



# The Bays Mountain Astronomy Club Newsletter

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# *Cosmic Reflections*

Greg Penner - BMAC Chair



reetings BMACer's!

We had a really nice time at the annual picnic! A big thank you goes to our host! The weather was quite warm, but we were comfortable in the gazebo eating great food and having some nice conversations. Some of the folks had not previously seen the host's observatory, so he gave us all a tour. All in all it was a very nice evening!

We are looking forward to an exciting fall season. I know we are all looking forward to cooler days and more hours of darkness at night. At our August 2nd meeting, we will be treated to a planetarium show. I'd also like to encourage anyone who has a "Show & Tell" to please bring something to share with the club. This can be some new observing equipment to show us, some interesting observations you've made, or some astronomical news that you would like to share. At our September 6th meeting, Dr. Gary Henson from ETSU will give a talk called: "The Astronomical Origins of our Ancient Holidays." A presentation on the historical perspective of the connection between seasonal changes, cultural and religious beliefs, and

the Earth's orbital motion around the Sun. Although traditions around the equinoxes and solstices are more well known, many holidays have evolved from the significance of the "Cross-Quarter" days occurring between them.

At our October 4th meeting, Trina Ray with NASA JPL, who is part of the Europa Clipper Mission, will be giving us a presentation. After that we will all be looking forward to our annual big event, StarFest, which is the first weekend in November! Stay tuned for more information regarding the topics, speakers and registration information.

We have also been discussing the possibility of going on a field trip to the Bare Dark Sky Observatory. This is a facility in the mountains in North Carolina about 1.5 to 2 hours from the Tri-Cities where the skies are very dark and the telescopes are big! We will be talking about this in our upcoming club meetings.

Looking forward to seeing everyone soon,

**Clear Skies!**

# BMAC Notes



# *BMAC Photos*



ccultation!



*The Moon moments before it occulted Spica on July 13th. Pic taken with iPhone 13 through a 90mm refractor. Image by Greg Penner.*

# *Sky News from the Astronomical League*



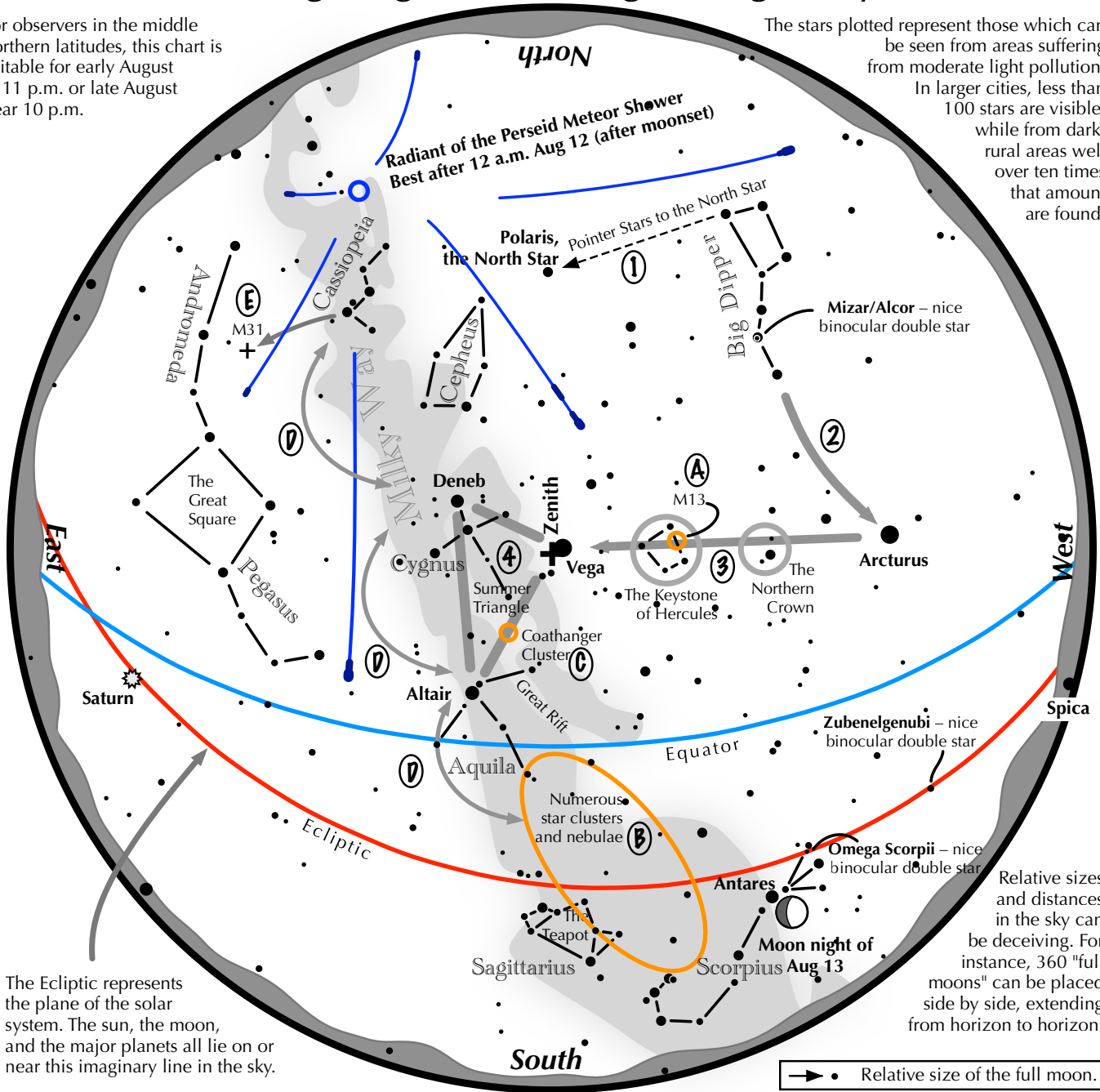
he Astronomical League has a plethora of educational content to help you learn and enjoy the night sky more. The following inserts are just a tiny bit of what they provide.



# Navigating the mid August Night Sky

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August 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.

**Navigating the mid August 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 intersects Arcturus, the brightest star in the June evening sky.
- 3 To the northeast of Arcturus shines another star of the same 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 High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

## Binocular Highlights

- A:** On the western side of the Keystone glows the Great Hercules Cluster.
- B:** Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C:** 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D:** Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
- E:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.

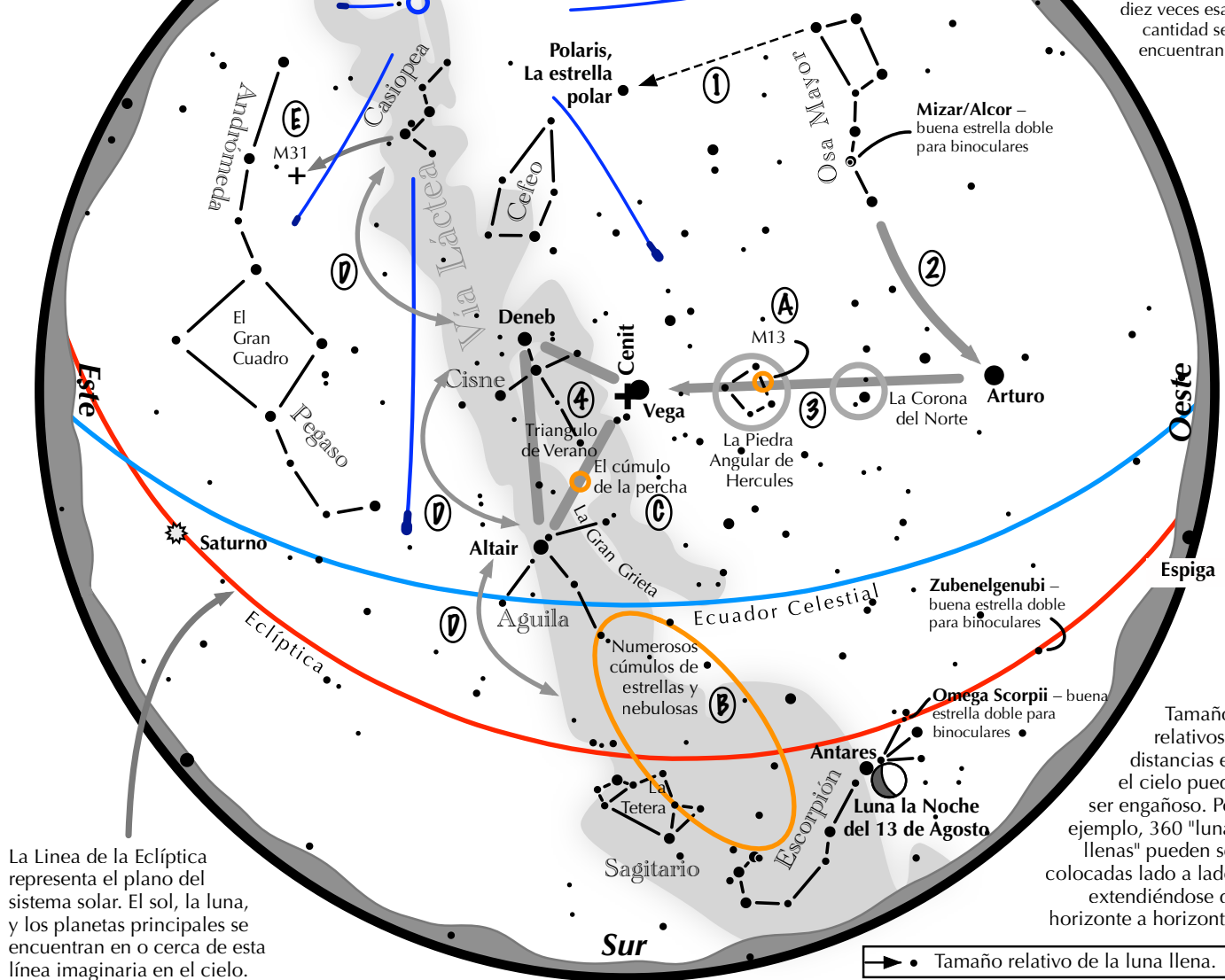


Astronomical League [www.astroleague.org/outreach](http://www.astroleague.org/outreach); duplication is allowed and encouraged for all free distribution.

# Navegando por el cielo nocturno de Agosto

Para los observadores en las latitudes medias del hemisferio norte, este mapa es adecuado para principios de Agosto a las 11 p.m. o finales de Agosto cerca de las 10 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.

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

- 1 Haz una línea hacia el norte desde las dos estrellas en la punta de la Osa Mayor. Pasa por Polaris, la estrella polar.
- 2 Siga el arco del mango del tazón de la Osa Mayor, continúa hacia Arturo, luego continúa hacia Espiga.
- 3 Dibuja una línea desde Arturo a Vega. Un tercio del camino se encuentra "La Corona del Norte". Dos tercios de esa distancia llevan a la "piedra angular de Hércules." Se necesita un cielo oscuro para ver estas dos configuraciones estelares tenues.
- 4 En lo alto del este se encuentran las tres estrellas brillantes del Triángulo de verano: Vega, Altair y Deneb.

### Puntos destacados con binoculares

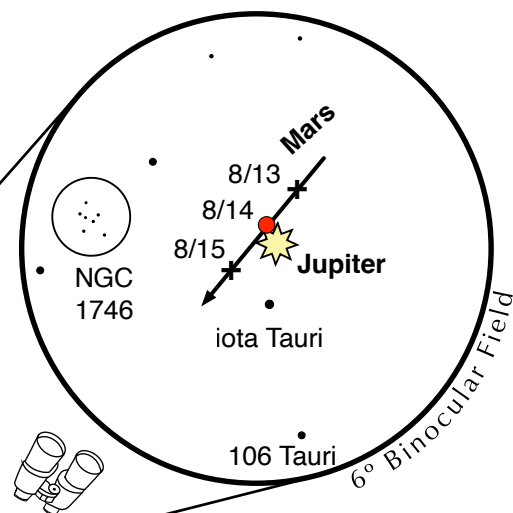
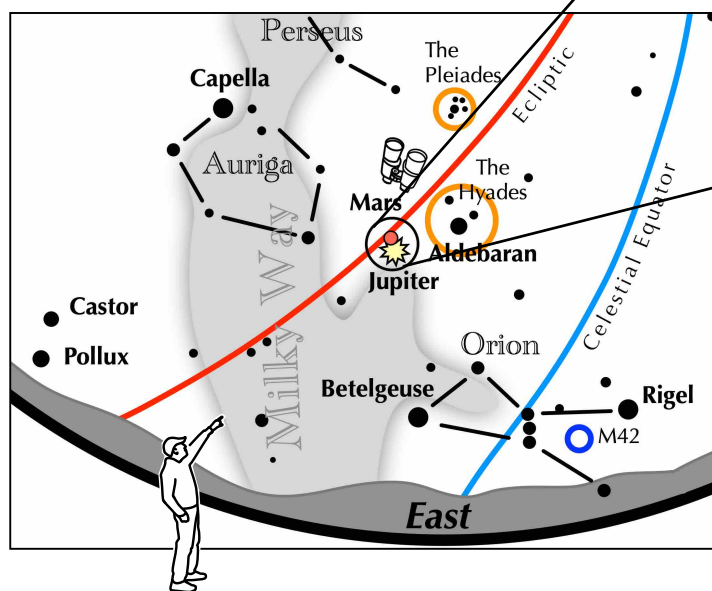
**A:** En el lado occidental de la Piedra Angular brilla el Gran Cúmulo de Hércules. **B:** Entre las brillantes estrellas Antares y Altair, se esconde un área que contiene muchos cúmulos de estrellas y nebulosas. **C:** Casi a la mitad de la distancia entre Altair y Vega, Brilla la "Percha," un grupo de estrellas que describe un perchero. **D:** Recorre la Vía Láctea en busca de un número asombroso de destellos tenues y bahías oscuras, incluido La Gran Grieta. **E:** Las tres estrellas más occidentales de las "W" de Casiopea apuntan hacia el sur hasta M31, la Galaxia de Andromeda, un óvalo "borroso."



## If you can view only one celestial event this month, view this one.

*A slowly brightening Mars passes immediately north of the much brighter Jupiter.*

1. Look to the east 90 minutes before sunrise on August 13, 14, and 15.
2. Find Mars and Jupiter shining left of the red star Aldebaran. Mars' brightness will nearly match that of Aldebaran.

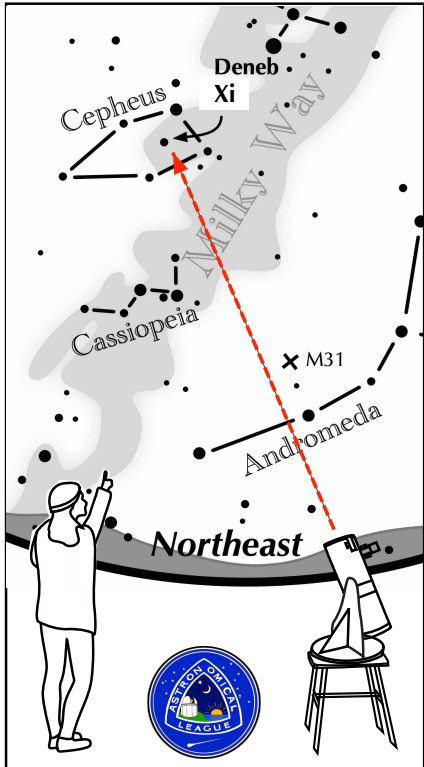


### Binocular View

3. Aim binoculars at Mars and Jupiter.
4. On the morning of August 14, they will be only 20 minutes apart.
5. They will be just  $1.5^\circ$  southwest of the open cluster NGC 1746.
6. A telescope at  $> 100$  power will reveal Mars' tiny red disk and Jupiter's larger disk along with its four Galilean moons.



# ASTRONOMICAL LEAGUE Double Star Challenge



## Other Suns: Xi Cephei

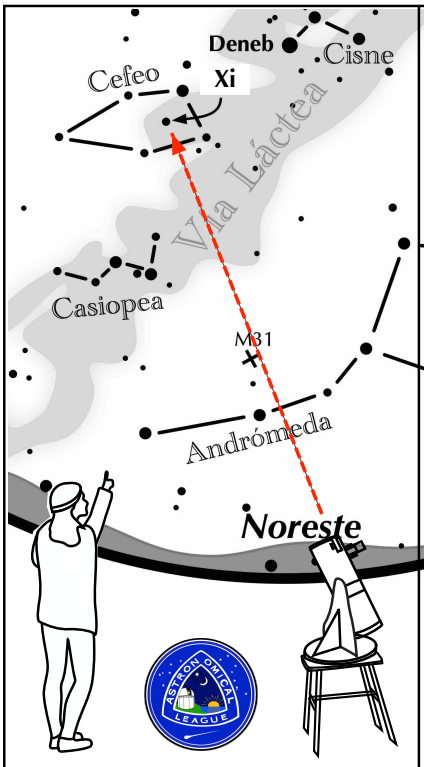
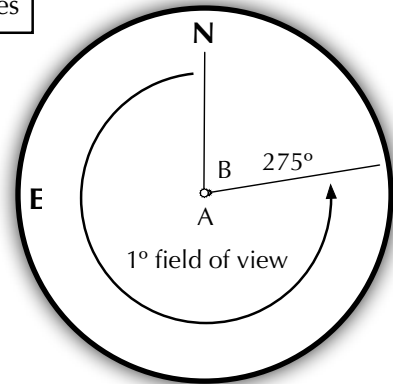
### How to find Xi Cephei on an August evening

Find the stars forming the house shape of Cepheus, which is the constellation above Cassiopeia in the early evening in August. Xi is the central star in the southerly portion of the house shape of Cepheus.

Suggested magnification: >50x  
Suggested aperture: >3 inches

### Xi Cephei

A-B separation: 7.9 sec  
A magnitude: 4.4  
B magnitude: 6.4  
Position Angle: 275°  
A & B colors: white & blue



## Otros Soles: Xi Cephei

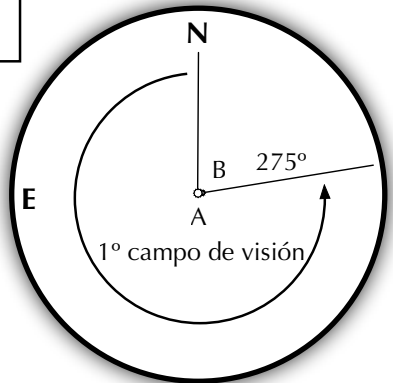
### C6mo encontrar Xi Cephei en una tarde de agosto

Encuentra las estrellas que forman la forma de casa de Cefeo, que es la constelaci6n sobre Casiopea a primera hora de la tarde de agosto. Xi es la estrella central en la parte sur de la forma de la casa de Cefeo.

Ampliaci6n sugerida: >50x,  
Apertura sugerida: >75 mm

### Xi Cephei

A-B separaci6n: 7.9 sec  
A magnitud: 4.4  
B magnitud: 6.4  
PA: 275°  
A & B colores: blanca & azul



# Stellar Observations

Greg Penner



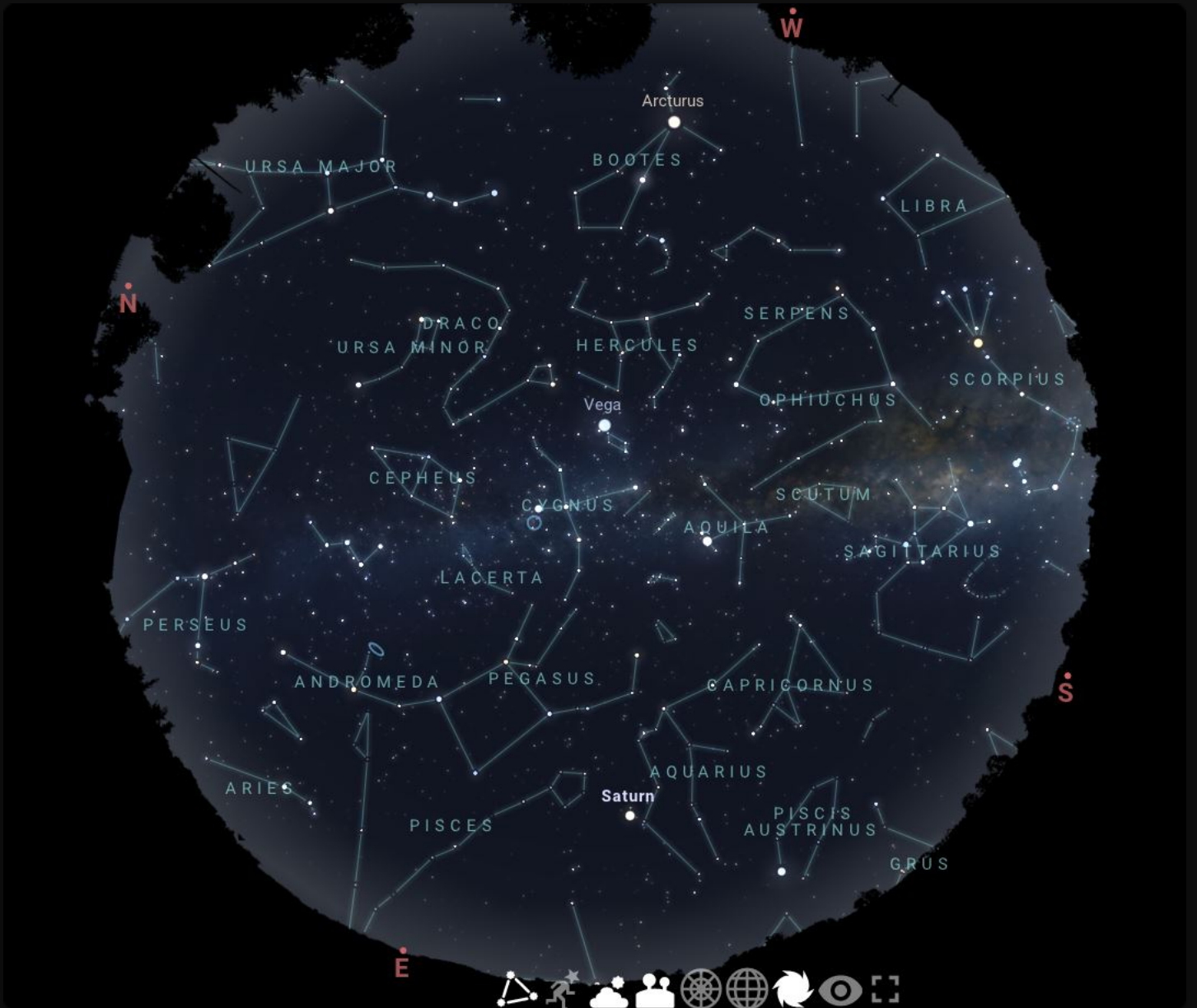
# *An Eyeful of Photons*



One of the great things about astronomy is the ability to enjoy it on so many different levels. There are of course professional astronomers who make a career out of exploring the night sky with hi-tech equipment, but anyone can enjoy what the night sky has to offer using the most simple equipment, such as your unaided eyes, all the way up to advanced amateur telescopes. The month of August is a great time to get out under the night sky and let all those photons of light flood your eyes!

August provides a couple of impressive astronomical phenomena that can be viewed with unaided eyes, although transporting your eyes to the darkest site you can find would be helpful. Our own Milky Way galaxy spans the sky from the south in the constellation Scorpius, to the northeast in the constellation Cassiopeia. Trying to view the Milky Way from within the Tri-Cities area here in East Tennessee can be a challenge, but a drive of only 1.5 to 2 hours can take you up

into the mountains along the Tennessee/North Carolina border where you will find very dark skies. One such place is the Bare Dark Sky Observatory, which is a certified Dark-Sky Park by the International Dark-Sky Association. This observatory has public viewing nights available and you can buy tickets online [HERE](#). From this location on a clear moonless night, the Milky Way will be an amazing sight with bright star clusters contrasting with dark lanes that give our home galaxy its ethereal quality. Seeing the Milky Way stretch all the way across the sky is a sight everyone should see sometime in their life!

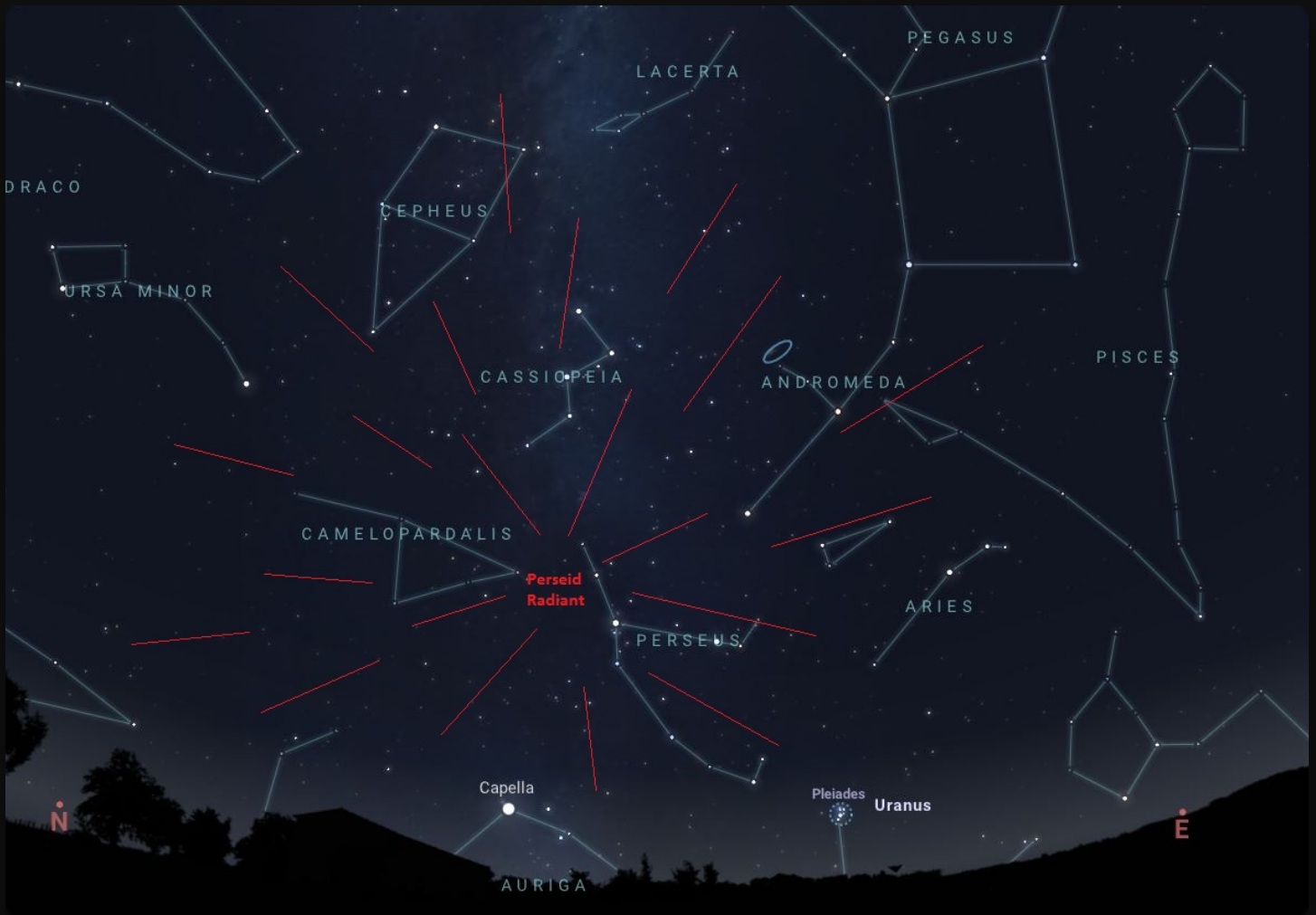


*All-sky view of the August Milky Way - from Stellarium*



The other phenomenon to view with the unaided eye in August is the Perseid meteor shower. The Perseids are caused by the Earth crashing into debris left behind by Comet 109P/Swift-Tuttle. This year the Perseids are active between July 17th and August 24th, with the peak occurring the night of August 12-13. Watching for them a day or two before or after the peak should still be worthwhile. The number of meteors visible per hour is highly dependent on the amount of light pollution at your local observing site. Seeing dozens of meteors per hour is possible from a very dark sky location far from city lights. On the night of the 12th the Moon will be a waxing gibbous, 55% illuminated, and sets just after midnight. So, the optimal viewing time will be from about midnight until dawn. If it looks like the night of the 12th will be cloudy and you want to try a different night, the nights leading up to the peak are usually better than the nights after peak (the Moon will be less bright and setting earlier). Meteors can appear anywhere in the sky, but they will appear to originate from the constellation Perseus if you trace backwards along their trajectory. You should generally look in the

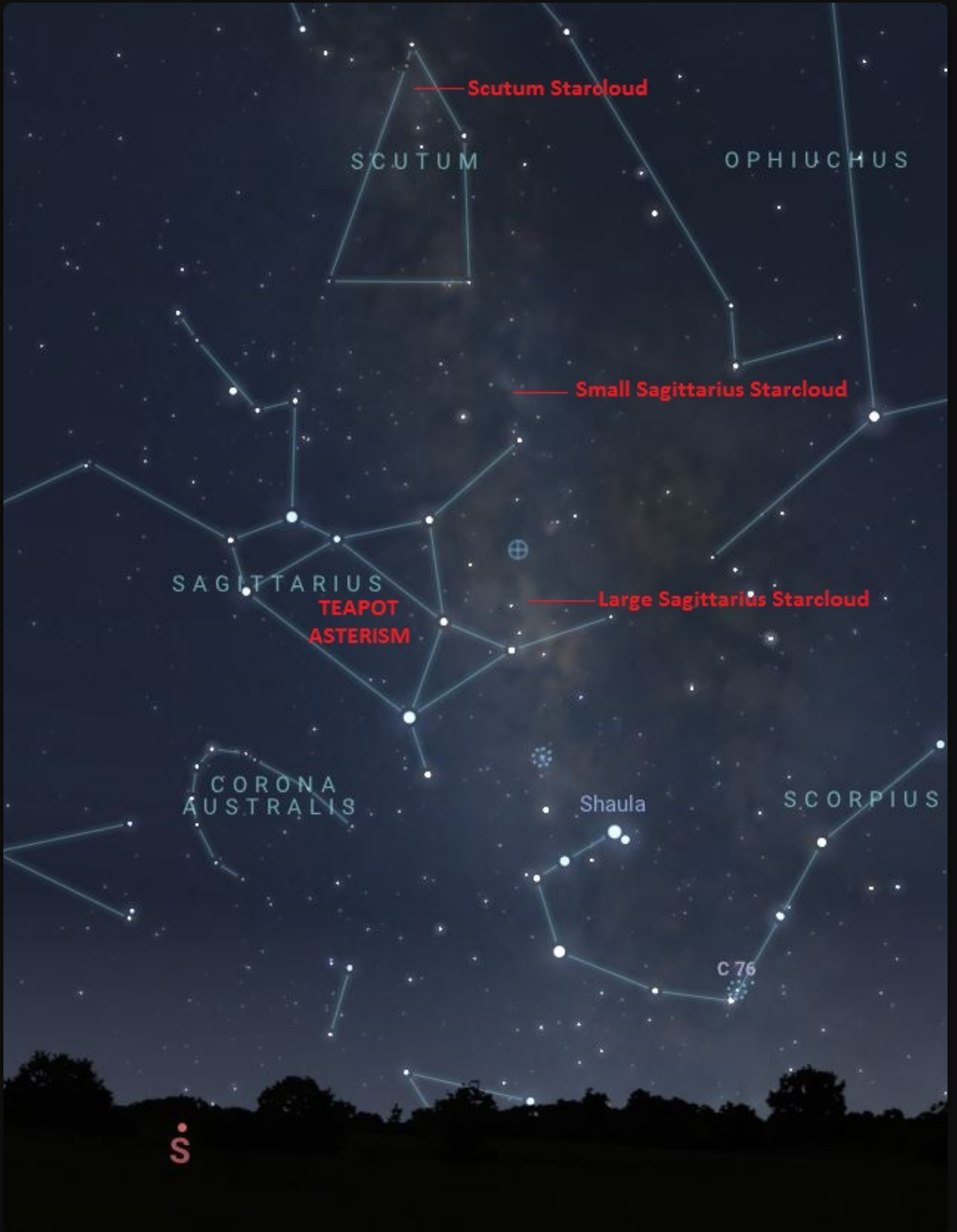
northeast direction toward Perseus and view as much of the sky as possible. Leaning back in a comfortable lounge-type or "zero-gravity" chair is best.



*Perseid meteor shower radiant - marked up Stellarium image*

Going a step up from unaided eye observing, using binoculars to scan the August night sky will show you some real stellar treasures. The impressiveness of the Milky Way really comes to light (pun intended) when you look at the dense "clouds" of stars in the direction of the center of the galaxy. The region from the constellation Sagittarius to the constellation Scutum is the brightest part of the Milky Way, and through binoculars you will see why: the region is packed with a myriad of stars. In Sagittarius, the teapot-shaped pattern of stars (asterism) is where you start scanning with your binoculars. At our latitude in East Tennessee the teapot is fairly low toward the horizon, giving the impression of steam coming out of the spout and streaming upward into the sky. The "steam" coming out of the teapot is actually the Large Sagittarius Star Cloud, which is very close to the center of our Milky Way galaxy where stars are densely packed together for a beautiful sight in binoculars. As you follow the path of the "steam" upward you will find the Small Sagittarius Star Cloud (a.k.a. Messier 24). This star cloud comprises an area about 600 light years across and through

binoculars there are about 1,000 individual stars visible in a single field of view. Continuing upward brings you to the Scutum Star Cloud. Looking in this direction, you are viewing the next spiral arm inward from ours, about 6,000 light years away. Thousands upon thousands of stars lie within the field of view, which gives it that cloudy, milky appearance. Through the binoculars, you might notice a particularly bright ball of stars at the eastern edge of the star cloud. You can get a closer look with the next step up from binoculars.

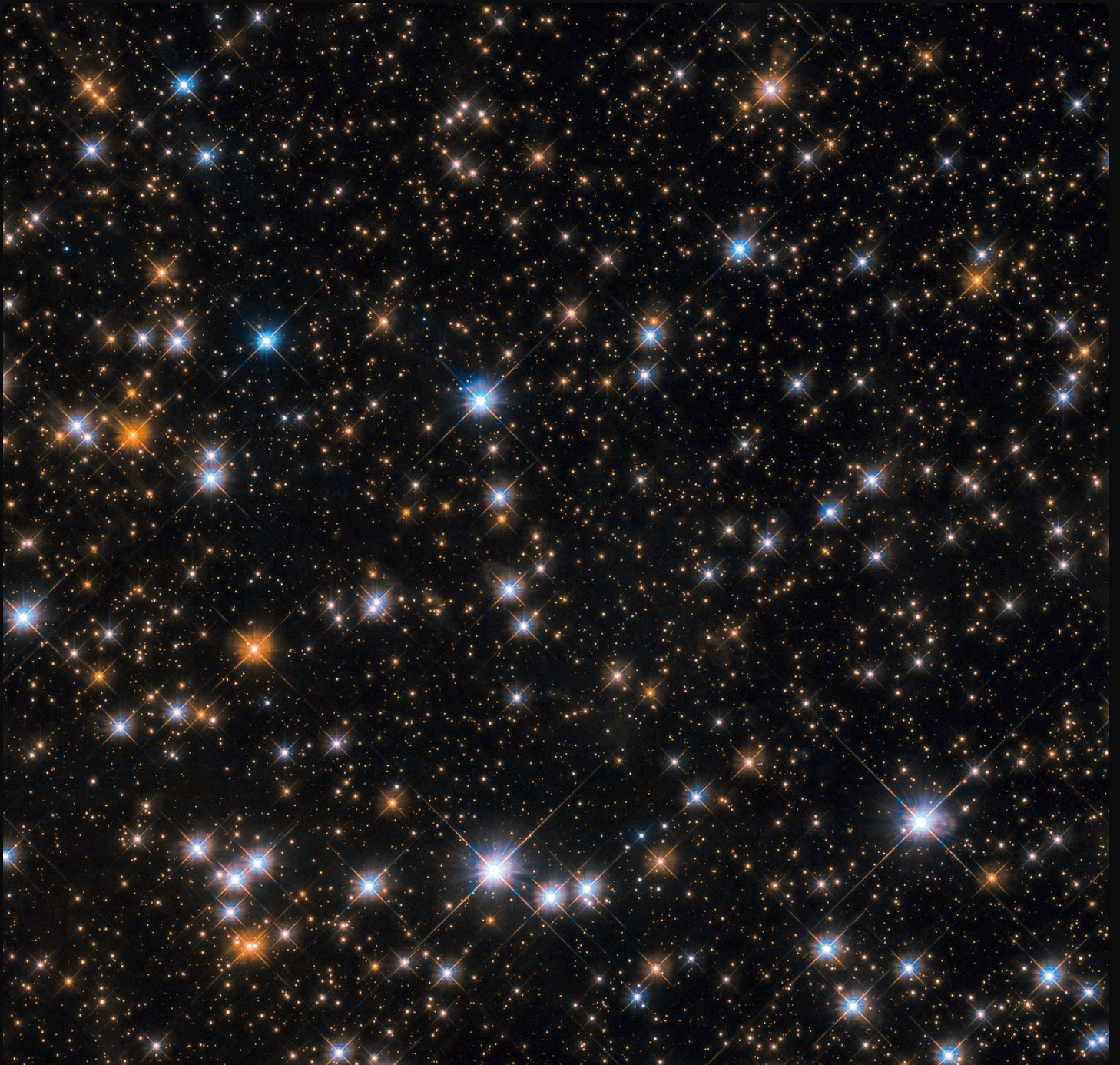


*Southern Milky Way starclouds - marked up Stellarium image*

A telescope in the 4" to 6" diameter range will give you a very nice view of M11, the Wild Duck Cluster. M11 is an open cluster of stars, as opposed to a globular cluster. The brightest stars form a V-shape that resembles a flock of flying ducks. At 6,200 light years away, M11 is the most distant of the open clusters in the Messier catalog that is visible with the unaided eye. The Wild Duck is also one of the most densely populated open clusters with over 2,900 stars. Dozens of stars will be visible in a small telescope.



*M11 location - marked up Stellarium image*



*HST image of M11 - Credit: ESAHubble & NASA, P. Dobbie et al.*



As you continue exploring with your telescope, consult your favorite app or star chart as you go back down the "steam" toward the teapot where you started. Many of the favorite celestial targets lie in this part of the sky with fanciful names such as Eagle Nebula, Swan Nebula, Trifid Nebula and Lagoon Nebula, as well as more star clusters that are better appreciated in a telescope. You may wonder why there are so many nebulae in this part of the sky. Remember, we are looking toward the center of the Milky Way galaxy in this direction, so in addition to the densely packed stars we are peering through many layers of interstellar gases. Where the gases are near bright star forming regions, the gas is illuminated to create the bright nebulae we love to admire. Don't expect to see the vibrant colors you see in photographs of these objects. The human eye doesn't process the colors like a camera, but through a telescope you can enjoy the ethereal quality and interplay between the gassy threads and starlight, knowing that those photons of light have travelled for thousands of years just to end up in your eye!



*Southern Milky Way Nebulae - marked up Stellarium image*

# *The Queen Speaks*

Robin Byrne



# *Book Review: Through the Glass Ceiling to the Stars*



his last year, I bought several books for myself that were accumulating in my Amazon wish list. Included in that list was *Through the Glass Ceiling to the*

*Stars: The Story of the First American Woman to Command a Space Mission* by Col. Eileen M. Collins (Ret.) with Jonathan H. Ward. Being a sucker for astronaut biographies and woman trailblazers, I knew this would be right up my alley. I wasn't wrong.

The book largely emphasizes three main eras in Collins' life: her childhood, her military career, and, of course, her years at NASA.

**COL. EILEEN M. COLLINS,  
USAF (RETIRED)  
WITH JONATHAN H. WARD**

**"What a read!"  
—TOM HANKS**



**THROUGH THE  
GLASS CEILING  
TO THE STARS**

*THE STORY OF THE FIRST  
AMERICAN WOMAN TO COMMAND  
A SPACE MISSION*

*Book cover to Through the Glass Ceiling to the Stars*

Collins' childhood began fairly normally, but several challenges arose over the years. Both of Collins' parents dealt with personal demons. Her father was an alcoholic whose drinking and drunken behavior became so bad, her mother kicked him out of the house for good, though they never divorced. Collins' mother struggled to raise the family on her own, having to move into public assistance housing because money was so tight. When Collins' older brother left home for college, the last vestige of stability was gone, and her mother attempted suicide. Collins, a high school senior, was left to care for her two younger siblings on her own while her mother was temporarily institutionalized.

When Collins graduated high school, she was determined to leave home, join the Air Force, and become a pilot. Lucky for her, the recruiter didn't show up for their meeting. It turns out that to be a pilot in the Air Force, you need a college degree. So, on to plan B: Collins enrolled in a nearby community college, but she still had an interest in being a pilot in the Air Force. She researched schools that had an Air Force ROTC

program, and the nearest to her was Cornell. After graduating with her Associate's Degree, Collins enrolled in the Air Force ROTC and reported for basic training the summer before entering Cornell. She found the discipline and challenge of the military to be a perfect fit for her personality.

After graduating from Cornell, Collins entered the Air Force and began training as a military pilot. During college, Collins had already taken private flying lessons, but now she got her hands on military aircraft. Although, as part of the policy barring women from serving in war, she was not allowed to fly any aircraft that was used in combat. This created some critical limitations in what Collins could do. Her military training was an interesting read, especially the component that involved survival exercises in case of a crash, immediately followed by being "captured" and taken to a "POW camp." The whole ordeal sounded harrowing.

Since childhood, Collins had an interest in science, and especially space. The dream of becoming an astronaut was

always in the back of her head. In particular, Collins dreamt of flying a Space Shuttle. To achieve that dream, NASA required completion of Test Pilot School (TPS). But, to enter TPS, she had to fly a minimum of hours on a particular list of aircraft. Of course, all but one of the aircraft on the list were combat aircraft, which she wasn't allowed to fly. So Collins made sure she flew on the one remaining aircraft as often as possible to accumulate the required hours. She also needed to log time flying an operational aircraft in actual missions. This ultimately led to her flying a support aircraft, and rescuing medical students, during the operations in Grenada.

But she still wasn't competitive enough to be accepted to TPS, so Collins entered graduate school, earning a Masters Degree from Stanford in Operations Research (a combination of engineering and computer modeling). This then gave her the qualifications to teach math at the Air Force Academy in Colorado. It was during this time that Collins married fellow Air Force pilot Pat Youngs, whom she had started dating before entering graduate school. Thinking about their future together



and the logistics of their careers, Pat chose to become an airline pilot, making it easier for them to move around as Collins' Air Force career stationed them in different places.

Collins finally made it into Test Pilot School at Edwards Air Force Base in California. Because her path to this goal took longer than normal, she outranked her fellow classmates, which automatically made her the "class leader" for her group. She was the first woman to hold this position at the school, adding another layer of responsibilities on top of training to be a test pilot. Collins rose to the occasion. Because of the intensity of the program, it's no surprise that this hard-working group of pilots also played hard. Collins describes several episodes of increasingly outrageous practical jokes that were executed by the pilots.

While she was in TPS, NASA announced that they were recruiting a new class of astronauts and taking applications. Collins knew it was now or never. She applied, despite not yet being an official test pilot. The timing actually worked well. A

month after graduating from TPS, Collins started working at NASA as one of the first three women who were recruited to be astronaut pilots. Prior to this, all the women astronauts were recruited for Mission Specialist positions only.



*STS-93 Commander, Eileen M. Collins. Collins was the first woman to command a Space Shuttle mission. Image 10/30/1998. Image from NASA.*

Collins' astronaut career included all of the dues-paying that every astronaut candidate goes through: learning about every aspect of the Space Shuttle, as well as the various assigned duties. Meanwhile, Collins was getting anxious to fly. While every Shuttle flight had multiple Mission Specialist positions, there was only one pilot and one commander (and you had to fly at least twice as a pilot before flying as a commander). So, while Collins' fellow astronaut recruits were flying as mission specialists, she was still waiting. Her supervisor told her that when she got her assignment, he would make sure it was a good mission. He lived up to that promise. Collins would not only be the first woman to pilot a Shuttle, but, also, she would fly the first mission that executed a rendezvous with the Mir Space Station. While not a docking mission, it was still a major milestone that led to subsequent missions of the Shuttle docking with Mir.

Collins' second flight as a pilot did dock with Mir, and she had the opportunity to enter the space station, which she described as being a mess. This mission brought U.S. astronaut Jerry

Linenger back to Earth from his stint on the space station.

Linenger had one of the most harrowing experiences on Mir, including an automated cargo ship crashing into the station, as well as a fire breaking out in one of the modules. Collins was left with less than a favorable impression of the Russian space station.

When Collins was assigned as Commander for her next flight, she once again achieved a first - this time as the first woman to command a Shuttle mission. Her flight would deliver the Chandra X-Ray Telescope to space. Collins' interest in astronomy made her especially excited to be a part of this mission.

When Collins got her assignment for her next command, she never dreamed it would be years before she would actually fly it. The mission scheduled just prior to hers was a mission on the Columbia spacecraft. This would be Columbia's last flight, tragically breaking up during its reentry in Earth's atmosphere. Collins had to navigate not only her own family's reactions to

the tragedy, including her young daughter, but also help her fellow crew members and their families, while simultaneously assisting in the process of understanding what went wrong and figuring out how to avoid this kind of tragedy in the future.

When Collins' mission finally did launch, it was dubbed a "back to flight" mission, which meant that, in addition to the already planned flight goals, they would also be testing out new systems and procedures. The flight brought equipment and supplies to the International Space Station (ISS). One of the new procedures was for the Shuttle to perform a roll as it approached ISS, allowing the astronauts on the station to photograph the underside of the Shuttle to inspect for damage. They also used the Canadarm to carry astronauts around the spacecraft to look for anything amiss. Fortunately, no damage was found. Meanwhile, they got to experience life on ISS, which Collins enjoyed much more than Mir.

Collins had already decided to retire from NASA after this flight, wanting to make room for the newer astronaut pilots to have a chance to fly before the Shuttle fleet was retired. This decision ended up being delayed due to both of Collins' parents tragically dying within a few months of each other. Once both estates were settled, Collins retired from the Air Force and NASA, moving into roles on various boards and making appearances, but largely living a private life and raising her family.

Eileen Collins' story is inspirational and fascinating. Her strong will and drive are evident throughout her life's path, and those qualities played a large role in the fact that Collins achieved so many firsts in her career. If you enjoy reading about what it takes to be an astronaut and to blaze a trail, then *Through the Glass Ceiling to the Stars* is a book you should add to your own wish list.

## *References:*

Through the Glass Ceiling to the Stars: The Story of the First American Woman to Command a Space Mission by Col. Eileen M. Collins (Ret.) with Jonathan H. Ward; Arcade Publishing, 2021



# The Space Place - NASA Night Sky Network

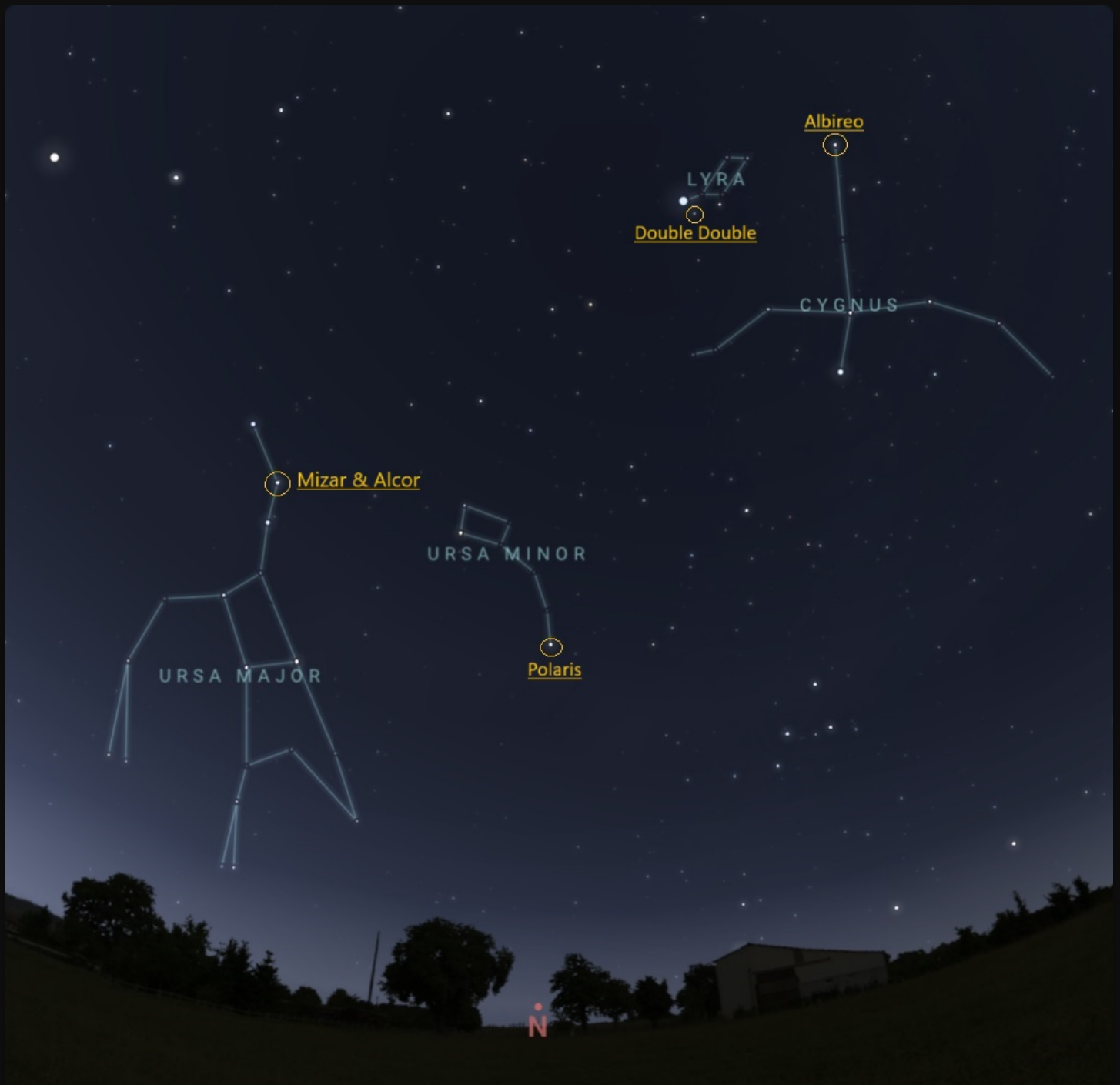
Kat Troche



## Seeing Double



uring the summer months of 2024, we miss the views of Saturn, Jupiter and other heavenly bodies. But it can be a great time to look for other items, like globular star clusters such as Messier 13, open star clusters such as the Coma Star Cluster (Melotte 111) and also double stars!



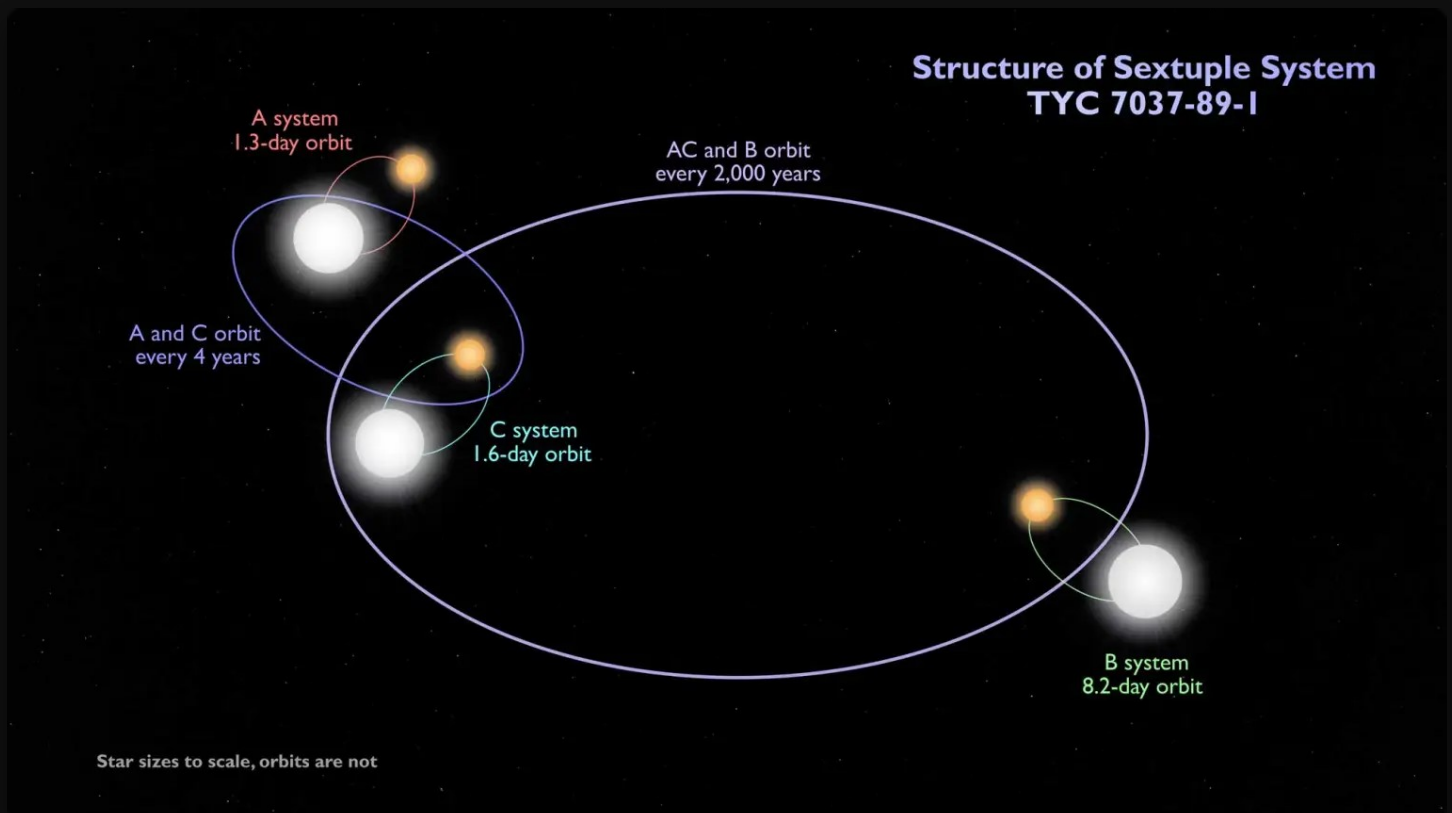
Mid-August night sky constellations with the following multiple star systems highlighted: the Double Double in Lyra, Albireo in Cygnus, Polaris in Ursa Minor, Mizar and Alcor in Ursa Major. Credit: [Stellarium Web](#)

## *What Are Double Stars?*

If you have seen any movies or read any books that refer to having two suns in the sky, that would be a double star system. These star systems typically come in two types - binary and optical doubles. Binary stars are two stars that are gravitationally bound and orbit each other. Optical double stars only appear to be close together when viewed from Earth, but in reality, are extremely far apart from another and are not affected by each other's gravity. With a small telescope, in moderately light polluted skies, summer offers great views of these stellar groupings from the Northern Hemisphere:

- **Double Double:** also known by its technical name, Epsilon Lyrae, this multiple star system appears as one star with naked eye observing. But with a small telescope, it can be split into 'two' stars. A large telescope reveals Epsilon Lyrae's secret - what looks like a single star is actually a quadruple star system!
- **Albireo:** a gorgeous double star set - one blue, one yellow - in the constellation Cygnus.
- **Polaris:** while technically a multiple star system, our North Star can easily be separated from one star to two with a modest telescope.

- Mizar and Alcor: located in the handle of the Big Dipper, this pair can be seen with the naked eye.



*This schematic shows the configuration of the sextuple star system TYC 7037-89-1. The inner quadruple is composed of two binaries, A and C, which orbit each other every four years or so. An outer binary, B, orbits the quadruple roughly every 2,000 years. All three pairs are eclipsing binaries. The orbits shown are not to scale. Credit: [NASA's Goddard Space Flight Center](#)*

Aside from looking incredible in a telescope or binoculars, double stars help astronomers learn about measuring the mass of stars and about stellar evolution. Some stars orbit each other a little too closely, and things can become disastrous, but overall, these celestial bodies make for excellent targets and are simple crowd pleasers.

Up next, learn about the Summer Triangle's hidden treasures on our mid-month article on the Night Sky Network page.

*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, August 2, 2024 - 7p - A planetarium program will be presented. Show & Tell will follow.
- Friday, September 6, 2024 - 7p - Dr. Gary Henson, Professor of Physics & Astronomy & Director of the Powell Observatory & ETSU Planetarium will present. The presentation will be: "The Astronomical Origins of our Ancient Holidays." A presentation on the historical perspective of the connection between seasonal changes, cultural and religious beliefs, and the Earth's orbital motion around the Sun. Although traditions around the equinoxes and solstices are more well known, many holidays have evolved from the significance of the "Cross-Quarter" days occurring between them.
- Friday, October 4, 2024 - 7p - Trina L. Ray, Europa Clipper Deputy Science Manager and REASON Investigation Scientist, will present. Topic TBA.
- Friday, December 6, 2024 - 7p - Topic TBA.
- Friday, February 7, 2025 - 7p - Topic TBA.
- 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.



## 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:

- October 5 & 12, 2024 - 7:30p
- October 19, 26 & November 2, 2024 - 7p
- November 9, 16, 23 & 30, 2024 - 6p
  - 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:

- **StarFest 2024 - November 1-3, 2024**

- Our 39th 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. 13, 2024 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 2025**

- This event is for members and their families. Look for an e-mail in January with all the information.

- **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.

# Regular Contributors:



*Greg Penner*



*Robin Byrne*



*Adam Thanz*

**G**reg 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.

**R**obin 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).

**A**dam 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:

## **B**ays Mountain Astronomy Club:

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

## **D**ues:

- 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.*
- **All background images used with permission by their authors.**