

The ECLIPSE

The Newsletter of the Barnard-Seyfert Astronomical Society



July 2023



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On June 25, 2023, NASA's James Webb Space Telescope turned to famed ringed world Saturn for its first near-infrared observations of the planet. The initial imagery from Webb's NIRCam (Near-Infrared Camera) is already fascinating researchers.

Saturn itself appears extremely dark at this infrared wavelength observed by the telescope, as methane gas absorbs almost all of the sunlight falling on the atmosphere. However, the icy rings stay relatively bright, leading to the unusual appearance of Saturn in the Webb image.

Image: NASA, ESA, CSA, Matthew Tiscareno (SETI Institute), Matthew Hedman (University of Idaho), Maryame El Moutamid (Cornell University), Mark Showalter (SETI Institute), Leigh Fletcher (University of Leicester), Heidi Hammel (AURA)

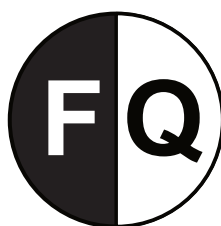
Image Processing: Joseph DePasquale (STScI)

webbtelescope.org

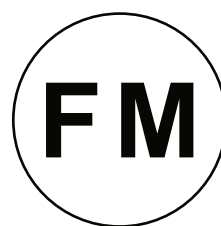
On the Cover: The Orion spacecraft for the Artemis III mission is in view in the high bay of the Neil Armstrong Operations and Checkout Building at NASA's Kennedy Space Center in Florida on June 22, 2023. The Orion spacecraft is being prepared for its launch atop the Space Launch System rocket on Artemis III, which will send astronauts, including the first woman and first person of color, on a mission to the surface of the Moon. Image credit: [NASA/Cory Huston](#)



Jul 17
Aug 16



Jul 25
Aug 24



Jul 3
Aug 1



Jul 9
Aug 8

Happy Birthday Jane Luu by Robin Byrne

This month, we celebrate the accomplishments of a woman who helped discover a new part of our solar system. Jane Luu was born July 15, 1963 in Saigon, South Vietnam. In addition to her parents and three siblings, Luu was also surrounded by a large extended family who all lived nearby, including many cousins with whom to make mischief. Her father was a clerk for the US army, while her mother worked at home taking care of the family. Luu learned French from her father and attended a French school, where memorization was emphasized over understanding, and no science was taught. Meanwhile, Luu, when not in school, put her creative mind to work through writing stories and making crafts. When she had the money to spare, she would rent books from neighborhood shops.



In 1975, when Luu was 11 years old, her father came home with the news that they would have to leave the country. The Vietnam War had ended, and since he worked for the US, it was not safe for them to stay. That night, they packed the essentials, with Luu's mother planning for the possibility of living on the street and packing accordingly. They spent the next five days camped outside the airport. Thanks to her father's connections, they were able to fly out on a US army plane. Luu's family spent the next week at a refugee camp on Wake Island, in the Pacific Ocean. The next stop was another refugee camp, this time in California at Camp Pendleton. Living in a large tent with dozens of strangers in a new place was exciting for the young, adventurous girl.

The family eventually found rental places in which to stay temporarily, while Luu's father learned skills to get a new job. Luu's maternal aunt visited the family and invited them to move back with her to Paducah, Kentucky. So while Luu's father continued to stay in California to find work, the rest of the family piled into one car, along with her aunt, uncle and two cousins, and made the long trip to Paducah. Over the next year, they made Kentucky their home. When Luu's father got work as a bookkeeper in Ventura, California, back to California they went. Luu's mother also got a job, doing work in an electronics factory. Finally, they were becoming settled in the US, though Luu's mother never did learn English.

When Luu was in 8th grade, she was given the opportunity to skip the rest of that year and move into 9th grade. She grabbed the opportunity. Luu easily got good grades, not feeling challenged by the work at all. When it came time to choose a college, Luu only knew about a couple schools in California, so her father bought a guide to the top colleges in the US. Luu applied to the top ten on the list, being accepted to MIT, Stanford, and Princeton. Ultimately, she chose Stanford because they offered the best financial assistance.

So, in 1980, Luu began her college career at Stanford. Following her father's advice, Luu began as a Mechanical Engineering major, but she didn't enjoy it. A friend suggested she try physics, and Luu found her calling. She graduated in 1984 with a bachelor's degree in physics.

After graduation, Luu got a job working at the Jet Propulsion Lab, which was her first exposure to astronomy and space. She was particularly enthralled by the images of the planets that the various JPL spacecraft were sending back to Earth. Luu wanted to know more about our solar system.

In 1986, Luu was accepted to the graduate program in the Earth, Atmospheric and Planetary Science Department at MIT. But first, during the summer before her graduate school year began, Luu traveled to Kathmandu, Nepal to do volunteer work for Save The Children, teaching English in one of the villages. That summer, Luu also traveled to Tibet with some Peace Corps volunteers, having several adventures along the way, but creating indelible memories of a unique place. This was the beginning of her love for travel.

That Fall, Luu began her graduate career at MIT, and was in heaven. She had the freedom to study everything she found of interest. She began working with David Jewitt, exploring the solar system's small bodies: asteroids, comets, and moons. In 1987, they began a project to study the outermost reaches of the solar system, expecting to confirm that it was mostly empty. This project would last for the next two decades. In the meantime, Luu pursued her own research, studying the connection between comets and asteroids. This eventually became her doctoral thesis. While Luu was working on her thesis, Jewitt took a position at the University of Hawaii, so Luu moved to Hawaii to continue working with him, while still being enrolled at MIT. Using the telescopes on Mauna Kea, they continued their research projects.

In 1990, Luu graduated from MIT with her PhD in Astronomy. She received a post-doctoral fellowship at the Harvard-Smithsonian Center for Astrophysics in Massachusetts, though she still managed to spend as much time in Hawaii as she possibly could.

Luu and Jewitt continued studying the outer solar system, and in 1992, their efforts finally paid off. On August 30, using the 2.2 meter telescope on Mauna Kea, they found an object in the outer solar system that was orbiting the Sun. They first dubbed it "Smiley" after the elusive spy in the John le Carré novels, but it was later given its official name of 1992 QB1. It would be the first Kuiper Belt Object to ever be discovered.

In recognition of her contributions to this major discovery, Luu received numerous honors, including the Annie J. Cannon Award in Astronomy from the American Astronomical Society, and a Hubble Fellowship from the Space Telescope Science Institute. Luu used the Hubble Fellowship to spend a year at the University of California at Berkeley, and then the following year at Stanford. In 1994, after the Fellowship had been completed, Luu took a faculty position at Harvard University in the Astronomy Department. Four years later, Luu left Harvard for a teaching position at the University of Leiden in the Netherlands. She remained there for the next three years. It was here that she met her husband, fellow astronomer Ronnie Hoogerwerf. They now have one daughter.

In 2001, Luu changed course in her career. While up to this point she was focused on doing research, now she decided to work on instrumentation, joining the Technical Staff at the MIT Lincoln Laboratory. Luu felt that her understanding of science instruments was lacking, and decided the best way to learn was by building them herself. So she went from being a confident observational astronomer to an engineering apprentice, but enjoyed the opportunity to do and learn about something new.

However, that didn't mean that Luu was no longer doing astronomical research. She continued collaborating with Jewitt. In December 2004, they announced the discovery of water ice on the Kuiper Belt Object, Quaoar. They hypothesize that the water ice is normally only found under the surface, but was exposed due to a collision in Quaoar's past.

Luu's work with Jewitt, and also with Michael Brown, led to another round of awards for all three. In 2012, they were awarded the Kavli Prize in recognition of "... discovering and characterizing the Kuiper Belt and its largest members, work that led to a major advance in the understanding of the history of our planetary system". That same year, Luu and Jewitt were awarded the Shaw Prize "...for their discovery and characterization of trans-Neptunian bodies, an archeological treasure dating back to the formation of the solar system and the long-sought source of short period comets."

Luu continues to study the small bodies in our solar system, and, so far, has discovered 37 minor planets. One of the asteroids in the Asteroid Belt was even named after her: Asteroid 5430 Luu. From a challenging childhood to an impressive career, Jane Luu is a woman to be admired. Whether you enjoy gazing at comets, or spotting an asteroid, part of what we know about those objects is thanks to this month's honoree, so give a shout out to Jane Luu.

References:

[Wikipedia - Luu](#)

[Opening My Eyes To The Things Beyond Earth
As Told By Jane X. Luu - The Kavli Prize](#)

[Autobiography of Jane Luu - The Shaw Prize](#)

Next Membership Meeting:

Wednesday, July 19, 7:30 pm

Cumberland Valley
Girl Scout Council Building
4522 Granny White Pike

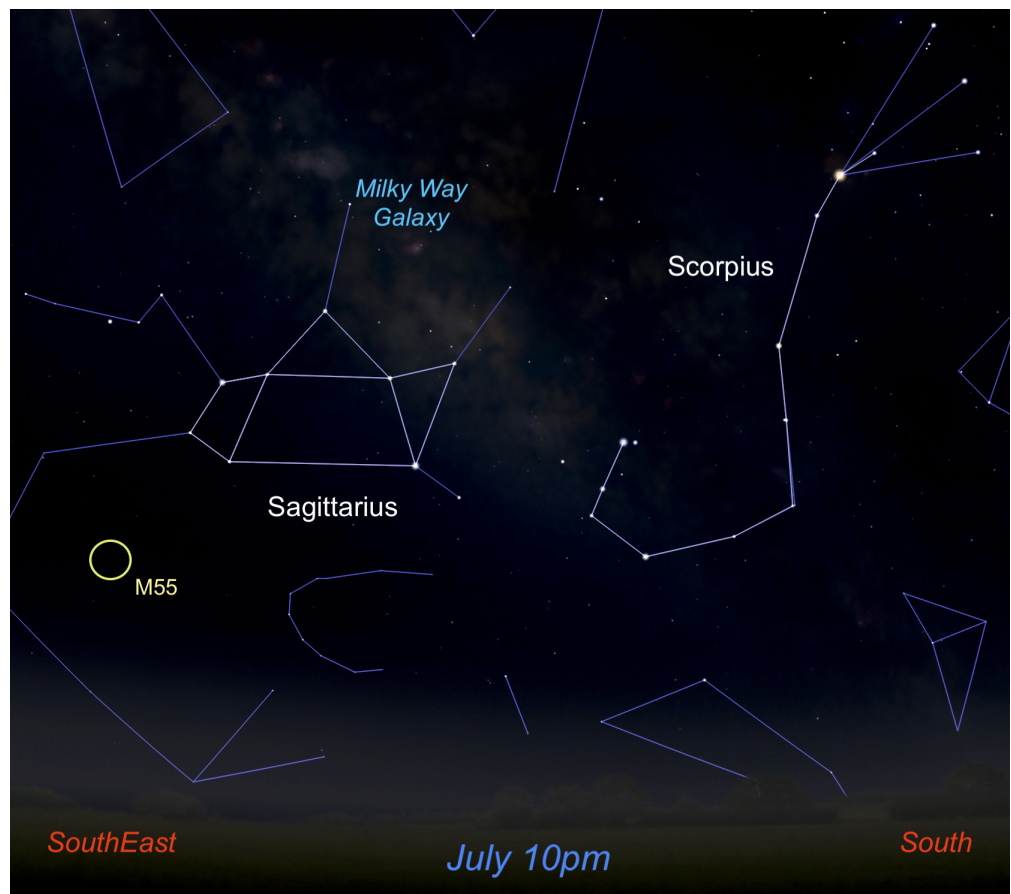
Find A Ball of Stars by Linda Shore, Ed.D

French astronomer Charles Messier cataloged over 100 fuzzy spots in the night sky in the 18th century while searching for comets – smudges that didn't move past the background stars so couldn't be comets. Too faint to be clearly seen using telescopes of the era, these objects were later identified as nebulae, distant galaxies, and star clusters as optics improved. Messier traveled the world to make his observations, assembling the descriptions and locations of all the objects he found in his Catalog of Nebulae and Star Clusters. Messier's work was critical to astronomers who came after him who relied on his catalog to study these little mysteries in the night sky, and not mistake them for comets.

Most easily spotted from the Southern Hemisphere, this

“faint fuzzy” was first cataloged by another French astronomer, Nicholas Louis de Lacaille in 1752 from Southern Africa. After searching many years in vain through the atmospheric haze and light pollution of Paris, Charles Messier finally added it to his catalog in July of 1778. Identified as Messier 55 (M55), this large, diffuse object can be hard to distinguish unless it's well above the horizon and viewed far from city lights.

But July is great month for getting your own glimpse of M55 – especially if you live in the southern half of the US (or south of 39°N latitude). Also known as the “Summer Rose Star,” M55 will reach its highest point in northern hemisphere skies in mid-July. Looking towards the south with a pair of binoculars well after sunset, search for a dim (mag 6.3) cluster of stars below the handle of the “teapot” of the constellation Sagittarius. This loose collection of stars appears about 2/3 as large as the full Moon. A small telescope may resolve the individual stars, but M55 lacks the dense core of stars found in most globular clusters. With binoculars, let your eyes wander the “steam” coming from the teapot-shaped Sagittarius



Look to the south in July and August to see the teapot asterism of Sagittarius. Below the handle you'll see a faint smudge of M55 through binoculars. More “faint fuzzies” can be found in the steam of the Milky Way, appearing to rise up from the kettle. Image created with assistance from Stellarium:

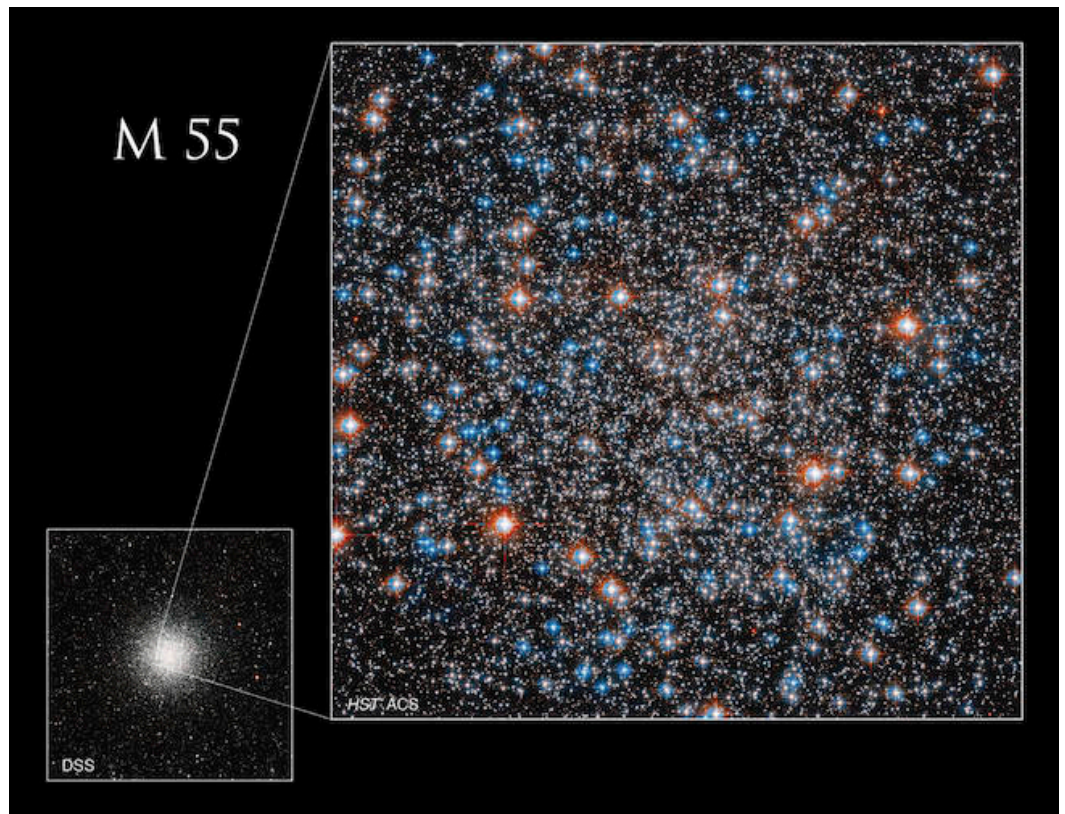
stellarium.org

(actually the plane of the Milky Way Galaxy) to find many more nebulae and clusters.

As optics improved, this fuzzy patch was discovered to be a globular cluster of over 100,000 stars that formed more than 12 billion years ago, early in the history of the Universe. Located 20,000 light years from Earth, this ball of ancient stars has a diameter of 100 light years. Recently, NASA released a magnificent image of M55 from the Hubble Space Telescope, revealing just a small portion of the larger cluster. This is an image that Charles Messier could only dream of and would have marveled at! By observing high above the Earth's atmosphere, Hubble reveals stars

inside the cluster impossible to resolve from ground-based telescopes. The spectacular colors in this image correspond to the surface temperatures of the stars; red stars being cooler than the white ones; white stars being cooler than the blue ones. These stars help us learn more about the early Universe. Discover even more: <https://www.nasa.gov/feature/goddard/2023/hubble-messier-55>

The Hubble Space Telescope has captured magnificent images of most of Messier's objects. Explore them all: <https://www.nasa.gov/content/goddard/hubble-s-messier-catalog/>



The large image shows just the central portion of M55 taken by the Hubble Space Telescope. Above Earth's atmosphere, this magnificent view resolves many individual stars in this cluster. How many can you count through binoculars or a backyard telescope?

Original Image and Credits: NASA, ESA, A. Sarajedini (Florida Atlantic University), and M. Libralato (STScI, ESA, JWST); Smaller image: Digital Sky Survey; Image Processing: Gladys Kober

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!

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, May 17, 2023

The Barnard-Seyfert Astronomical Society met at the Girl Scouts Center and on-line via Zoom on Wednesday, May 17, 2023, Tom Beckermann presiding.

Matt Harbison, Barnard Astronomical Society, Chattanooga, Tennessee, presented via Zoom "Electronically Assisted Astrophotography 101 / Modern Astrophotography." Matt's website is at <https://space4everybody.com/>.

Treasurer's report: Theo Wellington reported there was \$10,529.04 in the Truist account and \$146.66 in the PayPal account. The post office box renewed at \$226 annually. The Astronomical League dues will be \$5.00 per BSAS member. An additional Hatch Show Print poster was sold.

Membership report: There were 233 members.

Social media report: There were about 2,100 likes and 2,200 followers on Facebook and 324 followers on Twitter.

Outreach and star parties: The Messier Marathon was held April 22/23. Six persons participated and the clouds stayed away for the first part of the night. The April 29 star party was rained out. Chuck Schlemm was at the Adventure Science Center on Astronomy Day, with the Artemis and Beyond exhibit. Upcoming events include a private star party at the Water Valley Overlook, a public star party is scheduled for May 27 at Cornelia Fort Air Park; a public star party is scheduled for June 17 at Montgomery Bell State Park; a private star party is scheduled for June 27 at Natchez Trace Mile Marker 435.3. The next monthly membership meeting is scheduled for June 21. The Green Bank Star Quest is scheduled for June 21-24.

Other business: Theo reported that she has one quote for solar eclipse glasses. Cost should be in the \$0.50 - \$0.60 range.

Respectfully submitted,

Bud Hamblen
Secretary

Barnard-Seyfert Astronomical Society Minutes of a Regular Meeting of the Board of Directors Held On Wednesday, June 7, 2023

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held on June 7, 2023, online, Dr. Tom Beckermann presiding. Logged in were Tom Beckermann, Chip Crossman, Tony Drinkwine, Bud Hamblen, Keith Rainey, Andy Reeves and Theo Wellington. The minutes of the May 3, 2023, board meeting were adopted without discussion. Tom said he will be unavailable for the June and August member meetings.

Membership report: Keith is updating the membership roster to be sent to the Astronomical League.

Outreach: Public star parties are scheduled for June 24, 2023, at Bowie Nature Park, Fairview, and Cornelia Fort Airpark, Nashville, and July 22, 2023, at Bowie Nature Park. Can we get the group camp at Pickett State park for a New Moon weekend?

Private star parties: The Park Service permit date for June is June 17, and for July is July 15.

Equipment loans: We are trying to hunt down the Coronado H-Alpha solar telescope.

Meeting programs: Chip suggested we get a speaker from the National Weather Service. Bud will present only safely viewing the Sun in September.

There being no further business, the meeting was adjourned at 8:30 PM.

Respectfully submitted,

Bud Hamblen
Secretary

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, June 21, 2023

The Barnard-Seyfert Astronomical Society met at the Girl Scouts Center and on-line via Zoom on Wednesday, June 21, 2023, Theo Wellington presiding.

Treasurer's report: Theo Wellington reported there was \$10,458.04 in the Truist account and \$260.62 in the PayPal account. The post office box renewed at \$226 annually. The Astronomical League dues will be \$5.00 per BSAS member (the club has about 134 dues paying members). The Girl Scouts refunded the fee for the meeting that had to be cancelled because of electrical construction.

Social media report: There were about 2,100 likes and 2,200 followers on Facebook and 324 followers on Twitter.

Outreach: Chuck Schlemm said that the Montgomery Bell star party on June 17 was well attended, although the skies were smokey. Chuck was able to show his spacecraft display.

Star parties: Public nights are scheduled for both Bowie Nature Park and Cornelia Fort Airpark on June 24.

Other business: Theo reported that she has one quote for solar eclipse glasses. Cost should be in the \$0.50 - \$0.60 range.

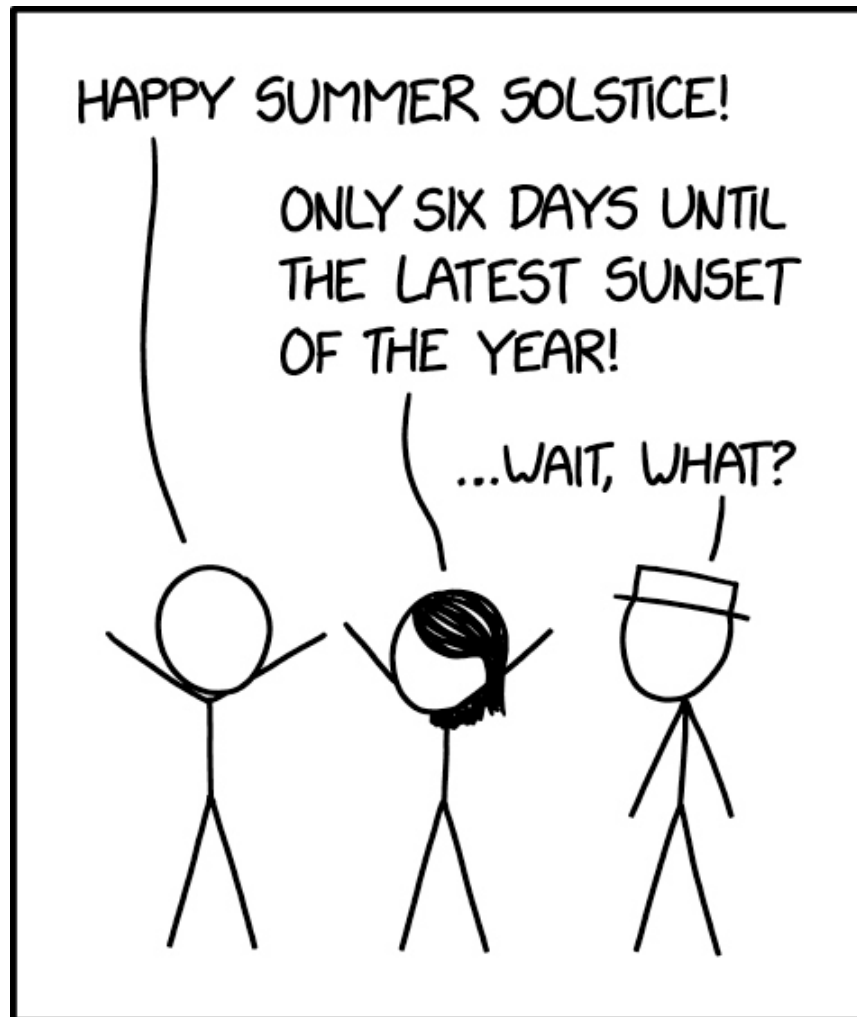
News: The ESA (European Space Agency)/JAXA (Japan Aerospace Exploration Agency) BepiColombo spacecraft made its 3rd flyby of Mercury on June 20, 2023. The spacecraft is scheduled to finally arrive at Mercury on December 5, 2025.

Theo presented "From Looking Up to Looking Out".

Respectfully submitted,

Bud Hamblen
Secretary

xkcd

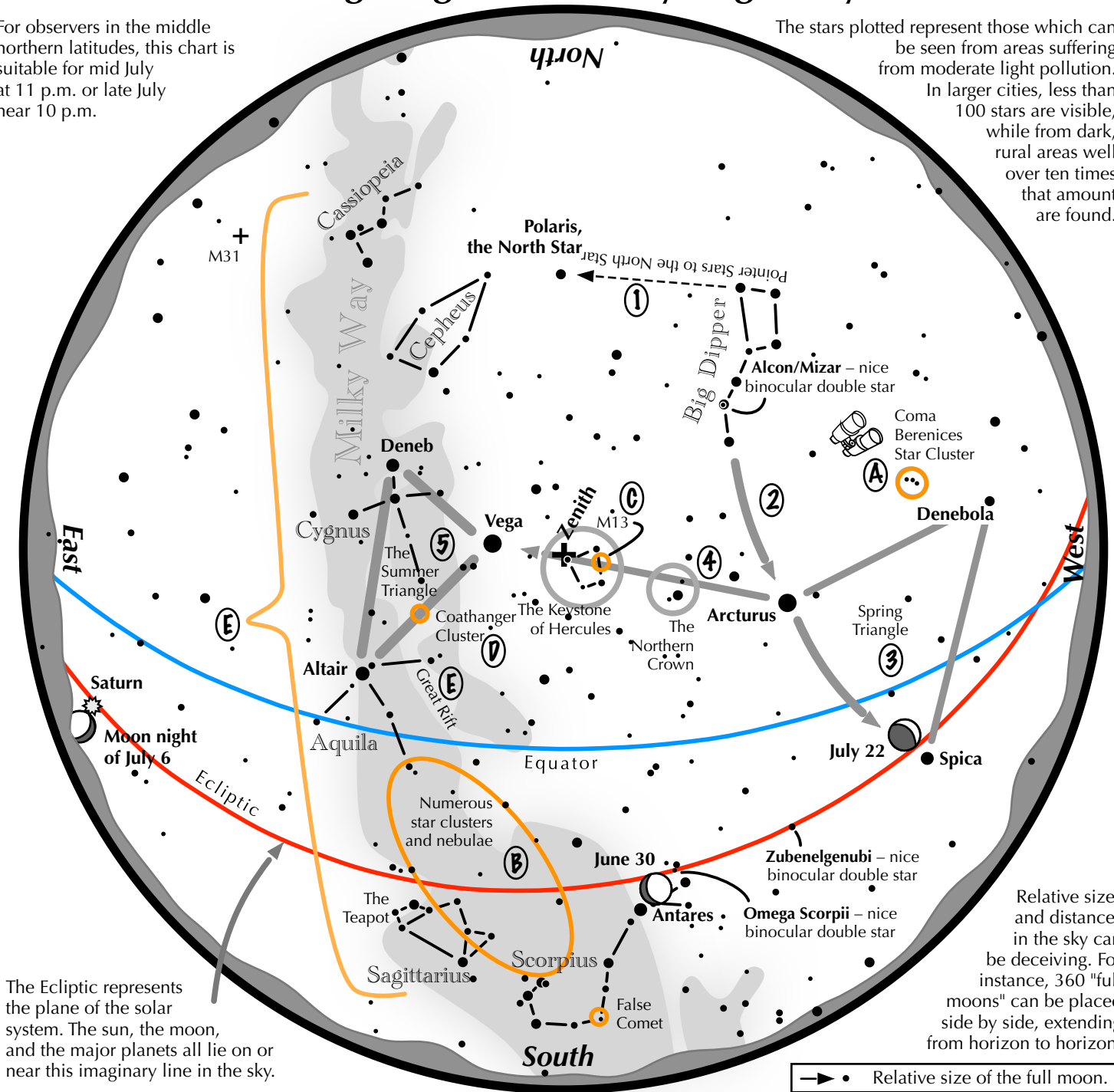


WHEN I FINALLY FINISH BUILDING MY GIANT ENGINE CAPABLE OF SHIFTING THE EARTH'S ORBIT, THIS IS THE FIRST THING I'M FIXING.

Navigating the mid July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 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 mid July night sky: Simply start with what you know or with what you can easily find.

- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 3 To the northeast of Arcturus shines another star of similar brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 4
- 5 High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
- D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.





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.



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.

About BSAS

Organized in 1928, the Barnard-Seyfert Astronomical Society is an association of amateur and professional astronomers who have joined to share our knowledge and our love of the sky.

The BSAS meets on the third Wednesday of each month at the Cumberland Valley Girl Scout Building at the intersection of Granny White Pike and Harding Place in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to *Astronomy and Sky & Telescope* at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly. BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the *Reflector*, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at bsasnashville.com. If you need more information, write to us at info@bsasnashville.com.

Free Telescope Offer

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact info@bsasnashville.com.