



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 32, No. 8 **Three-Time Winner of the Astronomical League's Mabel Sterns Award** ☼ 2006, 2009 & 2016 August 2024

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Perseverance's Selfie with 'Cheyava Falls'



Image Credit: NASA/JPL-CALTECH/MSSS. See page 2 for a detailed description of the image and its creation.

Membership Renewals Due

08/2024	Borowski Johnston & Stein Knabb Lurcott Manigly Schultz Tiedemann Trunk Zullitti
09/2024	Atmore Das Holloway Hopper Matas Okpaku Reilly Squire
10/2024	Abbott Conrad Lane Lester Levin Payton Richardson Wirth

August 2024 Dates

- 4th** • New Moon, 7:13 a.m. EDT.
- 12th** • First Quarter Moon, 11:19 a.m. EDT. Perseid meteor showers peak during the overnight hours (ZHR = 100).
- 13th** • Moon and Antares nearly touch tonight.
- 18th** • Moon occults Neptune at 3:21 a.m. EDT.
- 19th** • Full Moon, Sturgeon Moon, 2:26 p.m. EDT.
- 24th** • Moon and M45 (Pleiades) in conjunction.
- 26th** • Last Quarter Moon, 5:26 a.m. EDT.
- 27th** • Jupiter, Mars, Uranus, the Moon, Saturn and Neptune are visible in a line during early morning hours.



CCAS Upcoming Nights Out

In addition to our monthly observing sessions at the Myrick Conservancy Center, BRC (for directions, see pg. 15), CCAS has several special "nights out" scheduled over the next few months. Members are encouraged to help out during these events any way they can. See below for more information.

- ☼ Friday, August 2, 2024 - CCAS Monthly Observing Session, Myrick Conservancy Center, Brandywine Red Clay Alliance. The observing session is from 7:00 p.m. to 9:00 p.m. EDT.
- ☼ Friday, August 23, 2024 - CCAS Special Observing Session, Starr Farm Park, Downingtown PA. 7:00 to 10:00 p.m. EDT (Rain date: August 24th).
- ☼ Saturday, September 14, 2024 - CCAS Special Observing Session: International Observe the Moon Night 2024 & Walk When the Moon is Full w/ Malvern Arts Paoli Battlefield Historical Park, Malvern PA.

For more information about future observing opportunities, contact our [Observing Chair](#), Michael Manigly.

Summer/Autumn Society Events

August 2024

2nd • CCAS Monthly Observing Session, Myrick Conservancy Center, Brandywine Red Clay Alliance. The observing session is from 7:00 p.m. to 9:00 p.m. EDT.

20th • Open call for articles and photographs for the September 2024 edition of [Observations](#).

23rd • CCAS Special Observing Session, Starr Farm Park, Downingtown, PA. Center, Brandywine Red Clay Alliance. The observing session is from 7:00 p.m. to 10:00 p.m. EDT.

26th • Deadline for newsletter submissions for the September 2024 edition of [Observations](#).

27th-30th • CCAS Camping Trip, Cherry Springs State Park, Coudersport, PA.

September 2024

5th • CCAS Monthly Observing Session, Myrick Conservancy Center, Brandywine Red Clay Alliance. The observing session is from 7:00 p.m. to 9:00 p.m. EDT.

10th • CCAS Monthly Meeting, in person (as well as via Zoom) at West Chester University's Merion Science Center, Room 112. Speaker: John Conrad NASA Solar System Ambassador and CCAS Member, "Spaceships for the 21st Century (aka SpaceX and the 7 Little Dwarfs)".

13th • CCAS Special Observing Session: Star Party at Tyler Arboretum, Media, PA, 8:00 p.m. to 10:00 p.m. EDT.

14th • CCAS Special Observing Session, International Observe the Moon Night 2024 and Walk When the Moon is Full w/Malvern Arts at Paoli Battlefield Historical Park, Malvern PA. The observing session is scheduled to run 7:30 to 9:30 p.m. EDT.

20th • Open call for articles and photographs for the October 2024 edition of [Observations](#).

21st • CCAS Special Observing Session with Malvern Area Public Library at Bacton Hill Park, Malvern, PA. The observing session is from 7:30 p.m. to 10:00 p.m. EDT.

26th • Deadline for newsletter submissions for the October 2024 edition of [Observations](#).

Perseverance's Selfie with 'Cheyava Falls'

courtesy NASA/JPL-Caltech/MSSS

NASA's Perseverance Mars rover took the selfie on page 1 on July 23, 2024, the 1,218th Martian day, or sol, of the mission. To the left of the rover near the center of the image is the arrowhead-shaped rock nicknamed "Cheyava Falls," which has [features](#) that may bear on the question of whether Mars was home to microscopic life in the distant past. The small dark hole in the rock is where Perseverance took a core sample, which is now in a sample tube stored in the rover's belly. The white patch to the right of the hole is where the rover used an abrasion tool to clear away the top surface, allowing science instruments to study the rock's composition.

Measuring 3.2 feet by 2 feet (1 meter by 0.6 meters) and named after a Grand Canyon waterfall, Cheyava Falls lies at the northern edge of Neretva Vallis, an ancient river valley measuring a quarter-mile (400 meters) wide that was carved by water rushing into Jezero Crater long ago.

The selfie is composed of 62 images taken by the WATSON (Wide Angle Topographic Sensor for Operations and eNginEering) camera on the end of the rover's robotic arm. The images were stitched together after being sent back to Earth.

WATSON is part of an instrument called SHERLOC (Scanning Habitable Environments with Raman & Luminescence for Organics & Chemicals). WATSON was built by Malin Space Science Systems (MSSS) in San Diego and is operated jointly by MSSS and JPL. The rover's process for taking a selfie is explained in [this video](#).

A key objective for Perseverance's mission on Mars is [astrobiology](#), including the search for signs of ancient microbial life. The rover is also characterizing the planet's geology and past climate, which paves the way for human exploration of the Red Planet. NASA's Jet Propulsion Laboratory, which is managed for the agency by Caltech in Pasadena, California, built and manages operations of the Perseverance rover.

For more about Perseverance: <https://science.nasa.gov/mission/mars-2020-perseverance/>

September 2024 CCAS Meeting Agenda

by Bruce Ruggeri, CCAS Program Chair

Our next meeting will be held on September 10, 2024, in person at West Chester University's Merion Science Center, Room 113. The Science Center is located at 720 S. Church St., West Chester, PA. Member Speaker: John Conrad, NASA Solar System Ambassador and CCAS Member, "Spaceships for the 21st Century (aka SpaceX and the 7 Little Dwarfs)".

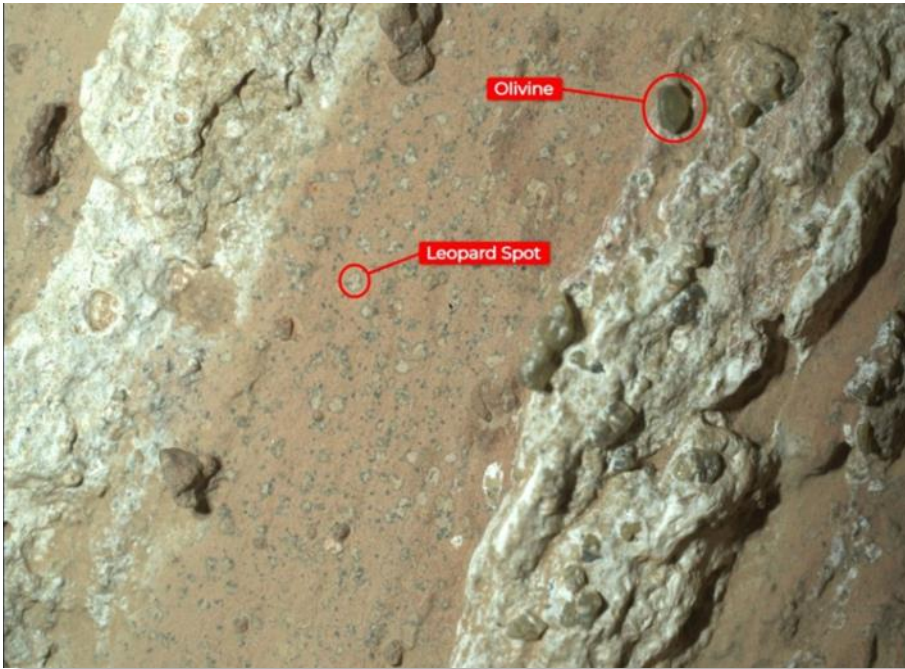
Please note that inclement

weather or changes in speakers' schedules may affect the program. In the event there is a change, CCAS members will be notified via e-mail with as much advance notice as possible.

As for future meetings, we are looking for presenters for beyond our 2024-2025 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

NASA's Perseverance Rover Scientists Find Intriguing Mars Rock

by Jet Propulsion Laboratory



An annotated version of the image of “Cheyava Falls” indicates the markings akin to leopard spots, which have particularly captivated scientists, and the olivine in the rock. The image was captured by the WATSON instrument on NASA’s Perseverance Mars rover on July 18. NASA/JPL-Caltech/MSSS

A vein-filled rock is catching the eye of the science team of NASA’s Perseverance rover. Nicknamed “Cheyava Falls” by the team, the arrowhead-shaped rock contains fascinating traits that may bear on the question of whether Mars was home to microscopic life in the distant past.

Analysis by instruments aboard the rover indicates the rock possesses qualities that fit the definition of a possible indicator of ancient life. The rock exhibits chemical signatures and

structures that could possibly have been formed by life billions of years ago when the area being explored by the rover contained running water. Other explanations for the observed features are being considered by the science team, and future research steps will be required to determine whether ancient life is a valid explanation.

The rock — the rover’s [22nd rock core sample](#) — was collected on July 21, as the rover explored the northern edge of

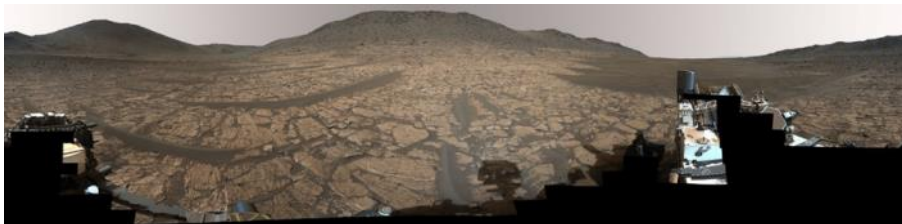
Neretva Vallis, an ancient river valley measuring a quarter-mile (400 meters) wide that was carved by water rushing into Jezero Crater long ago.

“We have designed the route for Perseverance to ensure that it goes to areas with the potential for interesting scientific samples,” said Nicola Fox, associate administrator, Science Mission Directorate at NASA Headquarters in Washington. “This trip through the Neretva Vallis riverbed paid off as we found something we’ve never seen before, which will give our scientists so much to study.”

Multiple scans of Cheyava Falls by the rover’s [SHERLOC](#) (Scanning Habitable Environments with Raman & Luminescence for Organics & Chemicals) instrument indicate it contains organic compounds. While such carbon-based molecules are considered the building blocks of life, they also can be formed by non-biological processes.

“Cheyava Falls is the most puzzling, complex, and potentially important rock yet investigated by Perseverance,” said Ken Farley, Perseverance project scientist of Caltech in Pasadena. “On the one hand, we have our first compelling detection of organic material, distinctive colorful spots indicative of chemical reactions that microbial life could use as an energy source, and clear evidence that water — necessary for life — once passed through the rock. On the other hand, we have been unable to determine exactly how the rock

(Continued on page 6)

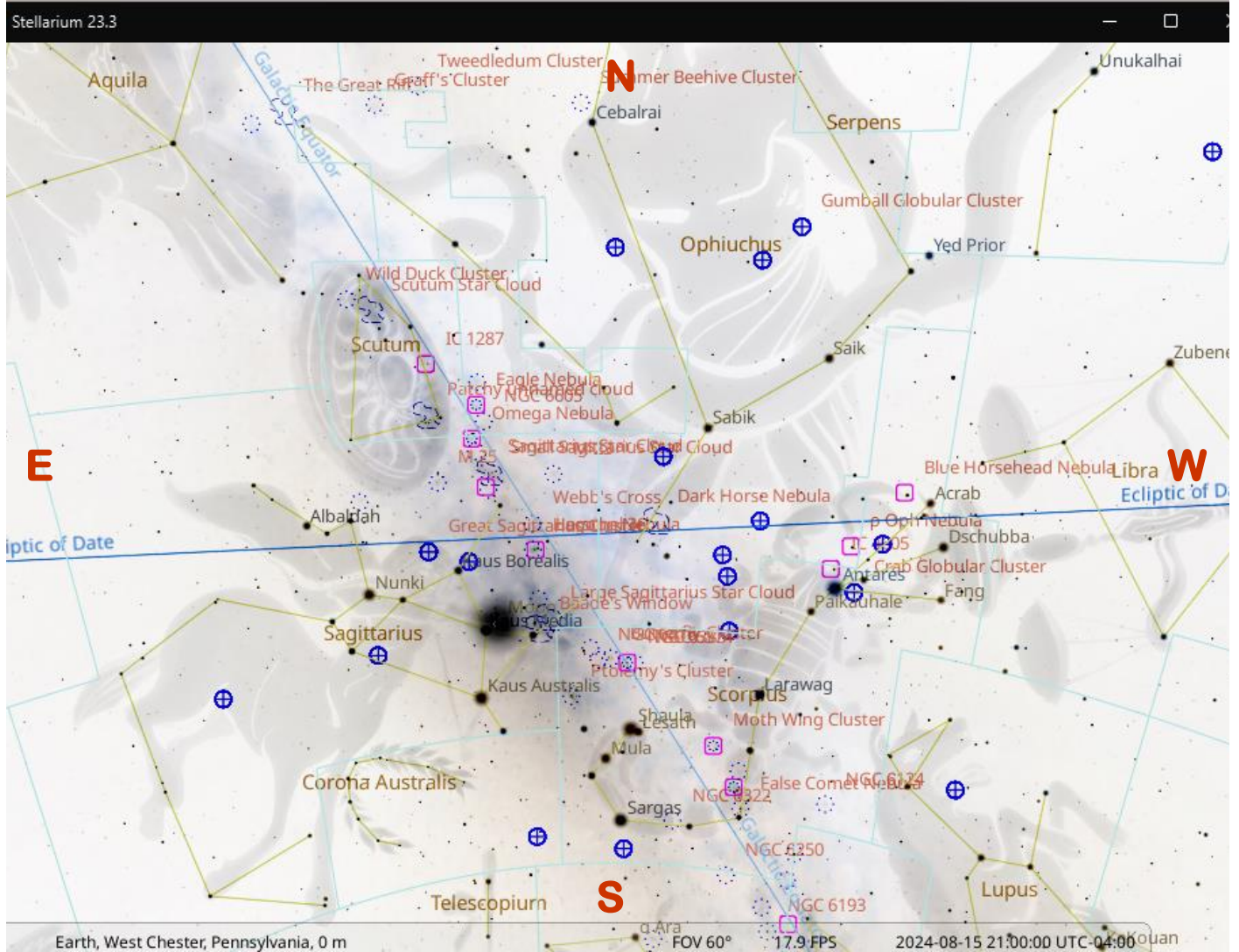


NASA’s Perseverance rover used its Mastcam-Z instrument to capture this 360-degree panorama of a region on Mars called “Bright Angel,” where an ancient river flowed billions of years ago. “Cheyava Falls” was discovered in the area slightly right of center, about 361 feet (110 meters) from the rover. NASA/JPL-Caltech/ASU/MSSS

The Sky Over Chester County

August 15, 2024 at 9:00 p.m. ET

Note: This screen capture is taken from Stellarium, the free planetarium software available for download at www.stellarium.org.



Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
08/01/2024	5:31 a.m. EDT	6:01 a.m. EDT	8:15 p.m. EDT	8:45 p.m. EDT	14h 13m 55s
08/15/2024	5:45 a.m. EDT	6:14 a.m. EDT	7:58 p.m. EDT	8:27 p.m. EDT	13h 43m 30s
08/31/2024	6:02 a.m. EDT	6:29 a.m. EDT	7:34 p.m. EDT	8:02 p.m. EDT	13h 04m 40s

Moon Phases					
			New Moon	08/04/2024	7:13 a.m. EDT
First Quarter	08/12/2024	11:18 a.m. EDT	Full Moon	08/19/2024	2:25 p.m. EDT
Last Quarter	08/26/2024	5:25 a.m. EDT			

August 2024 Observing Highlights

by Michael Manigly, CCAS Observing Chair

1	Double shadows can be viewed on Jupiter tonight. The same phenomenon can be seen on the 7th, 9th, 10th, 14th, 17th, 21st and 25th.
4	New Moon 7:13 a.m. EDT.
5	Venus is located slightly below the Moon at evening twilight.
6	Mercury can be found approximately 7° below the Moon at evening twilight.
12	First Quarter Moon 11:19 a.m. EDT and Lunar Straight Wall visible this evening. Also, the Perseid meteor showers peak during the overnight hours (ZHR = 100).
13	Moon and Antares nearly touch tonight.
18	Moon occults Neptune at 3:21 a.m. EDT.
19	Full Moon (Berry Ripening Moon) 2:26 p.m. EDT. Alternate names for the August Moon include the Sturgeon Moon, Black Cherries Moon, Corn Moon, Harvest Moon and Mountain Shadows Moon.
21	Saturn is sitting just below the Moon this evening.
24	Moon and M45 (Pleiades) in conjunction.
26	Last Quarter Moon 5:26 a.m. EDT.
27	Jupiter, Mars, Uranus, the Moon, Saturn and Neptune are visible in a line during early morning hours.

August observing highlights continue to be headlined by the lineup of planets in the predawn hours. Summer constellations and asterisms viewable include of Cygnus, Lyra, Aquila and the Summer Triangle. Multiple Messier/deep sky objects con-

tinue to be available during the summer months.

Planets:

Mercury appears extremely low in the West at evening twilight but is lost by mid-month.

Venus is very low in the WNW at evening twilight. Best viewed in predawn hours.

Mars rises before midnight in the ENE and is high in the SE at dawn.

Jupiter rises before midnight in ENE and is high in SE at dawn. Look for double shadows on multiple nights in August.

Saturn appears on the E horizon around 10:00pm EST on the 1st. The planet rises earlier throughout the month.

Uranus is the first planet to rise in the overnight hours on the 1st. It stands around 5 degrees SSW of M45 (Pleiades).

Neptune rises shortly after Saturn. The planet is one month from opposition and soon will be visible all night.

Constellations and Asterisms: Cygnus, Lyra, Aquila and the Summer Triangle. Each constellation provides excellent opportunities, under good dark sky conditions, to see multiple galaxies and deep sky objects (located within them).

Messier/Deep Sky Objects: M5, M6, M7, M11, M13, M22, M23, M27, M56, M57, M69, M80 and M92 are available targets during the month. Other Messier/DSOs are available as well under extremely dark skies.

Meteor Showers: The Perseid meteor showers (ZHR = 100) peak during the overnight hours of the 12th – 13th.

Comets: 13P/Olbers, 338P/McNaught and 146P/Shoemaker–LINEAR.

Asteroids: Dwarf planet 1 Ceres can be located near the Moon on the night of the 14th to the 16th.

Mars Rock (Cont'd)

(Continued from page 3)

formed and to what extent nearby rocks may have heated Cheyava Falls and contributed to these features.”

Other details about the rock, which measures 3.2 feet by 2 feet (1 meter by 0.6 meters) and was named after a Grand Canyon waterfall, have intrigued the team, as well.

In its search for signs of ancient microbial life, the Perseverance mission has focused on rocks that may have been created or modified long ago by the presence of water. That’s why the team homed in on Cheyava Falls.

“This is the kind of key observation that SHERLOC was built for — to seek organic matter as it is an essential component of a search for past life,” said SHERLOC’s principal investigator Kevin Hand of NASA’s Jet Propulsion Laboratory in Southern California, which manages the mission.

Running the length of the rock are large white calcium sulfate veins. Between those veins are bands of material whose reddish color suggests the presence of hematite, one of the minerals that gives Mars its distinctive rusty hue.

When Perseverance took a closer look at these red regions, it found dozens of irregularly shaped, millimeter-size off-white splotches, each ringed with black material, akin to leopard spots. Perseverance’s **PIXL** (Planetary Instrument for X-ray Lithochemistry) instrument has determined

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Through the Eyepiece: The Northern Jewel Box and the False Comet

by Don Knabb, CCAS Treasurer & ALCOR



Image Credit: StudentAstronomyGroupUoC
https://commons.wikimedia.org/wiki/File:NGC_6231_and_%CE%B6_Sco_AOFPK.jpg

We have a brief chance during the summer to look at the southern constellations and all the deep sky wonders they hold. One of my favorite objects in the low southern area of the sky is the

Northern Jewel Box, NGC 6231.

The Northern Jewel Box has the “Northern” designation to differentiate it from the Jewel

(Continued on page 7)

Eyepiece (Cont'd)



Image credit: map created using Stellarium planetarium software

(Continued from page 6)

Box in Crux, the Southern Cross.

NGC 6231 is located where the Scorpion's tail makes a sharp left turn near Zeta Scorpii. Zeta1 and Zeta2 Scorpii are outlying members of this star cluster. In the image below you can see NGC 6231 above Zeta Scorpii 1 and 2.

The Northern Jewel Box was first recorded by Giovanni Batista Hodierna in 1654. NGC 6231 has been given many names. Be-

sides the Northern Jewel Box, it is also called The Table of Scorpious and the Lizard.

The Northern Jewel Box is also part of what is called The False Comet. That name was most likely coined by Alan Whitman's description of it at the 1983 Texas Star Party. He described it as "A striking comet-like structure streams north from the colorful naked-eye

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Mars Rock (Cont'd)

(Continued from page 6)

these black halos contain both iron and phosphate.

"These spots are a big surprise," said David Flannery, an astrobiologist and member of the Perseverance science team from the Queensland University of Technology in Australia. "On Earth, these types of features in rocks are often associated with the fossilized record of microbes living in the subsurface."

Spotting of this type on sedimentary terrestrial rocks can occur when chemical reactions involving hematite turn the rock from red to white. Those reactions can also release iron and phosphate, possibly causing the black halos to form. Reactions of this type can be an energy source for microbes, explaining the association between such features and microbes in a terrestrial setting.

In one scenario the Perseverance science team is considering, Cheyava Falls was initially deposited as mud with organic compounds mixed in that eventually cemented into rock. Later, a second episode of fluid flow penetrated fissures in the rock, enabling mineral deposits that created the large white calcium sulfate veins seen today and resulting in the spots.

While both the organic matter and the leopard spots are of great interest, they aren't the only aspects of the Cheyava Falls rock confounding the science team. They were surprised to find that these veins are filled with millimeter-size crystals of olivine, a mineral that forms

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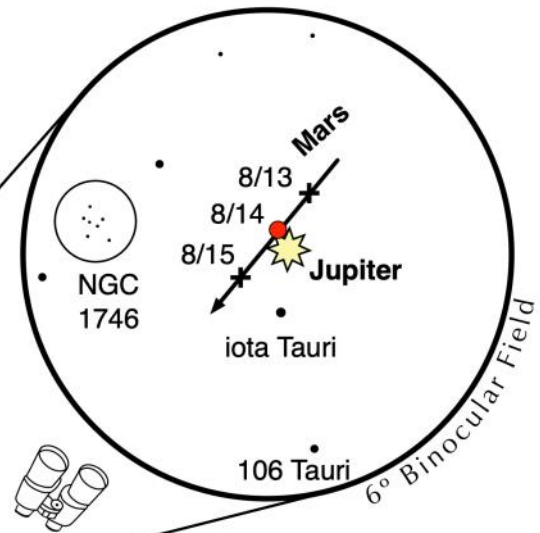
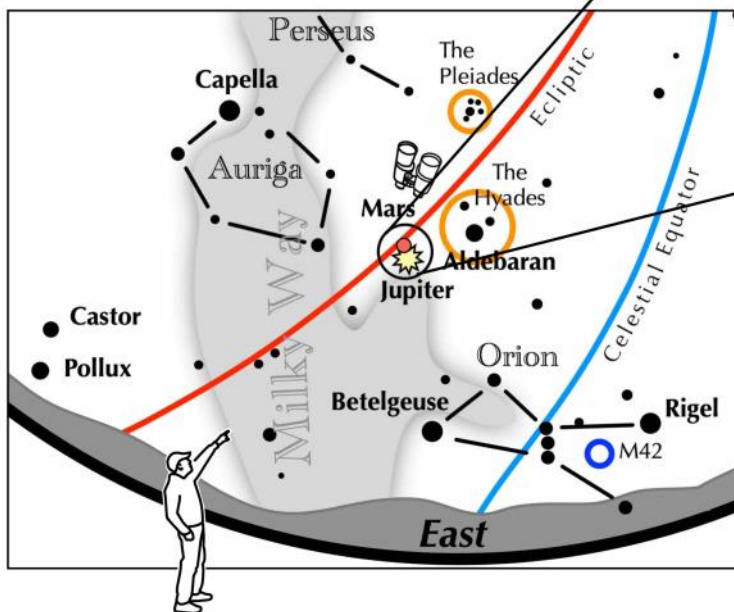
Conjunction of Mars and Jupiter

courtesy of the Astronomical League

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° 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.



Mars Rock (Cont'd)

(Continued from page 7)

from magma. The olivine might be related to rocks that were formed farther up the rim of the river valley and that may have been produced by crystallization of magma.

If so, the team has another question to answer: Could the olivine and sulfate have been introduced to the rock at uninhabitably high temperatures, creating an abiotic chemical reaction that resulted in the leopard spots?

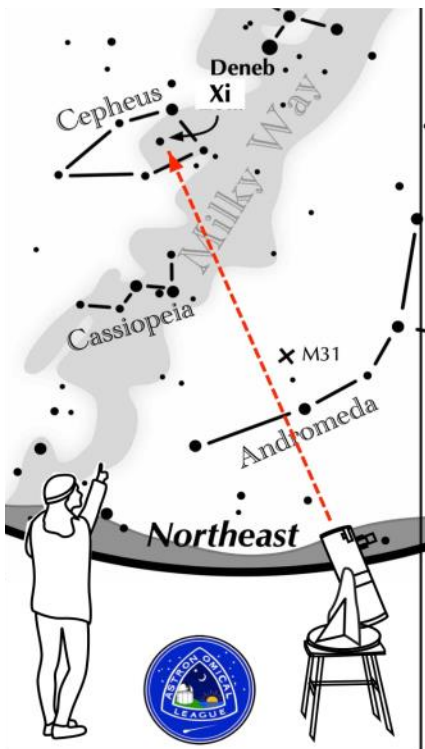
“We have zapped that rock with lasers and X-rays and imaged it literally day and night from just about every angle imaginable,” said Farley. “Scientifically, Perseverance has nothing more to give. To fully understand what really happened in that Martian river valley at Jezero Crater billions of years ago, we’d want to bring the Cheyava Falls sample back to Earth, so it can be studied with the powerful instruments available in laboratories.”

A key objective of Perseverance’s mission on Mars is astrobiology, including caching samples that may contain signs of ancient microbial life. The rover will characterize the planet’s geology and past climate, to help pave the way for human exploration of the Red Planet and as the first mission to collect and cache Martian rock and regolith.

NASA’s Mars Sample Return

(Continued on page 13)

Double Star Challenge for August 2024
courtesy of the Astronomical League



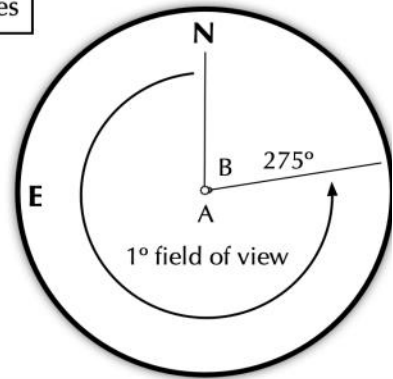
Other Suns: Xi Cephei

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



Eyepiece (Cont'd)

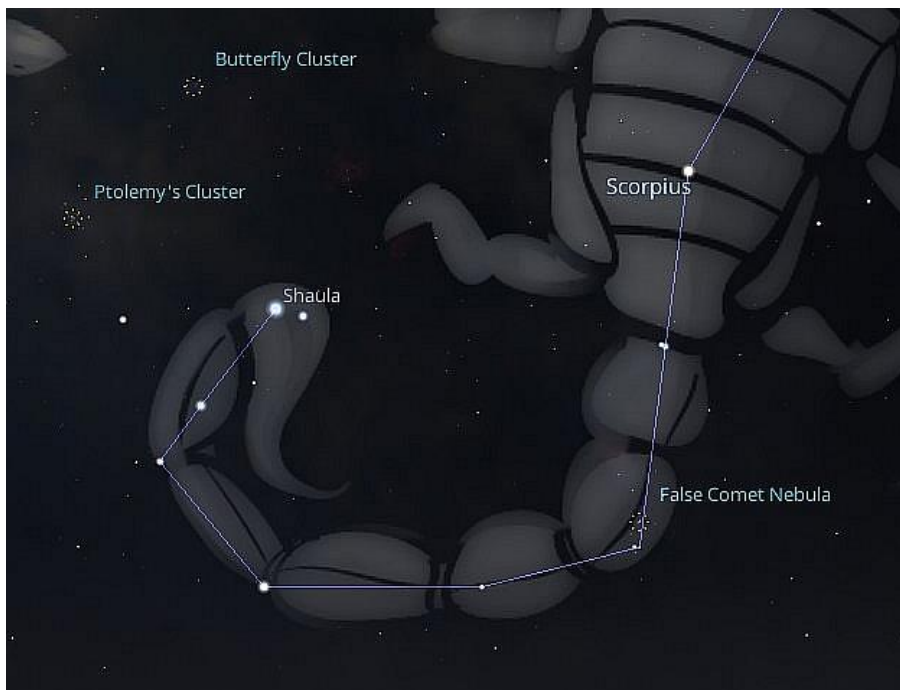


Image credit: map created using Stellarium planetarium software

H12, and the background glow of innumerable distant stars of Scorpius, all contributing to the cometary illusion.

On page 7 is an image created using Stellarium planetarium software showing the objects that make up the False Comet.

With a low southern horizon and reasonably dark skies it is easy to find the False Comet and NGC 6231 at the turn of the tail of Scorpius. 7x50 or 10x50 binoculars work nicely for this object and it is best to mount them on a tripod for steady viewing. A telescope also works fine for NGC 6231. Start with your lowest power eyepiece and work up to higher magnifications.

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double Zeta Scorpii.”

The 'comet' consists of Zeta, NGC 6231, the elongated cluster

Night Sky Notes: Seeing Double

by Kat Roche

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach.

Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.

During the summer months, we tend to 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), but also **double stars!**

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

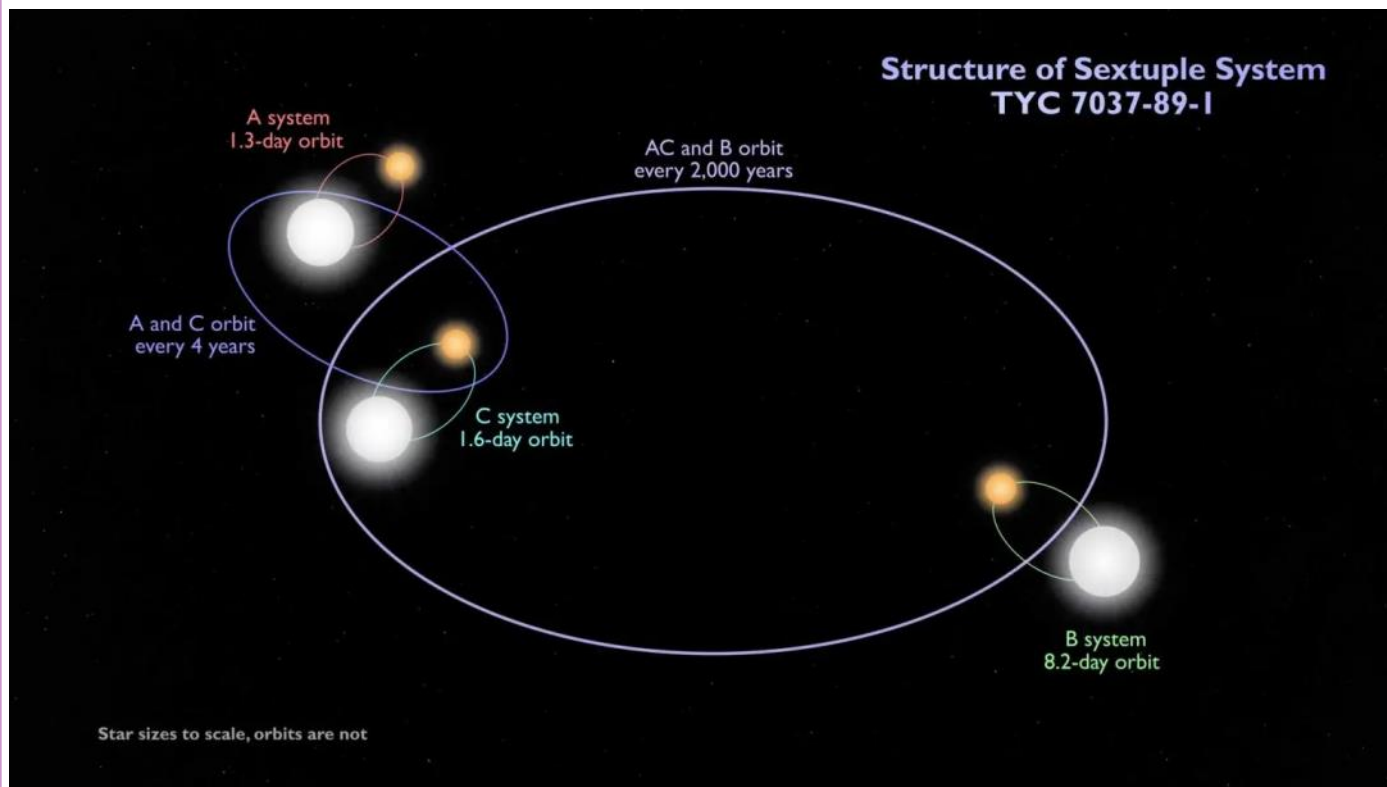


star systems typically come in two types – binary and optical doubles. Binary stars are two stars that are gravitationally bound and orbit each other, and optical double stars only *appear* to be close together when viewed

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:

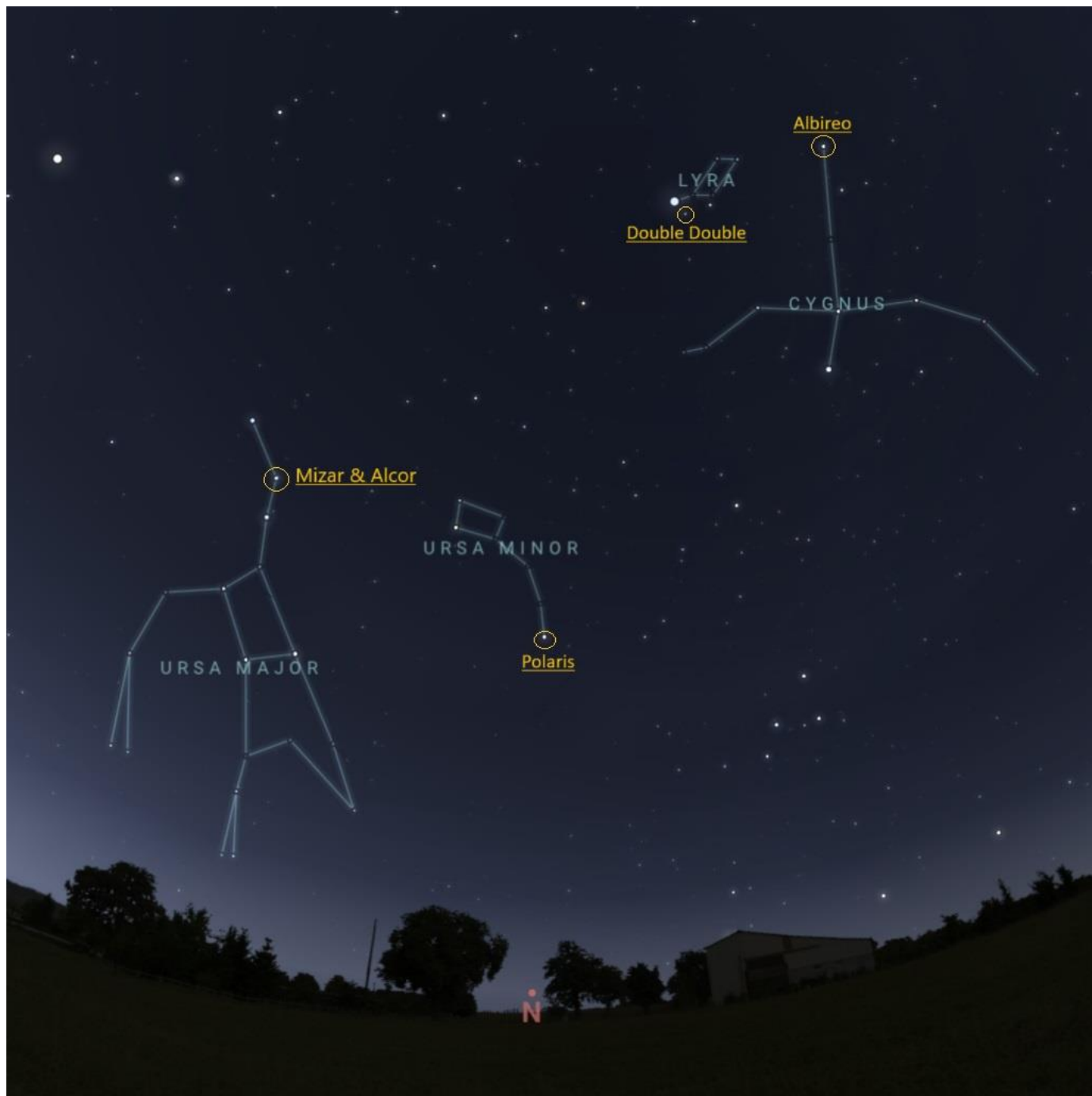
- **Double Double:** also known by its technical name, Epsilon Lyrae, this multiple star system appears as one star with naked eye observing. But with a small telescope, it can be split into 'two' stars. A large telescope reveals Epsilon Lyrae's secret – what

(Continued on page 11)



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. Image Credit: NASA's Goddard Space Flight Center

Night Sky Notes (Cont'd)



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

(Continued from page 10)

- looks like a single star is actually a *quadruple* star system!
- **Albireo:** a gorgeous double star set – one blue, one yellow

low – 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.

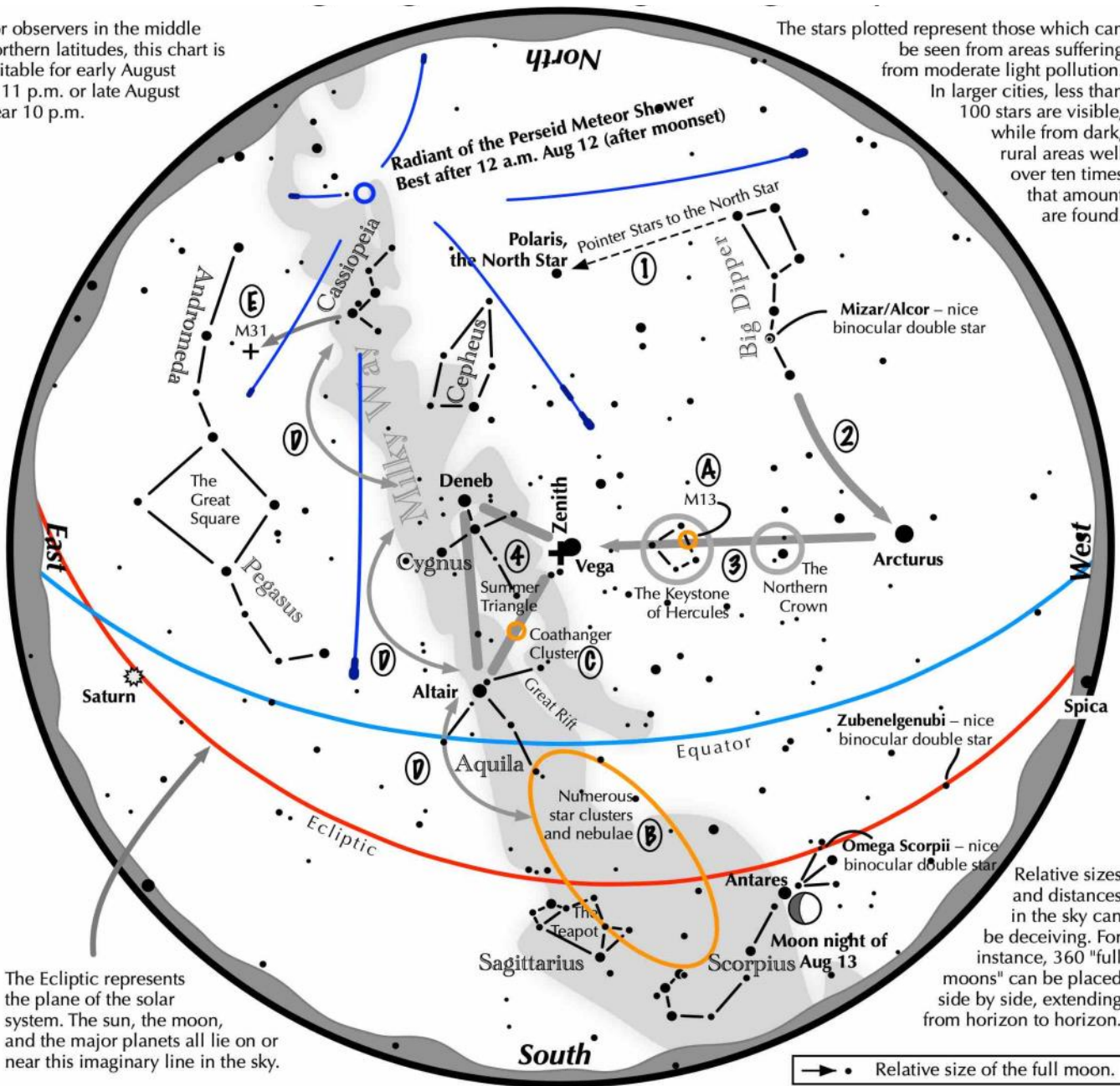
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Navigating the Mid-August 2024 Night Sky

courtesy of the Astronomical League

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.

→ • Relative size of the full moon.

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; duplication is allowed and encouraged for all free distribution.

Mars Rock (Cont'd)

(Continued from page 8)

Program, in cooperation with ESA (European Space Agency), is designed to send spacecraft to Mars to collect these sealed samples from the surface and return them to Earth for in-depth analysis.

The Mars 2020 Perseverance mission is part of NASA's Moon to Mars exploration approach, which includes [Artemis](#) missions to the Moon that will help prepare for human exploration of the Red Planet.

NASA's Jet Propulsion Laboratory, which is managed for the agency by Caltech, built and manages operations of the Perseverance rover. For more about Perseverance:

science.nasa.gov/mission/mars-2020-perseverance

Classic La Para by Nicholas La Para

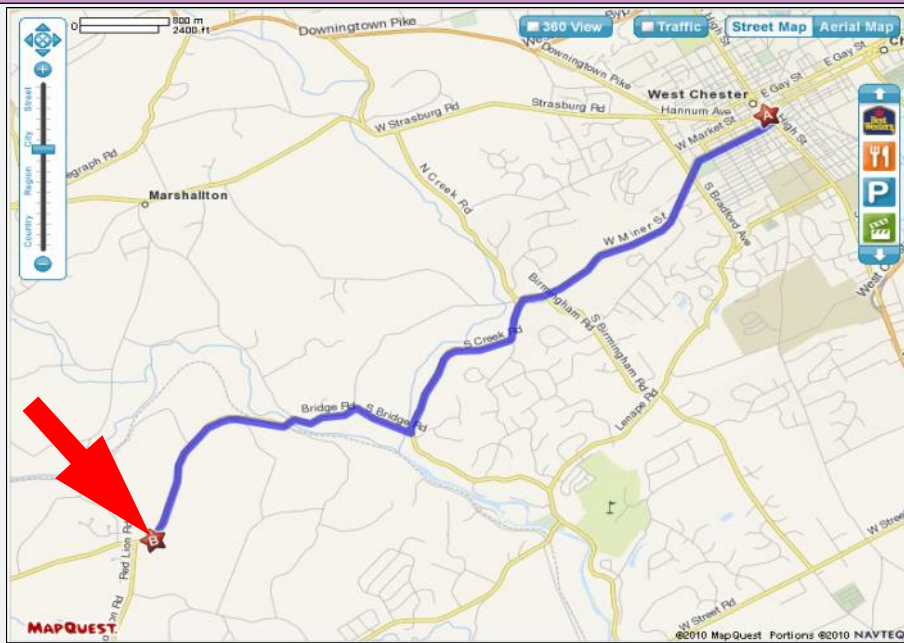
ASTRONOMY NEWS

UNIVERSE STILL EXPANDING!

- * Astronomer Glockenspiel says: "It hasn't slowed down yet. if we don't fix this, our children will inherit a much emptier cosmos."
- * Republicans blame inflation caused by deficit spending.
- * Democrats: New real estate could solve immigration problems.

LAPARA

CCAS Directions



Brandywine Red Clay Alliance

The monthly observing sessions (held February through November) are held at the Myrick Conservation Center of the Brandywine Red Clay Alliance.

To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BRC property, turn left off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go left through the gate and drive up the farm lane about 800 feet to the top of the hill. The observing area is on the right.

If you arrive after dark, *please turn off your headlights and just use parking lights* as you come up the hill (so you don't ruin other observers' night vision).

Brandywine Red Clay Alliance

1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090

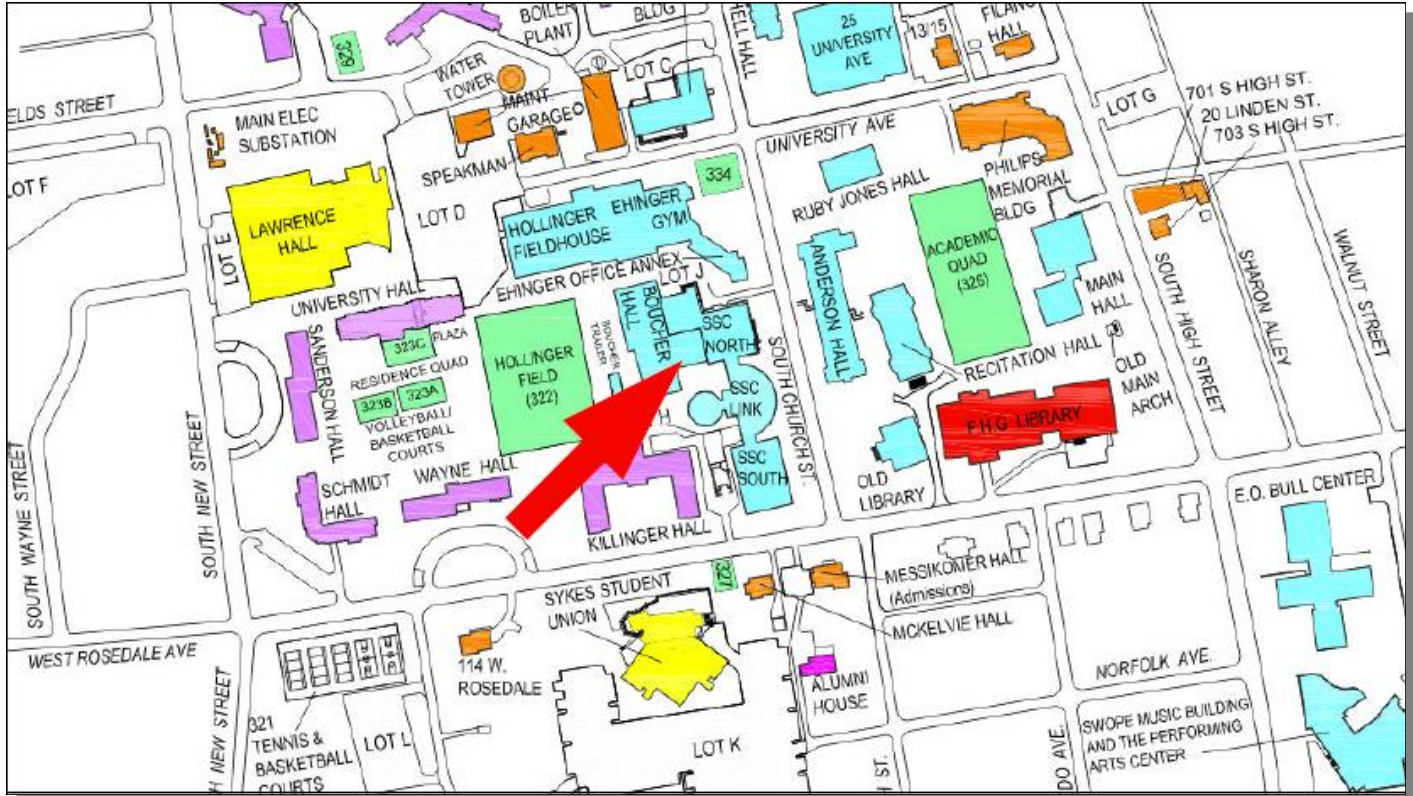
<http://brandywinewatershed.org/>

BRC was founded in 1945 and is committed to promoting and protecting the natural resources of the Brandywine Valley through educational programs and demonstrations for all ages.

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 112 in Merion Science Center (formerly the Boucher Building), attached to the Schmucker Science Center. The Schmucker Science Center is located at the corner of S. Church St & W. Rosedale Ave. Parking is generally available across Rosedale in the Sykes Student Union parking lot (Lot K).



Night Sky Notes (Cont'd)

(Continued from page 11)

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.

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

July 2024 Financial Summary

Beginning Balance	\$778
Deposits	\$355
Disbursements	-\$0
Ending Balance	\$1133

New Member Welcome!

Welcome to new CCAS members Brett Beidler, Douglassville, PA, Ryan Rauenzahn, Audubon, PA, and Ravi Ramadoss, Chester Springs, PA.

We're glad you decided to join us under the stars! Clear skies to you!

Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Don Knabb
988 Meadowview Lane
West Chester PA 19382

The current dues amounts are listed in the *CCAS Information Directory*. Consult the table of contents for the directory's page number in this month's edition of the newsletter.

Join the Fight for Dark Skies!



You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at \$30.00 for one year. Send to:

International Dark-Sky Association
 5049 E Broadway Blvd, #105
 Tucson, AZ 85711
 Phone: 520-293-3198
 Fax: 520-293-3192
 E-mail: ida@darksky.org

For more information, including links to helpful information sheets, visit the IDA web site at:

<http://www.darksky.org>

Dark-Sky Website for PA



The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

<http://www.POLCouncil.org>

Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

<http://www.lymebasics.org>

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent"!

Good Outdoor Lighting Websites

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Check out these sites and pass this information on to others. Help reclaim the stars! And save energy at the same time!



Light pollution from poor quality outdoor lighting wastes billions of dollars and vast quantities of valuable natural resources annually. It also robs us of our heritage of star-filled skies. Starry Night Lights is committed to fighting light pollution. The company offers the widest selection of ordinance compliant, night sky friendly and neighbor friendly outdoor lighting for your home or business. Starry Night Lights is located in Phoenix, Arizona.

Phone: 520-280-3846

<http://www.starrynightlights.com>



LIGHTHOUSE
 OUTDOOR LIGHTING

Lighthouse Outdoor Lighting is a dedicated lifetime corporate member of the [International Dark-Sky Association](http://www.darksky.org). Lighthouse's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

211 North Walnut St.
1st Floor
West Chester, PA 19380

Phone: 484-291-1084 or 800-737-4068

<https://www.lighthouse-lights.com/landscape-lighting-design/pa-west-chester/>

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our organization. This information is provided only as a service to our members and the general public.



High Point Scientific is a retailer of telescopes, binoculars, eyepieces and telescope accessories from Meade, Celestron, Televue, Orion, StellarMate, Takahashi, and many more. They also have an extensive blog of advice and education for amateur astronomers.

High Point Scientific
 442 Route 206
 Montague NJ, 07827

Phone: 800-266-9590

<https://www.highpointscientific.com/>



Located in Manayunk, Spectrum Scientifics educates and entertains customers with an array of telescopes, microscopes, binoculars, science toys, magnets, labware, scales, science instruments, chemistry sets, and much more.

4403 Main Street
Philadelphia, PA 19127

Phone: 267-297-0423
 Fax: 215-965-1524

Hours:
 Monday thru Friday: 9AM to 5PM

<http://www.spectrum-scientifics.com>

CCAS Information Directory

CCAS Lending Telescopes

Contact Don Knabb to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Don's phone number is 610-436-5702.

Contributing to Observations

Contributions of articles and images relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to: newsletter@ccas.us to:

Dr. John C. Hepler
21 Medinah Drive
Reading, PA 19607

The deadline for submissions to the monthly newsletter is the 26th of each month. Articles and images should be original or the author/artist must be given credit. Articles should be in MS Word format with 12 point Times New Roman Font with single row spacing and one-inch margins on all four sides. Images should be in JPG or PNG file format. The submission window opens on the 20th of each month.

CCAS Newsletters via E-mail

You can receive the monthly newsletter (in full color!) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to Dr. John Hepler, the newsletter editor, at: newsletter@ccas.us.

CCAS Website

Dr. John Hepler is the Society's Webmaster. You can check out our Website at:

<http://www.ccas.us>

Dr. Hepler welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work—no copyrighted material! Give your contributions to Dr. Hepler at (484) 883-5033 or e-mail to webmaster@ccas.us

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "nights out" for school, scout, and other civic groups.

CCAS Executive Committee

For further information on membership or society activities you may call:

President: Dave Hockenberry
610-558-4248

Vice President: Pete Kellerman
610-873-0162

ALCor & Treasurer: Don Knabb
610-436-5702

Observing: Michael Manigly
484-631-6197

Secretary: Beatrice Mazziotta
610-933-2128

Program: Bruce Ruggeri
610-256-4929

Education: Don Knabb
610-436-5702

Dennis O'Leary
610-701-8042

Webmaster & Newsletter: John Hepler
484-883-0533

Public Relations: Ann Miller
610-558-4248



CCAS Membership Information

The 2023 membership rates are as follows:

REGULAR MEMBER.....\$30/year
SENIOR MEMBER.....\$15/year
STUDENT MEMBER.....\$ 5/year
JUNIOR MEMBER.....\$ 5/year
FAMILY MEMBER.....\$40/year

Membership Renewals

Check the Membership Renewals on the front of each issue of *Observations* to see if it is time to renew. If you need to renew, you can mail your check, made out to "Chester County Astronomical Society," to:

Don Knabb
988 Meadowview Lane
West Chester PA 19382-2178

Phone: 610-436-5702
e-mail: treasurer@ccas.us

Sky & Telescope Magazine

The club membership subscription cost for *Sky and Telescope* magazine has increased to **\$43.95**. This is still a good saving from the regular rate of **\$56.05**.

There is no need to go through the CCAS treasurer for subscriptions or renewals. Just go to the Sky and Telescope website and select "Magazine", then under the FAQs you can subscribe at the club rate.

<https://skyandtelescope.org/subscribe/>

If you have **any** questions call Don Knabb at 610-436-5702.

Astronomy Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$34.00** which is much less than the individual subscription price of **\$42.95** (or \$60.00 for two years).

There is no need to go through the CCAS treasurer for subscriptions or renewals. Just call customer service at 877-246-4835 and request the club rate for your new subscription or renewal.