The ECLIPSE

April 2026

The Newsletter of the Barnard-Seyfert Astronomical Society

The Moon Issue

More than fifty years have passed since humans last walked on the Moon. With all of the excitement surrounding the Artemis II mission, it seemed natural for this issue to focus on the Moon. In addition to some relevant articles on the mission, the history of Moon exploration, and observing, we have some photos including this stunning image by our President, Steve Hughes.

Moon Music

For something fun – Melissa Kirsch of the New York Times wrote this week "I've had "moon music" in my head — Nick Drake's "Pink Moon," Neil Young's "Harvest Moon" and maybe my favorite of all moon songs, "The Whole of the Moon" by the Waterboys. The refrain stays with me: "I saw the crescent / You saw the whole of the moon." Listen here: https://www.youtube.com/watch?v=sBW8Vnp8BzU."

Photo by Steve Hughes

From the (New) Editor

Welcome to this month's BSAS newsletter—my first issue as your editor. It's an honor to step into this role.

My goal is for this newsletter to reflect the full range of interests in our club: upcoming events, observing tips, member stories and expertise, images, citizen science opportunities, and the simple joy of looking up. I'd love your help in shaping it. If you have ideas, photos, observing notes, project updates, or topics you'd like to see covered, please send them to me at eclipse@bsasnashville.com.

This month's issue will have a few items focusing on the Moon – how can I resist given the excitement of the Artemis II mission?

Thank you for reading. This is *your* newsletter, send me ideas!

Clear skies,
Don Filer, Editor

Barnard-Seyfert Astronomical Society

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Contact BSAS officers at bsanashville.com/contact, or email info@bsasnashville.com.

About BSAS

Founded in 1928, the **Barnard-Seyfert Astronomical Society** is an association of amateur and professional astronomers who have joined together to share their knowledge and love of the night - *and day* - sky! We welcome everyone from beginners to pros alike!

BSAS meets on the third Wednesday of each month at the **Warner Park Nature Center** in Nashville, TN. Experienced members or guest speakers usually talk about some aspect of astronomy or sky observing. Subjects range from how the universe first formed to how to build your own telescope, to "Pluto: Dog, planet, or KBO?..."

The meetings are very casual and time is allotted for coffee, hang out and general astro-tivity! Meetings are free and open to the public, you do NOT need to be a member to attend!... Join us!

BSAS membership entitles you to several perks such as subscription discounts to Astronomy and Sky & Telescope magazines, access to the club's Equipment Loan Program, invitations to private club events, participation in our Google chat forums, and much more!

In addition to the regular meetings, BSAS also sponsors many public astronomy events, such as our famous monthly public star parties, Astronomy Day school events, collaborations with the Dyer Observatory, tents and displays at local festivals, and "Pop-Up" star parties!

More information about BSAS can be found on our website bsasnashville.com. If you have any questions, please email us anytime at info@bsasnashville.com.

Equipment Loan Program

Did someone say **FREE** telescope loans??... Why yes, yes they did!!

BSAS has telescopes ranging from 2.5" to 10", from beginner to advanced, that members can borrow for up to 60 days at a time! We also have other items such as H-alpha solar telescopes, Dobsonians, educational CDs, tapes, DVDs, and more!

BSAS will not be held responsible for lost sleep or gear addiction from use of this excellent astronomy equipmen! For information on what's currently available, contact info@bsasnashville.com.

President's Corner

By Steve Hughes

"We're going back to the freakin moon!!..."

Couldn't have said it better myself!! For all its controversy, NASA continues to do absolutely groundbreaking feats of engineering and innovation, continually pushing the boundaries of human exploration!

And soon, in a few years, we'll (hopefully) be seeing footprints on the moon - again! This time, *to stay!!* (Oh *please* call it *Moon Base Alpha*, oh please, oh please, oh please, lol!…)

While it's exciting to witness and celebrate human's "return" to the moon, I am reminded that although NASA's success is built on the shoulders of giants, it was also built on the *sacrifice* of giants… May we never forget Apollo 1, Challenger and Columbia, whose legacy lives on in Artemis, and beyond.

Be safe, be kind, and keep looking up!

Steve Hughes
President, BSAS

"Every star may be a sun to someone..." - Carl Sagan

Upcoming Events

April Member Meeting
Telescope Workshop & Star Party
Wednesday, April 15
7:00 - 9:00 p.m.
Warner Park Nature Center
7311 Highway 100 Nashville

Public BSAS/Dyer Star Party
Saturday, April 25
8:30 - 10:30 p.m
Bells Bend Outdoor Center
4187 Old Hickory Boulevard
Nashville

May Member Meeting
Bill McClain - Space Weather
Wednesday, May 20
7:00 - 9:00 p.m.
Warner Park Nature Center
7311 Highway 100 Nashville

BSAS
Barnard-Seyfert Astronomical Society

The *Eclipse* is the monthly newsletter of the Barnard-Seyfert Astronomical Society, Nashville, Tennessee.

Comments, questions, and submissions for future issues are welcome and may be sent to eclipse@bsasnashville.com.

Don Filer, Editor

Why Go Back to the Moon? Eight Reasons It Matters

Astronomers, amateurs and professionals alike, have continued to study the Moon since the Apollo program ended. With new tools, new questions, and new ambitions, returning to the Moon offers opportunities that are deeper, broader, and in many ways more practical than ever before.

Some might ask: *why go back?* Besides being an exciting and very cool endeavor, there are some more substantive answers. The following is drawn from NASA's own material and other sources.

1. The Moon as Earth's Lost Archive

The Moon preserves a record of the early solar system that Earth itself has erased. Plate tectonics, weather, and oceans have reshaped our planet's surface over billions of years. The Moon, by contrast, is geologically quiet. Its ancient rocks still contain clues to the violent era when planets were forming and when Earth itself was young. By studying those rocks, scientists can reconstruct chapters of our own planet's history that no longer exist here. The Moon is not just a destination, it is an archive—one that preserves chapters of Earth's history we no longer possess.

Credit: NASA

2. A Laboratory for Living on Other Worlds

Apollo proved we could reach the Moon. The next step is learning how to stay. The lunar surface offers a nearby proving ground for technologies we will need far beyond it: habitats, life-support systems, and strategies for working in extreme environments. The Moon is close enough to allow for testing—and learning—without the risks of deep space missions to Mars.

3. Advancing Human Health and Medicine

Life on the Moon exposes astronauts to conditions impossible to replicate fully on Earth: one-sixth gravity and heightened radiation. Studying how the human body responds helps scientists better understand bone loss, muscle atrophy, and radiation exposure, among other issues. These insights don't just prepare us for space. The Moon may help us solve medical problems on Earth—by showing us how the human body fails, and adapts, in extreme environments.

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Why Go Back, continued from Page 4

4. A New Platform for Astronomy

The best place to study the universe may be a place where Earth itself disappears from the sky. For astronomers, the Moon is an observatory like no other. The far side, permanently shielded from Earth's radio emissions, offers an extraordinarily quiet environment for radio astronomy. With no atmosphere, the Moon could also host instruments capable of unprecedented resolution as well as instruments observing wavelengths that are blocked on Earth such as gamma-rays, X-rays, ultraviolet, and infrared.

5. Resources That Change the Equation

The Moon is not just scientifically interesting; it may also be practically useful. Water ice, particularly near the lunar poles, can be converted into drinking water, breathable oxygen, and even rocket fuel. The lunar soil—regolith—can potentially be used for construction and shielding. Learning to "live off the land" in space could dramatically reduce the cost and complexity of future missions.

6. A Catalyst for New Technology

One way to look at going to the Moon is that it is not a cost—it's a catalyst. We see that pushing the boundaries of exploration drives innovation. The Apollo era accelerated advances in computing, materials, and engineering. Today's return to the Moon is already spurring developments in robotics, energy systems, and autonomous operations. These technologies are likely to find applications far beyond space exploration.

7. A Stepping Stone to Mars

We can debate whether Mars is the long-term goal, but if it is, the Moon is the training ground. Missions there allow us to test spacecraft, refine procedures, and gain experience in operating far from Earth. Every challenge solved on the Moon—whether technical or human—reduces the uncertainty of future journeys deeper into the solar system. The potential downside is resources diverted from other science missions to support getting to the Moon and Mars.

8. Inspiration and Collaboration

Finally, there is something less tangible but no less important: inspiration. The effort to return to the Moon is drawing together nations, industries, and a new generation of explorers. NASA's website proclaims: "We're going back to the Moon for scientific discovery, economic benefits, and inspiration for a new generation of explorers: the Artemis Generation. While maintaining American leadership in exploration, we will build a global alliance and explore deep space for the benefit of all."

Looking Ahead

We are not going back to the Moon simply because we can. We are going because it helps us understand our past, improve life on Earth, and prepare for humanity's future in space. In that sense, the Moon is not a place we have already explored—it is a place we are only just beginning to discover.

Resources

1. NASA's Artemis site – https://www.nasa.gov/humans-in-space/artemis
2. NASA Artemis FAQ – https://www.nasa.gov/missions/nasa-answers-your-most-pressing-artemis-ii-questions/
3. Helio Highlights: The Moon as Laboratory – https://science.nasa.gov/learning-resources/science-activation/helio-highlights-july-2025/#hds-sidebar-nav-4
4. NASA Space Flight forum – https://forum.nasaspaceflight.com/index.php?topic=46317.0
5. Why going to the Moon still matters, Joseph Silk, December 12, 2022, Princeton University Press https://press.princeton.edu/ideas/why-going-to-the-moon-still-matters

Upcoming Events & Activities

April Member Meeting

Telescope Workshop and Star Party!

Wednesday, April 15th, 7:00 - 9:00 pm (ish)

Warner Park Nature Center

7311 Tennessee Highway 100, Nashville

Other Upcoming Events

The joint-venture BSAS/Dyer star parties will continue for the next few months while the observatory is undergoing renovations. Be sure to join us at our next BSAS/Dyer Star Party on **Saturday, April 25**, at Bells Bend Outdoor Center. We are expecting 400–500 sky-loving visitors! The event runs from 8:30–11:00 PM, with set-up starting around 6:00 PM. In addition to telescopes, we need help with parking and staffing the welcome table.

Call for Volunteers!!

BSAS is a non-profit, 100% volunteer operated organization. Please consider giving us a hand if you can!

Specifically, we could use some help with the following:

- Monthly Meeting Setup: Help set up the space and tech for the meetings.
- Program Committee: Help research content for our monthly meetings.
- Event Crew: Help with setting up our various events.

If you have an interest in helping with any of the above, or in any other way, please email us at volunteer@bsasnashville.com.

Night Sky Network

The Night Sky Network (NSN) program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more! You can catch up on all of NASA's current and future missions at nasa.gov. With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

Looking For Meeting Minutes?

Regular- and Board-Meeting minutes are stored on the BSAS Google Drive, and available for review once posted.

BSAS Outreach

This spring BSAS members hosted several highly successful public star parties!

After multiple rainouts, we finally had our first "Joint-Venture" star party with Dyer Observatory! The event was held on February 28 at Shelby Bottoms near downtown Nashville.

Attendance was estimated at over 500! BSAS members showcased a variety of night sky objects and enjoyed answering tons of visitors' questions throughout the evening!

The BSAS Welcome Table team loaned out red light keychains, passed out kids astro crosswords, answered questions, and gave out NASA-provided lithographs.

On March 21, we had our second joint star party with Dyer, this one at the Fairview Recreation Complex.

Another great crowd enjoyed views of the 3-day crescent Moon, Sea of Crises, and lit mountain peaks near the South Pole, where Artemis IV plans to land.

Others showed Jupiter, pointing out the cloud belts and 3 Galilean moons. Io was occulted the whole time!

Guests also were treated to views of several star systems, nebulae and clusters as well as several passing satellites!

The Night Sky Network Celebrates Artemis II

The team at NSN has assembled a collection of resources related to the Moon which have useful information for outreach events. They can be found at https://science.nasa.gov/solar-system/skywatching/night-sky-network/night-sky-network-celebrates-artemis-ii/.

- Weird Ways to Observe the Moon
- Why Does the Moon Have Phases?
- Exploring Moon Phases
- Skywatcher's Guide to the Moon
- Why Doesn't the Moon Fall to Earth?
- Moon Myths from Around the World
- Apollo at 50 Moon Toolkit
- Can You See The Flag On the Moon?
- Earth Craters and Moon Map

International Observe the Moon Night this year will be on September 19, 2026. But why wait?

History of Lunar Exploration

NASA Moon Team
SEPTEMBER 27, 2017
By Paul D. Spudis, Lunar and Planetary Institute

The Moon has held our imaginations for millennia, yet it is only in modern times that we have visited this body, first with robotic machines and then with astronauts. Exploration of the Moon has taught us much about the evolution of the solar system and ourselves. We've known for centuries about the effects on tides and biological cycles from a waxing and waning Moon. But it took space-age exploration to show us how the Moon is connected to human existence on a very fundamental level.

The Space Age arrives: Robots to the Moon

With the shocking launch of Sputnik 1 in October 1957, the Moon changed from a distant silver disk in the sky to a real place, a probable destination for probes and people. The Soviets struck first, flying Luna 1 by the Moon in January 1959. They followed this success with a number of other robotic probes, culminating later the same year with Luna 3, which photographed the far side of the Moon, never visible from Earth. From these early, poor quality images, we discovered that the far side has surprisingly little of the dark, smooth mare plains that cover about a third of the near side. Other surprises would soon follow.
In response to the 1961 flight of Soviet cosmonaut Yuri Gagarin, President John F. Kennedy committed the United States to landing a man on the Moon by the end of the decade. The Apollo program greatly accelerated interest in exploring the Moon. To ensure that human crews could safely land and depart from the lunar surface, it was important to understand its environment, surface and processes. At the same time, the robotic precursors would collect valuable information, constituting the first scientific exploration of another planetary body.

America's first step was the Ranger series of hard landers. These probes were designed to photograph the lunar surface at increasing levels of detail before crashing into the surface. After several heartbreaking failures, Ranger 7 succeeded in sending back detailed television pictures of Mare Nubium (Sea of Clouds) in July 1964. From the Ranger probes, we discovered that craters, those strange holes that pepper the lunar surface, range down in size to the very limits of resolution. Micrometeorite bombardment has ground up the surface rocks, creating a fine powder (called regolith). Two more Ranger spacecraft flew to the Moon, culminating with the 1965 Live From the Moon television images from Ranger 9, careening into the spectacular lunar crater Alphonsus.

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The BSAS 2026 Member Wall Calendar is SOLD OUT!!

But fear not!.. We will continue to take orders and print more batches as orders come in! Just head over to bsasnashville.com and order one today! Again a VERY special thanks to all the BSAS members who shared some of their amazing images to make this project possible!! Calendars are $20 for members, $25 for non-members.

Click here for a preview!

We got a much closer look at the Moon's surface in early 1966. Again, the U.S.S.R. led the way by safely soft-landing the robotic Luna 9 spacecraft on the mare plain, Oceanus Procellarum. It found the surface to be powdery dirt strewn with a few rocks, but strong enough to support the weight of a landed spacecraft. In May 1966, the United States followed with the landing of the complex robotic spacecraft, Surveyor 1. It sent television pictures back to Earth, showing the surface and its physical properties in detail. Later Surveyor missions (five in all), collected physical data on soil properties, including its chemical composition. Analysis of the lunar surface showed that the dark maria had a composition similar to terrestrial basalt, a dark iron-rich lava, while the highlands near the very fresh rayed crater Tycho were lighter in color and strangely enriched in aluminum. This led to an astonishing revelation about the Moon's early history after the first physical samples were later returned to Earth by the Apollo 11 crew.

The final robotic missions mapped the entire Moon from orbit for the first time and obtained extremely high resolution pictures of potential landing sites, certifying their safety for the Apollo missions to follow. This U.S. Lunar Orbiter series conducted five mapping missions, whereby boulders as small as a couple of meters could be seen. They also obtained amazing views of scientifically interesting targets, such as the first "pilot's eye" view of the large, brightly rayed crater Copernicus, dubbed the "picture of the century" by news reporters. More "pictures of the century" were soon to be obtained by people walking on the Moon.

From these robotic missions, we learned that the Moon was cratered and pitted at all scales. The surface was powdery dust but strong enough to support the weight of people and machines. The Moon had no global magnetic field or atmosphere and was made up of common rock types, similar to those found on Earth. Now the stage was set for the next giant leap in understanding lunar and planetary history.

Apollo: The Humans Follow

Apollo was the finest hour of America's space program. In just eight years, we had gone from zero human spaceflight capability to landing men on the surface of the Moon. From these missions, scientists developed a new view of the origin and evolution of the planets and of life on Earth.

The 1968 Christmastime flight of Apollo 8 was a milestone – humans left low Earth orbit and reached the Moon, circling it for almost a day. For the first time, people gazed on the Moon from orbit. They found it desolate and gray, but saw nothing to prevent journeying the final 62 miles to the surface. In May of 1969, Apollo 10 orbited the Moon, testing the lunar lander. It was a dress rehearsal for the manned landing to come. Each of the Apollo missions – and the astronauts who remained in the orbiting Command Module during the subsequent landed missions – took hundreds of high-resolution photographs of the Moon's surface. Their visual observations added to the burgeoning knowledge of lunar geology.

In a harrowing descent marked by program alarms from an overloaded computer and freezing fuel lines, Neil Armstrong and Buzz Aldrin in Apollo 11 safely landed in Mare Tranquillitatis (Sea of Tranquility) on July 20, 1969. They walked on the Moon for over 2 hours, collecting rocks and soil and laying out experiment packages. From the Apollo 11 samples, we learned that the dark maria are ancient volcanic lavas, having crystallized over 3.6 billion years ago. Lunar samples are similar in chemical composition to Earth rocks but extremely dry, with no evidence for any significant water on the Moon, past or present. Small bits of white rock were found in the soil, blasted to the site from distant highlands. Combined with the earlier results of the Surveyor 7 chemical analysis at the crater Tycho, scientists reasoned that the ancient Moon had been nearly completely molten, covered in a layer of liquid rock. This idea of an early "magma ocean" has since been applied to all the rocky planets. Micrometeorite bombardment ground up the bedrock and gases from the sun were implanted on the surfaces of the lunar dust grains. While preserved on the Moon, most of this ancient, shared history has been lost on our geologically active Earth.

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In November 1969, Apollo 12 touched down in Oceanus Procellarum (Ocean of Storms), near the previously landed Surveyor 3 spacecraft. This mission demonstrated our ability to precisely land on the Moon, a skill critical for navigating to future sites in the highlands and rugged areas. Astronauts Pete Conrad and Alan Bean explored the site in two moonwalks. They collected over 75 pounds of samples and deployed a nuclear-powered experiment package. Lavas from this landing site are slightly younger than those of Apollo 11, but still over 3.1 billion years old. The highland component here is different from that of the first landing; it has an unusual enrichment in radioactive and rare-earth elements, suggesting that the Moon's crust is laterally variable and complex. As a bonus, the crew also returned a light colored soil, possibly part of a "ray" cast-off and flung outward during the formation of the distant crater Copernicus – 186 miles north of the landing site. Dating of glass from this soil suggests that Copernicus is "only" 900 million years old, ancient by Earth standards but one of the youngest major features on the Moon.

The explosion of an oxygen tank on Apollo 13 prevented it from landing on the Moon. The three-man crew returned safely to Earth — a memorable saga closely followed around the world. Apollo 14 was sent to a highlands site east of Apollo 12, near the ancient crater Fra Mauro. This site was chosen to collect rocks blasted out from deep within the Moon by the formation of the giant Imbrium impact basin, a crater over 620 miles in diameter and situated 3,723 miles north of the landing site. Astronauts Alan Shepard and Edgar Mitchell conducted two moonwalks on the lunar surface. Towing a pull-cart filled with tools, they returned over 95 pounds of rock and soil. Samples from the Fra Mauro highlands are breccias (complex mixtures of ancient rocks), broken and crushed by the giant impact that created the Imbrium basin. From these samples, scientists learned the Imbrium impact occurred more than 3.8 billion years ago, before the dark mare lavas flooded the Moon's surface but well after the formation of the Moon's crust over 4.4 billion years ago. After this third landing, a new picture of lunar evolution was emerging. The Moon was not a simple lump of cold meteorite nor was it an active volcanic inferno, but a planetary body with its own complex, subtle history.

In July 1971, with Apollo 15, NASA began the first of three what were termed "J" missions – long duration stays on the Moon with a greater focus on science than had been possible previously. Apollo 15, whose lunar module Falcon spent three days on the lunar surface, was the first mission to use a lunar rover — a small electric cart that allowed the crew to travel many kilometers away from their landing craft. On three lunar rover excursions Dave Scott and Jim Irwin explored the beautiful Hadley-Apennine landing site — a valley at the base of the main rim of the huge Imbrium basin that included both mare and highland rocks. The crew returned the "Genesis Rock," composed almost entirely of a single mineral (plagioclase feldspar), representing the most ancient crustal rocks on the Moon. They also found small fragments of an emerald green glass, formed when magma from the deep mantle explosively erupted through the crust in a spray of lava. They sampled the mare bedrock at the edge of Hadley Rille, a giant canyon and ancient lava channel, formed over 3.3 billion years ago. The Apollo 15 mission obtained over 80 kilograms of samples and its command module carried chemical sensors and cameras that mapped almost 20 percent of the Moon's surface from orbit.

Apollo 16 was sent to the ancient crater Descartes, deep in the lunar highlands in April 1972. Astronauts John Young and Charlie Duke spent three days exploring the site. They traveled over 18 miles and collected more than 206 pounds of samples. They deployed and operated the first astronomical telescope on the Moon. The highlands rocks, almost all breccias, attest to a long and complicated history of repeated impacts from space. Ancient crustal rocks, similar to the Genesis Rock of Apollo 15, were also found. One puzzling observation by the crew was the measurement of a very strong magnetic field on the surface. Even though the Moon has no global magnetic field, some lunar samples have remnant magnetism, suggesting that they cooled in the presence of strong fields. Although we still do not understand lunar magnetism, with the flight of Lunar Prospector 26 years later, the Apollo 16 result would become a little clearer.

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The last human mission to the Moon to date, Apollo 17, was sent to the edge of Mare Serenitatis (Sea of Serenity) -- another combination mare/highland site -- in December 1972. Gene Cernan and Jack Schmitt (the first professional geologist sent to the Moon) spent three days thoroughly exploring the Taurus-Littrow valley. They returned over 242 pounds of samples and deployed a set of new surface experiments. They made startling and significant discoveries. The crew found 3.6-billion-year old orange volcanic ash. From the mountains, they returned crustal rocks and complex breccias created during the impact that formed the Serenitatis basin almost 3.9 billion years ago. Lavas at this site are over 3.6 billion years old, documenting at least a 700-million-year span of lava flooding on the Moon.

The Apollo missions revolutionized planetary science. The early solar system was one of colliding planets, melted surfaces and exploding volcanoes — a complex and violent geologic mixture. The concept of an “early bombardment” 3.9 billion years ago is now widely accepted for all the planets, but the actual evidence comes from study of the lunar samples. The constant rain of micrometeorites grinds away all airless planetary surfaces, albeit this sandblaster is extremely slow (the Moon erodes at a rate of roughly 1 millimeter per million years.) While Apollo did a magnificent job of outlining lunar history, more surprises were waiting to be unveiled.

The Robots Return: Clementine and Lunar Prospector

In the 1990s, two small robotic missions were sent to the Moon. For 71 days in 1994, the joint NASA-Strategic Defense Initiative Organization Clementine mission orbited the Moon, testing sensors developed for space-based missile defense, as well as mapping the color and shape of the Moon. From Clementine, we documented the enormous south pole-Aitken impact basin, a hole in the Moon 1, 616 miles across and over 8 miles deep. This basin is so large, it may have excavated the entire crust down to the mantle. The color data from Clementine, combined with Apollo sample information, allows us to map regional compositions, creating the first true “rock map” of the Moon. Finally, Clementine gave us a tantalizing hint that permanently dark areas near the south pole of the Moon may contain frozen water deposited over millions of years by impacting comets.

Soon after Clementine, the Lunar Prospector spacecraft mapped the Moon’s surface from orbit during its mission in 1998 and 1999. These data, combined with those from Clementine, gave scientists global compositional maps showing the complicated crust of the Moon. Lunar Prospector also mapped the surface magnetic fields for the first time. The data showed that the Apollo 16 Descartes highlands is one of the strongest magnetic areas on the Moon, explaining the surface measurements made by John Young in 1972. The mission also found enhanced quantities of hydrogen at both poles, adding to the lively controversy over the welcome prospect for lunar ice.

The Moon throws stones at us: Lunar meteorites

In 1982, we made a startling discovery. A meteorite found in Antarctica, ALHA 81005, is from the Moon! The rock is a complex regolith breccia, similar to those returned by the Apollo 16 mission in 1972. We have since found over 50 meteorites that, as determined from their unique chemical composition, come from the Moon. These rocks were blasted off the lunar surface by impacts, then captured and swept up by Earth as it moves through space. The lunar meteorites come from random places all over the Moon and they provide data complementary to the Apollo samples and the global maps of composition obtained by Clementine and Lunar Prospector.

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The Future and Significance of Lunar Exploration

Now we are preparing for humanity's return to the Moon. Over the next couple of years, at least four international robotic missions will orbit the Moon, making global maps of unsurpassed quality. We will soft land on the Moon, particularly the mysterious polar regions, to map the surface, examine the volatile deposits and characterize the unusual environment there. Ultimately, people will return to the Moon. The goals of lunar return this time are not to prove that we can do it (as Apollo did) but to learn how to use the Moon to support a new and growing spacefaring capability. On the Moon, we will learn the skills and develop the technologies needed to live and work on another world. We will use this knowledge and technology to open the solar system for human exploration.

The story of the Moon's history and processes is interesting in its own right, but it has also subtly shifted perspectives on our own origins. One of the most significant discoveries of the 1980s was the giant impact 65 million years ago in Mexico that led to the extinction of the dinosaurs, allowing the subsequent rise of mammals. This discovery (made possible by recognizing and interpreting the telltale chemical and physical signs of hypervelocity impact) came directly from the study of impact rocks and landforms stimulated by Apollo. Scientists now think that impacts are responsible for many, if not most, extinction events in the history of life on Earth. The Moon retains this record and we will read it in detail upon our return.

By going to the Moon, we continue to obtain new insights into how the universe works and our own origins. Lunar exploration revolutionized understanding of the collision of solid bodies. This process, previously thought to be bizarre and unusual, is now viewed as fundamental to planetary origin and evolution – an unexpected connection. By returning to the Moon, we anticipate learning even more about our past, and equally importantly, obtaining a glimpse into our future.

Source: https://science.nasa.gov/solar-system/moon/history-of-lunar-exploration/

Become a Member of BSAS! Visit bsasnashville.com to join online. All memberships have a vote in BSAS elections and other membership votes.

Also included are subscriptions to the BSAS and Astronomical League newsletters. Annual dues: • Regular: $25 • Family: $35 • Senior/Senior Family: $20 • Student:* $15 * To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.

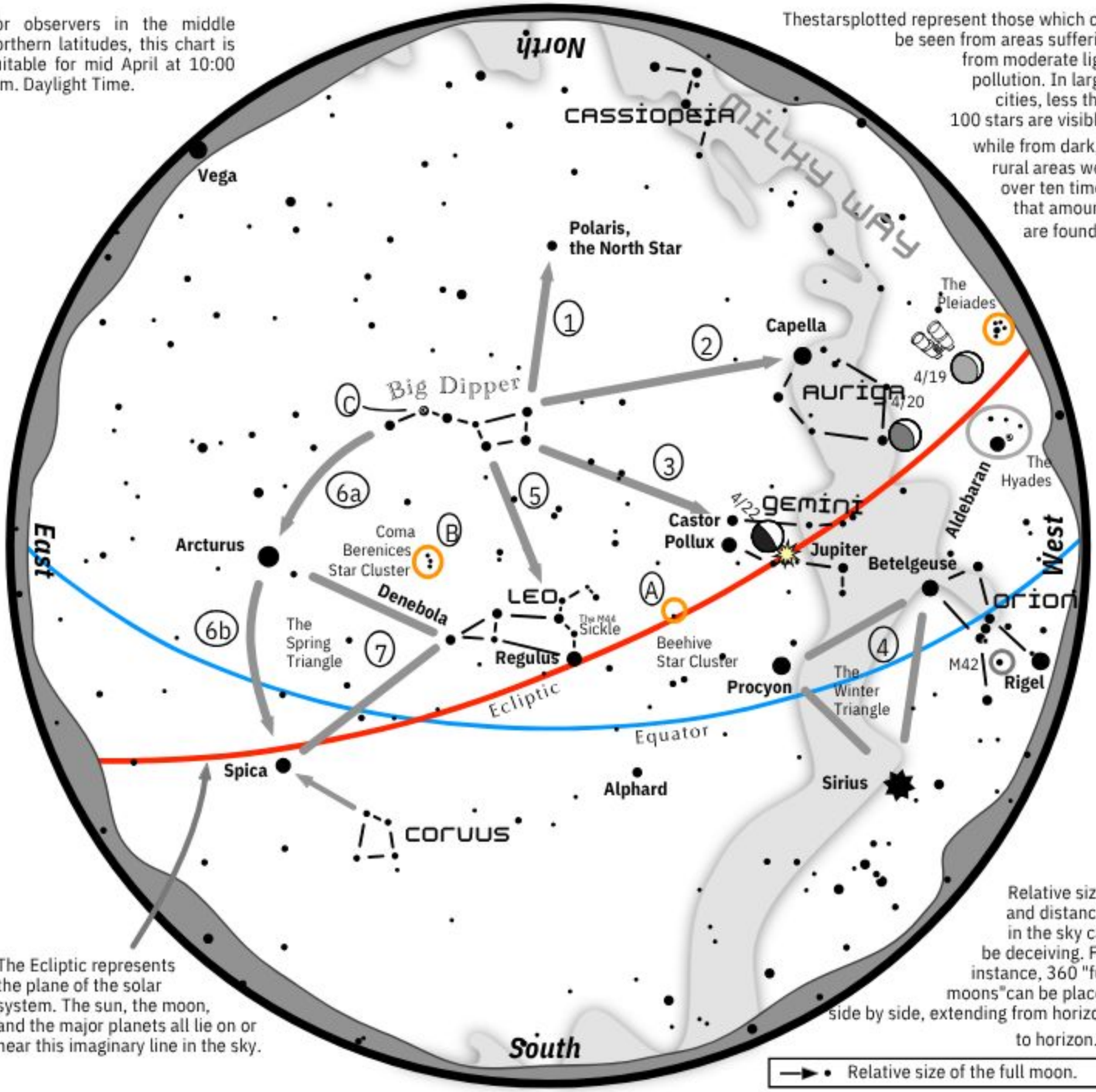
BSAS
Barnard-Seyfert Astronomical Society

Navigating the mid–April Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for mid April at 10:00 p.m. Daylight Time.

Thestarsplotted 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 April night sky: Simply start with what you know or with what you can easily find.

1. Extend an imaginary line north from the two stars at the tip of the Big Dipper's bowl. It passes Polaris, the North Star.
2. Draw another imaginary line west across the top two stars of the Dipper's bowl. It strikes Capella low in the northwest.
3. Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
4. Look in the west-southwest for the bright Winter Triangle stars of Sirius, Procyon, and Betelgeuse.
5. Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
6. Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica.
7. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.

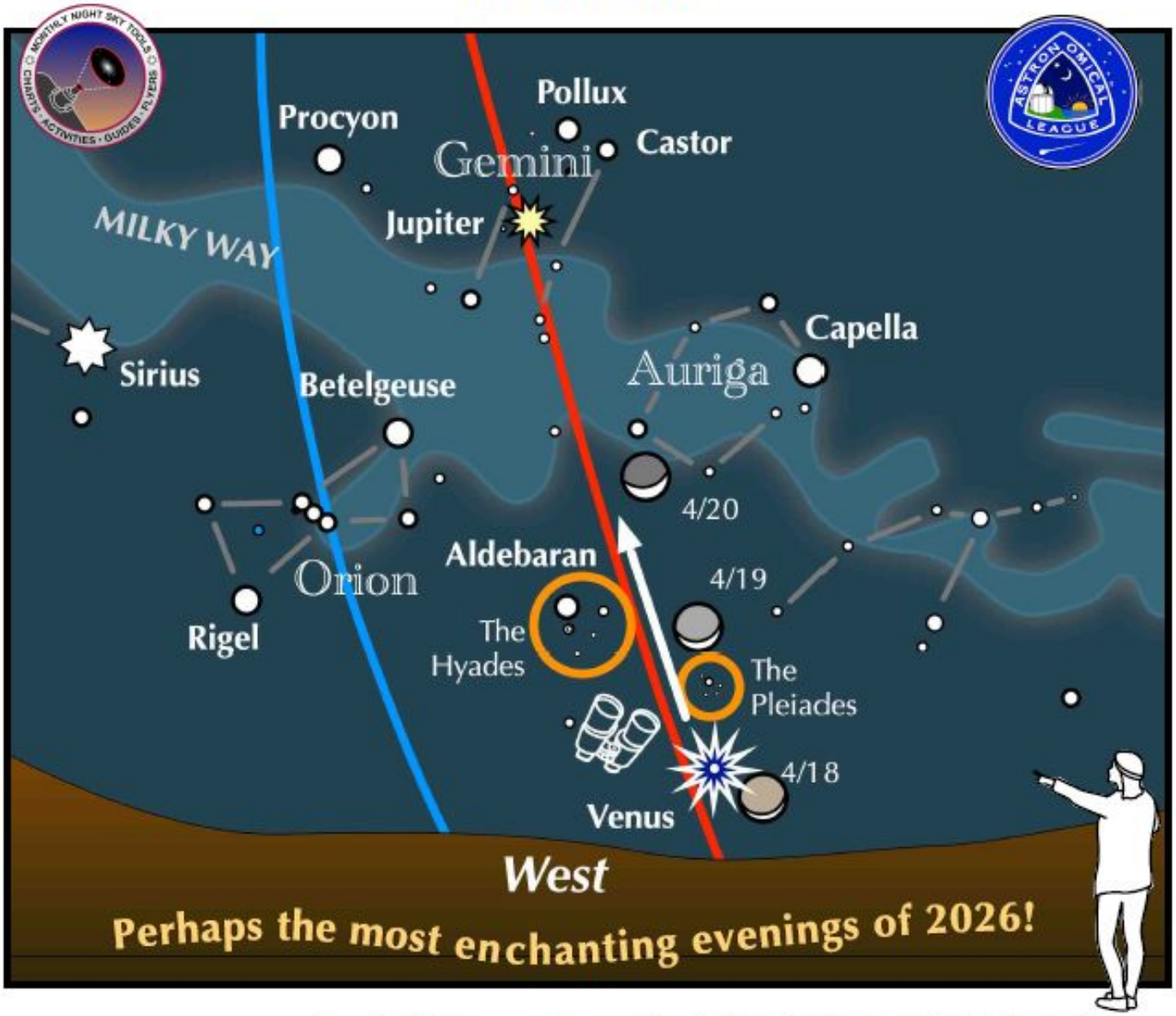
Binocular Highlights

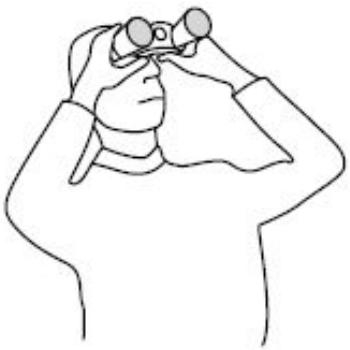
A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.
B: Look nearly overhead for the loose star cluster of Coma Berenices.
C: In the Big Dipper's handle shines Mizar next to a dimmer star, Alcor.

Astronomical League
www.astroleague.org

Duplication allowed and encouraged for all free distribution.

If you can see only one celestial event this April, see this one.





Enhance the scene – use binoculars!

On April 18, 19, & 20, look low in the west-northwest 60 minutes after sunset.

- On the first evening, the crescent moon, glowing full with earthshine, floats near brilliant Venus, while on the second evening, it moves just above the delicate Pleiades star cluster, and to the right of the bright star Aldebaran and the intriguing Hyades star cluster.
- On the third evening, the slightly thicker, but more pronounced crescent moon hangs above the Pleiades and the Hyades.
- Above it all, bright Jupiter plows through Gemini, shining near Castor and Pollux.

www.astroleague.org

In honor of the club's 90th anniversary we partnered with Hatch Show Print to create a unique poster that would honor the achievement of the club. For those who don't know Hatch Show has been making posters for a variety of events and concerts for 140 years. In all that time we are their first astronomy club. On the poster at the center is the moon. This was made from a wood grained stencil that the shop has used for over 50 years. To contrast that the telescope that the people are using is a brand new stencil made for our poster. The poster has three colors. First the pale yellow color of the moon was applied. Next the small stars, circles, and figures at the bottom were colored in metallic gold. The third color is a blue for the night sky. Where it overlaps with the metallic gold it creates a darker blue leaving the figures at the bottom looking like silhouettes.

This was a one-time printing so the 100 that we have are all that will be printed.

The prints are approximately 13 3/4” x 22 1/4” and are available for $20 at our membership meetings, or $25 with shipping by ordering through bsasnashville.com. Frame not included.

BSAS
Barnard-Seyfert Astronomical Society

Next BSAS meeting
Wednesday, April 15, 7:00 p.m.

Warner Park Nature Center
7311 Tennessee Highway 100
Nashville, TN 37221