



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 33, No. 1 **Three-Time** Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016 January 2025

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Best Wishes for a Happy & Healthy 2025!



Membership Renewals Due

01/2025	Hockenberry & Miller Johnson Jose Kellerman Kennedy McElwee Schier
02/2025	Buki Ruggeri Sutton
03/2025	Angelini DellaPenna Fulton Rainville Sterrett

January 2025 Dates

- 1st • New Moon, 1:21 a.m. EST
- 6th • First Quarter Moon, 5:26 pm. EST
- 13th • Full Moon, the Wolf Moon, 5:26 p.m. EST
- 13h • Mars will be occulted by the Moon, 9:17 to 10:30 p.m. EST in our area.
- 15th • Mars is at opposition
- 20th • Rupes Recta, the lunar straight wall is visible
- 21st • Last Quarter Moon, 3:30 p.m. EST; alignment of Venus, Mars, Jupiter, Saturn, Neptune & Uranus
- 29th • New Moon, 7:35 a.m. EST



CCAS Upcoming Nights Out

In addition to our monthly observing sessions at the Myrick Conservancy Center, BRC (for directions, see pg. 13), CCAS schedules special “nights out” throughout the year. Members are encouraged to help out during these events any way they can. See below for more information.

☼ Monthly observing sessions at the Myrick Conservancy Center, BRC, will resume in March 2025. Look for more details in the February 2025 edition of the Observations newsletter.

For more information about future observing opportunities, contact our Observing Chair, Don Miller.

Winter Society Events

January 2025

14th • CCAS Monthly Meeting, in person (as well as via Zoom) at West Chester University's Merion Science Center, Room 112. Guest Speaker: Dr. Joel Leja, Assistant Professor of astronomy and astrophysics at Penn State University, "Surprises at the Dawn of Time from James Webb: A First Look at the First Stars, Galaxies, and Black Holes."

20th • Open call for articles and photographs for the February 2025 edition of [Observations](#).

24th • West Chester University Planetarium Show: "The Wonders of the Distant Universe from the Webb Space Telescope," in the Schmucker Science Building. The show starts at 7 p.m. and runs approximately one hour in length. For more information and reservations, visit the [WCU Public Planetarium Shows](#) webpage.

26th • Deadline for newsletter submissions for the February 2025 edition of [Observations](#).

February 2025

11th • CCAS Monthly Meeting, in person (as well as via Zoom) at West Chester University's Merion Science Center, Room 112. Guest Speaker: Dr. Bhuvnesh Jain, Dept of Astronomy and Astrophysics, University of Pennsylvania, "Dark Matter and Dark Energy and their Roles in Galaxy Formation and Evolution."

20th • Open call for articles and photographs for the March 2025 edition of [Observations](#).

21st • West Chester University Planetarium Show: "Exoplanets and the Search for Life," in the Schmucker Science Building. The show starts at 7 p.m. and runs approximately one hour in length. For more information and reservations, visit the [WCU Public Planetarium Shows](#) webpage.

26th • Deadline for newsletter submissions for the March 2025 edition of [Observations](#).

November 2024 Meeting Minutes

by *Bea Mazziotta, CCAS Secretary*

- The November 2024 CCAS meeting was held in person on November 12th at West Chester University, as well as on YouTube and Zoom.
- Dave Hockenberry, CCAS president, welcomed members and guests. He thanked those who participated in the recent event held at the Helicopter Museum on November 2nd. It was a successful event and very well attended. CCAS will continue to participate in upcoming Museum events.
- Dave confirmed that the holiday party will take place in The Bull Pen area at Iron Hill Brewery in West Chester. The date is December 10th with a start time of 6 PM.
- Dave announced that Mike Manigly has retired from his post as CCAS Observing Chair. Many thanks to Mike for an outstanding job during his tenure.
 - Don Miller will be filling in temporarily until a new chair is installed. Anyone who is interested in the position please contact Dave Hockenberry, Don Knabb or Mike Manigly to discuss details.
- Bruce Ruggeri, Program Chair, introduced the evening's speaker, Dr. Ravi Sheth. His presentation, "Making black hole out of... light? New perspectives" explored the possibility that light, as a form of energy, could make a black hole.
 - Dr. Sheth is a full professor and graduate chair at the UPenn Dept. of Physics and Astronomy.
 - His areas of interest include Cosmology, Galaxy Formation and Stochastic (involving chance, probability, random variables) processes.

January 2025 CCAS Meeting Agenda

by *Bruce Ruggeri, CCAS Program Chair*

Our next meeting will be held on January 14, 2025, 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. Our guest speaker is Dr. Joel Leja, Penn State University. His presentation is titled, "Surprises at the Dawn of Time from James Webb: A First Look at the First Stars, Galaxies, and Black Holes."

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.

January 2025 Meeting Guest Speaker Information

by Bruce Ruggeri, CCAS Program Chair

I hope all is well with you and your families and that you had a wonderful holiday season. As we begin our Spring 2025 program of monthly meetings, I am pleased to announce our in person and Zoom CCAS rescheduled monthly meeting for Tuesday, January 14, 2025, commencing at 7:00 pm ET. Our guest speaker is Dr. Joel Leja, Assistant Professor of astronomy and astrophysics at Penn State University. A brief description of his presentation and biographical information follow.



Joel Leja, Ph.D.

Presentation Title & Synopsis: *Surprises at the Dawn of Time from James Webb: A First Look at the First Stars, Galaxies, and Black Holes.* The James Webb Space Telescope is the culmination of thirty years of planning,

twenty years of construction, and eleven billion dollars of funding. It is the most expensive and complex astronomical observatory ever built, and it was designed specifically to perform the first systematic exploration

of stars, galaxies, and black holes in the early universe. Luckily for us, this first systematic exploration is happening right now—in our lives.

Dr. Leja will introduce this flagship telescope and discuss some of the early, stunning, and sometimes tentative, discoveries we have made in Webb's first deep fields, by measuring the ancient first light from galaxies and black holes originating near the edge of the observable universe. Dr. Leja will discuss in particular the new, mysterious, very bright, and seemingly impossible objects at the edge of the universe which have been puzzling astronomers and cosmologists: those "little red dots".

(Continued on page 13)

Celebrating 20 Years: Night Sky Network

by Vivian White and Kat Troche

NASA's Night Sky Network is one of the most successful and longstanding grassroots initiatives for public engagement in

astronomy education. Started in 2004 with the PlanetQuest program out of the Jet Propulsion Laboratory and currently sup-

ported by NASA's Science Activation, the Night Sky Network (NSN) is critical in fostering science literacy through astronomy. By connecting NASA science and missions to support amateur astronomy clubs, NSN leverages the expertise and enthusiasm of club members, who bring this knowledge to schools, museums, observatories, and other organizations, bridging the gap between NASA science and the public. Now in its 20th year, NSN supports over 400 astronomy clubs dedicated to bringing the wonder of the night sky to their communities across the U.S. and connecting with 7.4 million people across the United States and its territories since its inception.

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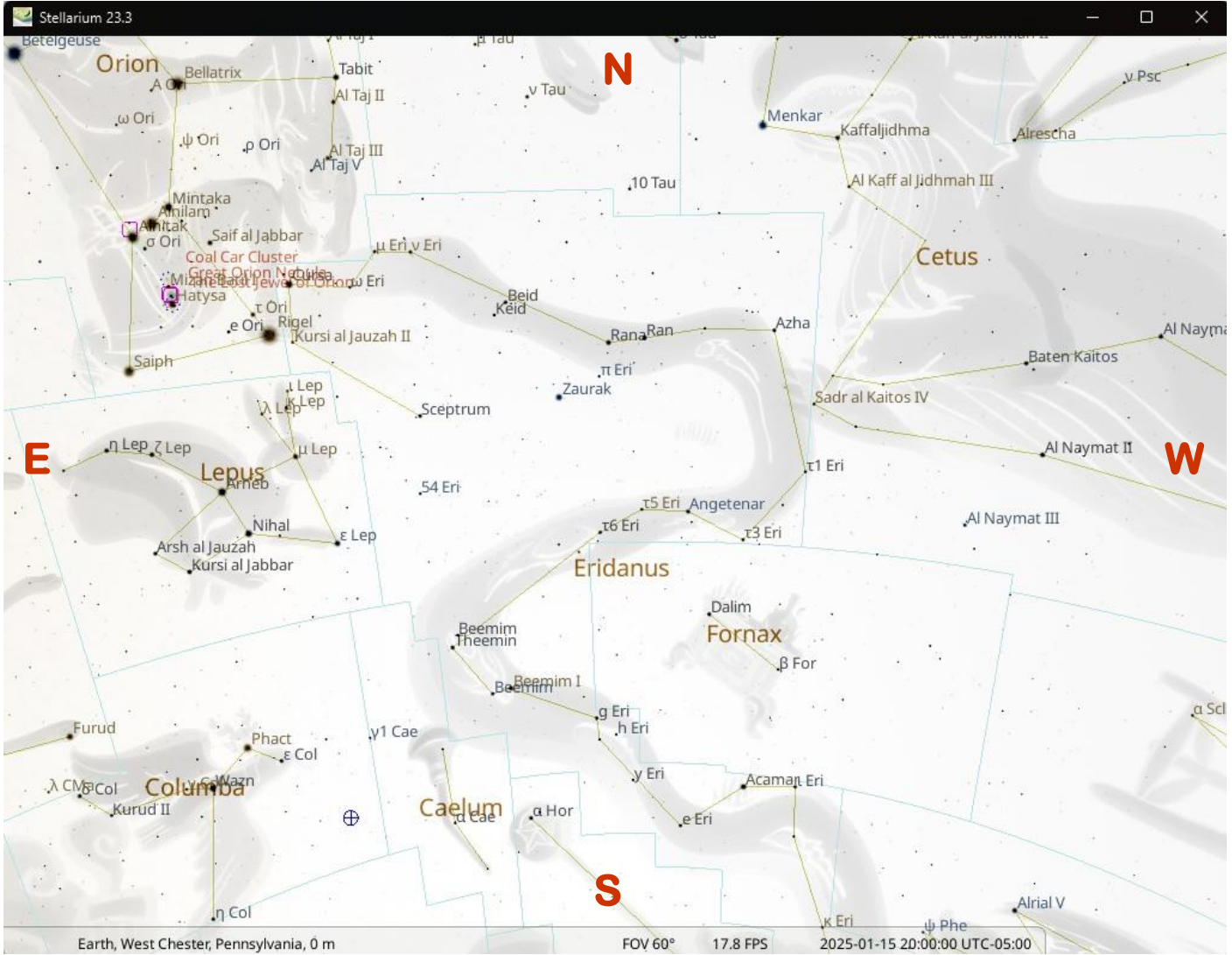


International Observe the Moon Night, September 2024.
Image Credit: Oklahoma City Astronomy Club/Dave Huntz

The Sky Over Chester County

January 15, 2025 at 8:00 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
01/01/2025	6:53 a.m. EST	7:24 a.m. EST	4:48 p.m. EST	5:18 p.m. EST	09h 24m 06s
01/15/2025	6:52 a.m. EST	7:22 a.m. EST	5:02 p.m. EST	5:31 p.m. EST	09h 40m 00s
01/31/2025	6:42 a.m. EST	7:11 a.m. EST	5:20 p.m. EST	5:49 p.m. EST	10h 09m 26s

Moon Phases					
First Quarter	01/06/2025	5:26 p.m. EST	Full Moon	01/13/2024	5:26 p.m. EST
Last Quarter	01/21/2025	3:30 p.m. EST	New Moon	01/29/2024	7:35 a.m. EST

January 2025 Observing Highlights

by Don Miller, CCAS Observing Chair

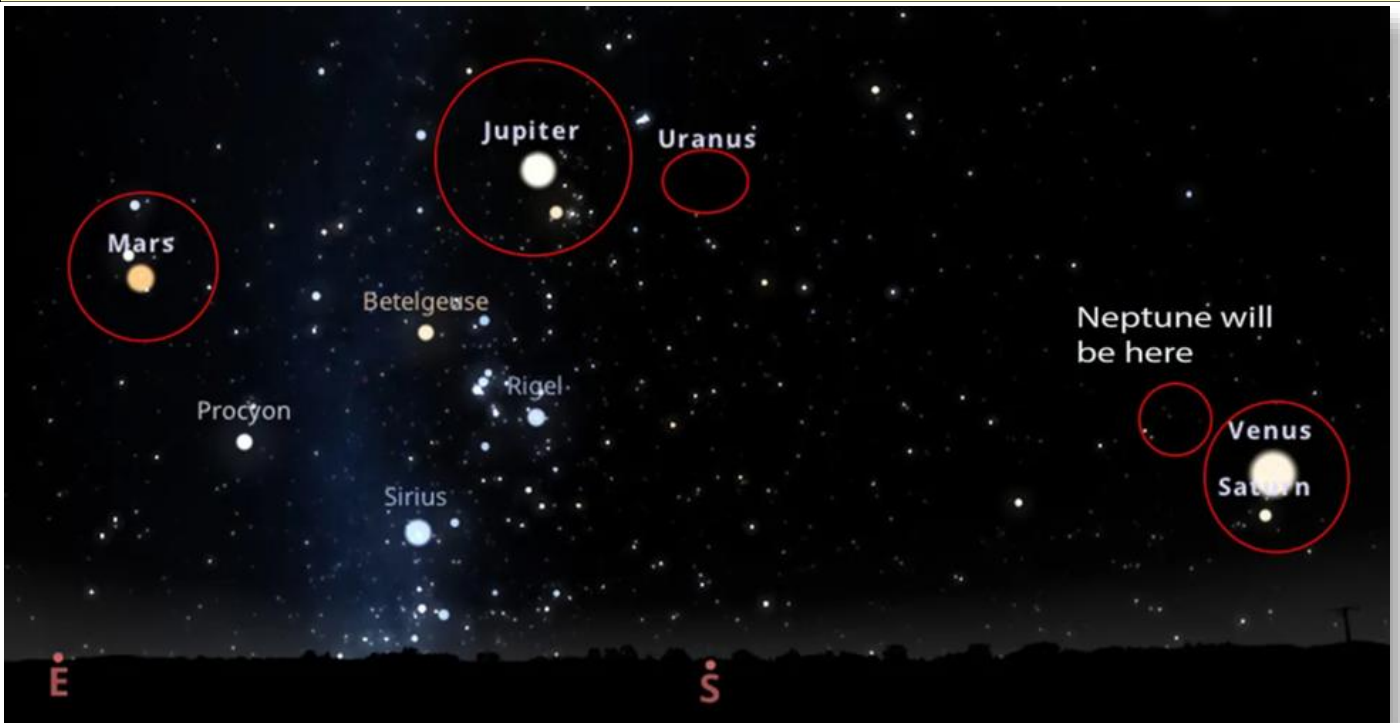


Image made using Stellarium, the free planetarium software

From an observing perspective, January is one of those months that is both incredible (the potential for fantastically clear skies, long nights) and awful (just too darn cold on your body and equipment). I've had my scope freeze solid on one January night in Indiana at -10 F. Even with all that said, this January has some observing opportunities that might entice you into the cold.

Planets

There will be an alignment of six planets around the 21st of January. Venus, Mars, Jupiter, Saturn, Neptune and Uranus. Venus and Saturn both set by approximately 9 pm so be sure to observe early.

Jupiter will be very nicely placed all month for our region. The disk will span 45" and easily 50" above the horizon in our early evening hours. This makes Jupiter a wonderful target in even the smallest telescopes. If you haven't observed the four Galilean moons as they orbit Jupiter, take some time to use tables of events for these moons to watch them as they are eclipsed by Jupiter, transit across the face of Jupiter, and cast their shadows on the Jupiter surface.

Occultations happen when one planetary body moves into a position to block another body from our view. This month we have a very good one oc-

curing. Mars will be occulted by the Moon on the 13th of January. Mars should start contact with the lunar disc around 9:17 PM in our area, and very quickly be occulted. Mars will reappear from behind the Moon at approximately 10:30 PM. The Moon is so bright that it can be very hard to see Mars when it is near the lunar disc but binoculars or a telescope will allow you to view the event clearly. Enjoy the show.

Mars will be at opposition on the 15th of January. This is the closest approach for the year of this planet with ours and thus the largest disc size for optimal viewing. Oppositions follow a 15.8-year cycle, with some years bringing Mars closer to the Earth and thus larger in image size. In July 2018, the disc was 24.3" versus this year's of 14.6".

Deep Sky

For me, the January sky is always a time to simply enjoy the wonder of M42 (the star forming region in the Orion constellation). A lot has been written about that one so I'm focusing on an open cluster that many people miss, M41. This is known as the little beehive cluster and is an open cluster in Canis Major. Look south of Sirius to find it easily either

(Continued on page 9)

Looking Up: The Alpha Persei Cluster in Perseus

by Don Knabb, CCAS Treasurer & ALCOR

To endure the cold temperatures of January I often just step outside with binoculars instead of taking the time to set up a telescope. So, this month I'll highlight a naked eye and binocular object.

During January the constellation Perseus is high in the sky during the evening observing hours. This constellation is part of the mythological soap opera

involving Andromeda, Cassiopeia, Cepheus, Pegasus and Perseus. But that's a story for another time. Its brightest star, Alpha Persei, is a member of a large cluster of stars. This cluster is easily observed with the naked eye, but any pair of binoculars will show you many more members of the group.

Below is a view of the cluster created with Stellarium planetar-

ium software. To find the cluster, just look at Mirfak, the brightest star in Perseus.

The Alpha Persei Cluster, also known as Melotte 20 or Collinder 39, is an open cluster, although it is much larger than most of the objects we call open clusters, spanning about three degrees (the full Moon is $\frac{1}{2}$ a

(Continued on page 14)

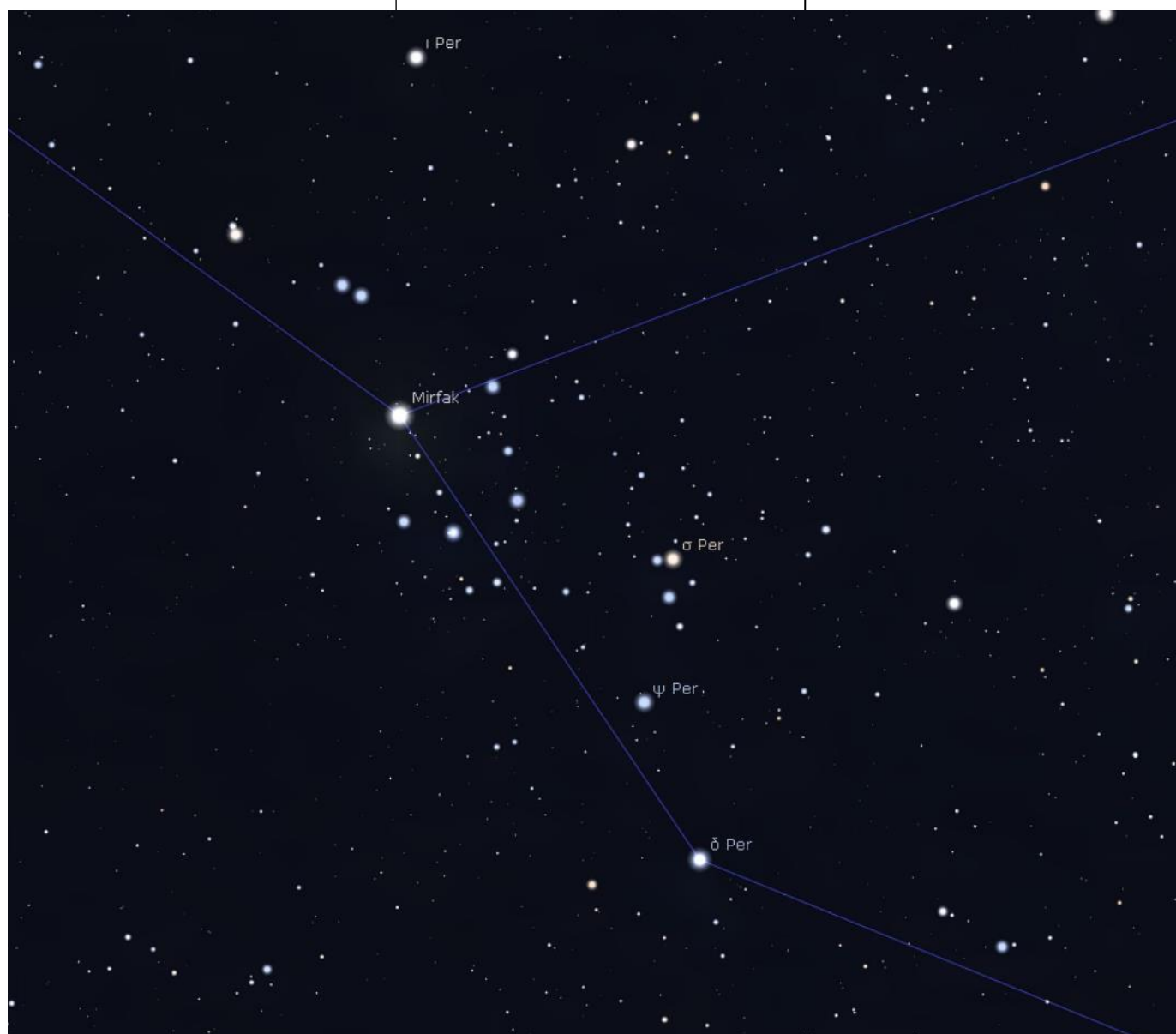


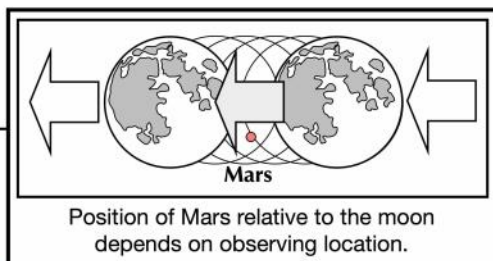
Image made using Stellarium, the free planetarium software

Binocular Challenge for January 2025

courtesy of the Astronomical League



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



Lunar occultation of Mars across the contiguous United States: Jan. 13.
Extreme southern US sees Mars move behind the southern portion of the moon, and the northern US sees the planet move behind the northern portion of the moon.



Be sure to use binoculars!

Occultations demonstrate the moon's eastward orbital motion as Earth's rotation causes it to move in a westward arc across the night sky.



Full Moon occults Bright Mars

In the evening hours of **January 13**, the brilliant full moon passes in front of bright Mars, which is near opposition. It may not be easy to spot because of the moon's bright glare!, but give it a try!

Approximate local times of disappearance and reappearance.

Begin viewing ten minutes before your estimated time. Mars' time and position of reappearance is difficult to judge since the planet lies concealed behind the moon beforehand.

City	Disappearance	Reappearance
Albuquerque	6:51 pm	7:52
Augusta	9:29	10:44
Atlanta	9:06	10:13
Boise	7:06	7:49
Boston	9:26	10:42
Chicago	8:08	9:16
Dallas	7:54	8:57
Denver	6:57	7:57
Kansas City	8:00	9:06
Memphis	8:00	9:07
Minneapolis	8:08	9:10
Los Angeles	5:51	6:45
Miami	9:30	9:53
New Orleans	8:00	8:59
New York	9:21	10:37
Phoenix	6:49	7:48
Salt Lake City	6:59	7:52
San Antonio	7:52	8:50
San Diego	5:49	6:45
San Francisco	5:58	6:45
Seattle	6:23	6:39
Washington DC	9:16	10:31

20th Anniversary (Cont'd)

(Continued from page 3)

Humble Beginnings

It all started with an idea – astronomy clubs already do significant outreach, and club members know a lot about astronomy (shown definitively by founder Marni Berendsen's research), and they love to talk with the public. How could NASA support these astronomy clubs in sharing current research and ideas through informal activities designed for use in the places where amateur astronomers conduct outreach? Thanks

to funding through NASA JPL's PlanetQuest public engagement program, the Night Sky Network was born in 2004, with more than 100 clubs joining in the first year.

As quoted from the first NSN news article, "NASA is very excited to be working closely with the amateur astronomy community," said Michael Greene, current Director of Communications and Education and former head of public engagement for JPL's Navigator Program and PlanetQuest initiatives.

"Amateurs want more people to look at the sky and understand astronomy, and so do we. Connecting what we do with our missions to the sense of wonder that comes when you look up at the stars and the planets is one of our long-term objectives. We have a strong commitment to inspiring the next generation of explorers. Lending support to the energy that the amateur astronomy community brings to students and the public will allow NASA to reach many more people."

(Continued on page 11)

Night Sky Notes: The Red Planet

by Kat Troche

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.

Have you looked up at the night sky this season and noticed a bright object sporting a reddish hue to the left of Orion? This is none other than the planet Mars! January will be an excellent opportunity to spot this planet and some of its details with a medium-sized telescope. Be sure to catch these three events this month.

Martian Retrograde

Mars entered retrograde (or backward movement relative to its usual direction) on December 7, 2024, and will continue throughout January into February 23, 2025. You can track the



planet's progress by sketching or photographing Mars' position relative to nearby stars. Be consistent with your observations, taking them every few nights or so as the weather permits. You can use free software like Stellarium or Stellarium Web (the browser version) to help you navigate the night as Mars treks around the sky. You can find

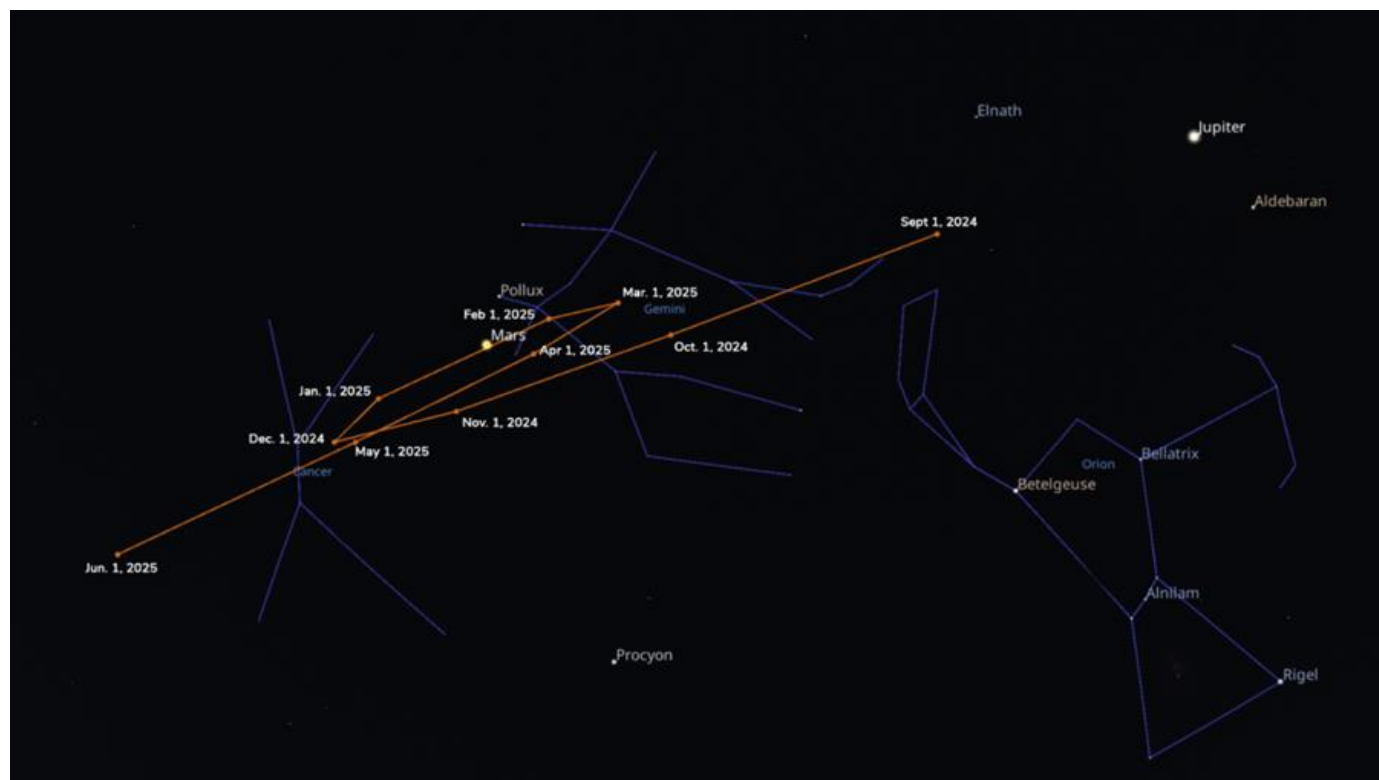
Mars above the eastern horizon after 8:00 p.m. local time.

Hide and Seek

On the night of January 13th, you can watch Mars 'disappear' behind the Moon during an occultation. An occultation is when one celestial object passes directly in front of another, hiding the background object from view. This can happen with planets and stars in our night sky, depending on the orbit of an object and where you are on Earth, similar to eclipses.

Depending on where you are within the contiguous United States, you can watch this event with the naked eye, binoculars, or a small telescope. The occultation will happen for over an

(Continued on page 9)



This mid-January chart shows the path of Mars from September 2024 to June 2025 as it enters and then exits in retrograde motion. Mars appears to change its direction of motion in the sky because Earth is passing the slower-moving Mars in its orbit. Credit: Stellarium

Night Sky Notes (Cont'd)



A simulated view of the Moon as Mars begins its occultation on January 13, 2025. Credit: Stellarium

(Continued from page 8)

hour in some parts of the US. You can use websites like [Stellarium Web](#) or the Astronomical League's ['Moon Occults Mars' chart](#) to calculate the best time to see this event.

Closer and Closer

As you observe Mars this month to track its retrograde movement, you will notice that it will increase in brightness. This is because Mars will reach **opposition** by the evening of January 18th. Opposition happens when a planet is directly opposite the Sun, as seen from Earth. You don't need to be in any specific city to observe this event; you only need clear skies to observe

that it gets brighter. It's also when Mars is closest to Earth, so you'll see more details in a telescope.

Want a quick and easy way to illustrate what opposition is for Jupiter, Saturn, Mars, or other outer worlds? Follow the instructions on our [Toolkit Hack: Illustrating Opposition with Exploring the Solar System](#) page using our [Exploring Our Solar System](#) activity!

Mars has fascinated humanity for centuries, with its earliest recorded observations dating back to the Bronze Age. By the 17th century, astronomers were able to identify features of the Martian surface, such as its [ice](#)

Observing (Cont'd)

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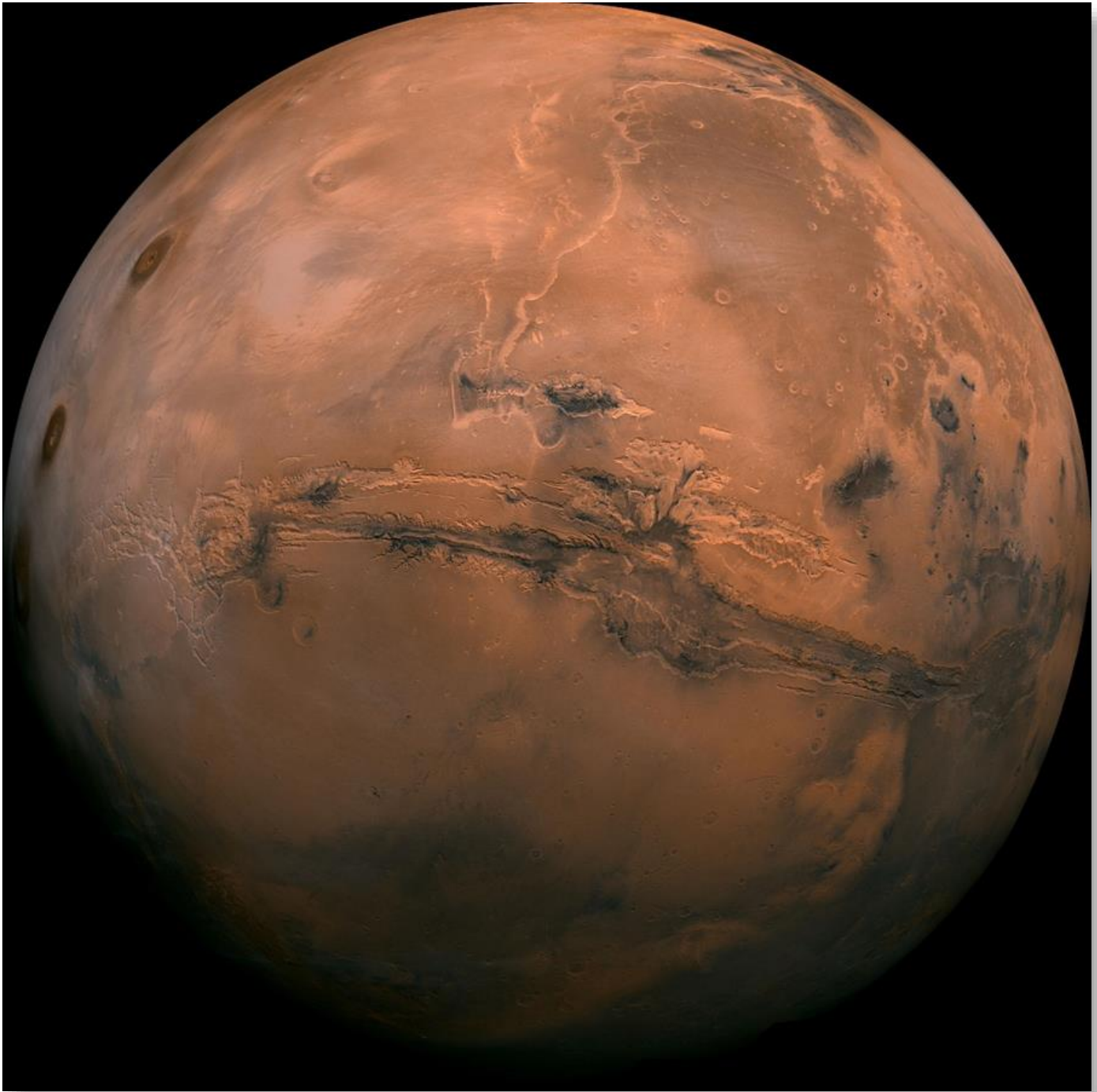
with your eyes (if you're in a nicely dark environment) or with a pair of binoculars. It is reported that Aristotle mentioned it in 325 BC as a mysterious cloudy spot in the sky. This cluster contains about 100 stars. Look carefully and you'll see that some of the star chains in this cluster form a backward question mark.

Lunar

Rupes Recta, also known as the straight wall, will be visible on lunar day 21 which is around January 20th. This clearly visi-

(Continued on page 17)

Night Sky Notes (Cont'd)



A mosaic of the Valles Marineris hemisphere of Mars projected into point perspective, a view similar to that which one would see from a spacecraft. The mosaic is composed of 102 Viking Orbiter images of Mars. Credit: NASA/JPL-Caltech

(Continued from page 9)

caps and darker regions. Since the 1960s, exploration of the Red Planet has intensified with robotic missions from various space organizations.

Currently, NASA has five active missions, including rovers and orbiters, with the future focused on human exploration and habitation. Mars will always fill us with a sense of wonder and

adventure as we reach for its soil through initiatives such as the Moon to Mars Architecture and the Mars Sample Return campaign.

20th Anniversary (Cont'd)



Raynham Public Observing Night, February 2004. Credit: Astronomical Society of Southern New England/Mark Gibson

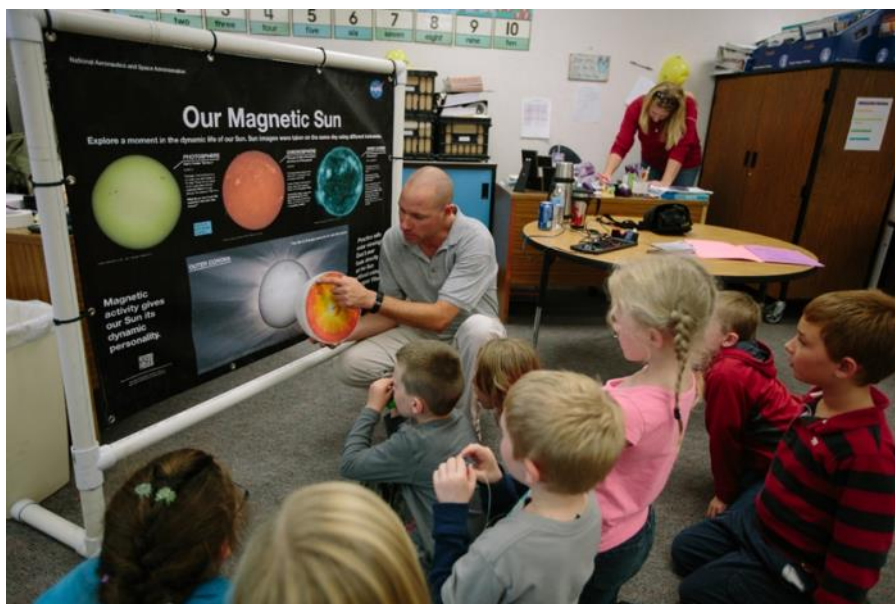
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Taking off like a rocket, Night Sky Network had over 100 clubs registered on their website within the first year.

The Toolkits

Outreach Toolkits were devel-

oped to assist clubs with their endeavors. These kits include educational materials, hands-on activities, and guides for explaining topics in an accessible way. So far, 13 toolkits have been created on topics ranging from the scale of the universe to



Rye Science Day, October 2014. Credit: Southern Colorado Astronomical Society/Malissa Pacheco

how telescopes work. To qualify for these free Toolkits, clubs must be active in their communities, hosting two outreach events every three months or five outreach events within a calendar year. Supplemental toolkits were also created based on special events like the solar eclipses and the 50th anniversary of Apollo's Moon landing. A new toolkit is being developed to teach audiences about solar science, and NSN is on track to support clubs well into the future.

NSN also hosts archived video trainings on these toolkits and other topics via its YouTube channel and a [monthly webinar series](#) with scientists from various institutions worldwide. Lastly, a monthly segment called [Night Sky Notes](#) is produced for clubs to share with their audiences via newsletters and mailing lists.

Sharing the Universe

In 2007, a National Science Foundation grant funded further research into astronomy club needs. From that came three club resources: the [Growing Your Astronomy Club](#) and Getting Started with Outreach video series, an updated website with a national calendar, and club and event coordination. Now, you can find [hundreds of monthly events](#) nationwide, including virtual events you can join from anywhere.

As of November 2024, NSN has over 400 clubs as far north as Washington State, west as Hawaii, and south as far as Puerto Rico. Astronomy clubs worldwide share the wonder of the day and night sky with their commu-

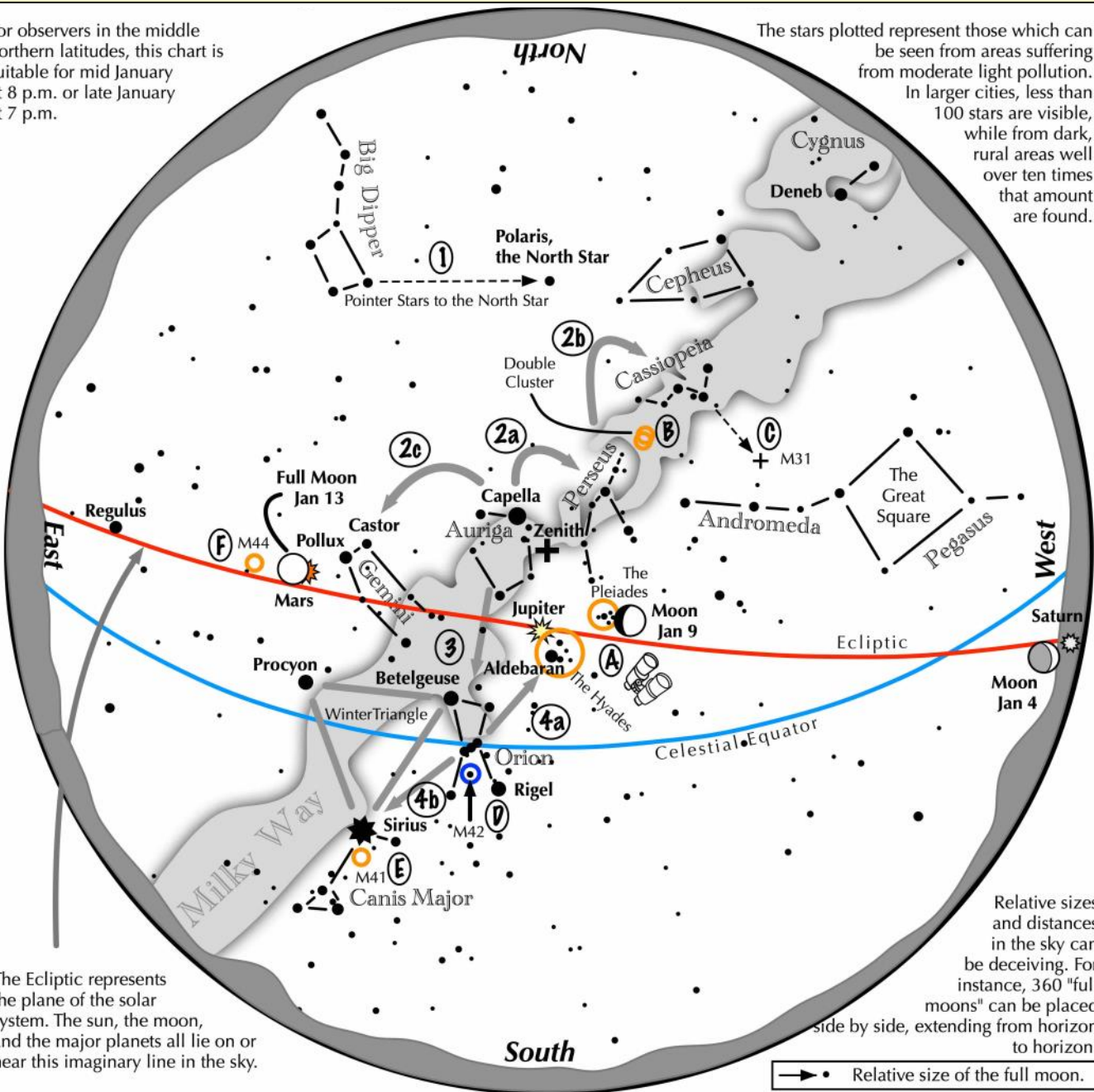
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Navigating the Mid-January 2025 Night Sky

courtesy of the Astronomical League

For observers in the middle northern latitudes, this chart is suitable for mid January at 8 p.m. or late January at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



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

- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
- 2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next Jump southeastward from Capella to the twin stars Castor and Pollux of Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star, Rigel.
- 4 Use Orion's three Belt stars to point to the red star Aldebaran, then to the Hyades, and the Pleiades star clusters. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius.

Binocular Highlights

A: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **B:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.



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

Speaker Bio (Cont'd)

(Continued from page 3)

Bio Sketch: Dr. Joel Leja is the Lee M Hammarstrom—Dr. Keiko Miwa Ross Early Career Endowed Chair and an Assistant Professor of astronomy and astrophysics at Penn State University. Dr. Leja aims to understand how galaxies form using large ground-and space-based telescopes, large surveys, and fast computers. He specializes in modeling observations of distant galaxies and in astrophysical computing.

Dr. Leja has authored over a hundred scientific papers and was named a Clarivate Highly Cited Researcher in 2023 (top 1% of cited researchers in astrophysics). He was awarded Yale University's Brouwer Prize in 2019 for a PhD thesis of unusual merit.

Classic La Para by Nicholas La Para

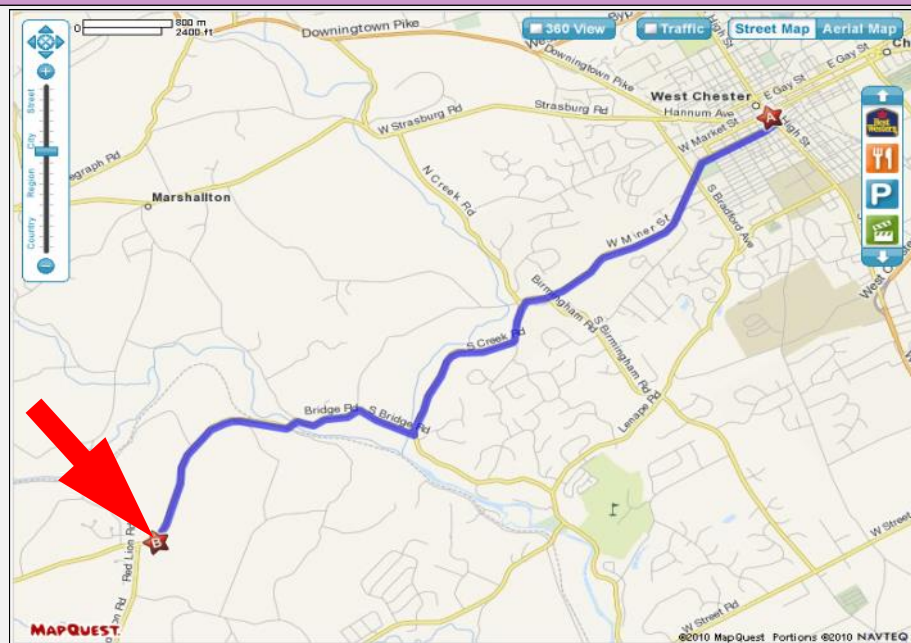
ASTRONOMY NEWS

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.

Looking Up (Cont'd)

(Continued from page 6)

degree). It is also known as the Alpha Persei Moving Group. To the naked eye, the cluster consists of several blue spectral type B stars. The most luminous member is the 2nd magnitude white-yellow supergiant Mirfak, also known as Alpha Persei. Most of the brighter stars are just south of Mirfak but there are many pleasing patterns of stars

winding around this bright star. More poetic stargazers refer to the stars as the “Attendants of Mirfak”. Below is a star chart of Perseus and the surrounding area of the sky.

This star group is truly associated and moves through space together. The group is just 50 million years old, so most stars are still young and blue-white.

In time, the stars will be pulled away by the gravity of other stars and dust clouds and they will disperse into the Perseus Arm of the Milky Way

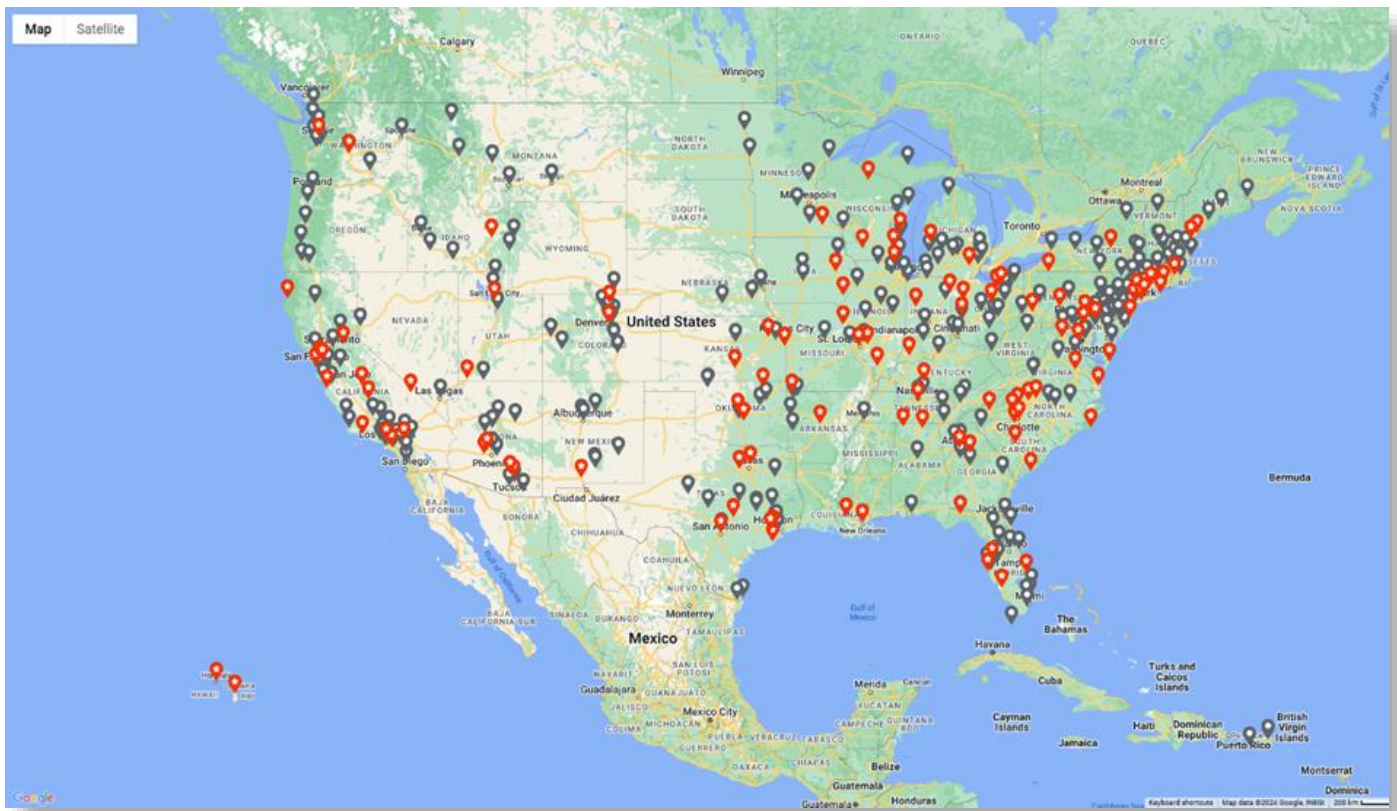
The cluster is more than just a pretty sight, though. It may mark “ground zero” for a cataclysm that wracked our part of the galaxy 50 million years ago.

(Continued on page 15)



Sky map made using Stellarium, the free planetarium software

20th Anniversary (Cont'd)



Map of Night Sky Network clubs within the United States as of November 2024

(Continued from page 11)

ities, and the Night Sky Network is happy to support US clubs with public engagement

tools. Through their outreach efforts, member clubs have reached more than 7 million people to date, and the community is

still going strong. Find an upcoming star party near you on our [new public website](#).

Looking Up (Cont'd)

(Continued from page 14)

The Alpha Persei cluster is 600 light-years from Earth. That puts it near the center of an enormous ring of bright stars known as Gould's Belt, which encircles our position in the galaxy. At its widest, the belt is more than 2,000 light-years in diameter. It contains many of the brilliant stars in Orion, Scorpius, and many other constellations. Yet no one knows what caused it.

But astronomers do know that Gould's Belt is expanding. By

tracing that expansion, they've deduced that it originated around the same time as the Alpha Persei cluster. Although this might be just a coincidence, it suggests that the two are related. Perhaps a giant gas cloud hit the Milky Way and caused the formation of the Alpha Persei cluster. Then supernova explosions in the cluster pushed away gas, triggering the birth of more stars in an expanding ring that we now see as Gould's Belt.

Other star clusters are more

spectacular. But the Alpha Persei cluster may hold an important clue to one of the biggest mysteries surrounding our part of the galaxy.

Information credits:

- <http://www.oneminuteastronomer.com/4486/alpha-persei-cluster/>
- <http://stardate.org/radio/program/alpha-persei-cluster>
- iPad application Sky Safari Pro
- http://en.wikipedia.org/wiki/Alpha_Persei_Cluster
- http://en.wikipedia.org/wiki/Alpha_Persei

NASA's Parker Solar Probe Makes History with Closest Pass to Sun

by Mara Johnson-Groh, NASA's Goddard Space Flight Center, Greenbelt, Md.



Operations teams have confirmed NASA's mission to "touch" the Sun survived its record-breaking closest approach to the solar surface on Dec. 24, 2024. Breaking its previous record by flying just 3.8 million miles above the surface of the Sun, NASA's Parker Solar Probe hurtled through the solar atmosphere at a blazing 430,000 miles per hour — faster than any human-made object has ever moved. A beacon tone received late on Dec. 26 confirmed the spacecraft had made it through the encounter safely and is operating normally.

This pass, the first of more to come at this distance, allows the spacecraft to conduct unrivaled scientific measurements with the potential to change our understanding of the Sun. "Flying this close to the Sun is a historic moment in humanity's first mission to a star," said Nicky Fox, who

leads the Science Mission Directorate at NASA Headquarters in Washington. "By studying the Sun up close, we can better understand its impacts throughout our solar system, including on the technology we use daily on Earth and in space, as well as learn about the workings of stars across the universe to aid in our search for habitable worlds beyond our home planet."

Parker Solar Probe has spent the last six years setting up for this moment. Launched in 2018, the spacecraft used seven flybys of Venus to gravitationally direct it ever closer to the Sun. With its last Venus flyby on Nov. 6, 2024, the spacecraft reached its optimal orbit. This oval-shaped orbit brings the spacecraft an ideal distance from the Sun every three months — close enough to study our Sun's mysterious processes but not too close to become overwhelmed by the

Sun's heat and damaging radiation. The spacecraft will remain in this orbit for the remainder of its primary mission.

"Parker Solar Probe is braving one of the most extreme environments in space and exceeding all expectations," said Nour Rawafi, the project scientist for Parker Solar Probe at the Johns Hopkins Applied Physics Laboratory (APL), which designed, built, and operates the spacecraft from its campus in Laurel, Maryland. "This mission is ushering a new golden era of space exploration, bringing us closer than ever to unlocking the Sun's deepest and most enduring mysteries."

Close to the Sun, the spacecraft relies on a carbon foam shield to protect it from the extreme heat in the upper solar atmosphere called the corona, which can exceed 1 million degrees Fahrenheit. The shield was designed to

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Solar Probe (Cont'd)

(Continued from page 16)

reach temperatures of 2,600 degrees Fahrenheit — hot enough to melt steel — while keeping the instruments behind it shaded at a comfortable room temperature. In the hot but low-density corona, the spacecraft's shield is expected to warm to 1,800 degrees Fahrenheit.

“It's monumental to be able to get a spacecraft this close to the Sun,” said John Wirzburger, the Parker Solar Probe mission systems engineer at APL. “This is a challenge the space science community has wanted to tackle since 1958 and had spent decades advancing the technology to make it possible.”

By flying through the solar corona, Parker Solar Probe can take measurements that help scientists better understand how the region gets so hot, trace the origin of the solar wind (a constant flow of material escaping the Sun), and discover how energetic particles are accelerated to half the speed of light. “The data is so important for the science community because it gives us another vantage point,” said Kelly Korreck, a program scien-

tist at NASA Headquarters and heliophysicist who worked on one of the mission's instruments. “By getting firsthand accounts of what's happening in the solar atmosphere, Parker Solar Probe has revolutionized our understanding of the Sun.”

Previous passes have already aided scientists' understanding of the Sun. When the spacecraft first passed [into the solar atmosphere](#) in 2021, it found the outer boundary of the corona is wrinkled with spikes and valleys, contrary to what was expected. Parker Solar Probe also pinpointed the origin of important zig-zag-shaped structures in the solar wind, called switchbacks, at the visible surface of the Sun — the photosphere.

Since that initial pass into the Sun, the spacecraft has been spending more time in the corona, where most of the critical physical processes occur. “We now understand the solar wind and its acceleration away from the Sun,” said Adam Szabo, the Parker Solar Probe mission scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. “This close approach will

give us more data to understand how it's accelerated closer in.”

Parker Solar Probe has also made discoveries across the inner solar system. Observations showed how giant solar explosions called coronal mass ejections [vacuum up dust](#) as they sweep across the solar system, and other observations revealed unexpected findings about [solar energetic particles](#). Flybys of Venus have documented the planet's [natural radio emissions](#) from its atmosphere, as well as the first complete image of its [orbital dust ring](#).

So far, the spacecraft has only transmitted that it's safe, but soon it will be in a location that will allow it to downlink the data it collected on this latest solar pass. “The data that will come down from the spacecraft will be fresh information about a place that we, as humanity, have never been,” said Joe Westlake, the director of the Heliophysics Division at NASA Headquarters. “It's an amazing accomplishment.” The spacecraft's next planned close solar passes come on March 22, 2025, and June 19, 2025.

Observing (Cont'd)

(Continued from page 9)

ble fault line runs approximately 70 miles with an offset 1,000 feet from the surrounding plain. This is one of several clair-obscure effects that are monthly highlights for lunar observing. This effect is a play between light and dark that was named during the Renaissance by painters creating a three-dimensional

appearance. I will seek to point out these phenomena during the year.

Other

The Quadrantids will be brief meteor shower on January 3rd, a moonless night. This would be a great observing opportunity but the shower is so brief, about 6 hours, that the peak during day-

light hours (10 am) makes it a non-event for our area.

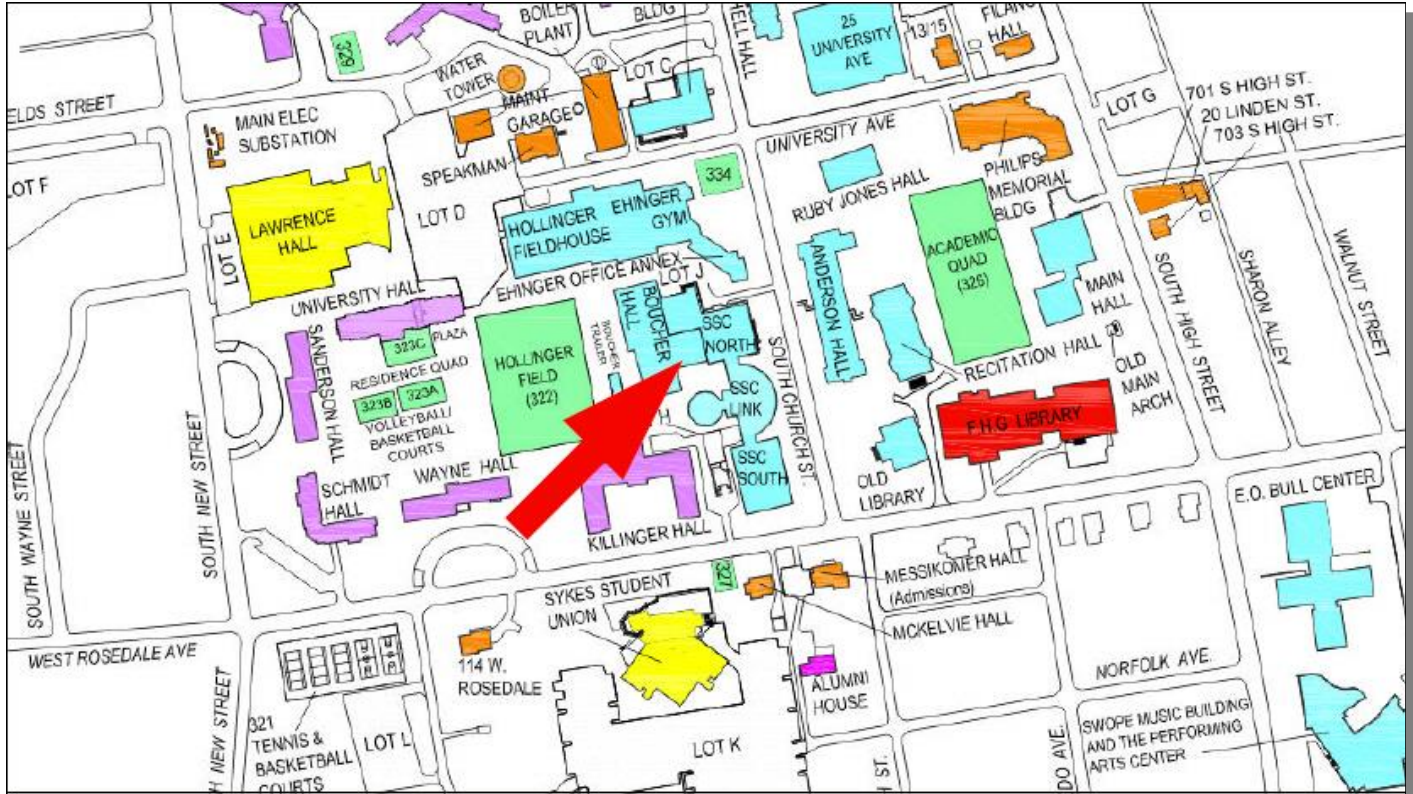
Variable stars are an area where generally only people with photometric equipment study them. There are several such stars however that are easily discerned as variable by unaided eyes. One such star is Algol, also

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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).



Observing (Cont'd)

(Continued from page 17)

known as the Demon Star. This star is actually a three-star system with the two more massive stars eclipsing each other from our vantage point. The period is 2.86 days and the brightness dips from 2.1 to 3.4 magnitude, with the minimum lasting about 10 hours. This star is easy to find in Perseus. Look for the minimum during January on many nights, such as the 24th and 30th.

Dress warmly and enjoy some wonderful opportunities to experience the wonders of our universe. Until next month.

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

Dec. 2024 Financial Summary

Beginning Balance	\$2209
Deposits	\$115
Disbursements	-\$496
Ending Balance	\$1828

New Member Welcome!

Welcome to new CCAS member Tom Kovic in Chadds Ford, 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: Don Miller
610-247-8712

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 **\$45.75**. This is still a good saving from the regular rate of **\$57.75**.

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.