



CLUB NEWS AND EVENTS

MONTHLY MEETINGS

Board Meeting: August 4 @ 7:00 p.m.

Members Meeting: August 4 @ 8:00 p.m.

Held at Schoonover Observatory

PROGRAM: Cook up a comet! Member David Humphreys will take you through the ingredients and steps that go into making a comet. This exciting live presentation uses DRY ICE as a major ingredient!

Observing will occur through the primary telescope (weather permitting). Learn about telescopes and learn how to use them! Bring your astronomy questions and a desire to learn!

UPCOMING EVENTS

Perseid Meteor Shower Observing!

Saturday, August 12 the club will be at Kendrick Woods with the Johnny Appleseed Metropolitan Parks District to see if we can catch a glimpse of some meteors. Expect observing to start around dusk. We'll have telescopes set up too, so come out to do some observing and cross your fingers for clear skies!

Allen County Fair

Lima Astro will have a booth at the Allen County Fair. The fair runs August 18–26. We'll keep everyone posted via Facebook on which dates we'll be there. **Volunteers are needed** to help out at the fair booth. Please let us know if you are interested.

Summer Viewing Program

Observing continues every Friday night at 8:00pm. Catch a presentation, do some stargazing, and add to your astronomy knowledge!

ANNOUNCEMENTS

NEW CLUB EMAIL ADDRESSES

The club *finally* has official "limaaastro.com" email addresses! You can now contact the club at info@limaaastro.com. Update your address book! You can still contact the club via Facebook.

SCHOONOVER OBSERVATORY TREE TRIMMING

The City of Lima has begun removing some trees along the drive to the observatory. Many trees near the observatory have been obscuring the view of some parts of the sky for many years.

New trees will be planted by the city to replace the ones being removed. The new trees will be of several varieties that won't get quite as tall, and will help to preserve the observatory's sight-line, as well as enhance the beauty of Schoonover Park.

SUMMER MOON FESTIVAL

The club was the Armstrong Air & Space Museum in Wapakoneta on July 22–23 as part of the annual Summer Moon Festival. We met plenty of great people, and quite a few who were not yet aware of the total solar eclipse occurring on April 8, 2024! Did you know there is a partial eclipse visible in Ohio on October 14 of this year?

Eclipse glasses are available NOW!

Stop by a Lima Astro meeting or event to get yours!
\$5.00 donation per pair



Eclipse glasses will start going FAST now that we are less than a year away from the April 2024 Total Solar Eclipse!

Lima Astro's glasses are ISO certified safe for solar observing.

Funds received from the sale of eclipse glasses go towards programming, outreach, and future projects such as the proposed Dark Sky Observatory at Kendrick Woods.



SUPER BLUE STURGEON MOON

VIVIAN WHITE - NIGHT SKY NETWORK

On August 1st, catch a full Moon rising in the east just 30 minutes after sunset. We are seeing the entire sunlit side of the Moon as it is nearly (but not quite) in line with the Sun and Earth. The Farmers' Almanac calls this month's Moon the "Sturgeon Moon", for the time of year when this giant fish was once abundant in the Great Lakes. Cultures around the world give full Moons special names, often related to growing seasons or celebrations.

As the Moon rises later and later each night, the bright sunlit part appears to get smaller or "wane" - we call this a waning gibbous Moon. About a week later, on August 8th, we see only one half of the Moon alight. At this phase, the Moon rises around midnight and sets around noon. Have you ever seen the Moon in the daytime? You may notice this phase towards the southwest in the morning sky. Hold up a ball or egg beside it and see how the Sun lights up the same part.



Image of waning crescent Moon shown next to a ball on a stick that is lit by the Sun on the same side as the Moon, with trees and a blue sky in the background. Try this with an egg or any round object when you see the Moon during the day!
Credit: Vivian White

By August 16th, the Moon has gone through its crescent phase and is now only showing its dark side towards the Earth. Did you know the dark side and the far side of the Moon are different? The Moon always shows the same face towards Earth due to the gravitational pull of Earth, so the far side of the Moon was only viewed by humans for the first time in 1968 with the Apollo 8 mission. However, the dark side is pointed at us almost all the time. As the Moon orbits the Earth, the sunlit side changes slowly until the full dark side is facing us during a new Moon. When the Moon is just a small crescent, you can sometimes even see the light of an Earthshine reflecting off Earth and lighting up the dark side of the Moon faintly.

Then as the Moon reappears, making a waxing (or growing) crescent Moon, best seen in the afternoons. By the time it reaches the first quarter on August 24th, we see the other half of the Moon lit up. At this point, the Moon passes through Earth's orbit and marks the spot where the Earth was just 3 hours prior. It takes the Earth about 3 hours to move the distance between the Moon and Earth.

The Moon on August 30th is referred to as a blue moon. Blue moons are not actually blue in color of course; it refers to the second full Moon in any month. Since it takes 29.5 days to complete the cycle



Earthshine as seen from the International Space Station with the sun just set - Astronaut Photograph ISS028-E-20073 was taken on July 31, 2011, and is provided by the ISS Crew Earth Observations Facility and the Earth Science and Remote Sensing Unit, Johnson Space Center

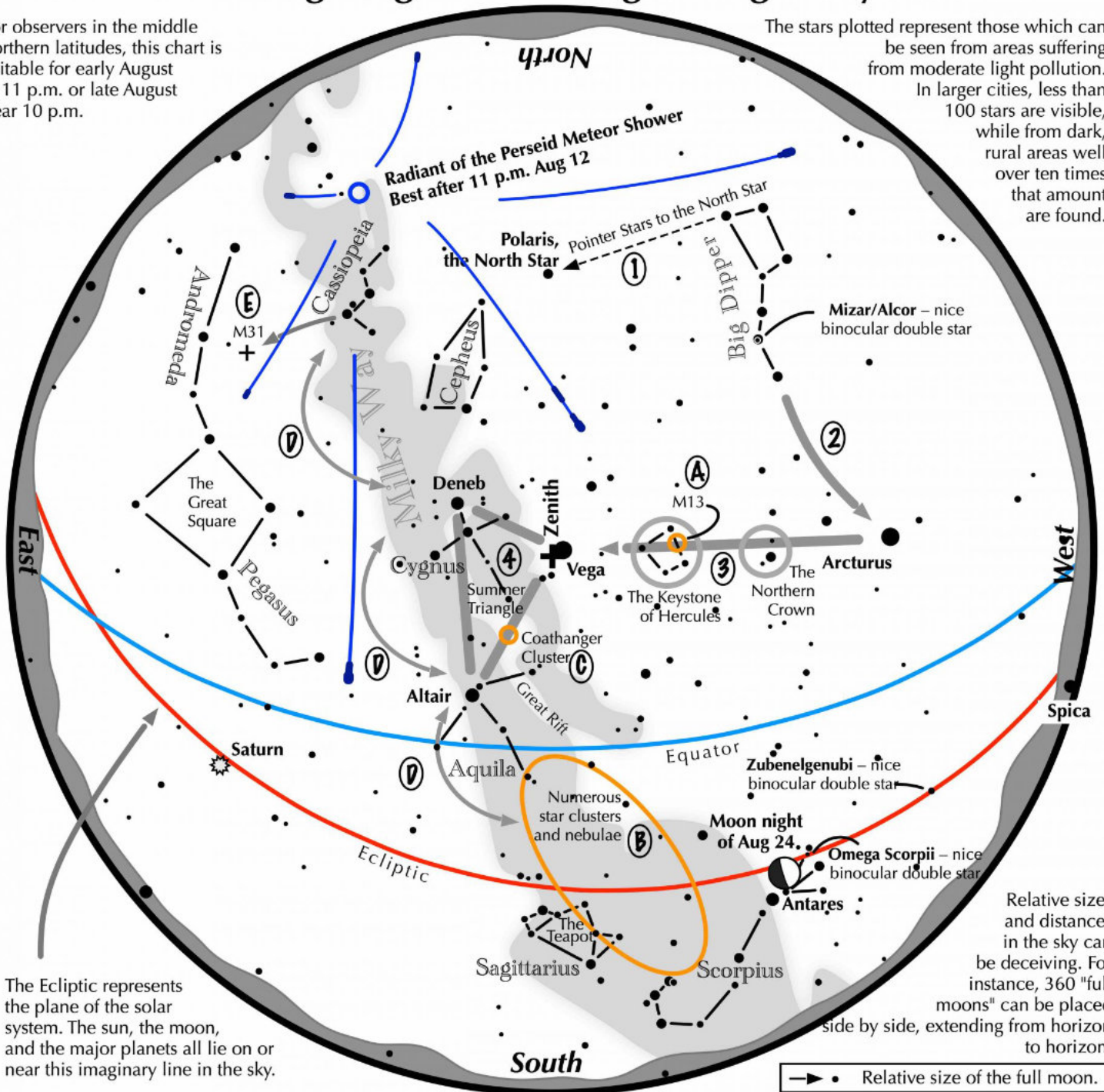
from full to new and back to full, most months will see only one. But occasionally, you'll fit two into one month, hence the phrase "once in a blue moon." We see a blue moon about once every 3 years on average - next in May 2026. In addition, this full Moon appears larger in the sky than any other full Moon this year - an unofficial supermoon. A supermoon appears larger than average because it is closer in its slightly elliptical orbit. The difference in apparent size between the smallest and largest full Moon is about the size difference between a quarter and a nickel. Even at its largest, you can always cover the whole Moon with your pinky extended at arm's length.

Follow the Moon with us this month and keep a Moon journal if you like - you may be surprised what you discover! moon.nasa.gov/moon-observation

Navigating the mid August Night Sky

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August near 10 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.

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

- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the June evening sky.
- 3 To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 4 High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

- A: On the western side of the Keystone glows the Great Hercules Cluster.
- B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
- E: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.



Observing Lists

Top ten deep-sky objects for August

M8	M22
M11	M24
M16	M27
M17	M55
M20	M57

Top ten deep-sky binocular objects for August

Cr 399	M22
IC 4756	M24
M8	M25
M11	M27
M17	NGC 6633

Challenge deep-sky object for August

Abell 53
Abell 53 is a planetary nebula located in the constellation Aquila. You'll need decent skies and a fairly large telescope to spot it through an eyepiece.
Apparent Magnitude: 16.9 Surface Brightness: 15.0

The Planets in August

Mercury: Continues its best evening apparition of the year for southern observers, reaching greatest eastern elongation of 27° on the 10th, the same day it achieves aphelion. This has the combined effect of placing Mercury against a darker background sky further from the Sun in Earth's sky, but intrinsically dimmer at mag. +0.3. It will remain well placed for southern observers in the days that follow, but continues to fade.

Venus: Is all but invisible to Northern Hemisphere observers for most of the month due to its southerly declination relative to the Sun. Venus achieves inferior conjunction on the 13th, when it is 144 light seconds (0.2887 AU) distant with an angular diameter of $57.8''$. It passes 7.7° south of the Sun, a comfortable distance for the experienced daytime telescopist to carefully sweep up (or "go to") its exquisite, razor-thin crescent, which changes rapidly in the days around conjunction. Moving more rapidly than Earth, Venus zooms into the morning sky, achieving an elongation of 27° west by month end.

Mars: Now at its minimum brightness of mag. +1.8, Mars is becoming ever more challenging to observe in the evening twilight. Its elongation from the Sun diminishes from 35° to 25° during the month. The thin crescent Moon joins the scene on the 18th.

Jupiter: Rises around midnight local daylight time early in the month, and in the late evening hours thereafter. The last-quarter Moon passes 3° to the north on the 8th. The Moon can be used as a visual anchor to attempt a daytime unaided-eye observation of Jupiter after sunrise, with both objects well placed in the polarization band of 90° from the Sun.

Saturn: Achieves opposition on the 28th when it is 73 light-minutes (8.763 AU) from Earth, mag +0.4; the northern side of the ring plane is exposed at a 8.1° tilt. The rings span $44.2''$, the disk of the planet $19.0''$ and 12° south of the celestial equator. The absence of shadows makes Saturn a bit brighter at opposition (the "Seeliger effect"—the brightening of a rough surface) but also eliminates the 3-D effect created by the planet's shadow on the rings, the reason some observers prefer to observe this unique planet a few days or even weeks to either side of opposition. Saturn will be visible throughout the night in retrograde motion against the background stars of Aquarius. The perigean full Moon passes 2° to the south on the 30th.

Uranus: Now rising close to the local midnight local daylight time, Uranus reaches its first stationary point on the 29th. Its subtle retrograde loop will take 22 weeks and cover 5° of sky.

Neptune: Rises in mid-evening as it approaches its Sep. 19 opposition.

Astronomy History This Month

- The gibbous phase of Mars was first observed by Francesco Fontana on August 24, 1638.
- Abraham Ihle discovered the globular cluster M22 on August 26, 1665.
- Nicolas Sarabat discovered Comet C/1729 P1 (Sarabat) on August 1, 1729.
- Caroline Herschel discovered Comet C/1786 P1 (Herschel) on August 1, 1786.
- The Saturnian satellite Enceladus was discovered by William Herschel on August 28, 1789.
- Dominique Dumouchel was the first person to observe the return of Comet 1P/Halley on August 5, 1835.
- John Russell Hind discovered asteroid 7 Iris on August 13, 1847.
- Asaph Hall discovered Deimos on August 11, 1877 and Phobos on August 17, 1877.
- The first extragalactic supernova, S Andromedae, was discovered by Ernst Hartwig on August 20, 1885.
- David Jewitt and Jane Luu discovered the trans-Neptunian object (15760) 1992 QB1 on August 30, 1992.
- The Jovian satellite 2002 Laomedeia was discovered by Matthew Holman on August 13th, 2002.

August 2023 Astronomy Events Calendar

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1 Full Moon	2 Moon at perigee (Large Tides)	3 Saturn 2° N of Moon	4 LAS Meeting @ 8pm Neptune 1.5° N of Moon	5
6	7 Venus at aphelion Moon at ascending node	8 Jupiter 3° S of Moon Last quarter Moon	9 Uranus 3° S of Moon Moon 1.4° S of Pleiades (M45)	10 Mercury at aphelion Mercury greatest elongation E (27°)	11	12 LAS Perseid Meteor Observing at Kendrick Woods
13 Perseid meteors peak Venus in inferior conjunction Pollux 1.7° N of Moon	14	15	16 New Moon Moon at apogee	17	18 Pallas 1.1° S of Moon Mars 2° S of Moon	19
20	21 Moon at descending node	22	23 Mercury stationary	24 First quarter Moon	25 Antares 1.1° S of Moon, occultation	26
27 Saturn at opposition	28	29 Uranus stationary	30 Venus at greatest heliocentric lat. S Moon at perigee (Large Tides) Saturn 2° N of Moon	31 Mercury greatest heliocentric lat. S Full Moon (largest in 2023)		

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.

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 in late winter/early spring, 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.