



the Skyscraper

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December 2025

AMATEUR ASTRONOMICAL SOCIETY OF RHODE ISLAND * 47 PEEPTOAD ROAD * NORTH SCITUATE, RHODE ISLAND 02857 * WWW.THESKYSCRAPERS.ORG

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Join us for Skyscrapers'

December Monthly Meeting Featuring Ron Zincone

at Seagrave Memorial Observatory

Saturday, December 6, 2025

Social hour at 6:30pm, Presentation at 7:00pm

Join Zoom Meeting

<https://us06web.zoom.us/j/82448184961?pwd=PeBaUtVVDrraKfUSzd7QiKEMEEdnHa.1>

Meeting ID: 824 4818 4961 Passcode: 747688

25 Years of Night Sky Photography and a Bit More

Ronald Zincone's presentation "25 Years of Night-Sky Photography and a bit more" is about the astrophotographer's journey and experience of 25 years of capturing celestial nightscapes, extreme weather and a bit more. Using PowerPoint, the teaching artist has selected some of his best image captures in which he explains the how, what, when and why? Ronald's presentation is designed to be educational while sharing his passions through imagery.

Ron Zincone is an award-winning photographer with an online business, ronaldzinconephotography.com, located in North Kingstown, RI. He is currently a continuing

education student in the Photography program at the Rhode Island School of Design (RISD) and a graduate of the New York Institute of Photography (NYIP). Zincone is also a member of Skyscrapers, Inc. (AAS-RI) and the Photographic Society of Rhode Island (PSRI) as well as a Certified Skywarn Spotter for the National Weather Service. The Teaching Artist has pursued 35mm photography, astronomy and extreme weather since the early 1970's. He has established an official business since 2005 and he has been a lifelong learning teacher since 2006. His online portfolio and Bio can be viewed at ronaldzinconephotography.com.



Observing Events:

Open Nights at Seagrave Observatory*

December 6, Closed
December 13, 7-9 PM
December 20, 7-9 PM
December 27, Closed

*Members are encouraged to attend

Off-site Public Observing**

None scheduled for December

**Volunteers with telescopes, binoculars, or just a love of the night sky, are always welcome

President's Message

by Linda Bergemann

It's hard to believe that December and winter are upon us. Weather permitting, we will meet at Seagrave for the last time in 2025 on December 6. Our January meeting and Holiday Potluck will take place at the North Scituate Community House on January 3. Our speaker for January will be author and historian Eddie Guimont. Eddie last spoke to us at AstroAssembly 2024 about H. P. Lovecraft. This time, he will talk about Mark Twain and his interest in astronomy. Look for more information in our January newsletter.

While we won't be meeting at Seagrave during the winter, we will continue to open for observing on Saturday nights as the weather and access to the grounds permit. My gratitude goes out to the members of the

Observatory Committee who are willing to brave some chilly nights to give someone their first glimpse of the Moon or a planet through a telescope. Personally, I find the experience of introducing visitors to the night sky very rewarding and have missed being actively involved. We can always use more volunteers to greet guests, point out objects in the night sky, or to operate one of our three main telescopes. Stop by some Saturday night for a visit. If you would like to join the team, just let me know.

Wishing you a joyous holiday and a happy new year!

Until next time,

Linda

401-322-9946

lbergemann@aol.com

New Member Welcome to Skyscrapers

Robert Swift
of Providence

Upcoming Presentations

January 3 at North Scituate Community House
Eddie Guimont: Mark Twain & Astronomy

February 7 on Zoom
Speaker TBD

March 7 at North Scituate Community House
Speaker TBD

Skyscrapers Official Merchandise

<https://www.bonfire.com/store/skyscrapers/>

<https://business.landsend.com/store/skyscrapersinc/>



Skyscrapers Presentations on YouTube

Many of our recent monthly presentations on Zoom have been recorded and published, with permission, on the Skyscrapers YouTube channel. Go to the URL below to view recent presentations.

<https://www.youtube.com/c/SeagraveObservatorySkyscrapersInc>



The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are held monthly, usually on the first or second Friday or Saturday of the month. Seagrave Memorial Observatory is open every Saturday night, weather permitting.

Directions

Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions

Submissions to *The Skyscraper* are always welcome. Please submit items for the newsletter no later than **December 15** to Jim Hendrickson at hendrickson.jim@gmail.com.

E-mail subscriptions

To receive *The Skyscraper* by e-mail, send e-mail with your name and address to hendrickson.jim@gmail.com.. Note that you will no longer receive the newsletter by postal mail.

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Skylights: December 2025

by Jim Hendrickson

December brings the longest nights, with the night of the 20th-21st giving us 11 hours 31 minutes of astronomical darkness, 12 hours 39 minutes outside of nautical twilight, 13 hours 47 minutes outside of civil twilight, and 14 hours 52 minutes between sundown and sunup.

The Sun

The earliest sunset of 2025 occurs at 4:14pm EST on the 8th.

Moving out of the non-zodiacal constellation Ophiuchus, the **Sun** moves into Sagittarius on the 18th, where it will spend the next 33 days.

The **solstice** occurs at 10:03am EST on the 21st. At this time, the Sun is at its most southerly declination of -23.44° . From now until June 21, the Sun will move northward, and length of daylight will be getting longer.

Simply by the cosmic coincidence of our solar system's orientation within the Milky Way galaxy, the Sun appears to cross the galactic equator just nine hours and 12 minutes later.

The Moon

On the night before full **Moon**, the 3rd, the 98.7% gibbous Moon occults the Pleiades cluster.

The first of the bright stars to be occulted, Celaeno (16 Tauri), is occulted by the dark limb of the Moon at 8:33pm. This is followed by Electra (17 Tauri) at 8:45pm. Taygeta (19 Tau) goes behind the Moon six minutes later. At 9:04pm, Maia (19 Tau) is occulted. Finally, Asterope (21 Tauri) and 22 Tauri are occulted about 100 seconds apart, beginning at 9:14pm. The stars then reappear from the brightened limb of the Moon, beginning with Electra (9:15pm), Celaeno (9:41pm), Taygeta (10:02pm), Maia (10:12pm), Merope (10:25pm), followed by Asterope (10:25pm) and 22 Tau (10:29pm).

And while you're watching the Moon pass in front of the northern sky's most prominent star cluster, turn your gaze 4.1° to the south-southeast to find Uranus.

The full Cold Moon, the **most northerly full Moon of 2025**, occurs at 6:14pm on the 4th within Taurus. The Moon rises in the northeast at 3:38pm, 36 minutes before sunset. Full Moons that rise during daylight make some of the best photographs, so try to find a spot where you can watch it rise beyond some remarkable local scenery.

December's full Moon also gives us one of the best opportunities for experiencing a feeling of daylight at night. With the Moon high in the sky, it occupies a position close to where the Sun lies around the June solstice, and with all the leaves down, the landscape is illuminated like no other time of the year. And if there is fresh snowfall, the effect is amplified into a dreamy nocturnal daylight, which is best experienced in an area away from artificial light. Nature organizations and recreation areas often conduct full Moon hikes, and this is the best time of year to experience one.

On the morning of the 5th, the full Moon sets in the northwest at 8:03am, over an hour after sunrise, presenting another photographic opportunity.

The Moon is a resident of the Winter Hexagon for the next three nights, and it partially crosses into the non-zodiacal constellation Auriga on the 6th.

On the 7th and 8th, the waning gibbous Moon is near Jupiter.

The 65.3% waning gibbous Moon joins Regulus early on the 10th, becoming as close as 0.2° to the east of the brightest star in Leo at 1:30am.

The Moon is last quarter in Leo, at 3:52pm on the 11th.

The 25% waning crescent Moon is 2.4° southwest of Spica on the 14th.

The 27-day old, 6.0% crescent Moon is located about 11° to the right of Mercury on the 17th.

An even older 28.2-day (38 hours before new) Moon is located 6.3° south of Mercury on the 18th. Turning a telescope on the thin 2.4% crescent will reveal Antares just 0.7° to the north of the Moon.

The 28.2-day (38 hours before new) Moon is located 6.3° south of Mercury on the 18th. Turning a telescope on the thin 2.4% crescent will reveal Antares just 0.7° to the north of the Moon.

The Moon is new at 8:43pm on the 19th, marking the beginning of Lunation 1274.

The wide waxing crescent Moon appears near Saturn on the 26th, and becomes first quarter at 2:10pm on the 27th, in Pisces.

The Moon again joins the Pleiades cluster early in the morning of the 31st, although we don't get to see an occultation from New England this time. A quick look with binoculars will reveal the 86.1% gibbous Moon, the Pleiades, and magnitude

Events in December

1	18:00	Vesta 0.2° ENE of M22
3	18:00	Moon (waxing 98.5%) 4.1° NNW of Uranus
3	20:33	Moon (waxing 98.8%) occults M45
4	03:00	Mercury 50% illuminated
4	18:14	● Full Cold Moon
4	20:00	Jupiter Inside Winter Hexagon
5	05:10	Earliest Mercuryrise
5	05:00	Moon (waning 98.2%) 3.6° E of Elnath
6	01:00	Moon (waning 97.3%) 3.3° N of M35
7	17:00	Mercury Greatest Elongation (20.7° W)
8	16:14	Earliest sunset
10	02:00	Moon (waning 65.3%) 0.2° E of Regulus
10	19:21	Neptune Stationary
11	15:52	◐ Last Quarter Moon
16	05:00	Moon (waning 11.2%) 5.0° S of Zubenelgenubi
16	06:00	Mercury 4.5° ENE of Dschubba
16	06:00	Mercury 2.4° E of Acrab
16	23:34	Saturn Quadrature (90° E)
18	02:00	Sun in Sagittarius (33d)
19	06:00	Mercury 5.5° NNE of Antares
19	20:43	○ New Moon (Lunation 1274)
20	20:02	Neptune Quadrature (90° E)
21	10:03	Solstice
21	19:15	Sun at 0° Galactic Latitude
25		Equation of Time = 0
26	19:00	Moon (waxing 41.3%) 2.9° NNW of Saturn
27	14:10	◑ First Quarter Moon
31	04:00	Moon (waxing 91.4%) 3.5° ENE of M45

Ephemeris times are in EST (UTC-5) for Seagrave Observatory (41.845N, 71.590W)

5.8 Uranus all within the same view. Uranus is 5.0° southeast of the Moon.

The Planets

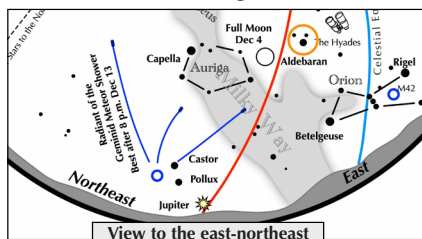
Mercury is in the morning sky, and reaches its greatest elongation on the 7th, at 20.7° west of the Sun. Rising over 100 minutes before sunrise, early December is the best appearance of our innermost planet for 2025. It rises so early, that for the next two weeks it is above the horizon before the onset of astronomical twilight. This should give plenty of opportunity to spot the planet's tiny globe go from crescent to gibbous, passing its 50% illuminated "half moon" phase on the 4th.

The innermost planet's tiny gibbous globe lies 0.7° north of Acrab (beta Scorpii) on the 14th.

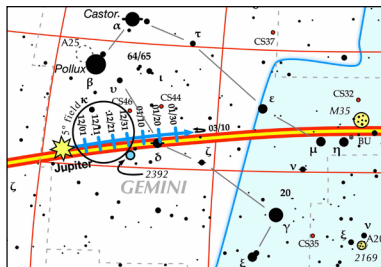
On the 17th, find Mercury 11.2° to the left and slightly below (east-northeast of) the 6.0% crescent Moon with its prominent Earthshine.

Mercury remains visible in the morning

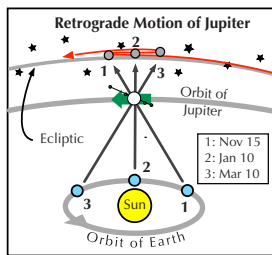
On evenings in December (and January), try this challenge:



View to the east-northeast in early December at 10 pm



Why do this activity? This planetary dance can only be explained if both Earth and Jupiter orbit our sun following definable and slightly elliptical paths. Our view from Earth clearly shows this to those people who take the time to look carefully enough.



Jupiter moves in retrograde

On evenings in December, the Giant Planet slides westward in central Gemini to the lower right of Castor and Pollux.

Observe, then plot its motion in the heavens. It continues its westward journey in January, but begins to slow in February. On about March 11, it halts and reverses direction.

The passing bright moon will hamper observations on December 4-8.



sky through the end of December.

Venus is low in the morning sky before sunrise, and is becoming difficult to observe.

Perhaps a trip to the beach on an exceptionally transparent early December morning will allow observers to spot the brilliant planet near its most distant point from Earth at about 1.7 au. To aid in locating it, look at the east-southeastern horizon at azimuth of 121°.

As it approaches its superior conjunction on January 6, Venus is too close to the Sun to be observed during the second half of December. It returns to our evening sky, becoming visible again, in February.

Mars sets within 30 minutes of sunset, and is too close to the Sun to observe during December. We won't be able to easily observe Mars again until spring 2026.

Jupiter is moving retrograde in Gemini, and enhances the Winter Hexagon asterism by being positioned along the southeastern segment of the Winter Hexagon, crossing the line connecting Pollux and Procyon on the 3rd, and remaining close to this alignment all month.

The King of the Planets now shines at a brilliant magnitude -2.5, and rises into the early evening sky. It passes 0.1° to the north of the open star cluster NGC 2420 on the 16th and 17th.

By mid-month, Jupiter rises during evening twilight, and shines at a brilliant magnitude -2.5, becoming the most prominent starlike object in the evening sky. On the 22nd, it crosses the line connecting Pollux

and Sirius.

Jupiter's moons

Times EST, events filtered for visibility during dark hours from Seagrave Observatory

December 1-2: 20:14 - Europa exits occultation behind Jupiter; 23:57 - A close pairing of Europa and Ganymede to the east of Jupiter; 01:04 - Ganymede's shadow begins to cross Jupiter; 04:22 - Ganymede's shadow leaves Jupiter's disk; 04:38 - Ganymede begins transit of Jupiter. **2-3:** 05:50 - Io's shadow begins to cross Jupiter; 06:44 - Io begins transit of Jupiter. **3-4:** 21:32 - A very close pairing of Io and Europa to the west of Jupiter; 03:08 - Io enters eclipse by Jupiter's shadow; 06:18 - Io exits occultation behind Jupiter. **4-5:** 00:18 - Io's shadow begins to cross Jupiter; 01:10 - Io begins transit of Jupiter; 02:36 - Io's shadow leaves Jupiter's disk; 03:26 - Io ends transit of Jupiter; 04:51 - Europa & Io in close pair to the east of Jupiter; 04:56 - Europa enters eclipse by Jupiter's shadow. **5-6:** 21:38 - Io enters eclipse by Jupiter's shadow; 21:40 - Ganymede exits occultation behind Jupiter; 00:44 - Io exits occultation behind Jupiter.

December 6-7: 19:36 - Io begins transit of Jupiter; 19:41 - A pairing of Io and Callisto to the east of Jupiter; 21:04 - Io's shadow leaves Jupiter's disk; 21:52 - Io ends transit of Jupiter; 23:56 - Europa's shadow begins to cross Jupiter; 01:34 - Europa begins transit of Jupiter; 02:44 - Europa's shadow leaves Jupiter's disk; 04:22 - Europa ends transit of Jupiter. **7-8:** 19:12 - Io exits occultation behind Jupiter; 21:34 - Callisto begins transit of Jupiter; 01:06 - Callisto ends transit of Jupiter; 03:16 - Io's shadow begins to cross Jupiter; 04:02 - Io begins transit of Jupiter. **8-9:** 22:32 - Europa exits occultation behind Jupiter; 02:45 - Europa and Ganymede are paired to the east of Jupiter; 05:02 - Ganymede's shadow begins to cross Jupiter. **9-10:** 02:46 - A close pairing of Europa and Ganymede to the east of Jupiter. **10-11:** 23:47 - Io and Europa are in a close pair to the west of Jupiter. Following this, the moons appear in order of orbital radius from the planet; 05:02 - Io enters eclipse by Jupiter's shadow. **11-12:** 02:12 - Io's shadow begins to cross Jupiter; 02:56 - Io begins transit of Jupiter; 04:30 - Io's shadow leaves Jupiter's disk; 05:12 - Io ends transit of Jupiter, after which, the moons once again appear in order of orbital radius to the west of the planet. **12-13:** 23:32 - Io enters eclipse by Jupiter's shadow; 01:04 - Ganymede exits occultation behind Jupiter; 02:30 - Io exits occultation behind Jupiter; 05:24 - Ganymede and Io make a close pair to the east of Jupiter.

December 13-14: 20:42 - Io's shadow begins to cross Jupiter; 21:22 - Io begins transit of Jupiter; 22:58 - Io's shadow leaves Jupiter's disk; 23:38 - Io ends transit of Jupiter; 02:32 - Europa's shadow begins to cross Jupiter; 03:52 - Europa begins transit of Jupiter; 05:20 - Europa's shadow leaves Jupiter's disk; 06:42 - Europa ends transit of Jupiter. **14-15:** 20:56 - Io exits occultation behind Jupiter. **15-16:** 19:00 - For much of the evening, Io, Europa and Callisto are in close arrangement to the west of Jupiter, forming a line and equally spaced at 19:10; 20:48 - Europa enters eclipse by Jupiter's shadow; 21:30 - Callisto enters eclipse by Jupiter's shadow; 23:24 - Io, Callisto and Europa are in a tight grouping for several hours; 00:40 - Callisto exits eclipse by Jupiter's shadow; 00:50 - Europa exits occultation behind Jupiter; 03:08 - Callisto enters occultation behind Jupiter; 05:32 - Europa and Ganymede are paired to the east of Jupiter; 06:40 - Callisto exits occultation behind Jupiter. **16-17:** None. **17-18:** 19:50 - Europa ends transit of Jupiter; 01:51 - Io and Europa are in a close pair to the west of Jupiter; 06:58 - Io enters eclipse by Jupiter's shadow. **18-19:** 04:06 - Io's shadow begins to cross Jupiter; 04:40 - Io begins transit of Jupiter; 06:22 - Io's shadow leaves Jupiter's disk; 06:56 - Io ends transit of Jupiter. **19-20:** 22:56 - Ganymede enters eclipse by Jupiter's shadow; 01:26 - Io enters eclipse by Jupiter's shadow; 04:14 - Io exits occultation behind Jupiter.

tation behind Jupiter; 04:24 - Ganymede exits occultation behind Jupiter.

December 20-21: 22:36 - Io's shadow begins to cross Jupiter; 13:06 - Io begins transit of Jupiter; 00:52 - Io's shadow leaves Jupiter's disk; 01:22 - Io ends transit of Jupiter; 05:08 - Europa's shadow begins to cross Jupiter; 06:08 - Europa begins transit of Jupiter. **21-22:** 19:54 - Io enters eclipse by Jupiter's shadow; 21:49 - Europa and Io are in a close pair to the west of Jupiter; 22:40 - Io exits occultation behind Jupiter; 17:04 - Io's shadow begins to cross Jupiter; 17:32 - Io begins transit of Jupiter. **22-23:** 19:20 - Io's shadow leaves Jupiter's disk; 19:48 - Io ends transit of Jupiter; 23:22 - Europa enters eclipse by Jupiter's shadow; 03:04 - Europa exits occultation behind Jupiter; 03:00 - Ganymede's shadow begins to cross Jupiter; 04:24 - Io enters eclipse by Jupiter's shadow. **23-24:** 00:22 - Europa and Callisto are paired to the east of Jupiter. **24-25:** 21:16 - Europa's shadow leaves Jupiter's disk; 22:06 - Europa ends transit of Jupiter; 03:47 - Europa, Callisto and Io are in a close grouping to the east of Jupiter, forming a line of equidistant spacing (Io, Europa, Callisto) at 04:39. **25-26:** 19:17 - Ganymede and Io form a close pair to the west of Jupiter; 19:39 - Europa, Callisto and Ganymede are in a line of equidistant spacing to the west of Jupiter; 00:00 - Ganymede and Callisto are paired to the west of Jupiter; 06:00 - Io's shadow begins to cross Jupiter; 06:24 - Io begins transit of Jupiter. **26-27:** 02:56 - Ganymede enters eclipse by Jupiter's shadow; 03:20 - Io enters eclipse by Jupiter's shadow; 05:58 - Io exits occultation behind Jupiter; 07:42 - Ganymede exits occultation behind Jupiter.

December 27-28: 20:43 - Ganymede and Europa are paired to the east of Jupiter; 00:30 - Io's shadow begins to cross Jupiter; 00:50 - Io begins transit of Jupiter; 02:46 - Io's shadow leaves Jupiter's disk; 03:06 - Io ends transit of Jupiter. **28-29:** 21:50 - Io enters eclipse by Jupiter's shadow; 00:24 - Io exits occultation behind Jupiter. **29-30:** 19:16 - Io begins transit of Jupiter; 21:14 - Io's shadow leaves Jupiter's disk; 21:32 - Io ends transit of Jupiter; 23:46 - Europa and Io are paired to the west of Jupiter; 01:58 - Europa enters eclipse by Jupiter's shadow; 05:18 - Europa exits occultation behind Jupiter. **30-31:** 20:20 - Ganymede's shadow leaves Jupiter's disk; 21:24 - Ganymede ends transit of Jupiter. **December 31-January 1:** 21:04 - Europa's shadow begins to cross Jupiter; 21:32 - Europa begins transit of Jupiter; 23:52 - Europa's shadow leaves Jupiter's disk; 00:20 - Europa ends transit of Jupiter;

05:04 - Europa, Io and Callisto are in a close grouping to the west of Jupiter.

Saturn is high in the south during early evening hours. Its rings are still close to their narrowest inclination, remaining under 1° to our line of sight.

While we're finished with Titan's shadow transits for the season (until 2038), we still have transits, occultations, and eclipses of Saturn's largest moon itself to watch. A transit is in progress as darkness falls on the 8th, and the moon emerges from Saturn's eastern limb at about 6:35pm.

Titan emerges from occultation during twilight on the 16th. Another transit ends at 5:41pm on the 24th.

At mid-month, Saturn is high in the south at dusk, and sets before midnight. It reaches eastern quadrature on the 16th, which means the elongation angle between the Sun and Earth as seen by Saturn is at its greatest. Because of this, the shadows we see on Saturn and its rings are at their maximum, but because Saturn's apparent ring tilt is still close to its minimum, this effect is greatly diminished than it is during times when the ring tilt is greater. Use a large telescope and high magnification under steady seeing conditions to look for an apparent gap on the rings just off the planet's western limb. Early on the 16th, Titan will be just below this spot.

During the waning days of December, notice how Saturn is due south as twilight fades, making the best time to observe the ringed planet in the early evening, before it gets too low in the southwest.

Uranus continues to be well-positioned and easy to locate about 4.0° south of the Pleiades cluster in Taurus. During the first week of December, the magnitude 5.6, 3.8 arcsecond planet forms a line of equidistant spacing with the pair of 6th magnitude stars 13 and 14 Tauri, to its west. It passes just 0.1° south of 14 Tauri, the easternmost of the pair, on the 13th and 14th.

Towards the end of December, the blue-green planet forms a triangle with 13 and 14 Tauri.

Neptune, like Saturn, is high in the south during early evening. Shining at magnitude 7.7 in Pisces, it can be seen within the same binocular field as the ringed planet, 4.3° to its northeast at the beginning of December, and closing to 3.5° to the northeast by month's end.

The outermost planet reaches its stationary point on the 10th, resuming eastward (prograde) apparent motion thereafter. It sets before midnight by mid-December.

At the end of December, Neptune, as with Saturn, will be west of the meridian following twilight, signaling that their observing season has progressed beyond the halfway point.

On the final evening of the year, Neptune will be 30 au away from Earth.

Minor Planets

Pluto is low in the southwest after sunset. It departs the evening sky too early to make observing the distant dwarf planet practical. It will remain mostly out of view until April.

Ceres, shining at magnitude 8.6, can be found just about 12° east-southeast of Saturn, and moving northeasterly through Cetus. In early December it is just 2.2° northeast of the magnitude 3.6 star iota Ceti.

In late December, the closest dwarf planet is now over 4.0° to the east-northeast of iota Ceti, but you can also use a pair of 6th magnitude stars, 12 and 13 Ceti, to locate it. These stars are 12° due east of Saturn (an equatorially mounted telescope needs only to be slewed in right ascension). From the easternmost star, move south and slightly west by 3.0° to find the magnitude 8.8 object.

4 Vesta is low in the southwest after sunset and will soon be out of view.

We don't look for **433 Eros** that often, but the Amor group asteroid happens to be located near the Andromeda Galaxy, Messier 31, during early December. It may be just beyond reach of binoculars, but a small telescope will show the magnitude 10.0 object arcing to the southwest of the galaxy, just over 2° from its core.

Although classified as a near-Earth object, Eros is 0.398 au away on the 1st, and continues to move away from us.

Events like this present a great opportunity to consider the scale of the universe. At this time, the Andromeda Galaxy is 400,000,000,000 times farther away than Eros. Using this ratio, placing the Andromeda Galaxy at the distance of the Moon, Eros would require a trip of a mere one millimeter. At this scale, Pluto would be no more than a hand's width away.

Eros is the first asteroid to be orbited by a spacecraft, NASA's Near Earth Asteroid Rendezvous (NEAR), which entered orbit around the asteroid in 2000. About a year later, the craft was renamed NEAR Shoemaker and, in another first, intentionally landed on the surface, despite the craft not being designed to do so. It continued sending signals back to Earth for about two

weeks. Although it's been silent for a quarter century, consider when you watch Eros sail past the Great Andromeda Galaxy that one of humanity's explorers is part of that faint speck of light.

Asteroid **16 Psyche**, the target object of NASA's namesake mission that launched in 2023, reaches opposition on the 7th. Well-placed in Taurus a few degrees east of Aldebaran, the 280-kilometer-long asteroid shines as bright as magnitude 9.7 when it is at its closest distance of 1.685 au. On the 1st, it is 0.5° south of 104 Tauri, and 1.5° northwest of NGC 1817 and 1807, a pair of open clusters. On the 24th and 25th, it is 1.5° south of NGC 1647, another open cluster. The asteroid moves westward at about 0.2° per day towards the Hyades, and will appear to be associated with the cluster by the end of the month.

The Psyche spacecraft will enter orbit around its asteroid in July 2029.

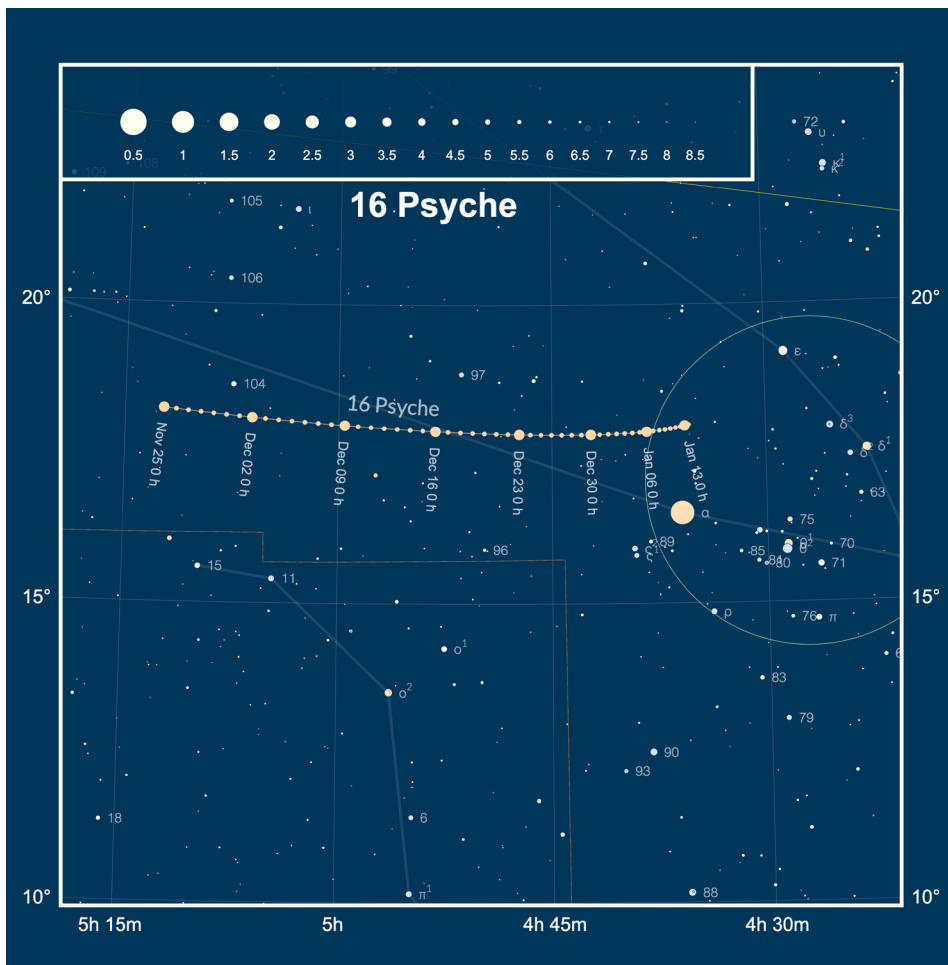
Meteors

The **Geminids** is one of the most favorable meteor showers of the year. Not only does this shower usually produce a consistent stream of up to 50 meteors per hour, northern hemisphere observers need not wait until the late hours for the radiant, located near Castor (alpha Geminorum), to rise above the horizon. These remnants of asteroid 3200 Phaethon enter the atmosphere at a modest 35 km/s.

On the heels of the prominent Geminids comes a little known meteor shower with the most northern radiant, the **Ursids**. Active from December 17th-26th, and peaking on the night of the 21st-22nd, these remnants from Comet 8P/Tuttle stream into our atmosphere at about 33 km/s and appear to radiate from a point near the bowl of the Little Dipper in the constellation Ursa Minor. The circumpolar location of this shower's radiant gives patient observers the opportunity to see up to 5-10 meteors per hour throughout all hours of darkness, and in 2025, the nearly new Moon presents no interference.

Stars & Constellations

In the early evening sky, we get our last views of Sagittarius and the southern sections of the summer Milky Way, the Big Dipper's pointer stars, Dubhe (alpha) and Merak (beta), reach their lower culmination due north and below Polaris, and Pegasus's Great Square is high in the south. The "loneliest star" Fomalhaut (alpha Piscis Austrini) is at its most prominent position,



low in the south, as twilight fades on December evenings.

As the northern hemisphere enters its winter season, the Summer Triangle remains in the western sky for a diminishing number of hours.

As the sky's fifth brightest star, Vega, loses prominence in the west, the sixth brightest, Capella, rises higher in the east. As these two stars reach equal elevation in the early evening, this is a good time to observe their differing colors.

Vega is a type A0 main sequence star that shines with 36 times the luminosity of the Sun. Its rapid rotation causes an equatorial bulge, resulting in it being hotter at the poles than at the equator, radiating at 10100 Kelvin and 7900 Kelvin, respectively, and giving it a distinct blue-white appearance. It lies at a relatively close 25 light years from us.

At 43 light years, the star we see as Capella (alpha Aurigae) is actually a pair of stars that orbit each other every 104 days. They are so close, however, as to be unresolvable in amateur telescopes, at just 50 milliarcseconds apart – a separation that corresponds to the distance of Venus from our Sun. Their spectral types are type G0 giant, and G8 giant, with corresponding

temperatures of 4900 Kelvin and 5800 Kelvin, giving the system a yellow-white appearance in our sky. They shine with luminosities of 93 and 64 times that of the Sun.

Capella not only anchors the northern apex of the Winter Hexagon, it also lies close to the galactic equator, making this one of the most brilliant and object-rich regions of the sky for explorers using binoculars or telescopes.

During the deepest hours of these long nights, the Winter Hexagon and its constellations Auriga, Taurus, Orion, Gemini, Canis Major, and Canis Minor, are prominently positioned high in the south.

Observers waiting for the Blaze Star, T Coronae Borealis, to brighten can see the Northern Crown constellation low in the northwest after sunset early in the month, but better viewing comes in the hours before morning twilight, when the constellation is fairly high in the east-northeast.

Lastly, skywatchers who have difficulty bearing the cold nights that will be with us for the next few months may feel somewhat relieved in anticipation for warmer nights by welcoming the stars of spring constellations such as Leo, Virgo, Hydra, and Corvus that populate the pre-dawn sky in December.

Book Review

The Sun We Share: Our Star in Popular Media and Science

by Kristine Larsen, Jefferson, North Carolina: McFarland & Company, Inc.,
Publishers, 2024, ISBN [978-1-4766-9117-6](#), softbound, \$49.95 US

Reviewed by Francine Jackson

As people who love the sky and attempt to instill that feeling on others, we often, instead of receiving enthusiastic questions on celestial subjects, find ourselves being asked about when the Earth will end. And, many times, it will have to do with our Sun being the culprit, the end game for us all.

In addition, as a hindrance to this type of subject, science fiction has a great tendency to help this along, and Kristine Larsen has certainly given us just about every way authors have made this happen.

Also, she reminds us that we as educators should become more aware of the writings of those fiction writers, as they have planned our destruction in too many myriad ways. To counteract this Larsen has written the definitive book on the Sun, and given us incredible science fiction – books, television shows, movies – entities that take each apparent natural “change” and how it will work against us.

Starting with Chapter 1, we find ourselves with probably the most beautiful phenomenon, a solar eclipse, being used for nefarious purposes. Sun spots (Chapter 3) introduces us to Robert Heinlein’s “The Year of the Jackpot,” where incidents of un-

usual behavior all seem to correlate to the Sun’s cycle.

Space weather chapters I and II are rife with reasons for the Sun to undo us, including using auroral displays to be the beacons of disaster. They even are used to disrupt a pigeon race, courtesy of both James Michener’s novel *Space* and an episode of *Paradox*.

We do know that eventually our Sun will die, but many science fiction authors seem to want to hurry up the process, or find ways for humanity to leave before the final days.

At first, the reader might just believe this book is nothing but a “list” of science fiction books related to our Sun and its potential disaster, but it’s far, far more. Included is virtually everything known about our star, and every scientist who contributed to the knowledge of it, to almost every author who took a piece of the Sun and turned it into science fiction. Some of the listed readings have been written by astronomers who like to venture into the realm of the future, the impossible, the fantastic, while others just seem to get an idea in mind with no actual science concept. The author dissects



each one, and directs the reader to the plausible or the impossible.

The Sun We Share is a great addition to a science bookshelf. It not only is a complete guide to our very necessary solar system member, but it is a compendium of how science fiction writers relate to it.



On Tuesday, November 4, several Skyscrapers members gathered at the Narragansett Brewery in Providence for another edition of **Astronomy on Tap RI**. Last month's event featured two presentations: Prof. Savvas Koushiappas talked about “The Quantum Universe” and Dr. Matt Jones, who presented “Why Is the Moon So Two-Faced? A Giant Impact Story.” We also enjoyed astronomy trivia, food, and of course, beer.

Pictured are Jim Hendrickson, Savvas Koushiappas, Denise Turco, Kathy Babcock and Francine Jackson. See more photos at <https://flic.kr/s/aHBqjCA1WU> and join us at the next event. You can keep up to date with Astronomy on Tap RI on their Instagram page <https://www.instagram.com/aotri24/>

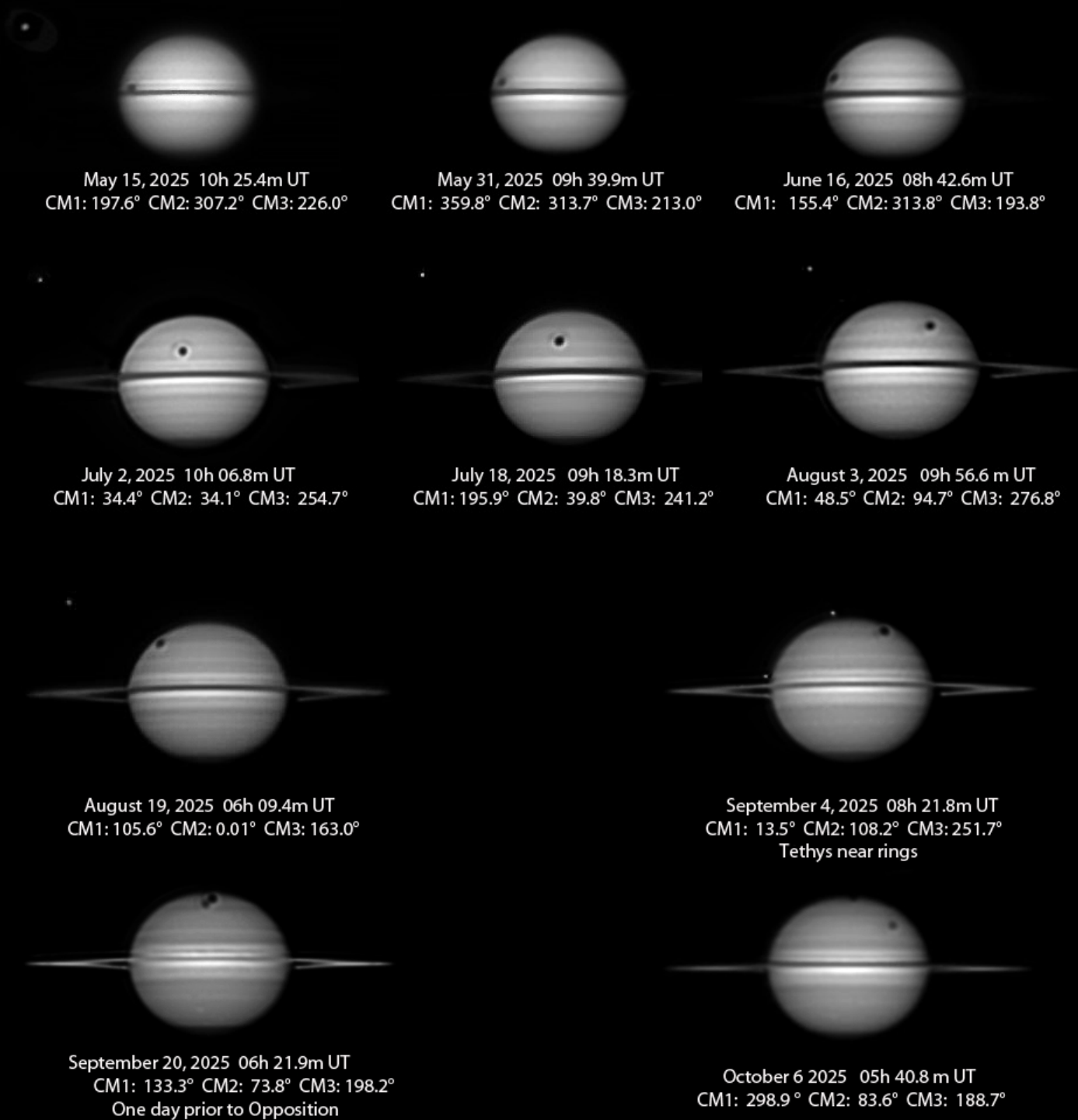


Figure 1: A series of Shadow Transits of Titan. All images were taken in the infrared which greatly reduces atmospheric scintillation. The angular diameter of Saturn increased from 16.4" on May 15, 2025 to 18.7" on August 3, 2025. The shadow of Titan began just above the ring plane on May 15th and rose higher on the disk of Saturn with each successive transit. The "halo" around the shadow is an artifact of processing. CM1 refers to the central meridian longitude at the equator, CM2 refers to the N and S temperate regions and CM3 is the

internal magnetic field rotation. Central meridian longitudes were obtained using WinJupos.

Figure 2: The series continues. The angular diameter of Saturn increased from 19.1" on August 19, 2025 to 19.4" on October 6, 2025. On Sept 20th, the moon Titan was just below its shadow with the final shadow transit occurring on Oct 6th were the shadow "grazed" the disk of Saturn.

Observing the 2025 Series of Titan Shadow Transits

by Greg Shanos

Saturn's rings were edge-on in 2025 which afforded the opportunity for shadow transits of various moons. I have imagined shadow transits of Dione, Rhea, Tethys which were difficult to see and rather unimpressive. An online article from *Sky & Telescope* indicated that a series of 11 shadow transits would occur from April 30, 2025 to Oct 6, 2025. See <https://skyandtelescope.org/astronomy-news/observing-news/titan-shadow-transit-season-underway/> These shadow transits were visible only from the Western Hemisphere. This event is unique because another Shadow Transit of Titan would not occur until 2038! Since Titan's orbital period is 15 days 22 hours, a shadow transit occurred on Saturn's disk every 16 days. I learned in the first week of May about this series of Titan shadow transits. Therefore, I was unaware of the first event on April 30th. Upon further inspection, this transit occurred during the daytime from my location, and the shadow was directly on the ring plane and virtually unobservable. Therefore, I did not really miss this event.

Once I became aware of the ten remaining transits of Titan, I made it my mission to image all of them. This series of shadow transits will surely be historic since there are 11 in a row each 16 days apart. The odds of that happening are astronomical — pun intended! Figure 1 shows the first set of six shadow transits from May 15th through August 3, 2025, taken under adverse observing conditions. All were taken under cloud cover which thickened and thinned as the night progressed. Most planetary imagers would not have attempted to observe on an evening with such poor transparency. Fortunately, the seeing was above average through the cloud cover which resulted in a higher resolution image.

The second set of images are from August 19th through October 6, 2025. The September 4th event was quite memorable since it



Figure 3: The author with his imaging setup. A Meade LX200GPS 10-inch 2500mm at f/10 with a ZWO ASI 462MM monochrome camera, Vernonscope 1.25x Barlow, and Baader 610nm R-IR longpass filter. An MSI GF65 i7 six-core 12-thread upgraded to 40GB of RAM gaming computer greatly reduces video processing time. Firecapture 2.7.0.15 captured the 75 second SER videos which were aligned & stacked with Autostakkert 4.0.13, sharpened and with Registax 6.1.0.8. Slight deconvolution with AstralImage 5.2.3.0 and additional processing in Photoshop CS4.

rained at 11:30pm local time on September 3rd. By 1:00am on September 4th, it was still completely overcast. Then by 1:30am local time the clouds began to clear, and I was

able to align my Go To scope on Polaris and Fomalhaut. I started imaging Saturn at 1:52 am local time. The weather conditions kept improving throughout the night with clear,

steady seeing with only a slight haze and humidity. Then at 4:07 am the weather took a turn for the worst with a few passing cloud banks. By 4:22 am it was completely overcast and remained that way through sunrise. I was able to image approximately 90% of the transit. I only lost 37 minutes from the beginning and 37 minutes from the end. The other moon that appears in the image is Tethys. If you look closely just above the rings, you can see a shadow transit of Tethys just about to start. Had it not clouded over, I would have continued imaging this transit once the shadow of Titan left the disk. Overall, a very successful imaging session. The months June 1st through November 30th are hurricane season in Florida. In 2025 we were fortunate not to have had any tropical storms or hurricanes hit Florida.

All the Saturn images were taken using a Vernonscope 1.25x Barlow and a ZWO ASI 462MM monochrome camera, therefore, the image scale remained constant. You can clearly see that the disk of Saturn is increasing in angular diameter and thus appears larger with each imaging run. The angular diameter of Saturn increased from 16.4" on May 15, 2025 to 19.4" on October 6, 2025. The September 20th transit occurred one day prior to Saturn's opposition. Note how the shadow of Titan began just above the ring plane on May 15th and rose high-

er on the disk of Saturn with each passing transit. On September 20th, the moon Titan was just below its shadow which was impressive. The final shadow transit occurred on October 6th when the shadow "grazed" the disk of Saturn. The shadow transits from August 19th through October 6th were under clear skies and I was able to record each event from beginning to end. I therefore was able to make animations of these transits. All these images were taken after midnight and into the early morning hours prior to sunrise. I had to stay awake

all night as to not miss these events. This sacrifice was well worth the loss of sleep.

In conclusion, the mission was complete. I was able to successfully image all ten remaining shadow transits of Titan and submitted my results to the Association of Lunar and Planetary Observers (ALPO) <https://www.alpo-astronomy.org/>, Planetary Virtual Observatory and Laboratory (PVOL), <http://pvol2.ehu.eus/pvol2/images/by?uid=gshanos> and to hstjupitergroups.io for archive and research. I await the next shadow transit of Titan in 2038.

Software utilized:

Firecapture (Free)

to acquire the uncompressed AVI or SER video
<https://www.Firecapture.de>

SharpCap (Free/Pro version \$18/year)

to acquire the uncompressed AVI or SER video
<https://www.sharpcap.co.uk>

Autostakkert 4 (Free)

aligns & stacks each individual frame from the uncompressed video
<https://www.autostakkert.com/wp/download>

Registax 6 (Free)

wavelets for initial sharpening of aligned & stacked video
<https://www.astronomie.be/registax/>

AstrImage (\$79.95)

deconvolution (use version 5.2.3.0 no AI)
<https://astrimage.com>

GIMP (Free)

alternative to Photoshop for post-processing
<https://www.gimp.org/downloads>

Photoshop CS4 (Subscription)

high pass filter for additional sharpening & final touches
<https://www.adobe.com/photoshop>

WinJupos

simulations & derotation
<https://jupos.org/gh/download.htm>

Observing Reports

Night Sky at River Bend

Farm, Uxbridge, MA

Friday, October 24, 2025

Weather: Partly Cloudy, 50°

Participants: Francine Jackson, John Kocur, Jim Hendrickson

Attendees: 12

Observed: Saturn, Epsilon Lyrae, C/2025 A6, C/2025 R2, Saturn, M31

Photos: <https://flic.kr/s/aHBqjCA3sR>

Report by Jim Hendrickson

Night of two comets, October 24, 2025 Blackstone River and Canal Heritage State Park (River Bend Farm) in Uxbridge, MA

After a cloudy Friday, skies cleared just enough before sunset for us to conduct our monthly River Bend astronomy night, but the clouds didn't stay away for long.

Originally scheduled as one of our dark sky nights, with no Moon visible, we were treated this month by the presence of two accessible comets.

The visitor center hosted its Bat Week

event in coordination with our night sky event. Participants made bat-related crafts in the barn, followed by a guided hike, but unfortunately they did report any bat sightings. About a dozen guests visited the telescope field, including several that returned from the hike just as the sky was dark enough to observe. Our regular friends Ruth and Marc Gravel also visited, sharing with us a late-season harvest of tomatoes from their garden.

John Kocur brought his 8-inch reflector, Jim Hendrickson set up an 80mm refractor and Seestar S50, and Francine had her Astroscan reflector. One of the guests brought a pair of 80mm binoculars.

Comet C/2025 A6 Lemmon in Serpens, was about 14° east of the bright star Arcturus. The 80mm refractor showed a bright coma with a distinct tail. Estimated to be around magnitude 4, it was 0.613 au from Earth, moving at a Sun-relative velocity of 54 km/s, at a distance of 0.638 au from the Sun. The image produced with the Seestar



showed a broad tail stretching across the entire frame.

Comet C/2025 R2 SWAN, at a distance of 0.289 au, was much fainter, moving eastward through Aquarius at a rate of 3.6° per day. With a tight green coma, its rapid movement through the sky showed a distinct trailed image in the Seestar. It was moving through the inner solar system at a Sun-relative velocity of 41 km/s.

As the sky darkened and Comet Lemmon got lower in the sky, clouds began to overtake everything except in the far north and south, and bit overhead. As the clear spots shifted, we had a little additional time to observe epsilon Lyrae, Saturn, the Double Cluster, and M31.

Sky conditions continued to improve as we were packing up at 8:00pm.

Comet images captured with a Seestar S50 telescope.

Winman School Lantern Night, Warwick RI Wednesday, November 5, 2025

Weather: Cloudy

Participants: Francine Jackson, Bob Janus, Jim Hendrickson

Attendees: 125

Observed: none - telescope demonstrations

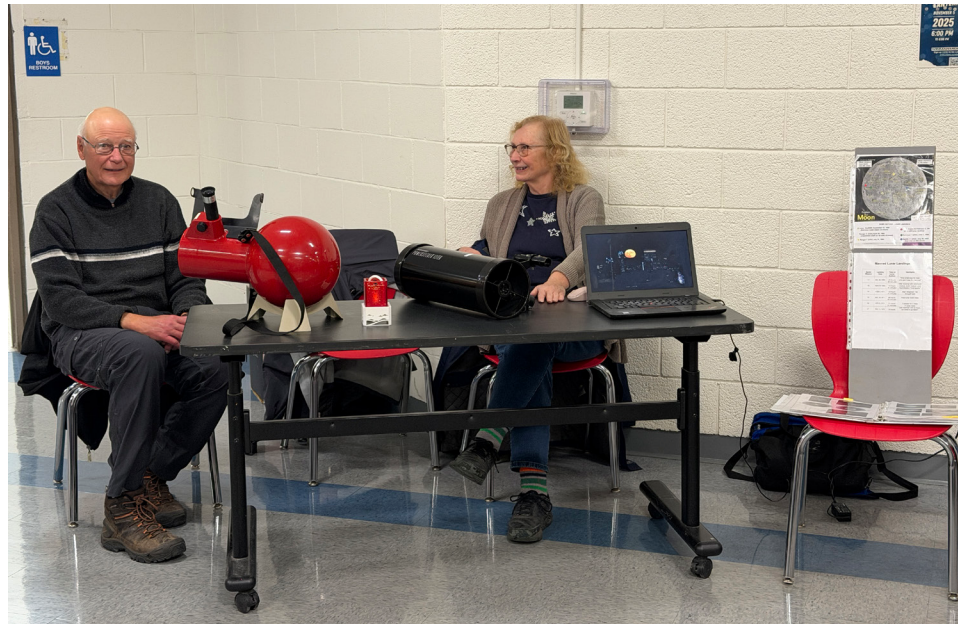
Photos: <https://flic.kr/s/aHBqjCzY3y>

Report by Francine Jackson

Cloudy night at Winman

For only the second time in several years, the skies for the annual Winman School's Lantern Night were cloudy. Only the Moon was visible, but it was just a foggy reminder of what was supposed to be a beautiful Full Beaver Moon. Therefore, Jim Hendrickson, Bob Janus and Francine Jackson set up in a corridor of the school, with many others displaying such as student-written books, a new dancing academy, and a door prize table. Bob brought a 4-inch reflector to show its insides, allowing everyone to "see themselves," plus a full Moon poster and images of many beautiful objects taken from the Hubble Space Telescope, Francine on her laptop showed the Moon as it would have looked (courtesy Jim's full Moon from Neutaconkanut Park), plus Jupiter and Saturn, and Jim kept Francine's Astroscan aimed at a large Oriental sphere on a wall several feet away.

Normally, we are situated outside, where groups who finish a night walk come to us, but it was different, in that we were able to see how many students and adults actually participate in this yearly celebration.



For the two hours we spent there, we had at least 125 people come by and ask about our display (including why we were not outside).

We always agree this is a great night, even spending it indoors, and we are looking forward to Winman's next Lantern Night, November 15, 2026. Make your calendars, and come join us!

Seagrave Observatory Night Saturday, November 8, 2025

Weather: Clear to party cloudy

Participants: Bob Janus, Matt White & Katie Chippendale

Attendees: 21 adults and 4 children

Observed: M15, 31, 45, 57, Saturn, C22, M31, M27, M76 and NGC891

Report by Bob Janus, Matt White & Katie Chippendale

Saturday November 8th was a clear night for the majority of the night. Most visitors came through between 7 and 8pm during the clearest portion. Some stayed a little more through 9pm as some high thin clouds came in.

Visitors were 21 adults and 4 children.
Katie Chippendale

The following objects were viewed with the Meade 12 inch SCT: M15, 31, 45, 57 and Saturn before the clouds began obscuring the sky. The 80mm Orion refractor (focal length 400mm, with 25mm eyepiece) that is piggybacked on the Meade provided a full view of M45 (the Pleiades). A few of the visitors were able to photograph Saturn through the Meade and M45 through the Orion with their smartphones.

Bob Janus

In addition to what Bob reported below, we showed Saturn and the Moon (very late) in the Clark. I had my S50 in the courtyard and showed C22, M31, M27, M76 and NGC891.

Matt White

Night Sky at River Bend Farm, Uxbridge MA Friday, November 14, 2025

Weather: Cloudy

Participants: Francine Jackson, Jim Hendrickson

Attendees: 1

Observed: none

Photos:

Report by Jim Hendrickson

Francine Jackson and Jim Hendrickson arrived just before 5:00pm at River Bend with three telescopes that never got unpacked. Forecasted clear skies didn't materialize.

Sherine was in the visitor center and showed us a baby turtle she had just rescued from the tow path and was going to bring to local reptile rescue. One woman had come in to ask about the night sky program. We invited her to visit the local observatories. After conversing inside for about 15 minutes and talking about future programming, we went out to the field to attempt to see a 5:36pm pass of the International Space Station, but it was too overcast and we saw nothing. This was the last of our monthly River Bend Night Sky events for 2025.

Seagrave Observatory Night Saturday, November 22, 2025

Weather: Clear, calm, 35°, heavy dew

Participants: Mark Munkacsy, Bob Horton,
Francine Jackson & Jim Hendrickson

Attendees: 10

Observed: Saturn, Albireo, Gamma Andromedae, M45, M15

Photos: <https://flic.kr/s/aHBqjCC3LT>

Report by Francine Jackson

Recently, I was gifted with a 12-inch Orion SkyQuest 12-inch Dobsonian, and Saturday, November 22nd, I brought it to Seagrave. Despite the fact that it had been placed in my van, Bob Horton and Jim Hendrickson had a time getting it out. Once the parts were outside, it was realized that, not only is it a beautiful piece of equipment, but it is motorized; however, as this was the

first time being set up, it was decided not to hook it up.

Once they had set it up, the results were very good. It was then realized that I had not been given eyepieces. As the former owner had bought a replacement telescope, which he felt was more in line with his telescopic ability, Bob's and Jim's borrowed eyepieces gave striking views of Saturn, Albireo and M15. One guest who came over when Albireo was being seen was struck by the beauty of the colors exhibited by the image.

Unfortunately, the weather conditions kept us from keeping the telescope set up for too long, and Bob, who had his own virtually identical telescope, and Jim then had to break it down to again fit in my car. Although it is a great instrument, it was felt among us all that it would again be set up, but in the spring, when the weather would

make it much easier to work with.



Al Nagler: 1935-2025

by Jim Hendrickson

Few names are as familiar in the universe of amateur astronomy as Al Nagler.

Before he was well-known to amateur astronomers, he worked as an optical engineer for Farrand Optical Company, where he designed the optical system for a simulator that was used by NASA astronauts to train for the Apollo lunar landings.

Building on this experience, he founded Tele Vue Optics in 1977 with the aim of bringing the beauty of the heavens to astronomers around the world through a series of new telescope and eyepiece designs.

Al was an ever-present fixture at Stellafane. He attended his first convention in the

1950s, where he won a 3rd Place Mechanical Excellence award for an 8-inch Newtonian he presented in 1958. In 1972, he won a 1st Place Newtonian award for his 12-Inch f/5.3 telescope.

Always eager to share views of the night sky through his telescopes and eyepieces, he was also a generous donor to the convention raffle.

During the 2025 Stellafane Convention he was awarded a pin from the Springfield Telescope Makers in recognition of his having attended more than 50 conventions. He was also presented with the Astronomical League Award for outstanding contribu-

tions to astronomy.

Al's most recent technical achievement was providing optics for NASA's Polarimeter to Unify the Corona and Heliosphere (PUNCH) mission, a fleet of four small satellites that launched on March 11, 2025 to study the solar corona.

Al continued to improve his optical designs at Tele Vue, recently introducing the seventh generation of eyepieces bearing his name. For almost five decades, Nagler eyepieces remain the high standard by which other eyepieces are compared, and nearly all amateur astronomers have experienced the "spacewalk" experience that looking through one provides.

Al passed away on October 27, 2025 at the age of 90. The 5.2-kilometer asteroid 10715 Nagler is named in his honor.





Bill Weber: 1954-2025

by Linda Bergemann

With sadness, I report the passing of Skyscrapers member Bill Weber. I spoke with his wife, Mary, this afternoon and she provided this obituary. Bill was actively involved with the Observatory Committee until his illness prevented his participation. I last saw Bill in January when I delivered his copy of the RASC Observer's Handbook 2025.

One more friend has rejoined the stars.

William Weber, Obituary

William D. (Bill) Weber, age 70, passed away from health complications on November 18, 2025 at his home in Rumford, RI. Bill graduated from St. Mary's High School in St. Mary's, WV in 1973. He went on to achieve an undergraduate chemistry degree from WVU and an organic chemistry doctorate from the University of Pittsburgh.

Bill worked for several companies in the field of microelectronic chemistry, including IBM, Ciba-Geigy, and Olin Chemical. He was an active member of the American Chemical Society and party to 23 US patents in the field of microelectronics.

In addition to being an avid amateur

astronomer and member of Skyscrapers Inc. Astronomical Society of RI, Bill was involved in many home projects and enjoyed coin collecting, gardening, fishing, woodworking and golfing. He was a loving father and grandfather and active in the Rumford Lions Club.

Bill was preceded in death by his parents, Jack W. and Helen D. Weber, his wife, Melissa, son Samuel, and brother Mike. He is survived by his wife of 22 years, Mary Morra; his daughter Dorsey Weber and her husband Edward Mahoney; his stepchildren Raymond (Anna), William (Ali) and Mary (Tim); his grandchildren Eleanor, Jacob, Lia, Frederick, George, Marion,

Lucille, Herbert, and Leonard; his brothers Ed (Traci) and Dan (Connie); and his sister Ann.

Services were held on Saturday, November 22. In lieu of flowers, donations may be made to:

Hope Health Hospice
1085 North Main Street
Providence, RI 02904

OR

Lions Club of Rhode Island
P.O. Box 4921
Rumford, RI 02916

Observing the Lunar X & V on October 28, 2025

by Greg Shanos

One of my favorite “features” on the moon is the Lunar X & V. This phenomenon is predictable and occurs on a monthly basis. (See table 1).

The Lunar X (also known as the Werner X) is a claire-obscure effect in which light and shadow create the appearance of a letter ‘X’ on the rim of the craters Blanchinus, La Caille and Purbach. The X is visible beside the terminator about one-third of the way up from the southern pole of the moon. The Lunar V forms along the northern part of the terminator near the crater Ukert. (See images 1-2)

I advise all amateur astronomers to consult this table to see if the Lunar X & V will be visible from your location. Time and date are listed in Universal Time therefore each individual observer will need to convert to their local time in order to observe the event. The easiest way to do this is with a free program called WinJupos. (<https://jupos.org/gh/download.htm>) WinJupos states both Universal Time and Local Time for the Sun, Moon and Planets. Enter your latitude and longitude first, then enter Universal Time stated on the table and your local time will appear above. Since the Moon was riding low in the sky at approximately 37 degrees above the horizon, I began my imaging session soon after sunset in the daylight.

Fortunately, the X & V can appear sooner and last several hours later than the stated time on the table. This is a good thing, since it may be cloudy at the start of the event and an hour later the clouds may have dissipated. The Lunar X & V will still be visible!

In conclusion, the Lunar X & V is a monthly phenomenon not to be missed. Check the table, convert Universal Time to Local Time and see if it will be visible from your location. If it is, then get out your telescopes and cameras and submit your observations to ALPO’s the Lunar Observer care of David Teske. david.teske@alpo-astronomy.org

3-Year Lunar X and Y Schedule***

	2026	2027	2028
Jan	25: 1630	15: 0015	4: 0830
Feb	24: 0730	13: 1530	3: 0015
Mar	25: 2145	15: 0600	3: 1500
Apr	24: 1100	13: 1930	2: 0430
			1: 1700
May	23: 2245	13: 0730	31: 0400
Jun	22: 0945	11: 1830	29: 1430
Jul	21: 2000	11: 0500	29: 0030
Aug	20: 0630	9: 1530	27: 1100
Sep	18: 1730	8: 0200	25: 2245
Oct	18: 0530	7: 1400	25: 1130
Nov	16: 1900	6: 0300	24: 0145
Dec	16: 0930	5: 1730	23: 1645

* All times are listed as the day of the month and then the hour in UT

** All times are approximate based on LTVT calculations. They are accurate to ± 1 hour.

Image 1: The Lunar X & V stands out in high relief on the disk of the moon on October 28, 2025 at 7:11pm local time or 23 11m UT. The moon was at 43% phase and only 37 degrees above the horizon. Weather conditions were ideal with perfectly clear skies and good seeing conditions. The image was taken in daylight with sunset at 6:52pm local time. An Orion ED80T CF 480mm f/6 triplet apo carbon fiber refractor was tracking on an Orion EQ-2 mount. A ZWO ASI 178MM monochrome camera and Baader CMOS optimized UV-IR cut filter using Firecapture v2.7.15 acquired the video through the refractor. Computer utilized was an MSI GF65 gaming computer upgraded to 40GB of RAM. The SER video was processed using Autostakkert 4.0.13 and Registax 6.1.0.8. Further sharpening and processing in Photoshop CS4. Image by Gregory T. Shanous, Longboat Key, (Sarasota), Florida.



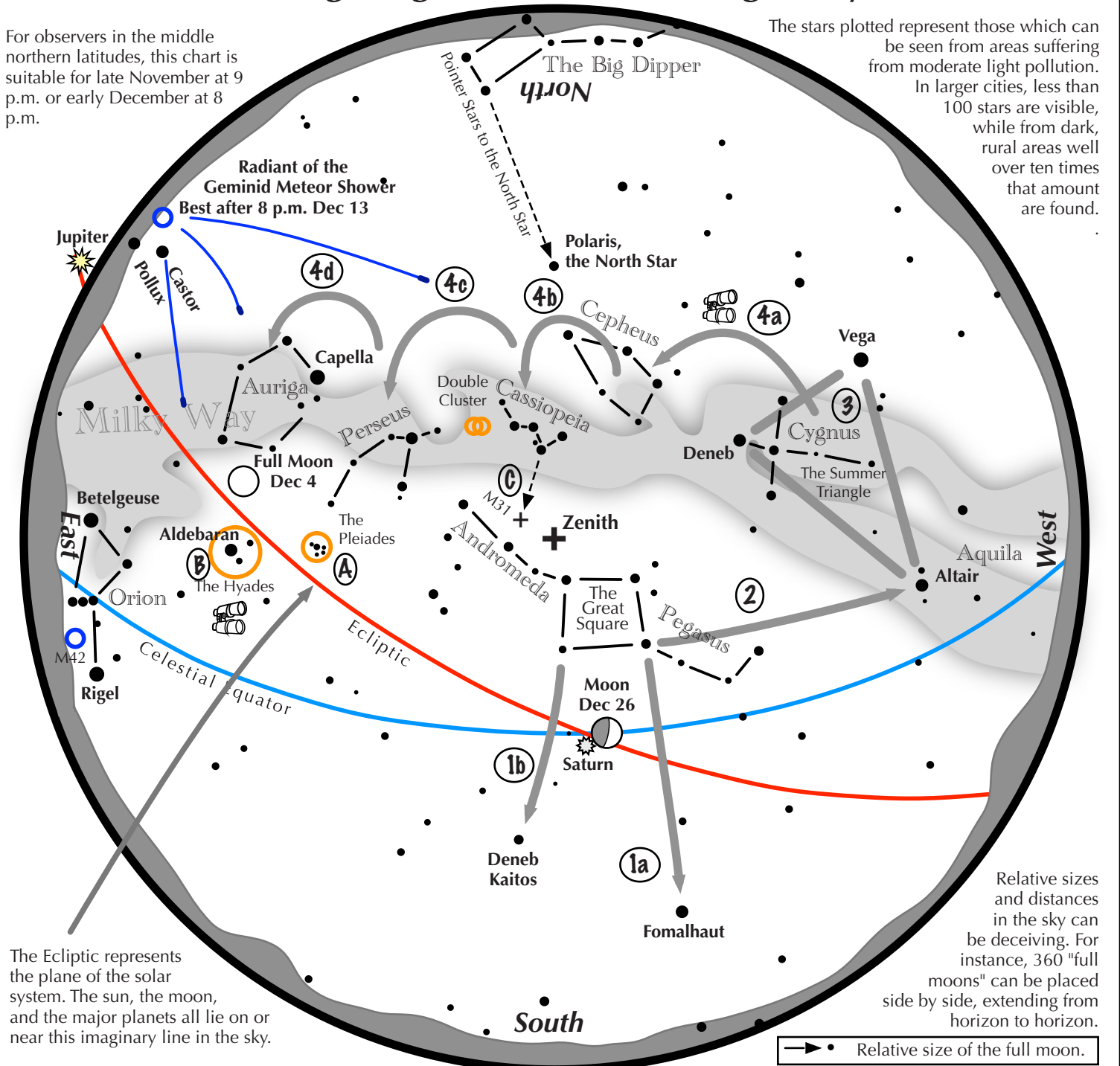
Image 2: The Lunar X & V stand out in high relief on the disk of the moon on October 28, 2025 at 7:24pm local time or 23h 24m UT. The moon was at 43% phase and only 37 degrees above the horizon. Weather conditions included clear skies with good steady seeing. Image was taken with an altazimuth driven Meade LX200GPS ACF 8-inch GO-TO Schmidt-Cassegrain telescope utilizing an Optec 0.62X focal reducer. A ZWO ASI 178MM monochrome camera with an Optolong UV-IR cut filter using Firecapture v2.7.14 to acquire the video. Computer utilized was an MSI GF65 gaming computer upgraded to 40GB of RAM. The SER video was processed using Autostakkert 4.0.13 and Registax 6.1. Further sharpening and processing in Photoshop CS4. Image by Gregory T. Shanos, Longboat Key, (Sarasota), Florida.

Navigating the December Night Sky

2025

For observers in the middle northern latitudes, this chart is suitable for late November at 9 p.m. or early December at 8 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 December night sky: Simply start with what you know or with what you can easily find.

- 1 Face south. Almost overhead is the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend an imaginary line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the southwest. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second bright star in the south.
- 2 Draw another line, this time westward following the southern edge of the Square. It strikes Altair, part of the "Summer Triangle."
- 3 Locate Vega and Deneb, the other two stars of the "Summer Triangle." Vega is its brightest member while Deneb sits in the middle of the Milky Way.
- 4 Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

- A and B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters.
- C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
- D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas.



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The Sun, Moon & Planets in December

This table contains the ephemeris of the objects in the Solar System for each Saturday night in December 2025. Ephemeris times in Eastern Standard Time (UTC-5) for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	6	16 51.0	-22 29.6	Oph	-26.8	1947.7	-	-	-	0.985	06:59	11:37	16:15
	13	17 21.8	-23 08.9	Oph	-26.8	1949.4	-	-	-	0.985	07:05	11:40	16:16
	20	17 52.8	-23 25.7	Sgr	-26.8	1950.6	-	-	-	0.984	07:09	11:44	16:18
	27	18 23.8	-23 19.6	Sgr	-26.8	1951.4	-	-	-	0.984	07:12	11:47	16:22
Moon	6	5 58.0	27 41.0	Tau	-12.8	2010.7	165° W	98	-	-	17:52	02:01	10:01
	13	12 12.3	-3 49.9	Vir	-11.5	1783.7	77° W	39	-	-	00:57	06:49	12:32
	20	17 46.1	-28 38.9	Sgr	-5.7	1763.2	5° W	0	-	-	08:01	12:16	16:33
	27	23 40.1	-1 17.1	Psc	-11.7	1909.3	80° E	41	-	-	11:21	17:46	00:24
Mercury	6	15 27.7	-16 17.4	Lib	-0.2	7.0	21° W	56	0.349	0.966	05:11	10:13	15:15
	13	15 58.3	-18 40.7	Lib	-0.4	6.0	20° W	75	0.389	1.122	05:25	10:17	15:09
	20	16 37.6	-21 11.0	Oph	-0.4	5.4	18° W	86	0.426	1.244	05:48	10:29	15:11
	27	17 21.3	-23 07.8	Oph	-0.4	5.1	14° W	92	0.452	1.333	06:12	10:46	15:19
Venus	6	16 18.9	-20 52.9	Sco	-3.8	10.0	8° W	99	0.725	1.689	06:22	11:06	15:48
	13	16 56.2	-22 23.1	Oph	-3.8	10.0	6° W	100	0.725	1.698	06:39	11:15	15:52
	20	17 34.3	-23 20.6	Oph	-3.8	9.9	4° W	100	0.726	1.704	06:53	11:26	15:58
	27	18 12.7	-23 43.2	Sgr	-3.8	9.9	3° W	100	0.727	1.708	07:06	11:37	16:08
Mars	6	17 29.4	-23 57.5	Oph	1.4	3.9	9° E	100	1.458	2.423	07:45	12:15	16:44
	13	17 52.4	-24 11.2	Sgr	1.3	3.9	7° E	100	1.450	2.422	07:41	12:10	16:39
	20	18 15.5	-24 12.1	Sgr	1.3	3.9	5° E	100	1.442	2.419	07:37	12:06	16:34
	27	18 38.8	-23 60.0	Sgr	1.3	3.9	3° E	100	1.434	2.414	07:32	12:01	16:31
1 Ceres	6	0 29.8	-8 34.7	Cet	8.6	0.5	109° E	97	2.896	2.423	13:40	19:12	00:43
	13	0 31.6	-7 46.8	Cet	8.7	0.5	103° E	97	2.892	2.512	13:12	18:46	00:21
	20	0 34.3	-6 54.1	Cet	8.8	0.5	97° E	97	2.888	2.603	12:44	18:21	23:59
	27	0 37.9	-5 57.3	Cet	8.8	0.5	91° E	97	2.884	2.696	12:16	17:58	23:39
Jupiter	6	7 44.4	21 26.7	Gem	-2.4	44.6	140° W	100	5.202	4.410	19:04	02:29	09:53
	13	7 41.9	21 34.2	Gem	-2.5	45.3	148° W	100	5.205	4.346	18:29	01:54	09:20
	20	7 38.7	21 42.7	Gem	-2.5	45.8	156° W	100	5.208	4.296	17:58	01:24	08:50
	27	7 35.2	21 51.9	Gem	-2.5	46.2	163° W	100	5.210	4.260	17:26	00:53	08:19
Saturn	6	23 46.2	-4 03.6	Aqr	1.1	17.8	101° E	100	9.527	9.288	12:41	18:28	00:16
	13	23 46.6	-3 58.8	Aqr	1.1	17.6	94° E	100	9.524	9.403	12:13	18:01	23:49
	20	23 47.4	-3 52.0	Aqr	1.1	17.4	87° E	100	9.522	9.519	11:46	17:34	23:23
	27	23 48.6	-3 43.2	Aqr	1.2	17.2	80° E	100	9.520	9.634	11:19	17:08	22:57
Uranus	6	3 46.7	19 42.1	Tau	5.6	3.8	165° E	100	19.495	18.542	15:11	22:28	05:45
	13	3 45.5	19 38.6	Tau	5.6	3.8	157° E	100	19.494	18.581	14:42	21:59	05:16
	20	3 44.5	19 35.4	Tau	5.6	3.8	150° E	100	19.492	18.634	14:14	21:31	04:47
	27	3 43.6	19 32.4	Tau	5.6	3.8	143° E	100	19.491	18.700	13:46	21:02	04:18
Neptune	6	23 59.9	-1 29.1	Psc	7.9	2.3	105° E	100	29.885	29.611	12:45	18:42	00:38
	13	23 59.8	-1 29.0	Psc	7.9	2.3	98° E	100	29.885	29.730	12:17	18:14	00:11
	20	23 59.9	-1 28.1	Psc	7.9	2.3	91° E	100	29.885	29.851	11:50	17:47	23:44
	27	0 00.1	-1 26.6	Psc	7.9	2.3	84° E	100	29.885	29.972	11:23	17:19	23:16
Pluto	6	20 20.7	-23 22.5	Cap	14.6	0.2	48° E	100	35.404	36.056	10:32	15:03	19:35
	13	20 21.5	-23 20.2	Cap	14.6	0.2	41° E	100	35.409	36.145	10:05	14:36	19:08
	20	20 22.3	-23 17.7	Cap	14.6	0.2	34° E	100	35.414	36.223	09:38	14:10	18:42
	27	20 23.1	-23 15.1	Cap	14.6	0.2	27° E	100	35.419	36.289	09:11	13:43	18:15

Astrophoto Gallery



Aurora Borealis by Michael Corvese

Taken November 11, 2025. Also visible are the rising Moon and Jupiter.

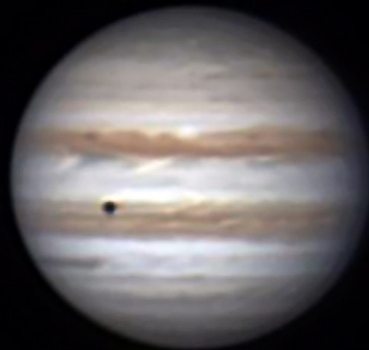
Gregory T. Shanos Sarasota, Florida USA
Meade LX200GPS 250mm fl 2500mm f/10
ZWO ASI 662MC one-shot color camera
Vernonscope 1.25x Barlow fl 3250mm f/13
Derotated 5 minutes in WinJupos

Magnitude: -2.4
Diameter: 40.5"
Phase: 99.2%
Altitude: 77°

Seeing: 5/10 Average
Transparency: 7/10 Clear, Slight, Haze
Resolution: 0.18"

Shadow Transit of Io on Jupiter by Greg Shanos

November 3, 2025



09h 36.8m UT
Astronomik L2 UV/IR cut filter
CMI: 240.2° CMII: 205.5° CMIII: 77.6°



Aurora Borealis
by Ron Zincone



Aurora Borealis
by Jay Baccala

© Jay Baccala



IC 1805 Heart Nebula by Jeff Padell

Over the weekend of October 25-26 I used my Seestar S30 to image the Heart Nebula IC1805. I processed it in Lightroom on my PC.

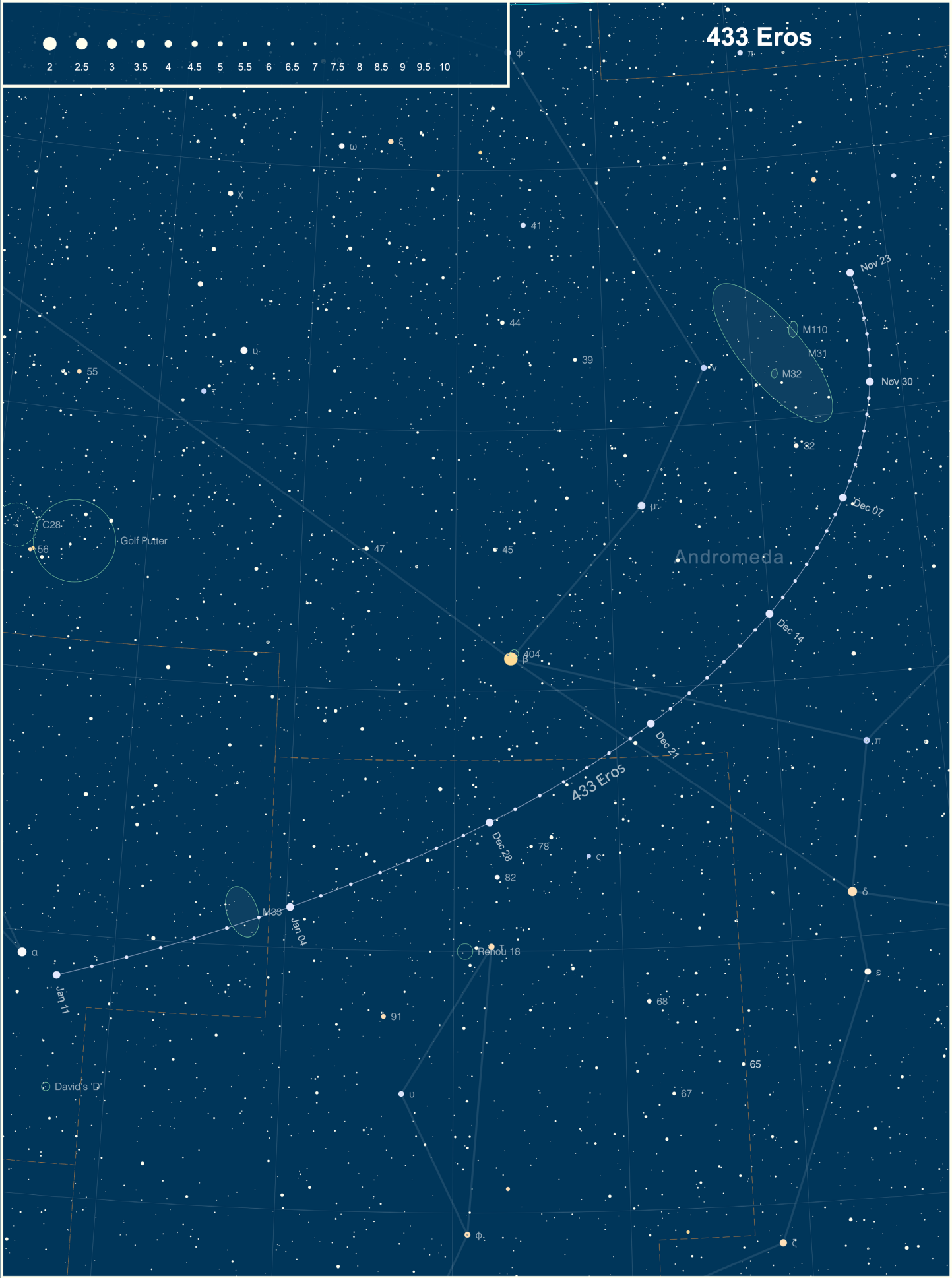
The Heart Nebula (also known as the Running Dog Nebula, Sharpless 2-190) is an emission nebula, 7,500 light-years away and located in the Perseus Arm of the galaxy in the constellation Cassiopeia. It was discovered by William Herschel on 3 November 1787. It displays glowing ionized hydrogen gas and darker dust lanes.[2]

The brightest part of the nebula (a knot at its western edge) is separately classified as NGC 896, because it was the first part of the nebula to be discovered. The nebula's intense red output and its morphology are driven by the radiation emanating from a small group of hot stars near the nebula's center. This open cluster of stars, known as Collinder 26, Melotte 15, or IC 1805, contains a few bright stars nearly 50 times the mass of the Sun, and many more dim stars that are only a fraction of the Solar mass.

Spiral Galaxy Caldwell 5 (IC 342) by Jeff Padell

I took my Seestar S50 out on my deck on November 23. Being 300 feet from the Walpole Mall my skies are Bortle 7.5, lots of light pollution. The S50 is a smart scope making it very easy to find and track objects. It allows for 10, 20, 30 and 60 second exposures, in areas with lots of LP 10 second exposures work the best.

I imaged Caldwell 5 the Hidden Galaxy, a tough object to observe and image.



Directions to Seagrave Memorial Observatory

From the Providence area:

Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:

Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:

Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:

Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:

- Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
- or • Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:

Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.



47 Peeptoad Road
North Scituate, Rhode Island 02857