the Skyscraper

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February 2025

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

In This Issue:

February Meeting: The OSIRIS-REx and Hayabusa2 Sample Return Missions to Asteroids Bennu and Ryugu by Greg Shanos

Saturday, February 1 @ 4:30pm EST on Zoom only

Contact Linda Bergemann (lbergemann@aol.com) for the Zoom link.

Greg Shanos joined Skyscrapers in 1986 during the apparition of Halley's Comet. In 1990 he married and relocated to Sarasota, Florida. Greg graduated from the University of Rhode Island with a double baccalaureate in both Pharmacy and Chemistry in 1984. He then went on to complete a Masters of Art in Teaching from Rhode Island College in 1989 and a Doctorate in Pharmacy from the University of Florida in 1999. During the COVID shutdown of 2020, Greg rejoined Skyscrapers and regularly attends meetings and Astro assembly via Zoom.

Please join us on Saturday February 1, 2025 at 7:00pm for a virtual presentation entitled: The OSIRIS-Rex and Hayabusa 2 Sample Return Missions to Asteroids Bennu and Ryugu The presentation will discuss the Bennu samples from the OSIRIS-Rex mission that were returned to earth on September 24, 2023 and revealed to the world on October 11, 2023. JAXA's Hayabusa 2 samples from Ryugu were returned to earth on December 5, 2020 and have since been thoroughly analyzed. Greg will present the current findings from both missions to these two carbonaceous asteroids.

Seagrave Memorial Observatory Open Nights
February 8, 15 & 23 @ 7pm

Telescope Workshop: Using the Seestar Smart Telescope

Saturday, February 15 @ 2:00pm at Seagrave Observatory

Conrad Cardano will be conducting a workshop on the Seestar Smart Telescope. Topics to be covered: The Seestar S50 and S30 ◆ The Seestar App ◆ Setting up a Seestar ◆ Navigating the menus ◆ Finding objects and photographing

Before this presentation, I have a short entertaining video of 24 images taken with the S50. Snow date is Saturday, March 1.

President's Message

by Linda Bergemann

We are looking for your input and ideas for engaging activities.

In January, we held our monthly meeting at the Community House in the late afternoon (5 PM) instead of early evening. This month (February), we will meet by Zoom only, again in the late afternoon. We are trying different things and would like your feedback. No decision has been made on March yet. What works for you? Are Saturdays best for you? Afternoon or evening? Are Friday nights better? Send me your thoughts.

Member Conrad Cardano has offered us a workshop on the Seestar All-in-One Smart Telescope which is a very popular item at the present time. If you are considering a purchase, or just want to know more about them, we will gather in the meeting hall at Seagrave Memorial Observatory on Saturday, February 15 at 2 PM. If it snows, we will meet on March 1. All are welcome!

If you have ideas for activities that Skyscrapers could offer that would interest you, we would like to hear about them. If you are one of the nine new members who joined in December and January, we especially want to know what Skyscrapers can offer for you? What are your expectations? We don't know what you want if you don't tell us. Our lines are open.

Hoping for clear skies and warmer weather. Linda

401-322-9946 ♦ lbergemann@aol.com

Skyscrapers Official Merchandise

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

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

New Members

Welcome to Skyscrapers

John Tomawski
of Assonet, MA

Geoffrey Chisholm
of Scituate

Denise Parrillo of Scituate

Joseph Blain
of Milton, MA

Elijah Nelson of Warwick

Lindsay Spann
of Warwick

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 **February 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.

Remembering Dave Huestis

by Joyce Towne, Planetarium Consultant & Francine Jackson

It's always difficult to write about a person known for many years, and Dave Huestis is no exception. His passing, although he was fairly ill, was still a total surprise to all of us who had been Skyscrapers with him for half a century.

He also was someone who kept to himself. His main confidante was his wife Tina, the true love of his life, whom he had met at the Boston Museum of Science,. After her death, Dave was never the same.

We know Dave was a voracious reader, and he had a major collection of antiquarian books. In addition to being an avid amateur astronomer, Dave loved hearing the birds that visited his backyard, and he and Tina often took vacations specifically for birdwatching.

Dave is survived by a brother, Glen.

As he was such a private person, not very much is known about him. If anyone would like to contribute a memory of him, please contact Jim Hendrickson, who will place them all in a future edition of the newsletter.

Skylights: February 2025

by Jim Hendrickson

The **Sun** is now climbing out of its most southerly position in the sky, resulting in earlier sunrises, later sunsets, and longer hours of daylight. The first sunset in the 5:00pm hour is on the 1st.

Midway through the month, February 14 also marks the halfway point in the Sun's northward progression towards equinox, declination -12° 43' 09".

After traveling through Capricornus for the past 27.5 days, the Sun crosses into Aquarius on the 16th.

Finally, the first day of the year with at least eleven hours of daylight (the interval between sunrise and sunset) occurs on the 24th.

On the 1st, the 15.1% illuminated crescent **Moon** is located between Venus (2.1° to the northwest) and Neptune (0.8° to the south-southeast), while the two planets are just 3.3° apart from each other.

The Moon is at first quarter phase at 3:02am on the 5th, in Aries. Later in the evening of the 5th, it is 4.8° north-northeast of Uranus. A few hours later, the Moon occults the Pleiades, but it occurs after moonset in the eastern US. Look for the 60% illuminated gibbous within just 0.5° west of the cluster just before moonset, which occurs at 2:00am on the 6th.

Later on the 6th, The Moon passes Jupiter, 4.9° to its north. On the 7th, it is just 0.8° east-southeast of Elnath (beta Tauri). As this occurs during evening twilight, it presents a good opportunity to test your ability to detect bright stars during non-dark hours. The gibbous Moon will be clearly visible high in the eastern sky before sunset. Aim your telescope at it, and start looking for the magnitude 1.7 star.

There is no occultation of Mars in store for us this month, but the Moon does appear just 2.2° east of the Red Planet on the 9th. A few hours later, just past midnight on the 10th, it is 2.1° south of Pollux, in Gemini.

Early on the 11th, the nearly full Moon is 1.8° northeast of the open star cluster M44, the Beehive, in Cancer. Due to the brightness of the Moon, this pairing will look best with a telescope capable of providing a low magnification, and wide field of view.

For moonrise observers and photographers, the best opportunity occurs on the evening before full Moon, the 11th, when it rises at 4:18pm, 55 minutes before sunset.

The Moon is full at 8:53am on the 12th, in Leo. This is the annual Snow Moon, and since it is below the horizon at the moment it turns full, the best time to observe it is right at sunrise on the 12th. The Moon sets at 7:01am. The following evening, the Moon rises 1.5° northeast of Regulus.

At midnight on the 19th, the waning gibbous Moon is 4.4° south-southwest of the wide double star Zubenelgenubi (alpha Librae). This pairing should present a great view with binoculars.

The Moon is last quarter at 12:32pm on the 20th, in Scorpius. At moonrise on the 21st, it passes just 0.8° south-southeast of Antares, the brightest star in that constellation.

The Moon is new at 7:45pm on the 27, beginning Lunation 1263.

An opportunity to observe a very young crescent (22 hours) Moon occurs after sunset on the 28th. The Moon will be just 1.0% illuminated, and 1.6° north-northwest (around the 1 o'clock position) of Saturn.

Mercury is at superior conjunction on the 9th, and will not be visible during the first half of the month. By the third week of February, it will be visible in the evening sky after sunset, and over the next several weeks it will undergo its best evening appearance of the year. From the 24th through March 17, the innermost planet sets over an hour after sunset. Also on the 24th, get one last look at Saturn as it appears just 1.6° south, southeast of Mercury.

On the 28th, the 1.1% illuminated, 1.2-day old crescent Moon is 3.4° below (southwest of) Mercury.

While **Venus** reached its greatest apparent elongation from the Sun in early January, its latest set time occurs at 8:53pm on February 4th, almost four hours past sunset.

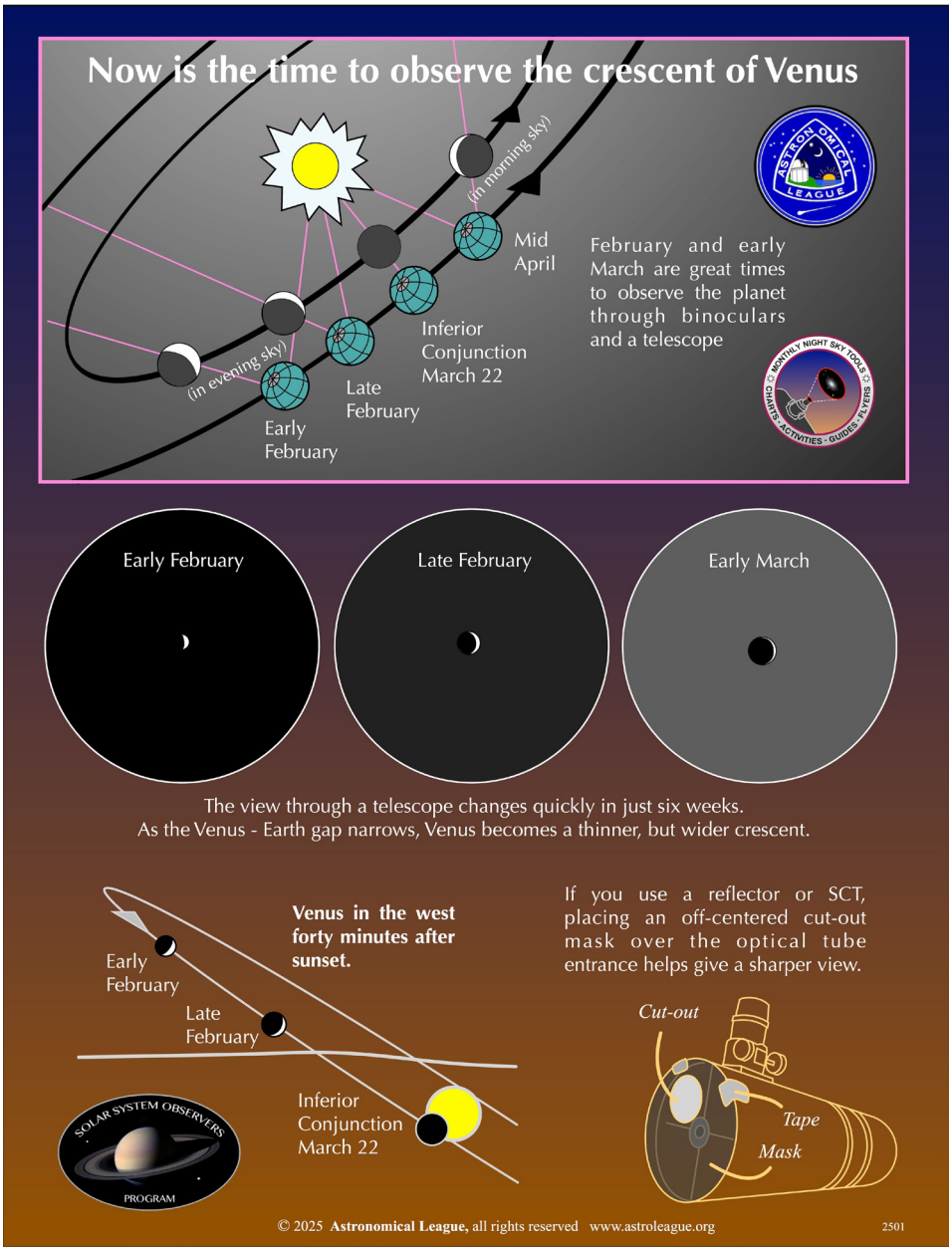
Venus spends the month within Pisces, and is exhibiting its crescent phase, which gets thinner each evening, and the planet's apparent diameter increases, as it continues moving closer to Earth.

Venus in the evening sky is often susceptible to atmospheric turbulence due to temperature changes after sunset and the planet usually being low over the horizon, with a lot of airmass for its light to pass through. This usually causes prismatic effects when the bright planet is close to the horizon, say, within 5° elevation. This apparition of Venus, however, has the planet on a steep angle off the horizon near maximum elongation, so the planet is much higher in the sky and away from most of the turbulent air. As such, you can easily track its changing phases through a small telescope. However, you may find it helpful to reduce its brightness with a filter, such as a deep red or neutral density (Moon) filter.

Events in February

1	01:00	Jupiter 5.1° N of Aldebaran
1	17:01	First 5:00pm sunset
1	19:00	Moon (waxing 15.1%) 2.1° SE of Venus
1	19:00	Moon (waxing 15.1%) 0.8° NNE of Neptune
4	08:07	Jupiter Stationary
4	20:53	Latest Venusset
5	03:02	**First Quarter Moon**
5	19:00	Moon (waxing 57.7%) 4.8° NNE of Uranus
6	01:30	Moon (waxing 60.1%) 0.5° W of M45
6	23:00	Moon (waxing 69.9%) 4.9° N of Jupiter
7	19:00	Moon (waxing 78.5%) 0.8° ESE of Elnath
9	07:08	Mercury Superior Conjunction
9	18:00	Moon (waxing 93.1%) 2.2° E of Mars
10	00:00	Moon (waxing 94.0%) 2.1° S of Pollux
11		Equation of Time = -14:14 (Sun Slow)
11	04:00	Moon (waxing 98.4%) 1.8° NE of M44
11	14:30	Uranus Quadrature (90° E)
12	08:53	**Full Snow Moon**
12	19:00	Moon (waning 99.7%) 1.5° NE of Regulus
14	23:00	Sun Declination ½ to Equinox (-12° 43' 09")
14	17:00	Ceres Conjunction
16	02:00	Sun in Aquarius (25d)
19	00:00	Moon (waning 63.4%) 4.4° SSW of Zubenelgenubi
19	19:00	Venus at brightest (mag. -4.9)
20	12:32	**Last Quarter Moon**
21	03:00	Moon (waning 43.5%) 0.8° SSE of Antares
21	03:00	Moon (waning 43.5%) 1.3° SE of M4
23	05:00	Pallas 3.5° SSE of Altair
24	04:35	Mars Stationary
24	06:27	First day with 11 hours of daylight (11:02:29)
24	18:00	Mercury 1.6° NW of Saturn
27	19:45	**New Moon (Lunation** 1263)
27	22:27	Venus Stationary
28	18:00	Moon (1.0% waxing) 3.6° SW of Mercury
28	18:00	Moon (1.0% waxing) 1.6° NNE of Saturn

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



Venus shines at its brightest, magnitude -4.9, on the 19th. Through a telescope, the planet's disk appears larger than that of Jupiter, and shows an obvious crescent phase.

On the 27th, Venus is stationary, and begins moving westward toward the increasingly later-setting Sun. Still shining at a brilliant magnitude -4.8, it sets three hours after the Sun. By the end of the month, Its enormous 49 arcsecond disk will appear larger than any other planet ever appears. Even a small telescope will reveal its diminishing crescent, now at just 15%.

Mars is visible all night, shining brightly in Gemini. On the 9th, the waxing gibbous Moon is 2.2° east of Mars.

Mars forms an isosceles triangle with the constellation's twin stars Castor and Pollux from around the 17th through the end of the month. The Red Planet reaches the end of its retrograde loop on the 24th, and moves eastward thereafter.

You'll also notice that Mars isn't quite as bright as it was a few weeks ago, although it is still brighter than all of the stars in the winter sky except Sirius. Although Earth is receding from Mars, its 12 arcsecond globe will still reveal features in a telescope during nights of steady seeing.

Jupiter is in Taurus, high in the south after sunset. It reaches its stationary point on the 11th, after which it resumes its prograde (eastward) motion. Note how it is almost directly north of Aldebaran, and over the coming weeks, as it moves eastward within Taurus, and the star patterns move westward with the progressing season, Jupiter will retain its relative position almost directly above Aldebaran as it slowly gains apparent distance from the star.

The pairing of the giant planet with the eye of Taurus closely mirrors the Gemini twins on the opposite side of the Winter Hexagon asterism, with similar separation and orientation. It crosses the line connecting Aldebaran and Capella on the 27th.

Jupiter's Moons

On the evening of the 2nd, beginning with Io's reappearance from eclipse at 7:20pm, all four Galilean moons are arranged in order of their orbital distance, extending to the east of Jupiter.

On the 7th, a peculiar double pairing, best observed around 10:30pm, has Europa and Io in a close pair to the west of Jupiter, with Ganymede and Callisto in a parallel, wider, and more distant pairing on the east side.

Just after dusk on the 9th, Jupiter appears to have only two moons, Callisto to the east and Ganymede to the west. Europa emerges from eclipse at 6:34pm, followed by Io at 9:15pm.

Another orbital distance arrangement occurs, this time to the west of the planet, early on the 12th. Io swaps places with Europa at 7:20pm.

Ganymede goes through eclipse from 7:18pm to 9:52pm on the 14th.

On the 16th, Jupiter again appears to have just its two outer moons after Io goes into occultation at 7:20pm. Callisto sails over Jupiter's north polar cap, is closest to the planet at 9:00pm, and solitary Ganymede is visible to the east of the planet. A few minutes later, beginning at 9:12pm, Europa emerges from eclipse, followed by Io at 11:09pm.

An eclipse of Ganymede occurs from 11:09pm on the 21st until after the planet sets at 1:44pm.

On the 23rd, Jupiter shows only its two outermost moons after Europa (6:23pm) and Io (9:33pm) are occulted by the planet, but only after Europa briefly reappears from occultation and immediately goes into eclipse at 9:07pm and 9:13pm, respectively. The four moons are once again visible at 1:08am.

The four Galilean moons appear close to Jupiter on the 23rd, in order of Io, Callisto, Ganymede, and Europa on its east side. Io moves across Jupiter while the other three move in closer later in the night.

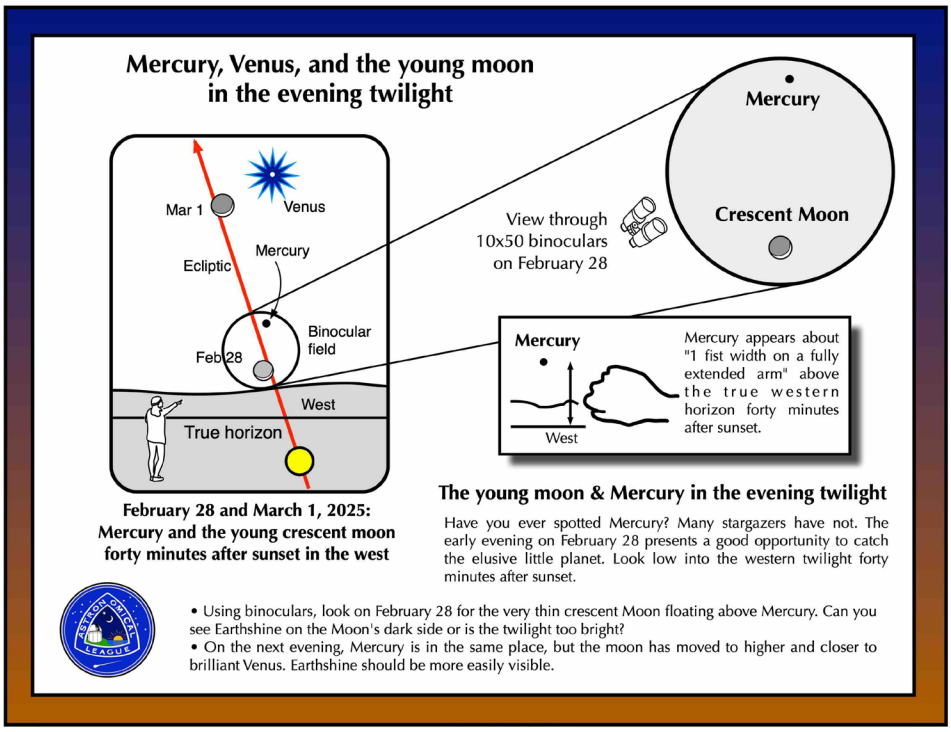
Another close arrangement of the moons, this time with Europa, Callisto, and Ganymede to the west, is visible after dusk on the 25th. Io reemerges at 7:34pm.

The moons form two parallel pairs at 12:30am on the 27th, with Europa and Io making the inner pair, and Ganymede and Callisto making up the outer pair.

The optimal time for observing **Saturn** has now passed, but as we get closer to crossing its equatorial plane late next month, it's worth trying to get a few last looks.

Saturn is still located in Aquarius, appearing almost directly below brilliant Venus throughout the month, its apparent distance expanding from 11.5° on the 1st to 19° at mid-month. This places it rather low over the southwestern horizon, and you'll have to begin viewing during twilight.

While Saturn season is just about over, it's worth watching as long as possible this year as we're approaching ring plane crossing on March 23. You can still spot Saturn low in the west-southwestern sky after sunset, and on the 24th, Mercury, shining twice as brightly as Saturn, lies just 1.6° to the northwest of Saturn on the 24th, presenting a nice pairing for binoculars or a wide-field telescope. The ring plane angle is now just 2.3°.



Mercury can be found 1.7° north of Saturn on the 25th, and the 1.0% illuminated crescent Moon is 1.6° north-northwest of the ringed planet on the 28th.

Uranus is high in the south in the early evening hours, near the border of Aries and Taurus. It is located 2.9° east-southeast of magnitude 4.4 Botein (delta Arietis). It sets before 2:00am in early February.

Uranus is easy to locate about 8° southwest of the Pleiades cluster. At magnitude 5.7, it can be seen with binoculars 3° east-southeast of magnitude 4.4 Botein (delta Arietis). The waxing gibbous Moon is 4.8° north-northeast of Uranus on the 5th.

Uranus is at quadrature, 90° east of the Sun, on the 11th. It sets at 12:50am.

The seventh planet reaches its stationary point on the 30th, and then resumes its prograde (eastward) motion.

Uranus sets just after midnight at the end of the month.

Neptune is low in the southwestern sky after sunset. It shines at magnitude 7.8 in Pisces, about 10° east-northeast of Saturn, and 4.8° southeast of lambda Piscium. You can also use Venus as a guide early in the month, as the brilliant planet will be just 4.5° north of it on the 4th. The distant planet sets at 8:30pm.

As the month progresses, Neptune is getting low in the west after sunset, and as a result is becoming more challenging to observe. At the end of the month, Neptune sets before the end of astronomical twilight.

Ceres is at conjunction on the 14th, and is not visible this month. Likewise, Pluto, which was at conjunction on January 21st, will not be visible until May.

4 Vesta is in the morning sky, slowly brightening from magnitude 7.5 to 7.0. It passes 1.5° south of mu Virginis on the 2nd, and crosses into Libra on the 6th.

On the 19th and 20th, it lies within 0.2° south of the 11th magnitude elliptical galaxy NGC 5812, 1° north of delta Librae.

2 Pallas is once again visible in our morning sky. It is traveling eastward through Aquila, and on the 23rd and 24th, the magnitude 10.5 asteroid will be just 0.9° south of Alshain (beta Aquilae), the magnitude 3.7 star that lies just to the south of Altair.

February's evening skies present us with the full breadth of the winter constellations, ready for viewing just after dark. The Winter Hexagon, marking the brightest stars of Auriga, Gemini, Taurus, Orion, Canis Major and Canis Minor, is high in the sky throughout the month. Not to be overlooked, despite their lack of brighter stars, the constellations of Monoceros, Puppis, and Lepus are all well-placed for exploration, and given their proximity to the Milky Way, there are numerous deep-sky treasures awaiting your gaze.

If you'd like to try a relatively easy observing challenge, try for the globular cluster Caldwell 73 (NGC 1851), in the little-known (to us northern hemisphere observers) constellation Columba, the Dove. The cluster's southerly declination of -40° brings it to an elevation no higher than 8° in our sky, but it is slightly larger, brighter, and has a more concentrated core than the more familiar Messier 79, located 15° to its north, making it accessible to small telescopes and even binoculars under a moderately dark sky.

To the northeast, Ursa Major is assuming its winter "nose-up" position, with the prominent Big Dipper asterism pouring its contents back over its handle.

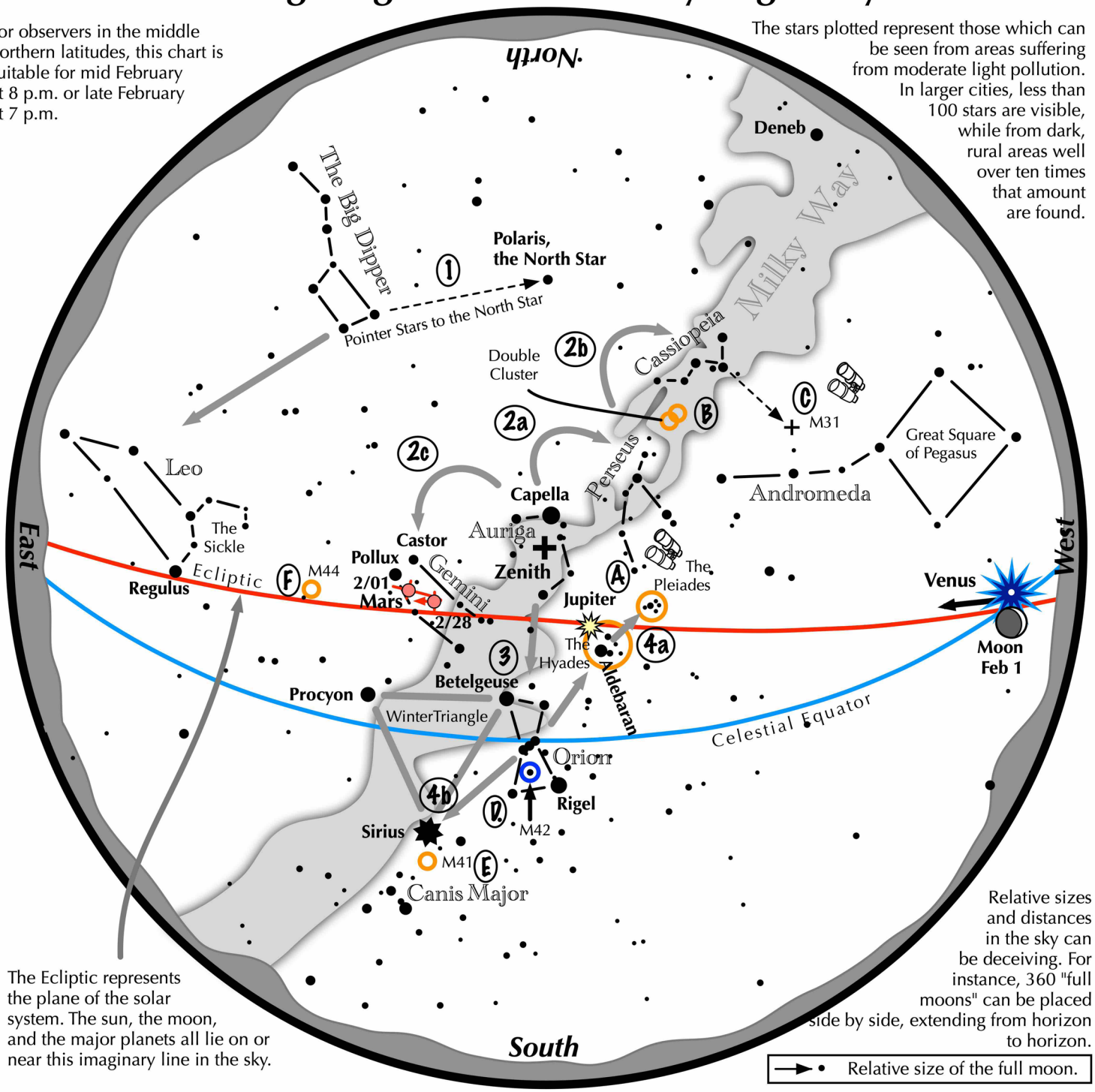
In the east, early spring's constellations Hydra and Leo are beginning to appear. A few hours into darkness, Arcturus, in Bootes, followed by Corona Borealis enter the sky. As we're still waiting for the expected one-in-eighty-years outburst of T Coronae Borealis, the "Blaze Star," keep watching this part of the sky.

Have you noticed a relatively bright star hanging low in the northwest after evening twilight? This is Deneb, in Cygnus, the last remaining hold out from last season's appearance of the Summer Triangle. This is the time of year to see how long you can continue to observe Deneb, and also to note how far into the north it gets before setting. It is so far north, in fact, that when it does set, it is out of view for just under three hours before rising again in the north-northeast. With the reappearance of some of the summer stars, we're reminded that the warmer nights, and the sounds of nocturnal life, are just a few weeks away.

Navigating the mid February Night Sky

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

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



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

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

Relative size of the full moon.

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

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

Binocular Highlights

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

February Night Sky Notes:

How Can You Help Curb Light Pollution?

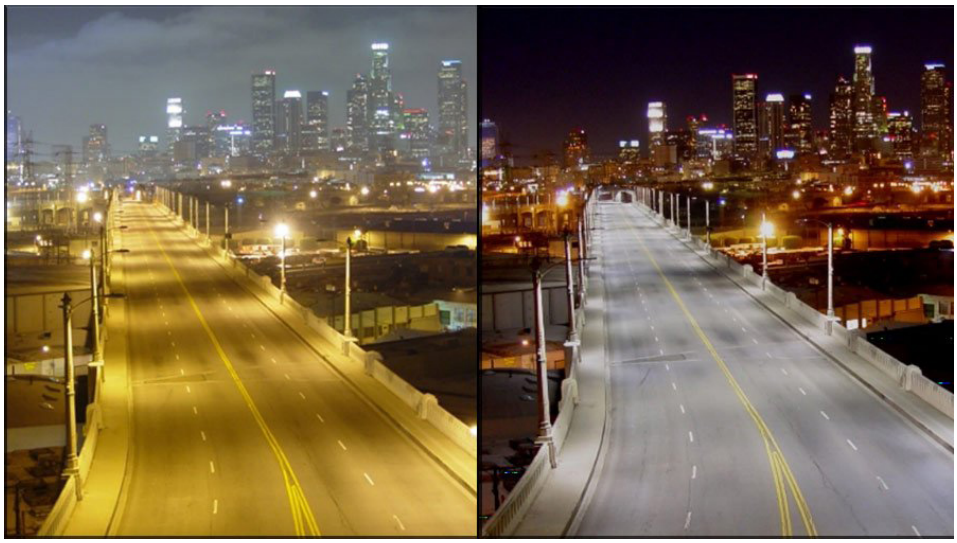
By Dave Prosper; Updated by Kat Troche

Light pollution has long troubled astronomers, who generally shy away from deep sky observing under full Moon skies. The natural light from a bright Moon floods the sky and hides views of the Milky Way, dim galaxies and nebula, and shooting stars. In recent years, human-made light pollution has dramatically surpassed the interference of even a bright full Moon, and its effects are now noticeable to a great many people outside of the astronomical community. Harsh, bright white LED streetlights, while often more efficient and long-lasting, often create unexpected problems for communities replacing their old street lamps. Some notable concerns are increased glare and light trespass, less restful sleep, and disturbed nocturnal wildlife patterns. There is increasing awareness of just how much light is too much light at night. You don't need to give in to despair over encroaching light pollution; you can join efforts to measure it, educate others, and even help stop or reduce the effects of light pollution in your community.

Amateur astronomers and potential citizen scientists around the globe are invited to participate in the Globe at Night (GaN) program to measure light pollution. Measurements are taken by volunteers on a few scheduled days every month and submitted to their database to help create a comprehensive map of light pollution and its change over time. GaN volunteers can take and submit measurements using multiple methods ranging from low-tech naked-eye observations to high-tech sensors and smartphone apps.

Globe at Night citizen scientists can use the following methods to measure light pollution and submit their results:

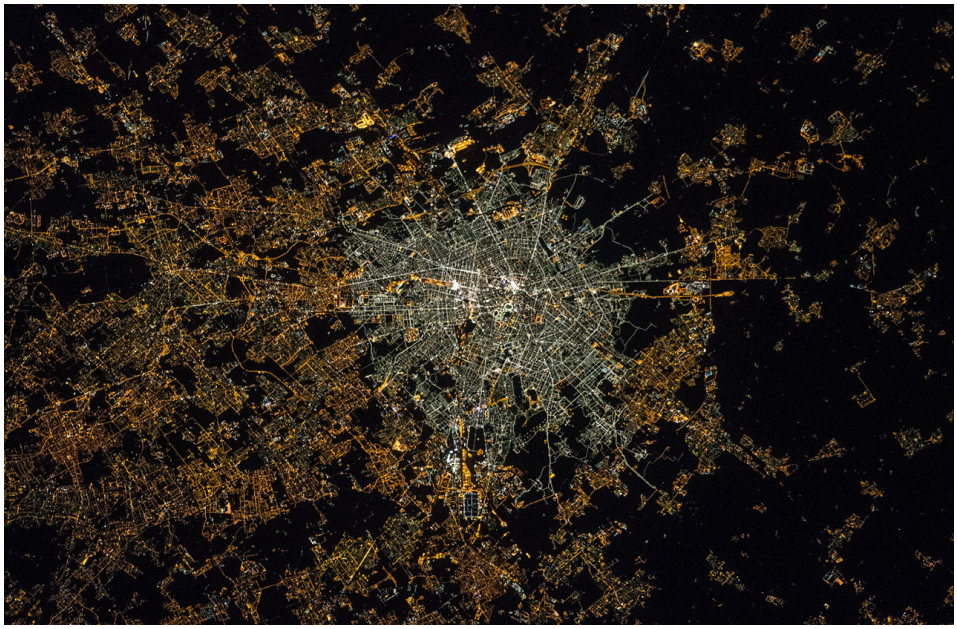
- Their own smartphone camera and dedicated app
- Manually measure light pollution using their own eyes and detailed charts of the constellations
- A dedicated light pollution measurement device called a Sky Quality Meter (SQM).
- The free GaN web app from any internet-connected device (which can also be used to submit their measurements from an SQM or printed-out star charts)



Before and after pictures of replacement lighting at the 6th Street Bridge over the Los Angeles River. The second picture shows improvements in some aspects of light pollution, as light is not directed to the sides and upwards from the upgraded fixtures, reducing skyglow. However, it also shows the use of brighter, whiter LEDs, which is not generally ideal, along with increased light bounce back from the road. Image Credit: The City of Los Angeles

Night Sky Network members joined a telecon with Connie Walker of Globe at Night in 2014 and had a lively discussion about the program's history and how they can participate. The audio of the telecon, transcript, and links to additional resources can be found on their dedicated resource page.

The International Dark-Sky Association (IDA) has long been a champion in the fight against light pollution and a proponent of smart lighting design and poli-



Light pollution has been visible from space for a long time, but new LED lights are bright enough that they stand out from older streetlights, even from orbit. Astronaut Samantha Cristoforetti took the above photo from the ISS cupola in 2015. The newly installed white LED lights in the center of the city of Milan are noticeably brighter than the lights in the surrounding neighborhoods. Image Credit: NASA/ESA

cy. Their website (at darksky.org) provides many resources for amateur astronomers and other like-minded people to help communities understand the negative impacts of light pollution and how smart lighting policies can not only help bring the stars back to their night skies but make their streets safer by using smarter lighting with less glare. Communities and individuals find that their nighttime lighting choices can help save considerable sums of money when they decide to light their streets and homes "smarter, not brighter" with shielded, directional lighting, motion detectors, timers, and even choosing the proper "temperature" of new LED light replacements to avoid the harsh "pure white" glare that many new streetlamps possess. Their pages on community advocacy and on how to choose dark-sky-friendly lighting are extremely helpful and full of great information. There are even local chapters of the IDA in many communities made up of passionate advocates of dark skies.

The IDA has notably helped usher in "Dark Sky Places", areas around the world that are protected from light pollution. "Dark Sky Parks", in particular, provide visitors with incredible views of the Milky Way and are perfect places to spot the wonders of a meteor shower. These parks also perform a very important function, showing the public the wonders of a truly dark sky to many people who may have never before even seen a handful of stars in the sky, let alone the full glorious spread of the Milky Way.

More research into the negative effects of light pollution on the health of humans and the environment is being conducted than ever before. Watching the nighttime light slowly increase in your neighborhood, combined with reading so much bad news, can indeed be disheartening! However, as awareness of light pollution and its negative effects increases, more people are becoming aware of the problem and want to be part of the solution. There is even an episode of PBS Kid's SciGirls where the main characters help mitigate light pollution in their neighborhood!

Astronomy clubs are uniquely situated to help spread awareness of good lighting practices in their local communities in order to help mitigate light pollution. Take inspiration from Tucson, Arizona, and other dark sky-friendly communities that have adopted good lighting practices. Tucson even reduced its skyglow by 7% after its own citywide lighting conversion, proof that communities can bring the stars back with smart lighting choices.

This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Originally posted by Dave Prosper: November 2018

Last Updated by Kat Troche: January 2025

Star Crossword

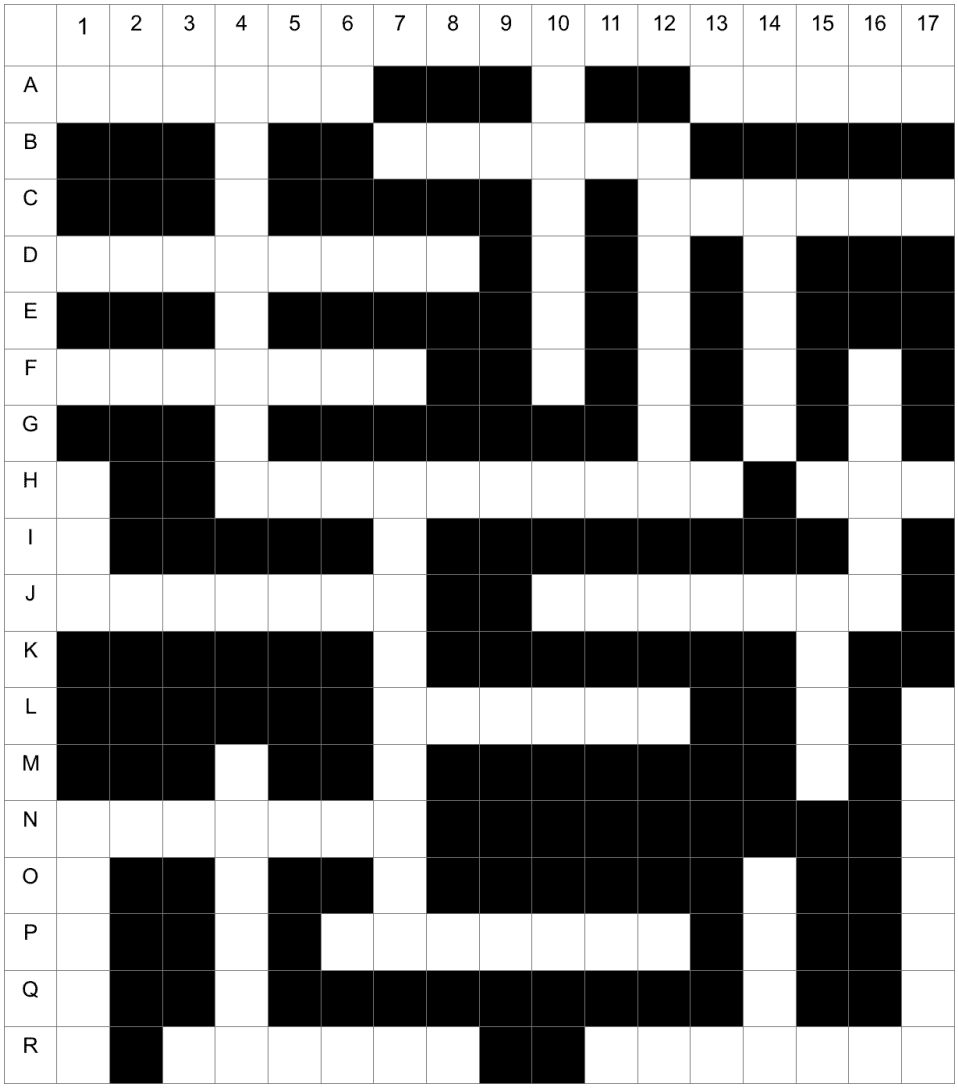
by Bob Janus

ACROSS

A1 Astronomical unit of distance
A13 Large nocturnal winter hunter
B7 Cosmic cloud of gas & dust
C12 Messier 8
D1 Type of telescope
F1 When moon is closest to earth
H4 Type of telescope mount
H15 Astrophoto file type
J1 First lunar golfer
J10 High flying equine
L7 Spectacular meteor
N1 Observatory in CA
P6 Red super giant

DOWN

A4 Times of longest day or night
A10 Jovian moon
B12 Leo binary star
C14 Type of cosmic ray
F16 Baily's
H1 The initials of a SkyLab successor
H7 Bull's Eye
J15 Major, minor & Yogi
L17 Planet without a moon
M4 Solar feature
N1 Lunar Crater
O14 Super nova remnant in Cygnus
R3 A celestial twin
R11 Geocentric astronomer



Observer's Challenge:

NGC 1491:
Emission Nebula in Perseus

by Glenn Chaple

(Magnitude 10.3; Size 5' X 4' [visual] 25' X 21' [photographic])

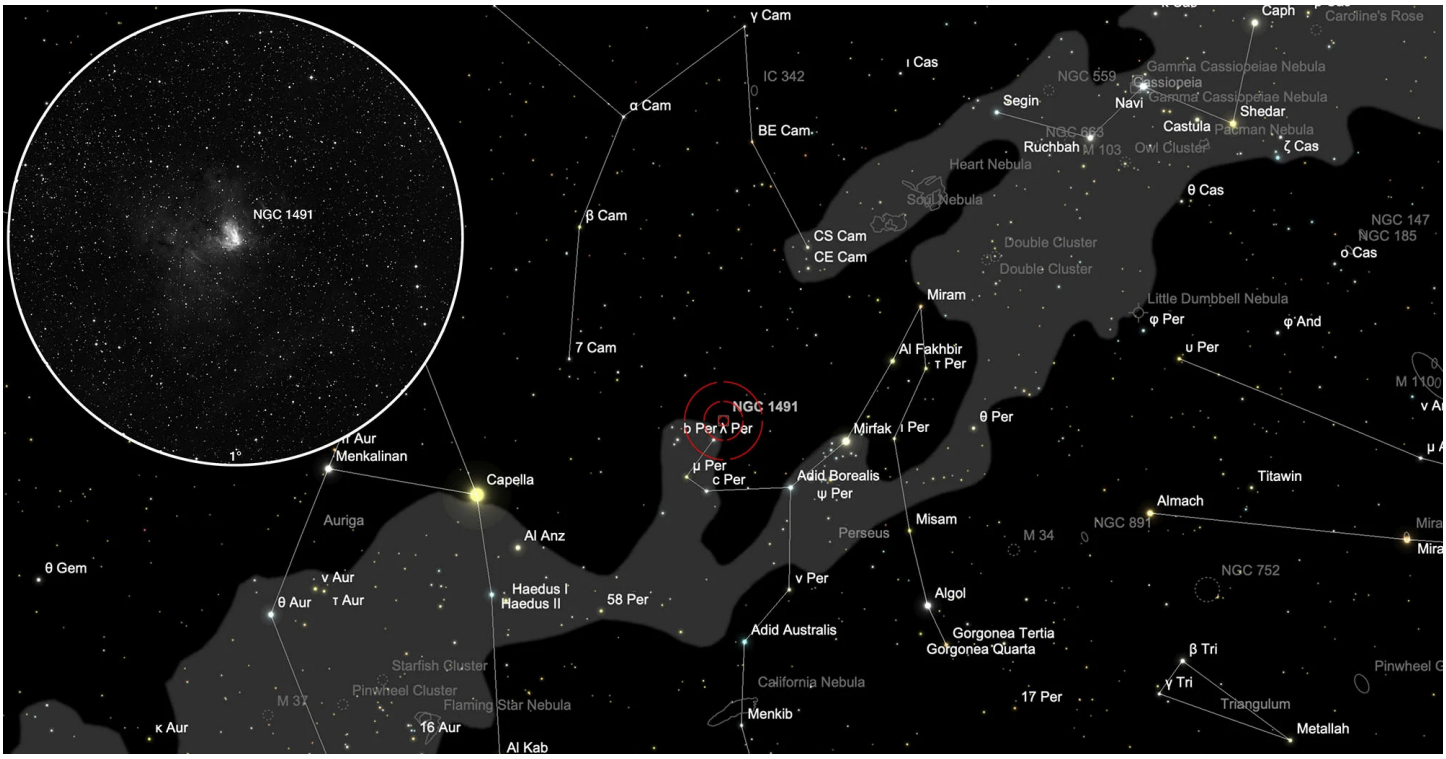
Our first Observer's Challenge of 2025 is the emission nebula NGC 1491, nicknamed the Fossil Footprint Nebula for the three-toed "dinosaur footprint" formed by the nebula's brightest region. Discovered by William Herschel on December 28, 1790, the Fossil Footprint bears the Herschel Catalog identification H2581, his 258th Class I (Bright Nebulae) object. He described it as "Very bright. Irregular form, resolvable, with a brighter middle. 5' long. 4' broad. A pretty large star in it towards the following side, but unconnected." Herschel's "bright star" is an 11th magnitude star of spectral class O5 that ionizes the gases in NGC 1491.

Users of GoTo technology will find NGC 1491 at the 2000.0 coordinates RA 4h03m13.5s and DEC +51o18'58" Star-hoppers need only travel a little over one degree NNW of the 4th magnitude star lambda (λ) Persei.

Taken with the 32 inch F6, in NB imaging, 5 min subs, about 1 hour each of Ha, O3, S2, with my ZWO 6200 camera, and processed in Pixinsight. Mario Motta

The main challenge presented by NGC 1491 is squarely in the lap of the visual observer. Herschel may have classified it as a "Bright Nebula," but it's hardly bright when viewed with the typical backyard telescope. While it may be glimpsed with apertures as small as 4 to 6 inches from dark sky locations, it can be a difficult target for observers living in areas beset by even a slight amount of light pollution. Recently, I failed to see it with my 10-inch reflector under the magnitude 5 skies where I live. I'll try again, this time with a UHC or OIII filter.

NGC 1491 is around 10,000 light years distant, give or take a few hundred light years. Its true diameter may be in the order of 20 light years.



The Sun, Moon & Planets in February

This table contains the ephemeris of the objects in the Solar System for each Saturday night in February 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	1	20 59.3	-17 05.5	Cap	-26.8	1947.7	-	-	-	0.985	06:58	11:59	17:02
	8	21 27.5	-14 58.9	Cap	-26.8	1945.7	-	-	-	0.986	06:50	12:00	17:11
	15	21 55.1	-12 40.1	Cap	-26.8	1943.2	-	-	-	0.988	06:41	12:00	17:20
	22	22 22.1	-10 11.2	Aqr	-26.8	1940.2	-	-	-	0.989	06:31	11:59	17:28
Moon	1	23 03.6	-7 41.6	Aqr	-10.0	1954.3	33° E	8	-	-	08:45	14:45	20:58
	8	5 32.5	28 12.2	Tau	-12.4	1929.8	124° E	78	-	-	12:51	21:07	05:18
	15	11 41.5	2 01.8	Vir	-12.5	1789.8	152° W	94	-	-	19:36	01:55	08:03
	22	17 05.4	-28 15.0	Oph	-11.5	1787.4	76° W	38	-	-	02:56	07:09	11:21
Mercury	1	20 37.2	-20 36.4	Cap	-0.7	4.8	6° W	99	0.446	1.412	06:53	11:39	16:26
	8	21 25.8	-17 18.4	Cap	-1.1	4.8	2° W	100	0.416	1.400	07:00	12:00	17:02
	15	22 14.4	-12 49.5	Aqr	-1.2	5.0	5° E	99	0.378	1.354	07:03	12:21	17:41
	22	23 02.2	-7 18.0	Aqr	-1.1	5.3	10° E	93	0.339	1.262	07:03	12:41	18:22
Venus	1	23 47.5	0 45.7	Psc	-4.4	32.4	45° E	38	0.719	0.523	08:40	14:47	20:54
	8	0 04.7	3 48.1	Psc	-4.4	35.8	43° E	33	0.719	0.473	08:19	14:36	20:53
	15	0 18.0	6 32.4	Psc	-4.5	39.8	40° E	27	0.718	0.425	07:54	14:21	20:48
	22	0 26.6	8 49.1	Psc	-4.4	44.4	36° E	21	0.718	0.381	07:27	14:01	20:37
Mars	1	7 31.4	26 05.2	Gem	-1.0	13.7	158° E	99	1.639	0.684	14:39	22:25	06:12
	8	7 23.5	26 13.3	Gem	-0.8	13.0	149° E	98	1.643	0.718	14:04	21:50	05:37
	15	7 18.3	26 12.4	Gem	-0.7	12.3	141° E	96	1.648	0.759	13:31	21:18	05:05
	22	7 16.0	26 04.5	Gem	-0.5	11.6	133° E	95	1.652	0.808	13:03	20:49	04:35
1 Ceres	1	21 43.1	-21 16.5	Cap	9.0	0.3	11° E	100	2.974	3.935	08:00	12:41	17:23
	8	21 54.2	-20 24.5	Cap	9.0	0.3	8° E	100	2.975	3.948	07:40	12:25	17:10
	15	22 05.2	-19 31.3	Aqr	9.0	0.3	7° W	100	2.976	3.953	07:19	12:08	16:58
	22	22 16.1	-18 37.1	Aqr	9.0	0.3	9° W	100	2.976	3.951	06:59	11:52	16:45
Jupiter	1	4 39.3	21 38.7	Tau	-2.4	43.3	119° E	99	5.093	4.543	12:10	19:35	03:01
	8	4 39.3	21 40.2	Tau	-2.3	42.4	112° E	99	5.095	4.645	11:42	19:08	02:34
	15	4 40.0	21 43.1	Tau	-2.3	41.4	105° E	99	5.098	4.753	11:15	18:41	02:07
	22	4 41.4	21 47.1	Tau	-2.2	40.4	98° E	99	5.100	4.864	10:49	18:15	01:41
Saturn	1	23 16.7	-6 44.5	Aqr	1.1	15.9	35° E	100	9.621	10.411	08:36	14:14	19:52
	8	23 19.6	-6 25.9	Aqr	1.2	15.8	29° E	100	9.619	10.472	08:10	13:49	19:29
	15	23 22.6	-6 06.6	Aqr	1.2	15.7	23° E	100	9.617	10.522	07:44	13:25	19:05
	22	23 25.7	-5 46.9	Aqr	1.2	15.7	16° E	100	9.615	10.560	07:19	13:00	18:42
Uranus	1	3 23.7	18 21.2	Ari	5.7	3.6	101° E	100	19.548	19.338	11:09	18:20	01:31
	8	3 23.9	18 21.8	Ari	5.7	3.6	94° E	100	19.547	19.456	10:41	17:53	01:04
	15	3 24.2	18 23.1	Ari	5.7	3.6	87° E	100	19.546	19.576	10:14	17:25	00:37
	22	3 24.6	18 24.9	Ari	5.7	3.6	80° E	100	19.544	19.694	09:47	16:58	00:10
Neptune	1	23 54.6	-1 58.4	Psc	7.9	2.2	46° E	100	29.893	30.574	08:56	14:51	20:46
	8	23 55.3	-1 53.2	Psc	7.9	2.2	39° E	100	29.893	30.656	08:29	14:25	20:20
	15	23 56.2	-1 47.7	Psc	8.0	2.2	32° E	100	29.893	30.727	08:02	13:58	19:54
	22	23 57.0	-1 41.9	Psc	8.0	2.2	25° E	100	29.893	30.786	07:35	13:31	19:27
Pluto	1	20 20.5	-22 55.7	Cap	14.5	0.2	11° W	100	35.193	36.160	06:44	11:18	15:52
	8	20 21.4	-22 53.3	Cap	14.5	0.2	18° W	100	35.198	36.137	06:17	10:51	15:25
	15	20 22.3	-22 51.2	Cap	14.5	0.2	24° W	100	35.203	36.101	05:51	10:25	14:59
	22	20 23.2	-22 49.2	Cap	14.5	0.2	31° W	100	35.207	36.051	05:24	09:58	14:32

Horsehead Nebula by Steve Hubbard

All taken with my 14" F8 sct with a focal reducer and ZWO294mc Pro, 40 mins at 350 gain, 60 sec subs.

Messier 1 by Steve Hubbard

Working on my imaging and processing skills more. This is my latest revised image of M 1. 14" F8 SCT, ZWO 294MC PRO camera with RGB filter, 1 hour of 45 second subs processed with SIRIL and Astra Image.

C20 North America Nebula & M31 Andromeda Galaxy by Jeff Padell

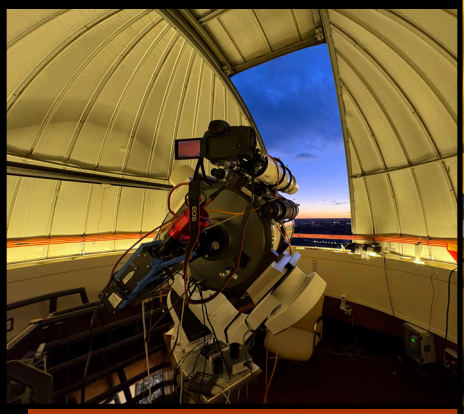
Taken with Seestar S30 and tweaked in Lightroom and Photoshop

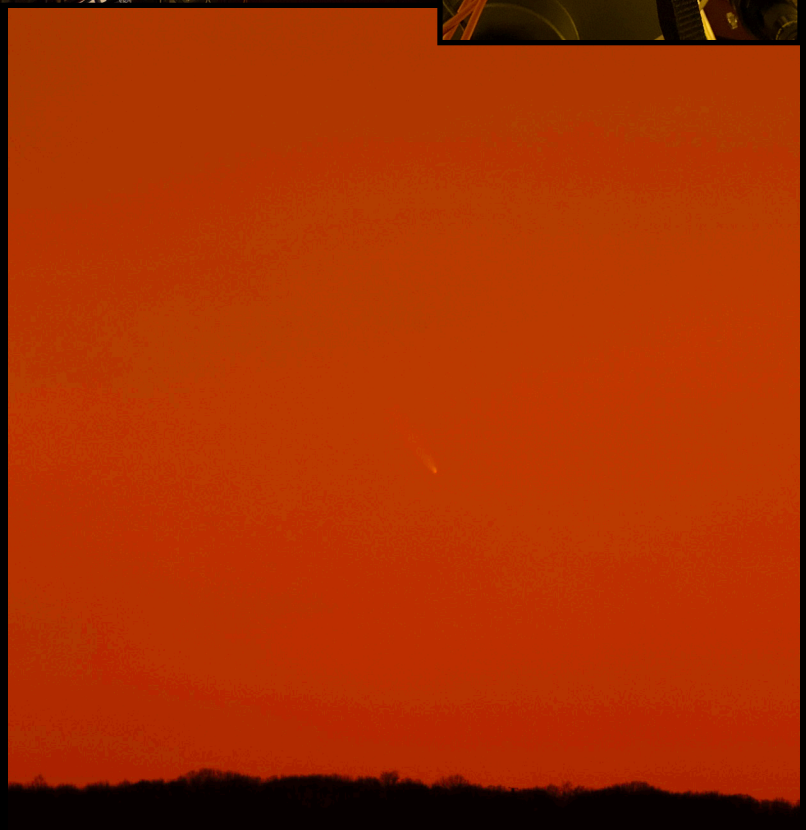
Lunar Occultation of Mars sequence by Bob Horton

Images taken with a Celestron C5.

Comet C/2024 G3 ATLAS by Bob Horton

Comet ATLAS C/2024 G3 just passed by the Sun a few days ago, and could be seen with some difficulty close to the horizon on January 15th, about 20 minutes after sunset. I used the 4 inch telescope in the rooftop observatory at Barus & Holley.





Lunar Occultation of Mars

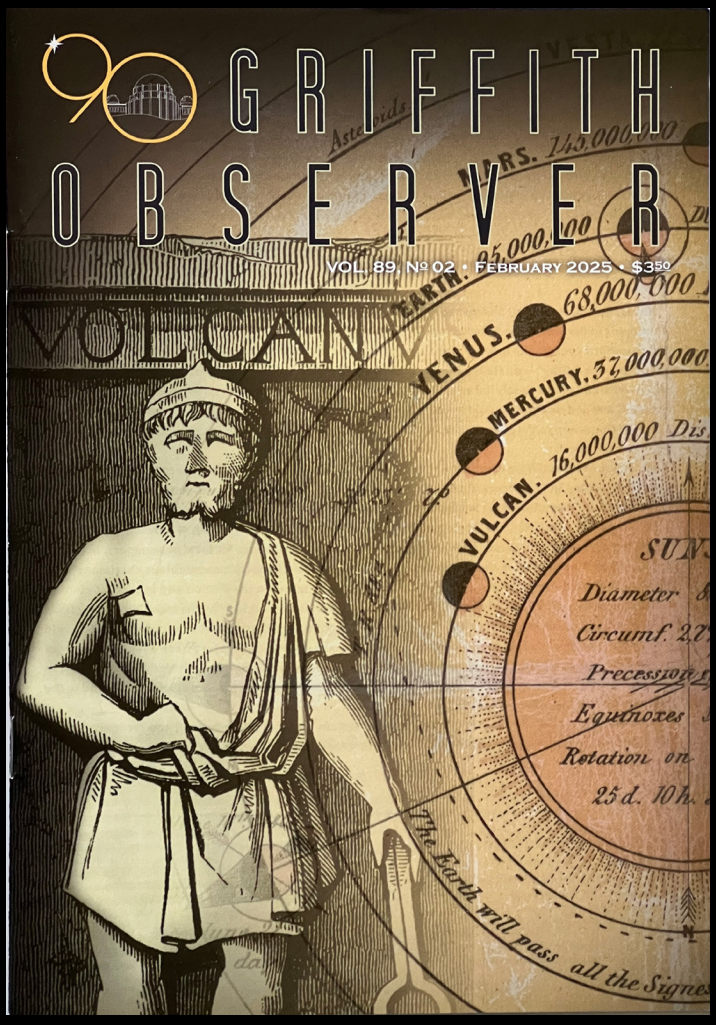
by Francine Jackson & Jim Hendrickson

One of the benefits of observing a full Moon event is that a dark-sky place isn't necessary; therefore, it was very easy for Jim to set up his equipment in my next-door-to-Pawucket lit skies for the recent lunar occultation of Mars.

As the Moon is so brilliant compared to our closest outer planet, Mars wasn't visible with the naked eye, but through his 3-inch refractor the two objects were clearly seen. This was evident until 9:20 P.M., when Mars began to disappear behind the brilliant ball of our Moon.

We now had over an hour to wait until Mars returned to our "sight," so Jim set up his Seestar S50, and, until it was time to once again return outside, he focused his new piece of equipment to various celestial objects, to show how the images changed with every several-second frame that appeared. As Skyscrapers is looking to utilize these on our open nights, the public will be amazed how such a small piece of equipment can create such beautiful images.

And, then, it was time to venture outside for the reappearance. A video by Astronomy's David Eicher stated the time to come out from the back of the Moon was 20 seconds, and we saw that occur. Watching Mars reappeared almost magically, and the entire tiny planetary ball was quickly separated from the Moon. It was still too dim with respect to the Moon to be seen naked eye, but Jim did capture images of it, one of which took Editor's Choice by Sky & Telescope. Then, it was back inside for a grateful cup of hot chocolate.



Congratulations to Francine Jackson for taking Honorable Mention in the 2024 Joan and Arnold Seidel *Griffith Observer* Science Writing Contest. Her article "Vulcanizing the Solar System," which gives a history of the once-hypothesized inner planet Vulcan, is published in the February 2025 issue of *Griffith Observer*. This is Francine's 25th article accepted for publication.

M45 The Pleiades by Jeff Padell

Images taken on January 17 with the Seestar S30 a wide field telescope from East Walpole

C46 Hubble's Variable Nebula by Steve Hubbard

January 25 14" SCT with focal reducer, RGB filter, ZWO294mc PRO. 17 minutes total, 45 ec subs at 300 gain.

Directions to Seagrave Memorial Observatory

www.theSkyscrapers.org

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.

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47 Peeptoad Road
North Scituate, Rhode Island 02857