



CLUB NEWS AND EVENTS

MONTHLY MEETINGS

Board Meeting: November 3 @ 7:00 p.m.
Members Meeting: November 3 @ 8:00 p.m.
Held at Schoonover Observatory

Program: Club member, Robert Verb, will present a multimedia program covering the processes and engineering of the special Beryllium Mirror Segments of the James Webb Space Telescope.

He had hands-on involvement in the JWST telescope engineering, closely involved in providing the correct chemical mixture, material processing, and follow-up through the machining process and shipping of the mirrors to NASA.

Robert is a retired Army Major, Engineering Graduate of the University of Toledo, retired Facility Engineer of Bush Wellman (Materion) and retired Senior Engineer for Beryllium Products.

UPCOMING EVENTS

Sunday Schoonover Observatory Openings

The club recently received a second shipment of commemorative eclipse glasses. As the April 8, 2024 total solar eclipse is only 6-months away, we want to make sure everyone has an opportunity to get theirs!

Schoonover Observatory will be open many Sunday afternoons from 2:00 p.m. – 4:00 p.m. to allow those who can't make it on Friday nights to purchase their glasses. It's also a great time to find out more information about the astronomy and the club.

Bulk discounts on eclipse glasses are offered. Inquire within or contact the club via email or Facebook if your organization or large family is in need of eclipse glasses to observe this rare event.

Lima Astro's eclipse glasses are made in the USA and ISO certified safe for solar viewing.

As a reminder, eclipse glasses are usable any time for observing the Sun, you don't have to wait for an eclipse to use them!

UNDER THE DOME

The club was thankful and thrilled to host Terry Mann as October's guest speaker. Terry is an accomplished photographer specializing in the Aurora Borealis, and is the current President of the Ohio Chapter of the International Dark Sky Association. Terry presented a highly-detailed program about the Aurora and solar cycles, and shared her stories and photography with the crowd. It was a full-house! Despite the weather being stormy that evening, many in attendance headed up to the dome to discuss the equipment and converse.

On October 14 a partial solar eclipse occurred across most of the United States. Schoonover Observatory was open for the event. Unfortunately, nearly the entire State of Ohio was covered in clouds that day. Many still gathered at the observatory to observe the eclipse live via the Internet, and to have hearty astronomy-based discussion.

International Observe the Moon Night was held at Kendrick Woods on October 21. David Humphreys provided a detailed program about the Moon outdoors at one of the park shelters. The forecast was for clouds, so we didn't have many visitors, but those that did attend were enthusiastic and lively, and we had a great time, and even a small break in the clouds where we could observe for a bit. Representatives from the Johnny Appleseed Metropolitan Parks District and the Armstrong Air & Space Museum were in attendance.

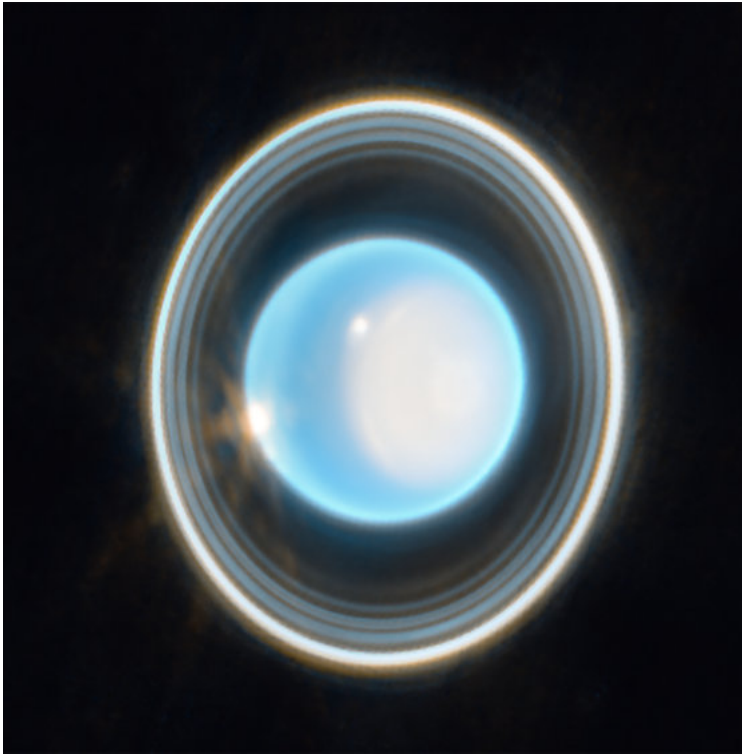
Due to the clouds, Schoonover Observatory was opened on October 22 specifically for Moon observing, as the skies were predicted to be clear. They were, and visitors were able to observe the Moon through the 11-inch telescope in the dome.

October wasn't without technical difficulty. Of course, they occurred at the worst times. Thanks to the City of Lima, the problems have been remedied, and we can continue using the observatory regularly!



SPY THE SEVENTH PLANET, URANUS

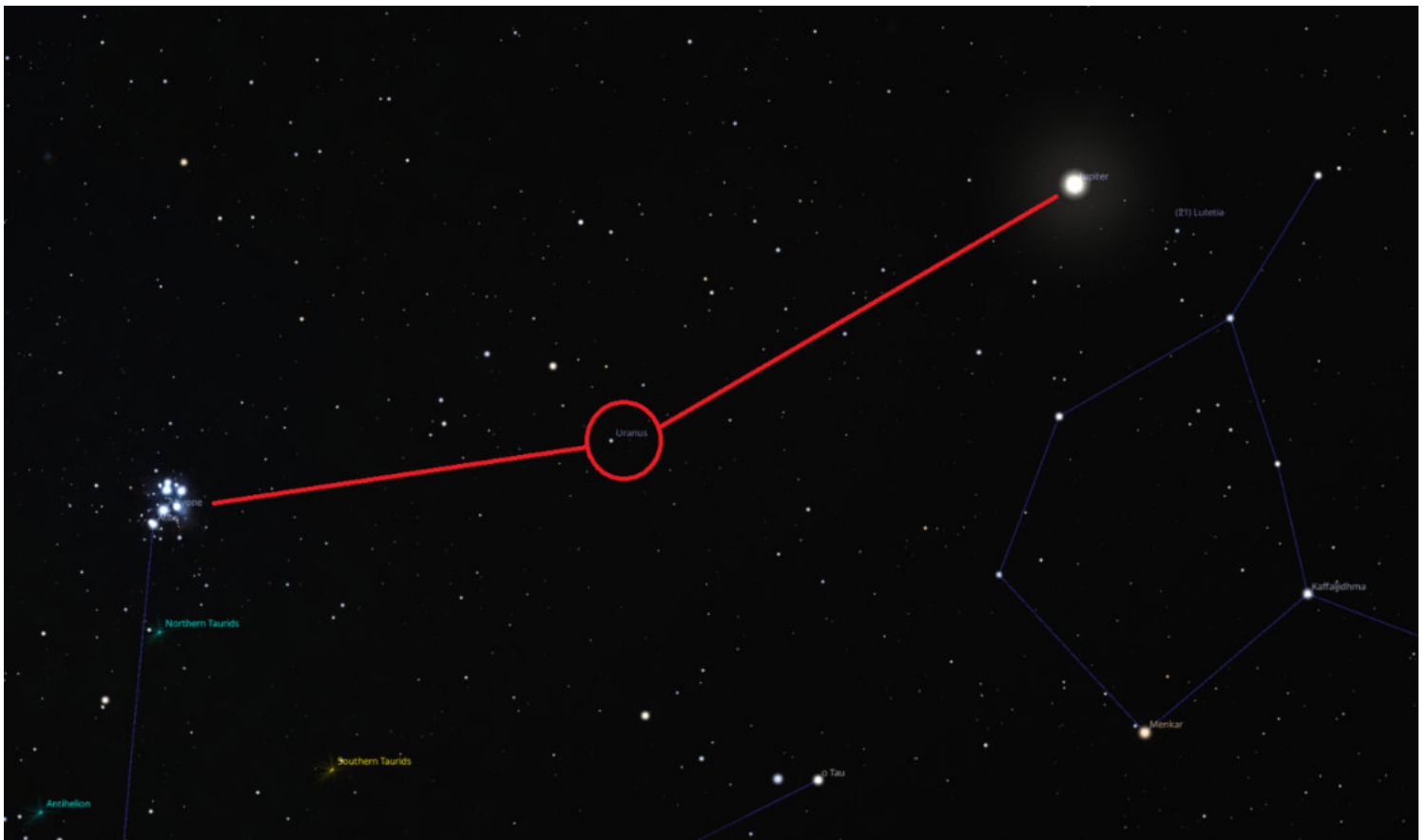
LIZ KRUESI - NIGHT SKY NETWORK



You might be familiar with Saturn as the solar system's ringed planet, with its enormous amount of dust and ice bits circling the giant planet. But Uranus, the next planet out from the Sun, hosts an impressive ring system as well. The seventh planet was the first discovered telescopically instead of with unaided eyes, and it was astronomer extraordinaire William Herschel who discovered Uranus March 13, 1781. Nearly two centuries passed before an infrared telescope aboard a military cargo aircraft revealed the planet had rings in 1977.

Since that discovery, multiple observatories have revealed more details of Uranus and its ring system. Most recently, the NASA-led JWST space observatory captured the planet and its rings in detail. This recent image combines just 12 minutes of exposure in two filters to reveal 11 of the planet's 13 rings. Even some of the planet's atmospheric features are visible in this image.

Even with advanced imaging like that from JWST, much of Uranus remains a mystery, including why it orbits the Sun on its side. This is because only one spacecraft has ever visited this planet: NASA's Voyager 2, which flew by the distant planet in the mid-1980s.



Sky map picturing M45, Uranus and Jupiter, Stellarium

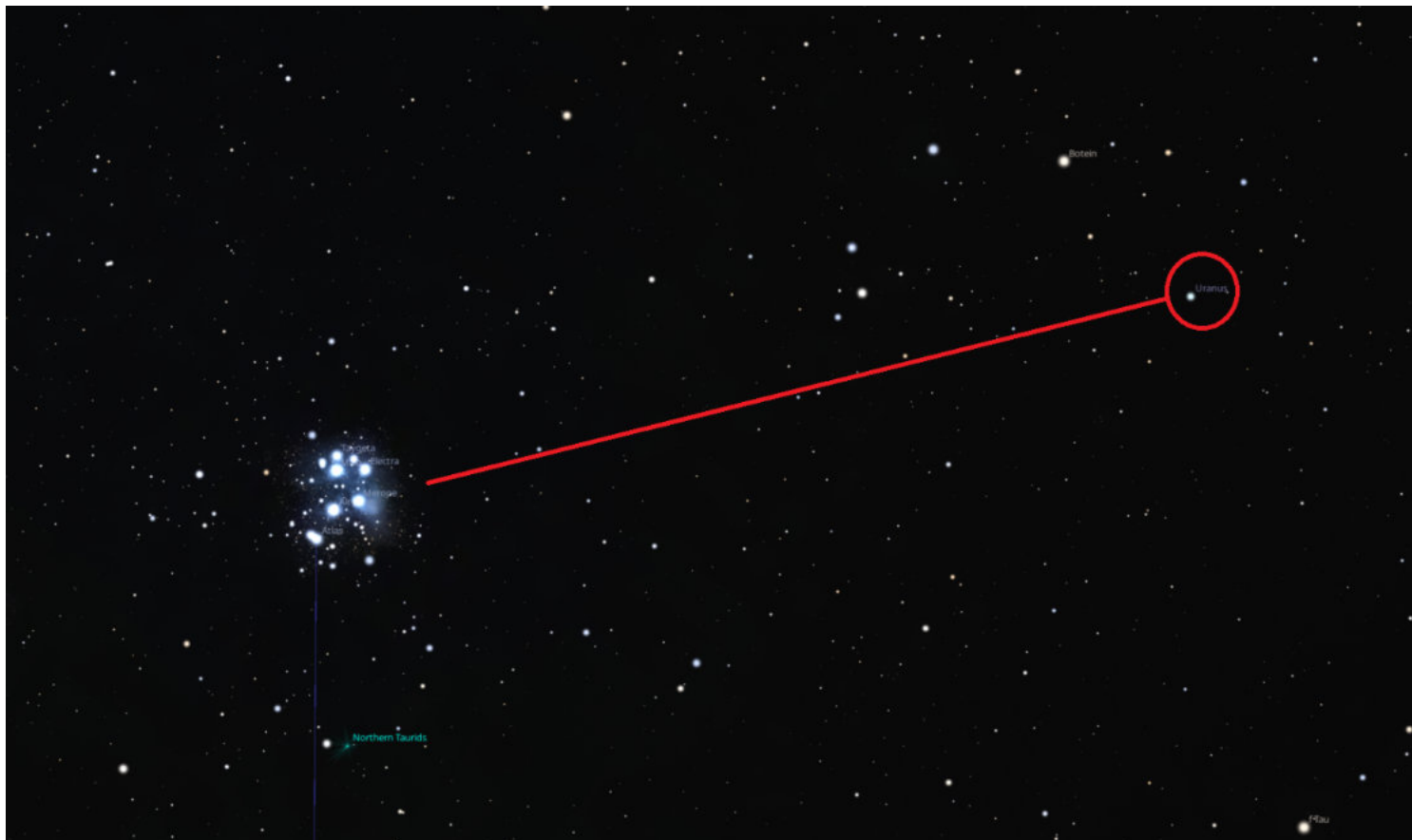
Planetary scientists are hoping to change that soon, though. Scientists recommended in a [report](#) released last year from the National Academies of Sciences, Engineering, and Medicine that Uranus be the focus on the next big planetary science spacecraft mission. Such a large-scale mission would gain insight into this icy giant planet and the similar solar system planet, Neptune.

If you want to catch a view of Uranus with your own eyes, now is prime time to view it. This ice giant planet lies perfectly positioned in mid-November, at so-called “opposition,” when its position in its orbit places it on the other side of the Sun from Earth. That location means

our star’s light reflects off Uranus’ icy atmosphere, and the planet appears as its brightest.

To find it, look overhead just after midnight on November 13. Uranus will lie about halfway between the brilliant planet Jupiter and the diffuse glow of the Pleiades star cluster (M45). While Uranus may look like a bright blinking star in the night sky, its blue-green hue gives away its identity. Binoculars or a telescope will improve the view.

For more about this oddball planet, [visit NASA’s Uranus page](#).



Sky map picturing M45 and Uranus, Stellarium

Commemorative eclipse glasses are available *NOW!* **Visit a Lima Astro meeting or event to get yours!**



The club just received a new shipment of glasses, as they are going fast. **BULK DISCOUNTS** are available.

Email: info@limaastro.com

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

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.

Observing Lists

Top ten deep-sky objects for November

M31	M110
M32	NGC 40
M33	NGC 253
M76	NGC 457
M103	NGC 752

Top ten binocular objects for November

M31	NGC 253
M33	NGC 457
M103	NGC 654
NGC 225	NGC 663
NGC 288	NGC 752

Challenge deep-sky object for November

IC 59
IC 59 is a Reflection Nebula in Cassiopeia. It is situated close to the northern celestial pole and, as such, it is visible for most part of the year from the northern hemisphere. Apparent Magnitude: 13.33 Surface Brightness: 17.32

The Planets in November

Mercury: Returns to the evening sky in the second week of the month, shining brightly at about mag. -0.5 in evening twilight for the rest of the month. It reaches 15° elongation on the 15th and 20° on the 27th, though at a deep southerly declination that adds to the challenge for Northern Hemisphere observers.

Venus: Continues to dominate the morning sky. Has a superb conjunction with the Moon on the 9th; eastern North America is favored for a close appulse in morning twilight. In the telescope at low-to-medium power, look for the contrast between the waning crescent Moon vs. the waxing gibbous phase of Venus, with the planet displaying a much higher surface brightness.

Mars: Too close to the Sun to be seen. Achieves solar conjunction on the 18th.

Jupiter: Achieves opposition on the 3rd when it is 33 light-minutes (3.982 au) from Earth, mag. -2.9 , with a 49.45" disk and 13.5° north of the celestial equator. At this time, the four largest (Galilean) satellites are also at their brightest and with their widest apparent separation. Jupiter's retrograde motion is also at its maximum at this time, traversing westward among the stars of Aries. Visible throughout the night all month, with the bright waxing gibbous Moon passing by on the 25th.

Saturn: Reaches its second stationary point on the 4th, after which it resumes prograde motion against the stars of Aquarius. Fades to mag. $+0.8$ this month as it recedes and the reflective ring system continues to close. The waxing crescent Moon slides by 2° to the south on the 20th.

Uranus: Achieves opposition on the 13th, 2.6 light-hours (18.6 au) from Earth, mag. $+5.6$ with a 3.7" disk and 17.6° north of the equator.

Neptune: Well placed in the evening sky among the stars of southwestern Pisces, crossing the border into extreme northeastern Aquarius late in the month.

Astronomy History This Month

- Nicolaus Copernicus observes a lunar eclipse on November 5, 1500.
- Wolfgang Schuler independently discovers Tycho's Supernova on November 6, 1572.
- Cornelius Gemma independently discovers Tycho's Supernova on November 9, 1572.
- Tycho Brahe observes Tycho's Supernova on November 11, 1572.
- SN 1604 (Kepler's Supernova) becomes visible to the unaided eye on October 9, 1604.
- Nicolas-Claude Fabri de Peiresc makes the first telescopic observations of M42 (the Orion Nebula) on November 26, 1610.
- Jan de Munck discovers Comet C/1743 X1 (the Great Comet of 1744) on November 29, 1743.
- Captain James Cook observes a transit of Mercury from New Zealand on November 9, 1769.
- William Herschel discovers the ring galaxy NGC 922 on November 17, 1784.
- E.E. Barnard discovers the emission nebula NGC 281 (the Pacman Nebula) on November 16, 1881.
- The first photograph of a meteor was taken on November 26, 1885.
- The minor planet/comet 2060 Chiron or 95P/Chiron was discovered by Charles Kowal on November 1, 1977.

November 2023 Astronomy Events Calendar

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3 Meeting, Program and Observing starting @ 8pm Vesta stationary Jupiter at opposition Pollux 1.4° N of Moon	4 Saturn stationary
5 Daylight Savings Time ends Last quarter Moon	6 Mercury at aphelion Mars at descending node S. Taurid meteors peak Moon at apogee	7	8	9 Venus 1.0° S of Moon	10	11 Moon at descending node
12	13 N. Taurid meteors peak New Moon Uranus at opposition	14 Mercury 1.7° N of Moon Antares 0.9° S of Moon, occultation	15	16	17	18 Mars in conjunction with the Sun Leonid meteors peak
19	20 First quarter Moon Saturn 3° N of Moon Ceres in conjunction with the Sun	21 Moon at perigee	22 Neptune 1.5° N of Moon	23	24 Moon at ascending node	25 Jupiter 3° S of Moon
26 Mercury at greatest heliocentric lat. S Uranus 3° S of Moon	27 Moon 1.1° S of Pleiades (M45) Full Moon	28 Venus at perihelion	29	30		

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 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.