



The Bays Mountain Astronomy Club Newsletter

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Cosmic Reflections

Greg Penner - BMAC Chair



reetings BMACers!

I hope everyone's new year is off to a good start.

January has been an interesting month already in the area of space-related events. We had a surprising comet, known as C/2024 G3 ATLAS, make an appearance. I had been reading about this comet and my understanding was that it was mainly going to be viewable in the southern hemisphere. Then I saw someone from Arizona had posted a photo online, so I pulled up my Stellarium app and sure enough, it showed the comet would be just above the horizon right after sunset on January 15th. I was able to view it through my 10x50 binoculars, and it was quite bright, about +1 magnitude. The comet was only viewable for about 15 minutes before it sunk down behind some trees, but that was an unexpected treat! We also had the successful launch of a couple of lunar landers that are now on the way to the Moon (see the Stellar Observations article in this newsletter). And then there was the SpaceX Starship launch and subsequent explosion that created quite a stir. 2025 has started off with a bang!

The annual BMAC January dinner was a nice evening of good food and conversation. BMACer Michael Hopkins has a report and some pictures from the evening.

For our February 7th meeting, we will have a presentation from our own Robin Byrne titled "You Are Here: Finding Our Place in the Universe". This will cover historical ideas of where we are located in space, up through to our modern understanding of the structure of the universe. This will be a great presentation for our members and any guests to get a solid grounding in how we have come to know what we know about the universe. Robin is an astronomy Associate Professor at Northeast State Community College.

As we like to do at all our club meetings, we will have some time for anyone to do some "show and tell." Did you get any new astronomy "toys" or resources that you would like to share with the club? Please bring it along and share, so we can all learn from each other. Also at the February meeting, we will talk about our next attempt to have a club observing night. In

December we tried this event on a very cold night, but we would like to try this event again during a warmer time of year (perhaps at our March club meeting).

Looking forward to seeing everyone in February,

Clear Skies!

BMAC Notes



BMACers Capture Mars Occultation



Mars was occulted by the Moon on January 13, 2025.

Here are some cool photos.



Michael Hopkins used his phone to capture this telescopic view.



Greg Penner writes: Used my iPhone 13 with my Takahashi 90mm refractor.

BMAC January Dinner



MACer Michael Hopkins has provided some photos of club members enjoying each other's company during dinner. He writes:

The BMAC January Dinner at Cootie Brown's near ETSU was well attended as you can see in the photos. We had to grow into another table to fit all eight of us. The topics of conversation were mostly about our astronomy adventures. Plenty of stories and looking at photos on our phones made for more conversation. This was a great way to get to know members outside of meetings. I look forward to next year's BMAC January meeting.



Sky News from the Astronomical League

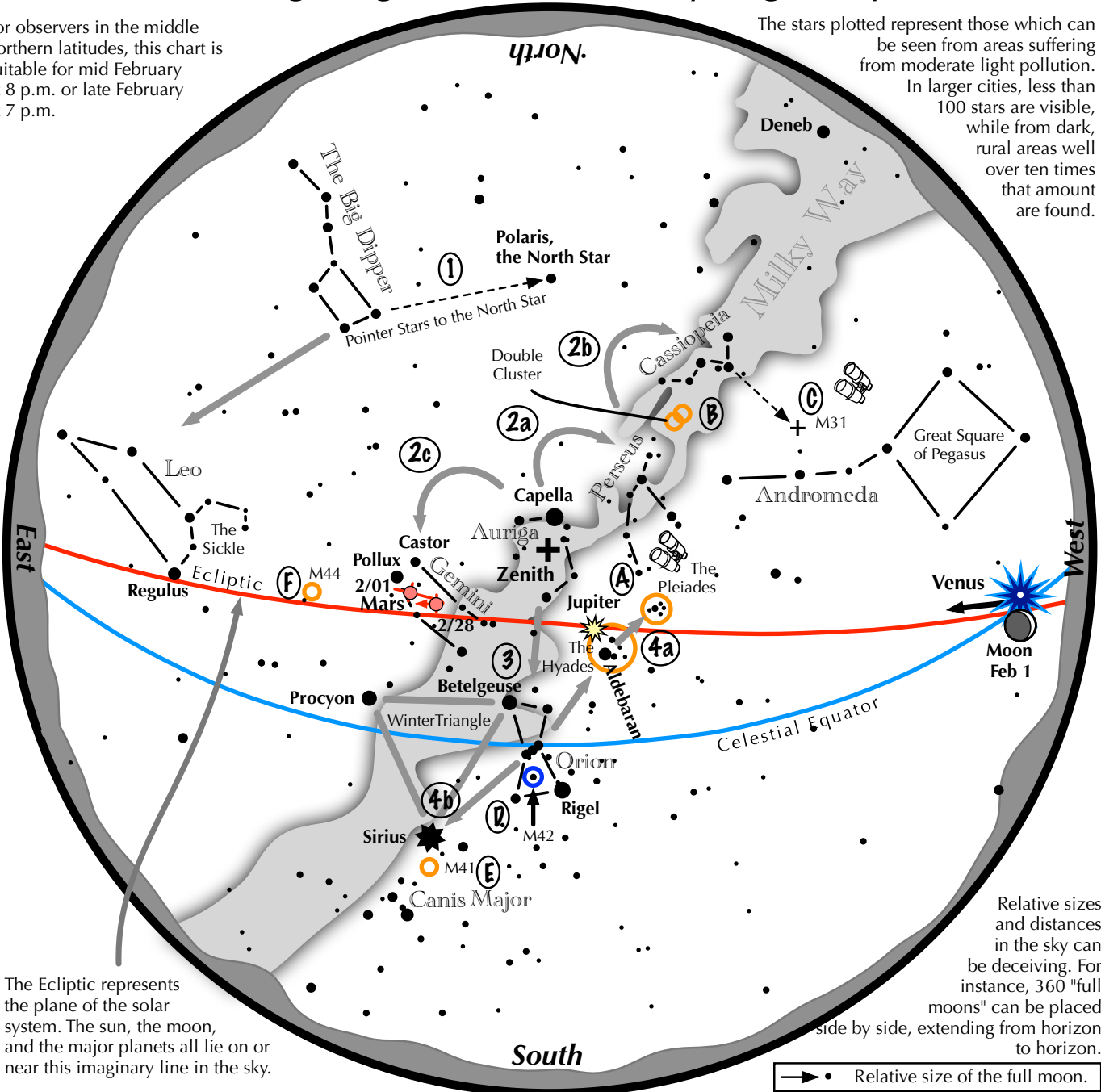


he Astronomical League has a plethora of educational content to help you learn and enjoy the night sky more. The following inserts are just a tiny bit of what they provide.

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.



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.

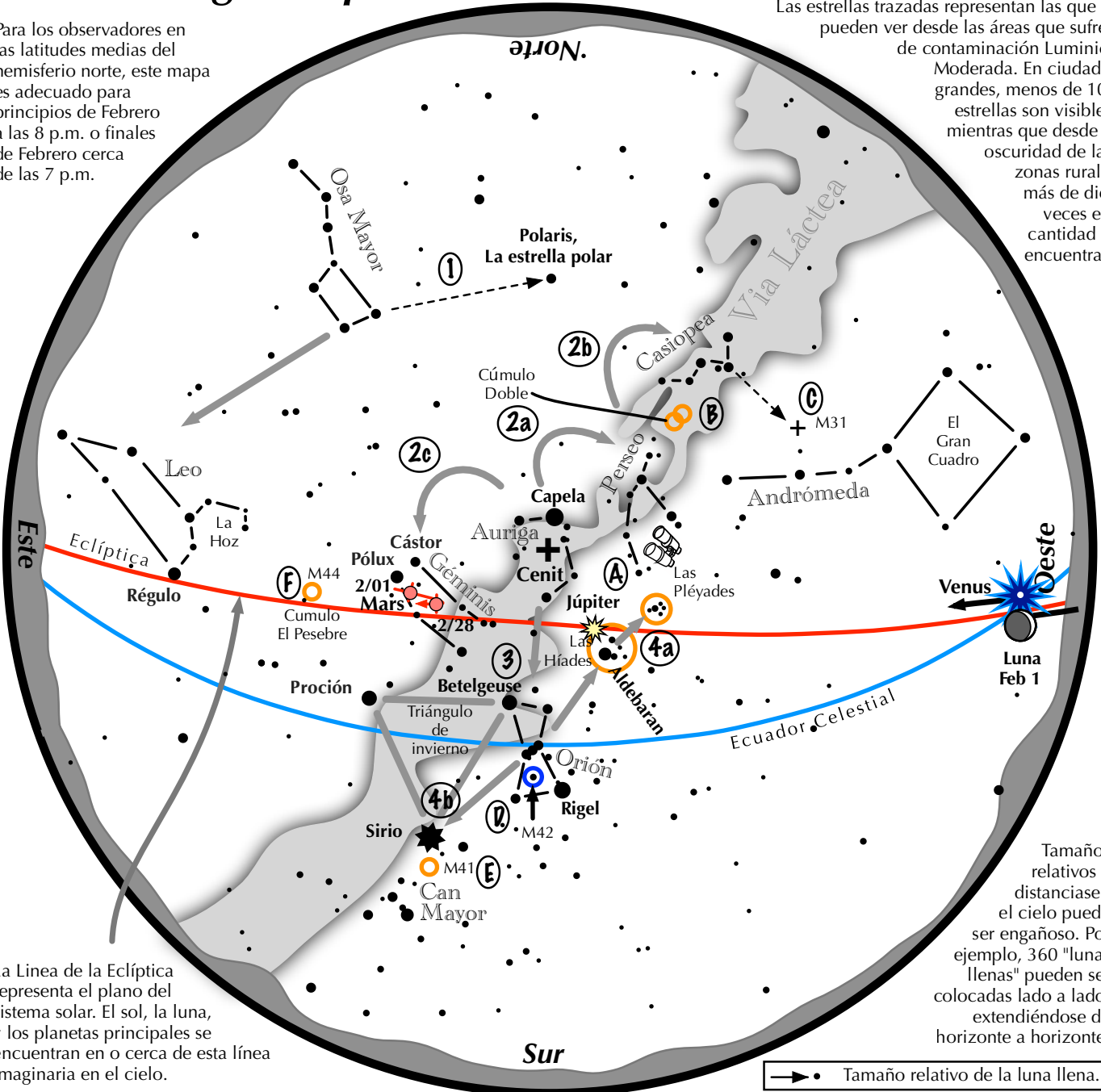


Astronomical League www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.

Navegando por el cielo nocturno de Febrero

Para los observadores en las latitudes medias del hemisferio norte, este mapa es adecuado para principios de Febrero a las 8 p.m. o finales de Febrero cerca de las 7 p.m.

Las estrellas trazadas representan las que se pueden ver desde las áreas que sufren de contaminación Luminica Moderada. En ciudades grandes, menos de 100 estrellas son visibles, mientras que desde la oscuridad de las zonas rurales más de diez veces esa cantidad se encuentran.



La Línea de la Eclíptica representa el plano del sistema solar. El sol, la luna, y los planetas principales se encuentran en o cerca de esta línea imaginaria en el cielo.

Tamaños relativos y distancias en el cielo puede ser engañoso. Por ejemplo, 360 "lunas llenas" pueden ser colocadas lado a lado, extendiéndose de horizonte a horizonte.

→ • Tamaño relativo de la luna llena.

Navegando por el cielo nocturno: simplemente comience con lo que sabe o con lo que puede encontrar fácilmente.

- 1 Sobre el horizonte noreste se alza la Osa Mayor. Dibuja una línea desde sus dos estrellas finales hasta la estrella polar.
- 2 Desde Capela, salte hacia el noroeste a lo largo de la Vía Láctea hacia Perseo, luego hacia la "W" de Casiopea. Siguiente salto hacia el sureste desde Capela a las estrellas gemelas de Cástor y Pólux en Géminis.
- 3 Directamente al sur de Capela se encuentra la constelación de Orión con sus tres estrellas del Cinturón de Orión, su brillante estrella roja Betelgeuse y su brillante estrella azul-blanca Rigel.
- 4 Usa las tres estrellas del Cinturón de Orión para apuntar al noroeste hacia la estrella roja Aldebarán y el cúmulo estelar Híades, y luego hacia el cúmulo estelar de las Pléyades. Viaja hacia el sureste desde las estrellas del cinturón hasta la estrella más brillante en el cielo nocturno, Sirio. Es un miembro del Triángulo de invierno.

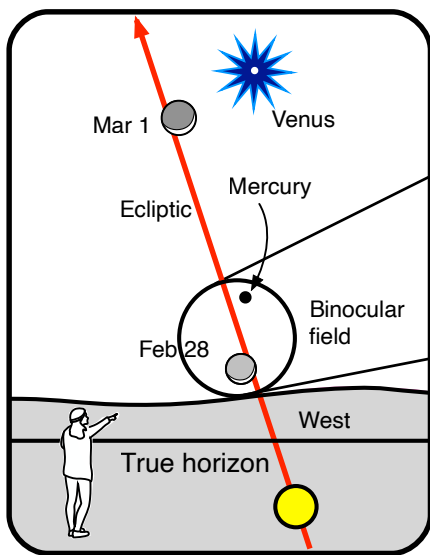
Puntos destacados con binoculares

A: Examina las estrellas de las Pléyades y las Híades. **B:** Entre la "W" de Casiopea y Perseo se encuentra el Doble Cúmulo de Perseo. **C:** Las tres estrellas más occidentales de la "W" de Casiopea apuntan hacia el sur hasta M31, la Galaxia de Andrómeda, un óvalo "borroso." **D:** M42 en Orión es una nebulosa formadora de estrellas. **E:** Mire al sur de Sirio para ver el cúmulo estelar M41. **F:** M44, un cúmulo de estrellas apenas perceptible a simple vista, se encuentra al sureste de Pollux.



Traducción al español por Dr. Salvador Aguirre Liga Astronómica www.astroleague.org/outreach; Duplicación permitida y fomentada para toda distribución gratuita

Mercury, Venus, and the young moon in the evening twilight

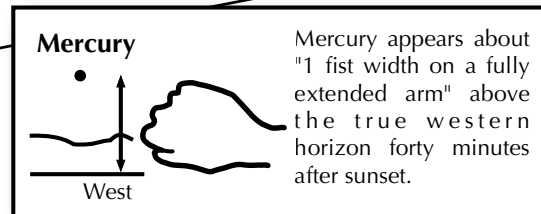
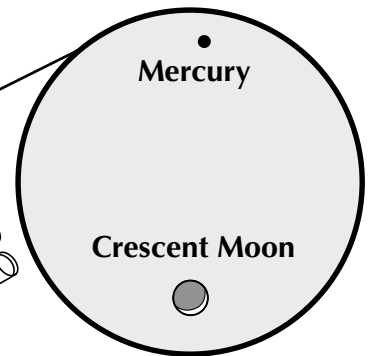


**February 28 and March 1, 2025:
Mercury and the young crescent moon
forty minutes after sunset in the west**



- Using binoculars, look on February 28 for the very thin crescent Moon floating above Mercury. Can you see Earthshine on the Moon's dark side or is the twilight too bright?
- On the next evening, Mercury is in the same place, but the moon has moved to higher and closer to brilliant Venus. Earthshine should be more easily visible.

View through
10x50 binoculars
on February 28

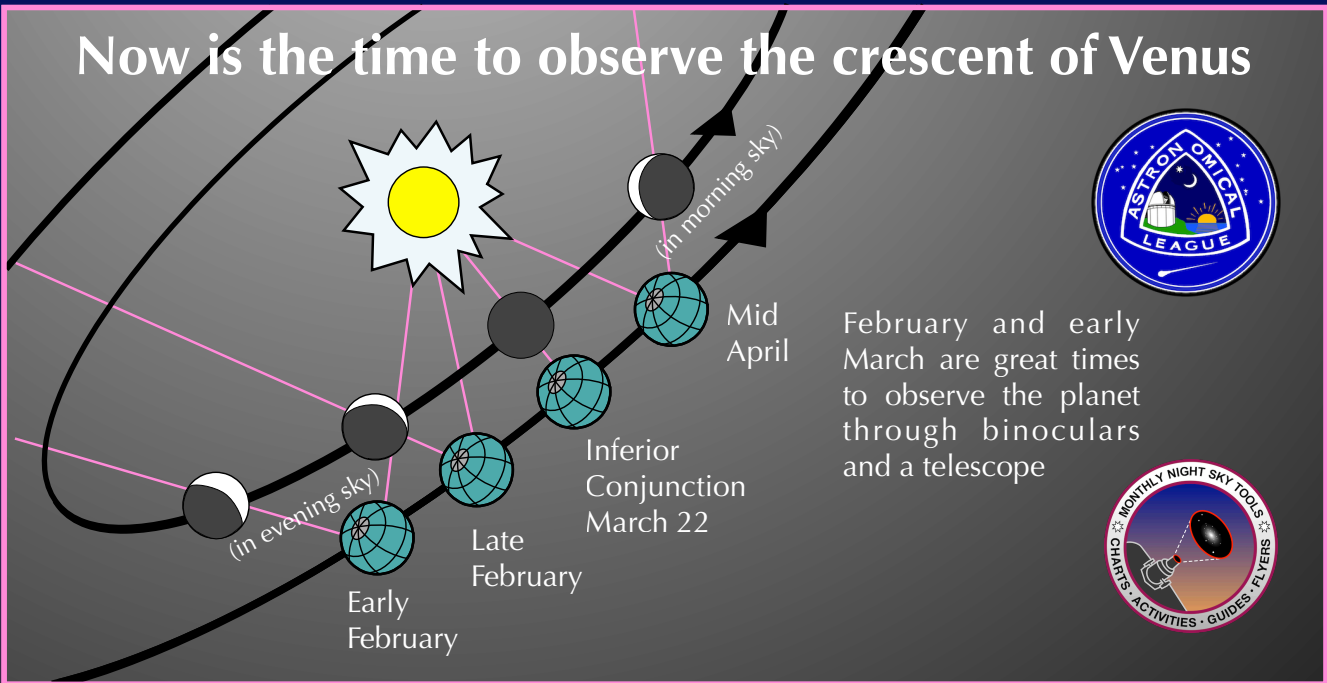


Mercury appears about
"1 fist width on a fully
extended arm" above
the true western
horizon forty minutes
after sunset.

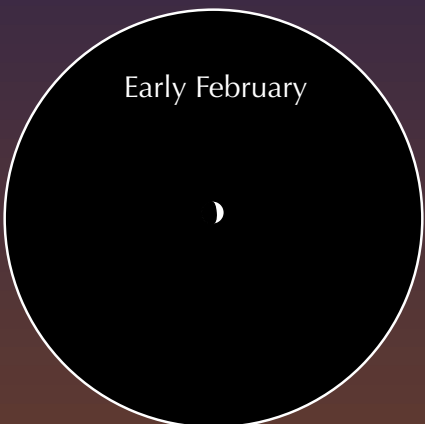
The young moon & Mercury in the evening twilight

Have you ever spotted Mercury? Many stargazers have not. The early evening on February 28 presents a good opportunity to catch the elusive little planet. Look low into the western twilight forty minutes after sunset.

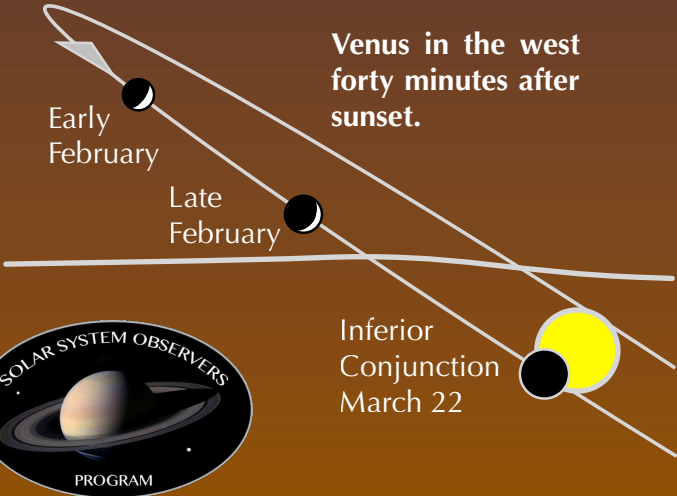
Now is the time to observe the crescent of Venus



February and early March are great times to observe the planet through binoculars and a telescope

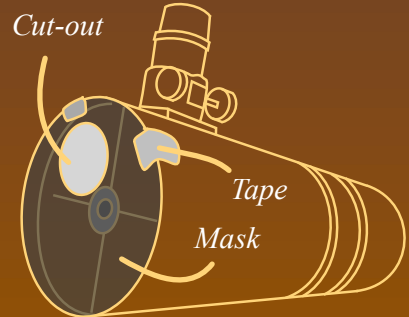


The view through a telescope changes quickly in just six weeks. As the Venus - Earth gap narrows, Venus becomes a thinner, but wider crescent.



Venus in the west forty minutes after sunset.

If you use a reflector or SCT, placing an off-centered cut-out mask over the optical tube entrance helps give a sharper view.



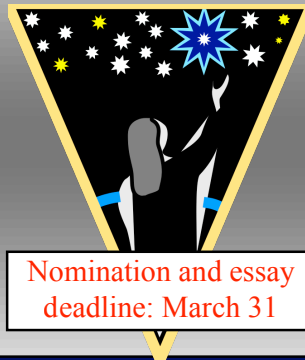


Attention Grandparents!

Do you have a grandchild who

- is 8-14 years of age,
- enjoys writing, and
- loves astronomy?

Encourage your young person to enter the **AL Horkheimer/O'Meara Youth Journalism** competition!



<https://www.astroleague.org/jack-horkheimer-youth-awards/>

Actually, the young writer may be nominated by anyone, not just by a grandparent. But they must be sponsored by an Astronomical League regional officer or by an Astronomical League club officer. Only one nominee per sponsor is permitted.

<https://www.astroleague.org/wp-content/uploads/2007/11/Journalism-Form.pdf>

AL Horkheimer/O'Meara Youth Journalism Award

Stellar Observations

Greg Penner



2025 Space Exploration Missions



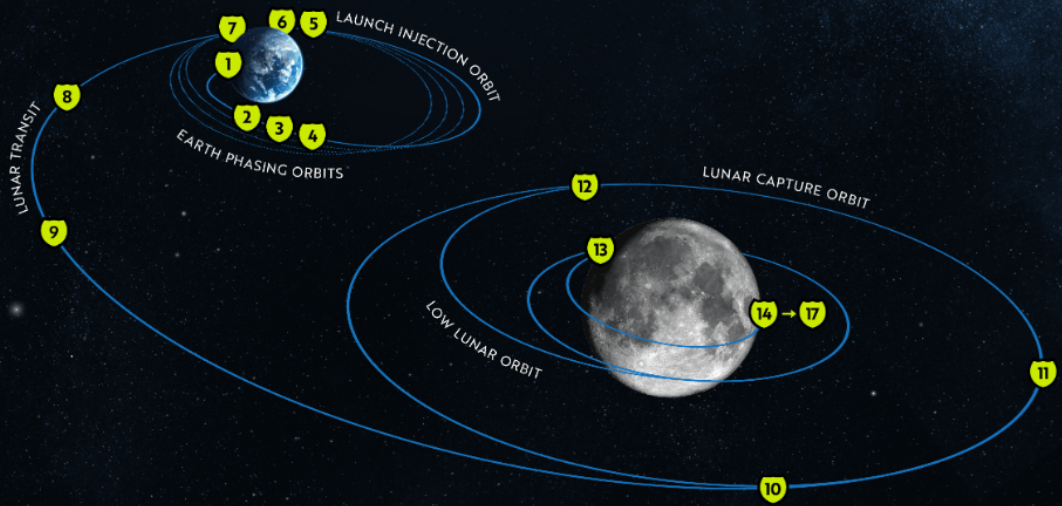
The beginning of the new year is a good time to preview the planned space exploration missions for 2025. At our StarFest event in November, we heard a lot about ongoing lunar studies from our presenters. This year we will continue to see a focus on missions to the Moon, which will conduct lunar research and support the Artemis program. Several of these missions are part of the Commercial Lunar Payload Services (CLPS) initiative. The lunar missions start off quickly as a Space-X Falcon 9 rocket has successfully launched at 1:11a on January 15th carrying two lunar landers, Firefly Aerospace's Blue Ghost lunar lander and ispace's RESILIENCE lunar lander.

According to Firefly's website,

Firefly's first Blue Ghost mission, named Ghost Riders in the Sky, will deliver 10 science and technology instruments to the lunar surface as part of NASA's Commercial Lunar Payload Services (CLPS) initiative.

Upon launching, Blue Ghost will spend approximately 45 days in transit to the Moon, allowing ample time to conduct health checks on each subsystem and begin payload science. Blue Ghost will then land in Mare Crisium and operate payloads for a complete lunar day (about 14 Earth days). Following payload operations, Blue Ghost will capture imagery of the lunar sunset and provide critical data on how lunar regolith reacts to solar influences during lunar dusk conditions (it might even witness a solar eclipse on March 14th, the day of the lunar eclipse viewed from Earth). The lander will then operate for several hours into the lunar night.

According to this schedule, the Blue Ghost should be attempting a landing around March 1st, one day after new moon. The lander will be carrying 10 payloads that will conduct research and demonstrate new technologies, which will help prepare for future human missions. To learn more about this mission, go to this [WEBSITE](#).

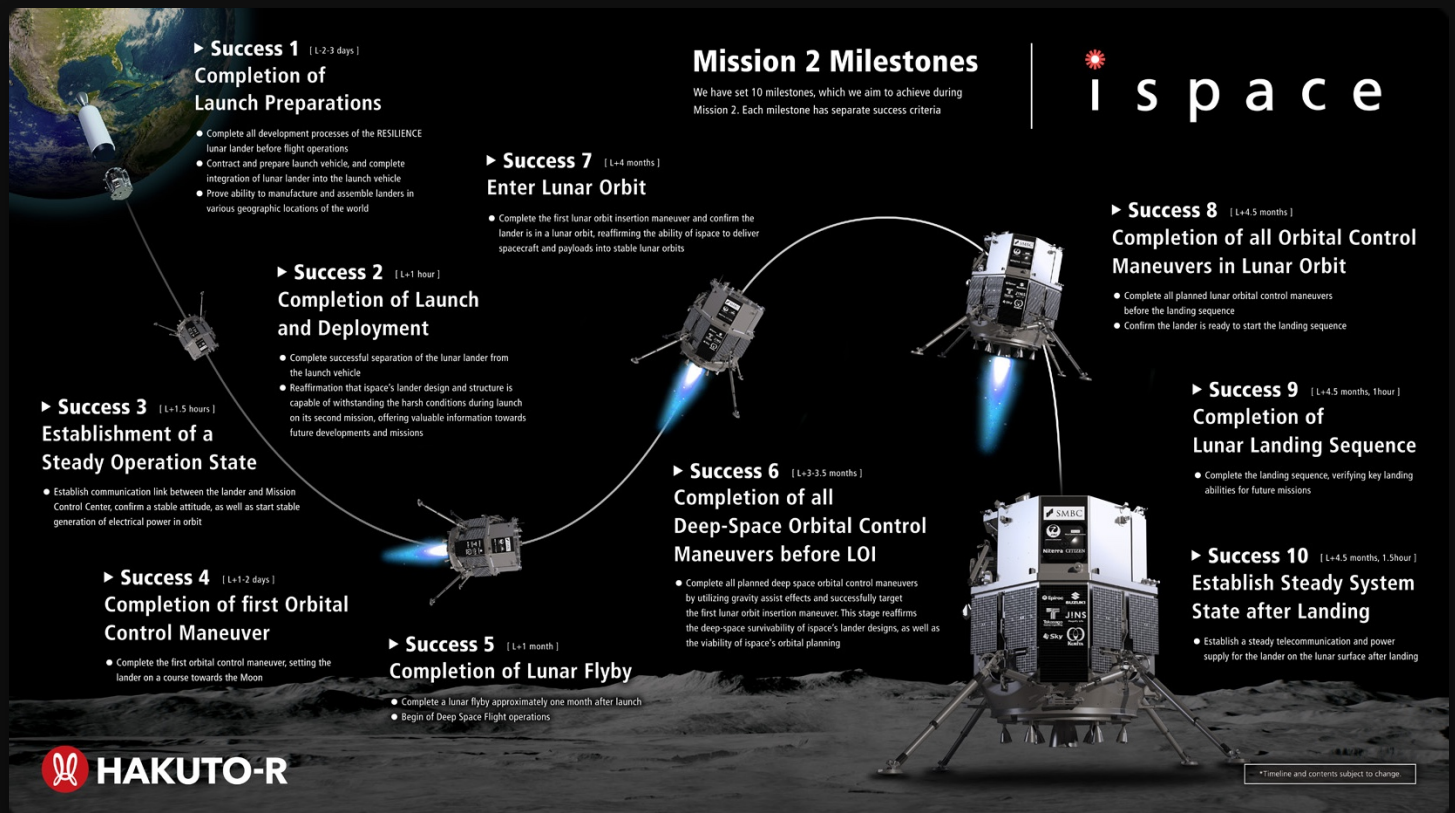


LAUNCH 1 HOUR	ON-ORBIT COMMISSIONING 8 HOURS	EARTH ORBIT 25 DAYS	LUNAR TRANSIT 4 DAYS	LUNAR ORBIT 16 DAYS	DESCENT 1 HOUR	SURFACE OPERATIONS 14 DAYS
1 LAUNCH	3 SIGNAL ACQUISITION	6 EARTH ORBIT PHASING	8 TRANS LUNAR INJECTION	10 LUNAR ORBIT INSERTION	13 DESCENT ORBIT INSERTION	15 SURFACE COMMISSIONING
2 LAUNCH VEHICLE SEPARATION	4 ELECTRICAL & PAYLOAD CHECKOUTS	7 ON-ORBIT PAYLOAD SCIENCE BEGINS	9 TRAJECTORY CORRECTION MANEUVER(S)	11 VISION NAVIGATION CALIBRATION	14 TOUCHDOWN	16 SURFACE PAYLOAD SCIENCE
	5 ENGINE CALIBRATION			12 LOW LUNAR ORBIT INSERTION		17 LUNAR NIGHT OPERATIONS

Firefly Blue Ghost mission chart - from Firefly Aerospace website

The ispace RESILIENCE lunar lander will take “the long road” to the Moon by utilizing gravity assist effects and multiple deep space orbital maneuvers. After about 3½ months, it will go into lunar orbit, and 1 month later will attempt a landing at Mare Frigoris. RESILIENCE will carry various payloads for analyzing the lunar surface. The most exciting payload will be the TENACIOUS micro-rover which, according to the ispace website, “will explore the landing site, collect lunar regolith, and relay data back to the lander. It will be equipped with a forward-

mounted HD camera and a shovel.” The first ispace lunar landing attempt in 2023 failed to make a soft landing due to a software issue. Hopefully the lessons learned by ispace and incorporated into this mission will result in a successful landing. To learn more about this mission, go to this [WEBSITE](#).

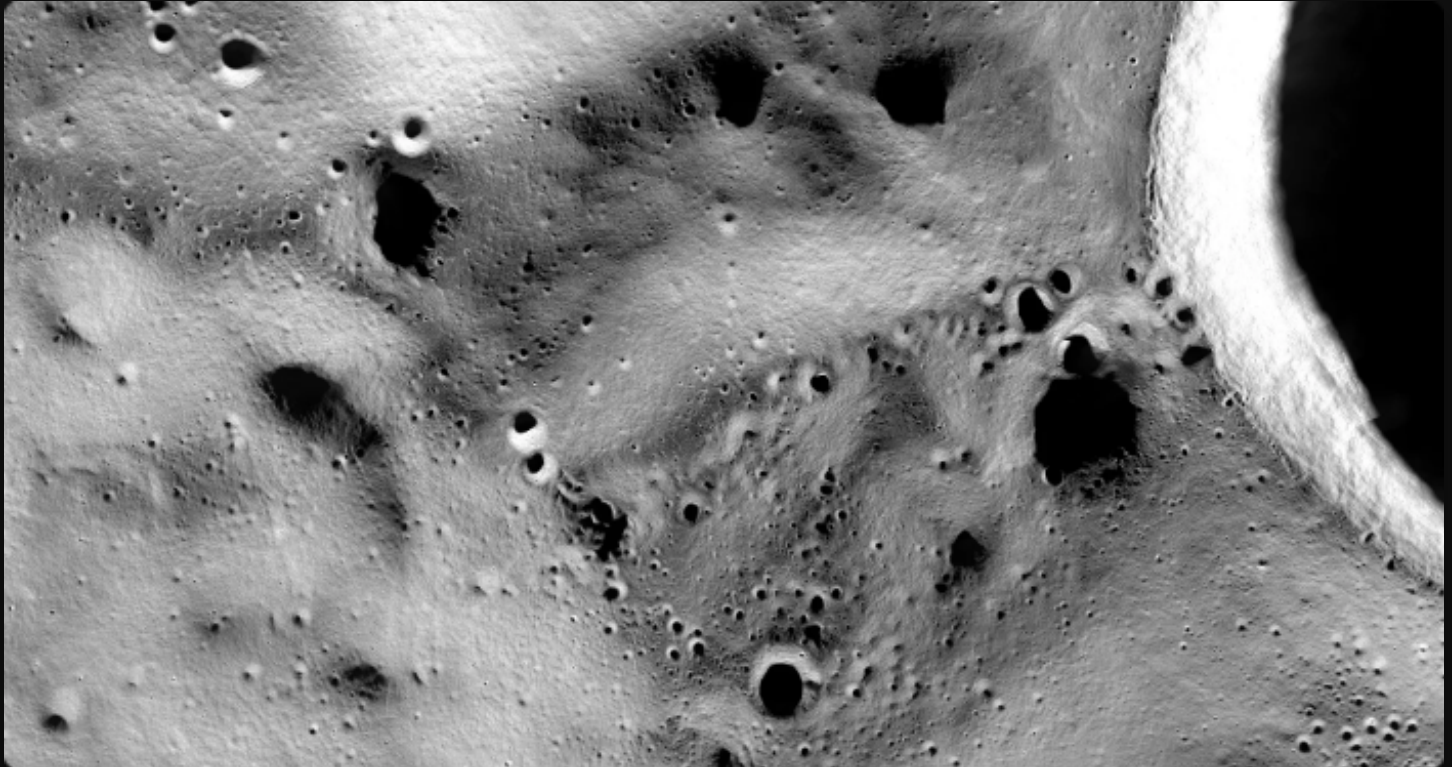


ispace RESILIENCE mission chart - from ispace website

Intuitive Machines is the next company that will be launching a lunar lander in 2025. According to NASA's website,

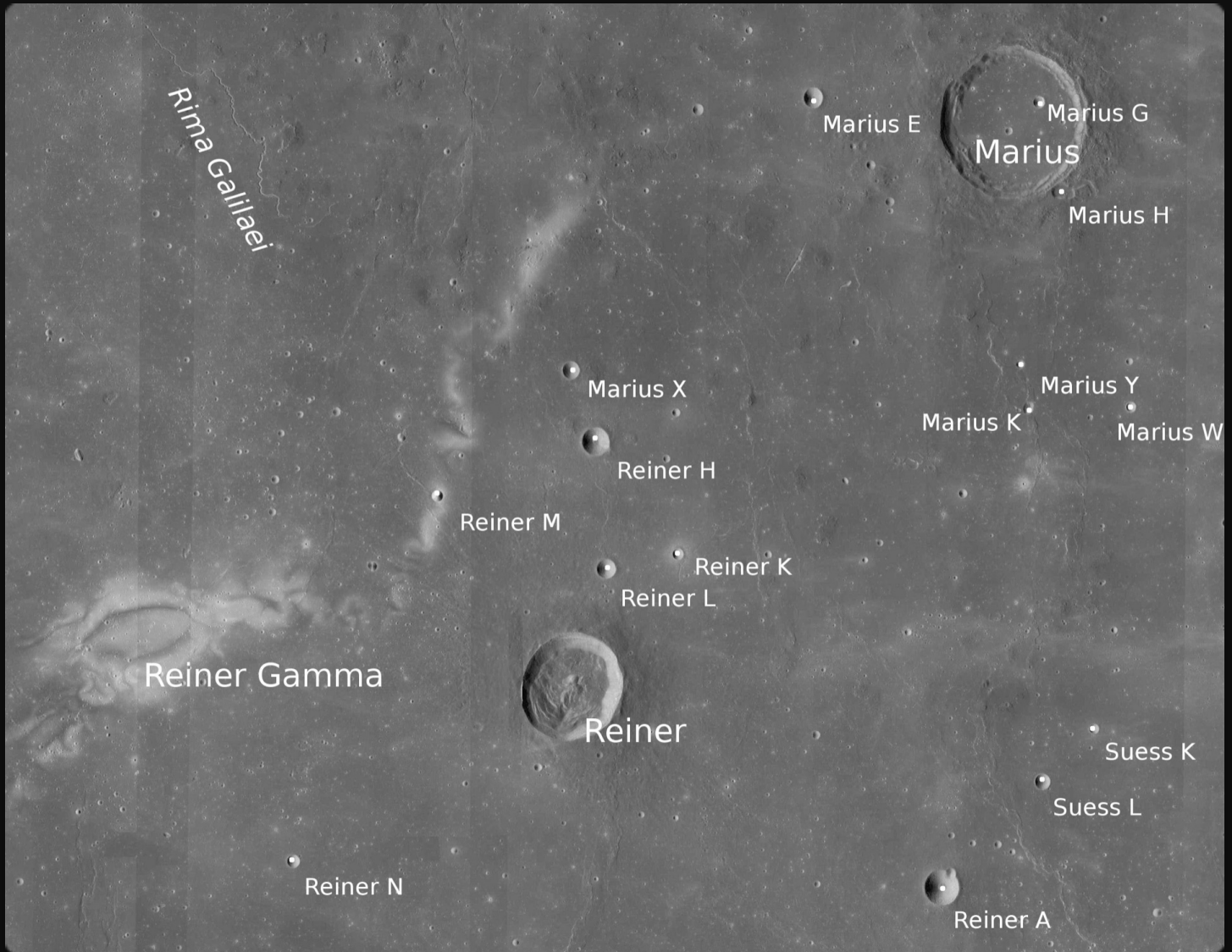
The objective of the Intuitive Machines 2, or IM-2 (TO PRIME-1) mission is to land a drill and mass spectrometer (Polar Resources Ice Mining Experiment-1, or PRIME-1) near the south pole of the Moon in order to demonstrate the feasibility of in-situ resource utilization (ISRU) and measure the volatile content of subsurface samples. The PRIME-1 mission has two primary components, The Regolith and Ice Drill for Exploring New Terrain (TRIDENT) and the Mass Spectrometer observing lunar operations (MSolo). TRIDENT is an augering drill approximately 1 meter long. The drill is able to stop at any depth as commanded from the ground and deposit its sample on the surface for analysis. After launch on the Falcon 9, currently scheduled for no earlier than February 2025, the Nova-C lander will touch down at the Shackleton connecting ridge, near Shackleton Crater close to the south pole, and begin drilling operations.

The Astrobotics' Griffin lander with the Cube Rover may launch in fall of 2025, with Griffin Mission 1. This was supposed to carry the (now canceled) VIPER (Volatiles Investigating Polar Exploration Rover) for NASA. The mission will still be flown as a demonstration of the lander and engines and will touch down on Mons Mouton near the western rim of Nobile crater close to the lunar south pole. Both this mission and the Intuitive Machines IM-2 are focusing on the south pole region, which is where there is much interest for a future human presence.

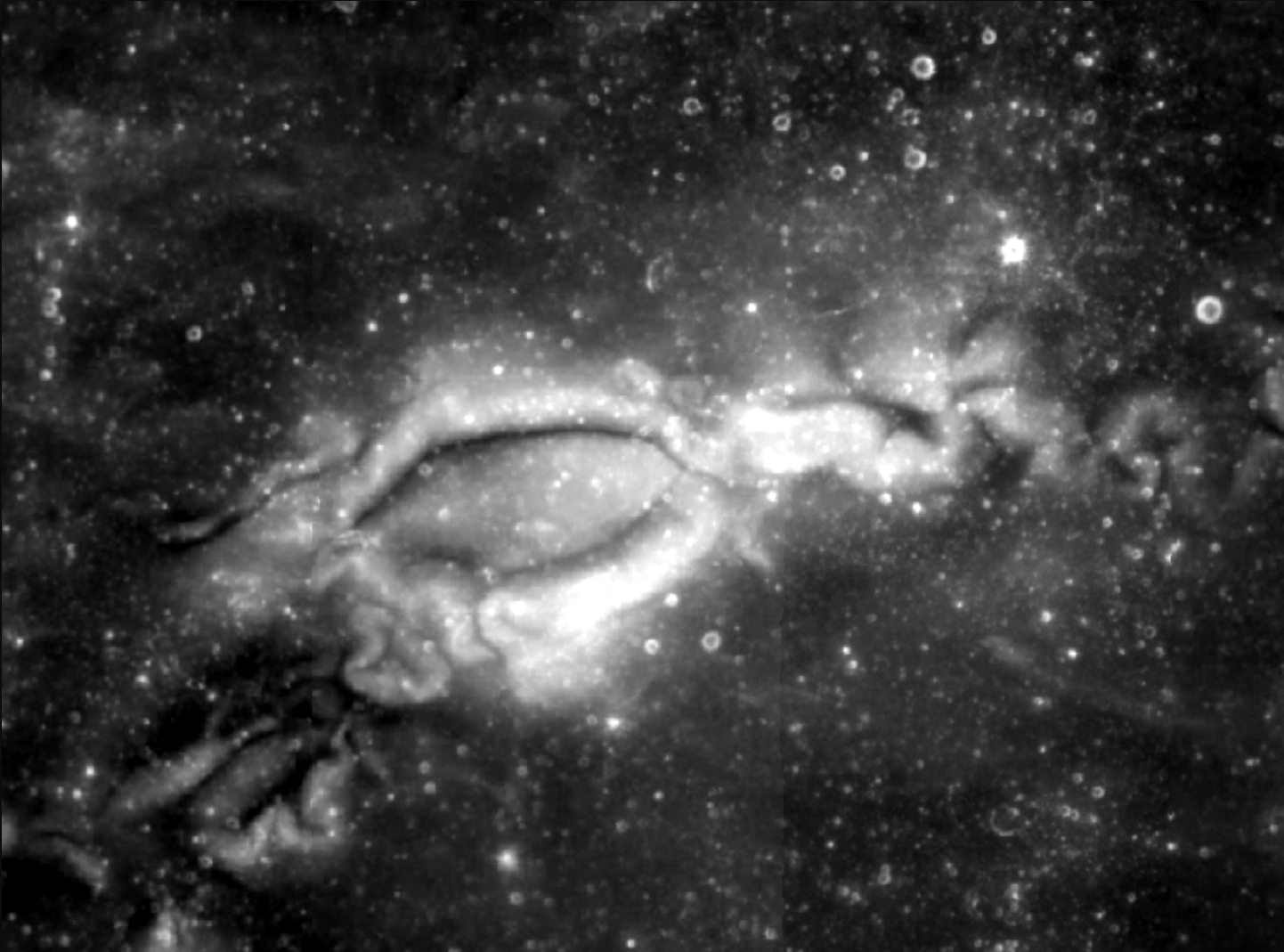


IM-2 landing zone near Shackleton Crater - image by NASA

Another Intuitive Machines mission could be launched late in 2025. The IM-3 mission will land in the Reiner Gamma region in the Oceanus Procellarum. The Reiner Gamma region is the location of a feature known as a "lunar swirl." These features are known to have unusually strong magnetic anomalies that will be analyzed by the lander payloads. Included in the payload are several small mobile robots that will explore the surface as a team. Lunar swirls have very high albedos, making them visible from Earth based telescopes. Can you find Reiner Gamma with your telescope?



IM-3 landing area in Reiner Gamma region - image by NASA



Close up of Reiner Gamma - image by NASA

We won't see the Artemis 2 Moon fly-by mission with astronauts aboard in 2025. The schedule for that mission has been pushed back to no earlier than April 2026. But watching all of these other missions go to the Moon is building excitement for the eventual human presence on the Moon, whenever that may happen. All of these missions can be followed on various social media platforms, so stay tuned to launch schedules and news about (hopefully) successful landings!

The Queen Speaks

Robin Byrne



Happy Birthday Maria Margaretha Kirch



his month we celebrate the life of someone who is credited as being the first woman to discover a comet. Maria Margaretha Winckelmann was born

February 25, 1670 near Leipzig, Saxony (now Germany). Even though society didn't encourage educating young women, Maria's father (who was a Lutheran minister) and her uncle (who cared for Maria after both her parents died) felt differently. They took it upon themselves to provide Maria with an early education.

Maria's introduction to astronomy came from Christoph Arnold, who would be considered an amateur astronomer by today's standards. As his unofficial apprentice, Maria learned much about astronomy from Arnold. As her skills developed, Arnold "promoted" Maria to the role of assistant. The arrangement included Maria living with Arnold and his family. And it was Arnold who introduced Maria to Gottfried Kirch, an astronomer

who had studied under Johannes Hevelius. It is speculated that since Hevelius worked with his wife, Elisabetha, that this example may have influenced Kirch to accept the idea of a woman working as an astronomical assistant. He even trained his three sisters to work with him. Despite being 30 years older than Maria, they married in 1692 and would eventually have a total of four children, who all studied astronomy. Through their partnership, Maria gained the opportunity to learn about and participate in astronomical pursuits, while Gottfried got an assistant, calculator, and caretaker of the children he had from a previous marriage.

One of Kirch's main astronomical pursuits was producing an annual almanac, which included the dates for the Moon phases, times of sunrise and sunset, plus planet positions for the following year. Maria became instrumental in assisting in the creation of this publication. In 1697, the couple also began monitoring the weather throughout the year, and used their data to include the general weather trends as part of the

almanac. All of their publications were vital for use by navigators while at sea.

Due to the importance of the almanacs, in 1700 Gottfried was offered a position as Astronomer Royal, with the opportunity to work at an observatory being built in Berlin. Since the observatory wasn't completed until 1711, Kirch made use of a private observatory belonging to an amateur astronomer, with both Gottfried and Maria making observations through this telescope.

On April 21, 1702, while using that telescope, Maria noticed something out of the ordinary. It was a comet, now known as the "Comet of 1702." Gottfried later recalled,

Early in the morning (about 2:00 AM) the sky was clear and starry. Some nights before, I had observed a variable star and my wife (as I slept) wanted to find and see it for herself. In so doing, she found a comet in the sky. At which time she woke me, and I found that it was indeed a comet... I was surprised that I had not seen it the night before.

With Gottfried's confirmation that it was a comet, and that Maria was the first to observe it, this made her the first woman known to discover a comet. Unfortunately, whether out of societal custom or pride or Maria's inability to compose the official announcement in Latin, Gottfried was the one to make the report, so the discovery was credited to him. It wasn't until about 8 years later that Gottfried admitted it was Maria who saw the comet first.

While Maria could not write in Latin, which prevented her from publishing in the accepted scientific journals, she did publish articles in German. In 1707, her first publication was a description of her observations of the Aurora Borealis. That was followed in 1709 with a pamphlet describing a conjunction that would occur in 1712 between the Sun, Saturn, and Venus.

Also in 1709, Maria gave a presentation to the Prussian Court about observations she made of sunspots. In his speech to introduce Maria to the court, Gottfried von Leibniz (the

President of the Berlin Academy of Sciences), described her with the following:

There is a most learned woman who could pass as a rarity. Her achievement is not in literature or rhetoric but in the most profound doctrines of astronomy... She observes with the best observers and knows how to handle marvelously the quadrant and the telescope.

In 1710, Gottfried Kirch passed away. Maria requested to be appointed as Astronomer Royal, stepping in for her late husband. She pointed out that she had been fulfilling his duties for some time, both while he had been ill prior to his passing, as well as after his death, when Maria had continued to publish the almanacs that had been their most valued work. While Leibniz supported her appointment, he was vastly outvoted by the other members of the Academy, who opposed the idea of naming a woman as Astronomer Royal. Instead, they named a man, Johann Hoffmann, who turned out to be quite incompetent for the job. Their only concession was to allow Maria and her

children to continue living in the house that had been provided for their family.

Maria continued her astronomical observations at the same observatory she and her husband originally used when they first moved to Berlin. In 1712, she published another pamphlet, this time about a conjunction of Jupiter and Saturn that would occur in 1714. In 1716, Maria's son, Christfried, was named Astronomer Royal. Maria joined him, acting as his assistant at the observatory, where they continued to create astronomical almanacs. However, the following year, the Academy members were upset that she played such a large role at the facility, saying that Maria was "... too visible at the observatory when strangers visit," and she was ordered to "... retire to the background and leave the talking to... her son." To avoid jeopardizing her son's position, Maria retired from the observatory, but continued to make observations from her home.

As her health deteriorated, Maria only stopped observing near the end of her life. On December 29, 1720, Maria Kirch passed away, after suffering from a fever for some time.

The almanacs that Gottfried and Maria Kirch produced were an amazing accomplishment, and truly a lifelong endeavor.

Gottfried began publishing the almanacs in 1685, seven years before marrying Maria. They continued to be published each year until 1728, with their son carrying on the tradition for an additional eight years after Maria's death. While Maria Kirch was never officially recognized as an astronomer, she clearly devoted her life to the pursuit of astronomy, making her own observations, calculating ephemerides, producing publications, and even discovering a comet.

Today, we take for granted automated telescopes and computer programs that instantly tell us the positions of the Sun, Moon, and planets for any date and time. But for most of history, such information had to be meticulously calculated, based on continuous observations necessary to refine the positional data.

That tedious work was vital for navigation, which used those astronomical positions to pinpoint a ship's location when at sea. The next time your telescope instantly slews to a view of Jupiter or Saturn, take a moment to appreciate this month's honoree and the work she performed most of her life to make such observations possible - Maria Kirch.

References:

References: Maria Margaretha Kirch - [Wikipedia](#)

Maria Kirch - [Britannica](#)

Maria Margaretha Winckelmann Kirch by J J O'Connor and E F Robertson - [Math History, 2008](#)

Maria Winkelmann Kirch - [She Is An Astronomer](#)



The Space Place - NASA Night Sky Network

Dave Prosper,

Updated by Kat Troche

How Can You Help Curb Light Pollution?



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 older 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.



*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*

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)

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](#).



*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*

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 policy. Their website 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 also 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 street lamps 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 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% (as of 2018) after its own [citywide lighting conversion](#), proof that communities can bring the stars back with smart lighting choices.

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky](#) to find local clubs, events, and more!

BMAC Calendar & More



Calendar:



MAC Meetings:

- Friday, February 7, 2025 - 7p - BMAcEr and NSCC Associate Professor Robin Byrne will present "You Are Here: Finding Our Place in the Universe," which covers historical ideas of where we are located in space, up through to our modern understanding of the structure of the Universe.
- Friday, March 7, 2025 - 7p - Topic TBA.
- Friday, April 4, 2025 - 7p - Topic TBA.
- Friday, May 2, 2025 - 7p - Topic TBA.
- Friday, June 6, 2025 - 7p - Topic TBA.
- Friday, August 1, 2025 - 7p - Topic TBA.
- Friday, September 5, 2025 - 7p - Topic TBA.
- Friday, October 3, 2025 - 7p - Topic TBA.
- Friday, December 5, 2025 - 7p - Topic TBA.
- Friday, February 6, 2026 - 7p - Topic TBA.



unWatch:

- Every clear Saturday & Sunday - 3p-3:30p - March-October - By the Dam
 - View the Sun safely with a white-light view if clear.; Free.
 - You must have completed the Park Volunteer Program in order to help with the public program. If you have, and have been trained, please show up at least 30 minutes prior to the official start time.



tarWatch:

- March 1 & 8, 2025 - 7p
- March 15, 22 & 29, 2025 - 8p
- April 5, 12, 19 & 26, 2025 - 8:30p
 - View the night sky with large telescopes at the observatories. If poor weather, an alternate live tour of the night sky will be held in the planetarium theater. Free.
 - You must have completed the Park Volunteer Program in order to help with the public program. If you have, and have been trained, please show up at least 30 minutes prior to the official start time.



Special Events:

- **Astronomy Day - ?, 2025 - 12p-3p; 8:30p-9:30p**
 - Come help share the fun of astronomy with the public. There will be tables with different themed topics plus solar and night viewing.
- **Annual Club Picnic - July 2025**
 - Date and site location will be sent directly to full BMAC members. BMACers and their families are welcome to enjoy an evening of astronomy-themed games and activities along with a potluck dinner and observing.
- **StarFest 2025 - November 7-9, 2025**
 - Our 40th annual astronomy convention / star gathering for the Southeast United States. Three days of astronomy fun, 5 meals, 4 keynote speakers, unique T-shirt and more!
 - **Pre-registration by Oct. 16, 2025 with full payment is mandatory for attendance. Sorry, no walk-ins nor "visits."**
 - [Link for all the StarFest info including registration and hotel reservation links.](#)
- **BMAC Dinner - January 2026**
 - This event is for members and their families. Look for an e-mail in January with all the information.

Regular Contributors:



Greg Penner



Robin Byrne



Adam Thanz

Greg Penner is a semi-retired architect living in the Tri-Cities area since 2018. He has enjoyed astronomy since childhood when he received a “department store telescope” and viewed Saturn for the first time. He has been a member since 2018.

Robin Byrne has been writing the science history column since 1992 and was chair in 1997. She is an Associate Professor of Astronomy & Physics at Northeast State Community College (NSCC).

Adam Thanz has been the BMAC Newsletter Editor for all but a small number of issues since 1992. He is the Planetarium Director at Bays Mountain Park and an astronomy adjunct instructor at NSCC since 2000.

Connection:

Bays Mountain Astronomy Club:

- 853 Bays Mountain Park Road; Kingsport, TN 37650
- (423) 229-9447 - [Park Site](#) - [Club Site](#)
- Newsletter edited by [Adam Thanz](#)

Dues:

- Dues are highly supplemented by the Bays Mountain Park Association and volunteerism by the club. As such, our dues are kept at an extremely low cost.
- \$16 / person / year
- \$6 / each additional family member
- Note: if you are a Park Member (which incurs a separate, additional fee), then a 50% reduction in BMAC dues are applied.
- Dues can be paid in many ways. The easiest way is to pay via the CivicRec online portal. If you are a current member, please log in with your e-mail address and reset your password if you have not already done so. You can then update your membership. Here's the direct [link](#). If you want to add family members, then add them via the internal link. You can also pay at the gift shop, by mail or over the phone.

Chapter Background Image Credits:

- **Cover image of Southern Milky Way by Adam Thanz.**
 - *Sony A7ii with Zeiss Batis 2.8/18 lens, f/2.8, 8 sec., ISO 6,400, August 9, 2020.*
- **Table of Contents image of Comet NEOWISE (C/2020 F3) by Adam Thanz**
 - *Sony A7ii with Sony FE 2.8/90 Macro G OSS lens, f/2.8, 8 sec., ISO 4,000, July 15, 2020.*
- **Cosmic Reflections image of the Summer Triangle area of the Milky Way by William Troxel.**
 - *Image captured July 23, 2016.*
- **BMAC Notes painting of the Moon with moon glow by Christa Cartwright.**
 - *Painting based on a photograph of the Moon Christa captured July 2020.*
- **Stellar Observations image of Crescent Nebula by David Reagan.**
 - *This image was taken with a 140mm refractor in his suburban backyard using an AstroPhysics 900 mount, 8.7 hours of 5 minute Ha and OIII subexposures, combined in AstroPixelProcessor as an HOO image and processed in Lightroom and Photoshop. Image captured in 2022.*
- **The Queen Speaks image of a solar halo by Robin Byrne.**
 - *iPhone 7, June 8, 2020.*
- **The Space Place - NASA Night Sky Network image of the Rho Ophiuchi cloud complex by Brandon Stroupe.**
 - *Canon 6D with Canon 2.8/70-200mm lens, f/2.8 @200mm, 20 x 120 sec. exposures, ISO 1,000, stacked in Deepsky Stacker, processed in Adobe Photoshop CC, Skywatcher Star Adventure mount, September 19, 2015.*
- **BMAC Calendar & More image of the Moon by Greg Penner.**
 - *iPhone shooting through a 9mm eyepiece and 12.5" Truss Tube Dobsonian @212x.*
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