



Observations

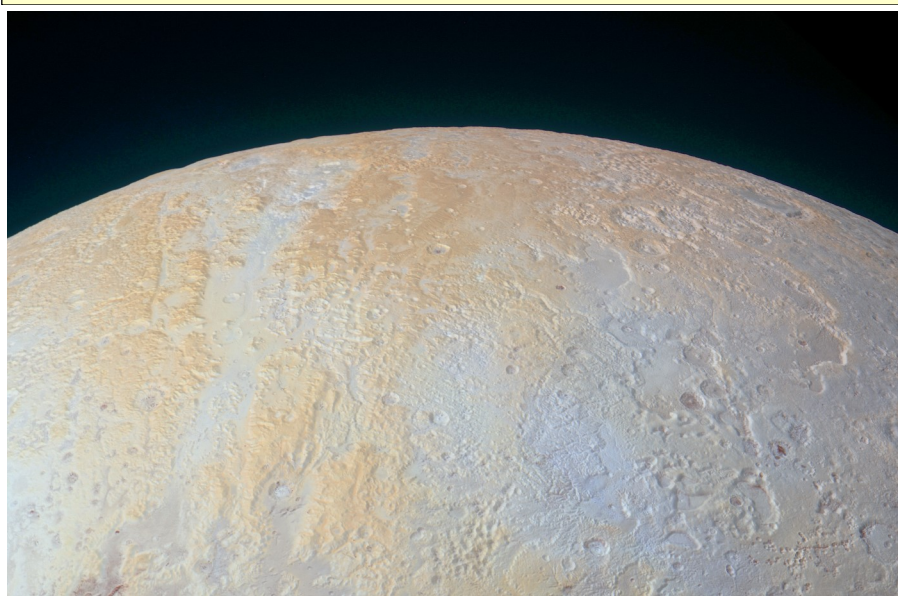
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 31, No. 9 **Three-Time** Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016 September 2023

In This Issue

CCAS Summer/Autumn Events	2
Horkheimer/O'Meara Awardee	2
September 2023 Meeting Agenda	2
September 2023 Speaker Profile & Topic ..	3
CCAS Student Scholarship Awardees	3
The Sky Over Chester County:	
September 2023	4
September 2023 Observing Highlights	5
Through the Eyepiece: Albireo, the	
Double Star in Cygnus	6
Navigating the Mid-August Night Sky	9
Night Sky Network: Looking Beyond	
the Stars	10
Moon Visits M44, Venus Visits M67	12
Classic La Para	13
CCAS Directions: Brandywine	
Red Clay Alliance	13
Membership Renewals	14
New Member Welcome	14
CCAS Directions: WCU Map	14
Treasurer's Report	14
CCAS Information Directory	15-16

Lowell Regio, Northern Pluto



A view of the frozen canyons of northern Pluto in this contrast enhanced color scene. The image data used to create it was acquired in July 2015 by the New Horizons spacecraft. Region named after Percival Lowell. Image Credit: NASA, Johns Hopkins Univ./APL, Southwest Research Institute

Membership Renewals Due

09/2023	Borrelli Holloway Reilly Squire
10/2023	Abbott Conrad Kania, J. Kania, M. Kraynik Lane Lester Levin Rosenblatt Wirth
11/2023	Battle Buczynski DiGiovanni Holenstein Kelly Kerkel Leiden Romer

September 2023 Dates

- 6th** • Last Quarter Moon 6:22 p.m. EDT. Also, Mercury is inferior conjunction.
- 10th** • The Twins of Gemini, Pollux and Castor, align 1.5° north of the Moon at first light.
- 14th** • New Moon 9:40 p.m. EDT. Also, Mercury is stationary 8:00 p.m. EDT.
- 21st** • Moon passes 0.9° north of Antares 4:00 a.m. EDT.
- 22nd** • First Quarter Moon 3:32 p.m. EDT. Also, Lunar Straight Wall this evening.
- 26th** • Saturn is 3° northeast of the Moon 9:00 p.m. EDT
- 29th** • Full Moon 5:58 a.m. EDT, the Harvest Moon, Fruit Moon, Green Corn Moon, Mate Calling Moon and Moose Calling Moon.



CCAS Upcoming Nights Out

In addition to our monthly observing sessions at the Myrick Conservancy Center, BRC (see pg. 12), 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.

- ☼ Saturday, September 2, 2023 • Fall Star Party at Hoopes Park, West Chester, PA. Co-sponsored with the West Chester Department of Recreation.
- ☼ Friday, September 8th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset
- ☼ Friday, September 22, 2023 • CCAS Special observing Session at Starr Farm Park, Downingtown, PA.

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

Summer Society Events

September 2023

2nd • CCAS Special observing Session at Hoopes Park, hosted by West Chester Parks and Recreation.

8th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

12th • CCAS Monthly Meeting, in person (as well as via Zoom) at West Chester University's Merion Science Center, Room 112. CCAS Member Speaker: John Conrad will present "An in-depth look at NASA's Osiris-Rex Sample Return Mission from asteroid Bennu."

20th • Open call for articles and photographs for the October 2023 edition of [Observations](#).

21st • The von Kármán Lecture Series: [Solar Eclipses—Your Guide to the 2023/2024 Celestial Events](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech, starting at 10 p.m. EDT.

22nd • CCAS Special observing Session at Starr Farm Park, Downingtown, PA. Due to parking constraints, participation is limited to 40 attendees. For more information, contact our Observing Chair, Michael Manigly.

26th • Deadline for newsletter submissions for the October 2023 edition of [Observations](#).

October 2023

6th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

10th • CCAS Monthly Meeting, in person (as well as via Zoom) at West Chester University's Merion Science Center, Room 112. Guest Speaker: Ray Harris, nuclear engineer & former director of the Lehigh Valley Amateur Astronomical Society (LVAAAS), "Lost Constellations—The History and Origins of the Known (and no longer visible) Constellations."

14th • Annular Solar Eclipse Observing Event w/Chester County Library at Hibernia County Park (near Coatesville). The solar observing session is scheduled from 12:00 p.m. (noon) to 2:30 p.m. EDT.

14th • Special Observing Session w/West Chester Parks & Recreation at Springton Manor Park in West Chester, PA. For more information, contact our Observing Chair, Michael Manigly.

20th • Open call for articles and photographs for the November 2023 edition of [Observations](#).

22nd • CCAS Special Observing Session w/Beaver Creek Elementary School, Downingtown, PA. For more information, contact our Observing Chair, Michael Manigly.

26th • Deadline for newsletter submissions for the November 2023 edition of [Observations](#).

CCAS Member Wins Horkheimer/O'Meara Award

by Don Knabb, CCAS ALCOR & Treasurer

The Astronomical League conducts an annual science writing competition for youths age 8 to 14. The top two winners of the Horkheimer/O'Meara Journalism Award receive beautiful plaques and cash prizes. CCAS member Avni Dhargalkar, age 12, was one of the two winners of this year's award. Avni is currently an 8th grader (award year 7th grader) at the Charles F. Patton Middle School in Kennett Square, Pennsylvania. Avni received a plaque and a \$1,000 cash prize for the winning essay, "The First Space Tourist." Reprinted here is her essay:

"Talgat Musabayev, how does it feel to be involved with such an important part of history, commanding the mission of the world's first space tourist? What does it mean for the future?" Many versions of these words have been asked of me by obscure reporters and friends. And sometimes I reflect on these questions. You, my friends, will now hear the story, and, if you read closely, you may find the answers.



Horkheimer/O'Meara Journalism Award Winner
Avni Dhargalkar

I was 50 years old when I first heard the name Dennis Tito. He had paid quite a large amount of rubles (20 million American dollars) to board a Soyuz rocket to one of our satellites. It was called Mir; however, it was de-orbited before he could board it. I'd heard that he was still determined to head to space, and that's when I was told he was going on a mission with us to the International Space Station. I was to be the commander of the mission. I must admit, I was a bit skeptical. What repercussions

(Continued on page 7)

September 2023 CCAS Meeting Agenda

by Bruce Ruggeri, CCAS Program Chair

Our next meeting will be held on September 12, 2023, in person at West Chester University's Merion Science Center, Room 112. The Science Center is located at 720 S. Church St., West Chester, PA. September's speaker: John Conrad, NASA Ambassador and CCAS Member, "An in-depth look at NASA's Osiris-Rex Sample Return Mission from asteroid Bennu" (sample return is scheduled for September 24).

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 our 2023-2024 season and beyond. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

CCAS Member Speaker to Present at September 2023 Monthly Meeting

by Bruce Ruggeri, CCAS Program Chair

I am pleased to announce the in person and Zoom CCAS Monthly meeting for Tuesday, September 12 commencing at 7:00 pm ET. Our guest speaker is John Conrad, NASA Solar System Ambassador and CCAS member, who has been a long-time contributor to our meeting programs addressing a variety of amazing topics.

This time last year, John presented a timely talk on “*DART—The World’s First Asteroid Deflection Test.*” Similarly, this month we have a timely asteroid-related presentation from John. The CCAS meeting presentation will commence at **approximately 7:50-8:00PM ET.**

Our meetings are held at West Chester University’s (WCU) Merion Science Center, Room 112. The Science Center is lo-



John Conrad, long-time CCAS member & NASA Solar System Ambassador

cated at 720 S. Church St., West Chester, Pennsylvania.

The presentation title, synopsis and bio sketch for John Conrad are provided in the subsequent paragraphs.

Title: NASA's Osiris-Rex Sample Return Mission from Asteroid Bennu. *Osiris-Rex* is the U.S.’ first asteroid sample return mission. Launched in 2016, the *Osiris-Rex* spacecraft has spent more than 6.5 years in its mission to the near Earth asteroid Bennu, using an Earth gravity assist to reach the asteroid. The spacecraft has spent over 500 days mapping Bennu’s surface features and utilizing a novel sample collection technique (touch-and-go maneuver) allowing its robotic sampling arm to collect larger amounts of regolith material than previous missions, namely the JAXA *Hayabusa 1* and 2 missions to asteroids Itokawa and Ryugu, also so-called ‘rubble-pile’ near Earth asteroids like Bennu.

(Continued on page 11)

CCAS Scholarship Awardees 2023-2024

by CCAS President Dave Hockenberry

As announced in the February 2023 edition of *Observations*, the CCAS Executive Committee launched the Chester County Astronomical Society Scholarship Fund late last year. The purpose of the fund is to provide two yearly scholarships, each for \$1,500.00, to deserving West Chester University (WCU) students who are engaged in astronomy, physics or other Earth science/STEM majors, and who have expressed an interest in astronomy and/or planetary sciences as a future career.

It is with great pleasure that I announce the CCAS Scholarship Awardees for 2023-24, Marissa Mower and Finn Schmidhuber.



Marissa Mower, WCU Senior Geoscience Student & CCAS Scholarship Awardee

Each of them has been awarded a \$1500 scholarship to support their studies at WCU.

Marissa Mower has started her senior year at WCU pursuing a Bachelor of Science degree in Geoscience. Originally from Parkesburg, Pennsylvania, Marissa selected WCU because of its close proximity to her hometown and its world-renowned programs.

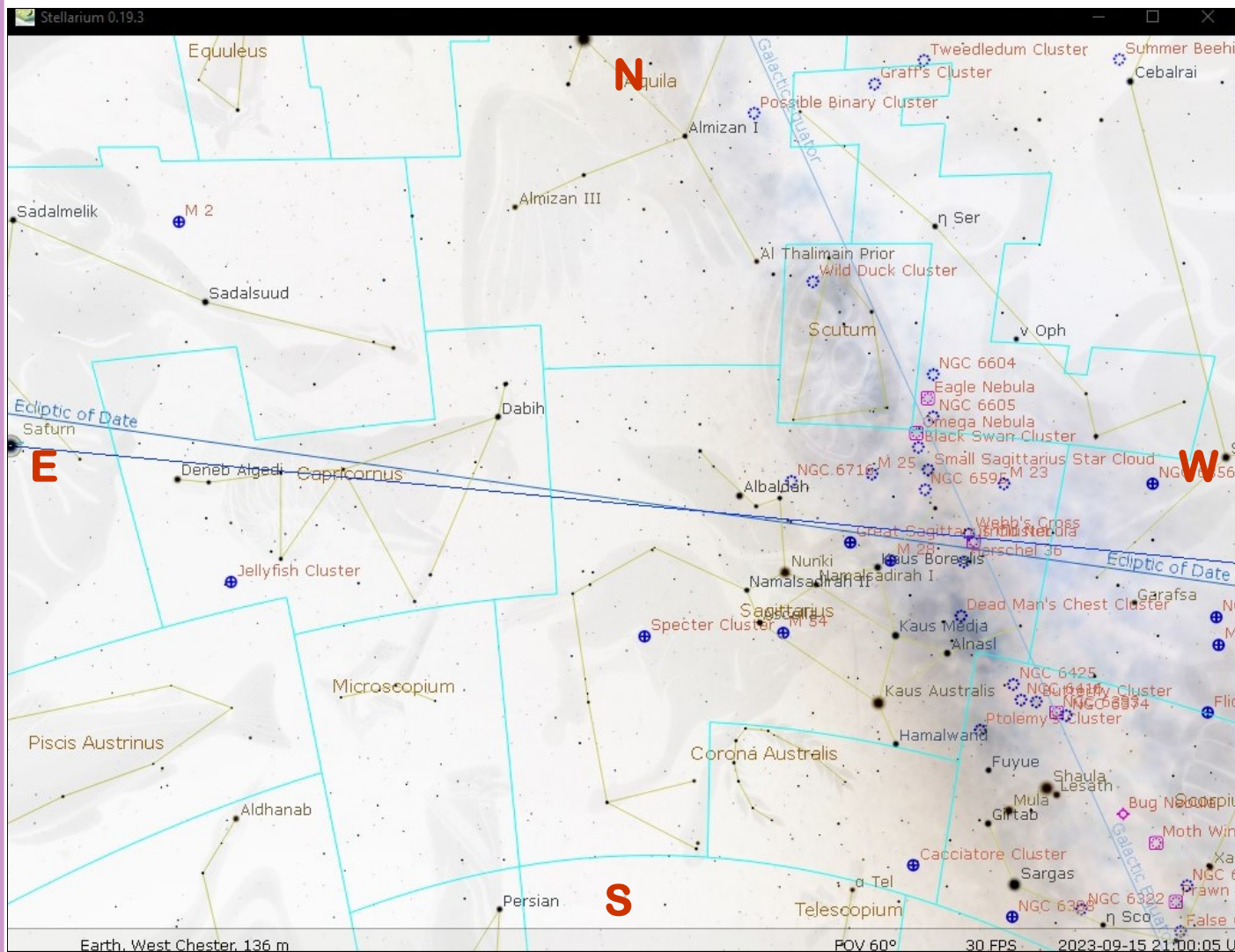
She is currently studying to become a licensed geologist and aspires to contribute to the fields of environmental conservation and geological research. While her background is primarily in

(Continued on page 8)

The Sky Over Chester County

September 15, 2023 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
09/01/2023	6:02 a.m. EDT	6:30 a.m. EDT	7:34 p.m. EDT	8:01 p.m. EDT	13h 04m 03s
09/15/2023	6:16 a.m. EDT	6:43 a.m. EDT	7:11 p.m. EDT	7:38 p.m. EDT	12h 28m 12s
09/30/2023	6:30 a.m. EDT	6:57 a.m. EDT	6:46 p.m. EDT	7:13 p.m. EDT	11h 49m 09s

Moon Phases

Last Quarter	09/06/2023	6:22 p.m. EDT	New Moon	09/14/2023	9:40 p.m. EDT
First Quarter	09/22/2023	3:32 p.m. EDT	Full Moon	09/29/2023	5:58 a.m. EDT

September 2023 Observing Highlights

by Michael Manigly, CCAS Observing Chair

1	Moon passes 1.4° south of Neptune 3:00 a.m. EDT.
2	Algol, bright multiple star designated Beta Persei or Demon Star is at minimum 8:58 p.m. EDT and Venus is stationary Midnight EDT.
4	Jupiter is 3° south of the Moon at first light.
5	Moon passes 3° north of Uranus 5:00 a.m. EDT. Also, Algol is at minimum and the Moon is 1.2° south of the Pleiades (M45) in the evening hours.
6	Last Quarter Moon 6:22 p.m. EDT. Also, Mercury is inferior conjunction. Aldebaran, the Eye of the Bull, hangs below the Moon at first light.
10	The Twins of Gemini, Pollux and Castor, align 1.5° north of the Moon at first light.
11	Venus, the Morning Star, to the lower right of the Moon at first light. Also, Algol at minimum.
12	Moon at apogee (252,457 miles from Earth) 11:43 a.m. EDT. Venus stands to the upper right of the Moon at first light.
14	New Moon 9:40 p.m. EDT. Also, Mercury is stationary 8:00 p.m. EDT.
17	Algol at minimum 5:03 a.m. EDT.
19	Neptune at opposition.
20	Antares, the orange heart of the Scorpion, is close to the left of the Moon at nightfall. Also, Algol at minimum 1:52 a.m. EDT.
21	Moon passes 0.9° north of Antares 4:00 a.m. EDT.
22	First Quarter Moon 3:32 p.m. EDT. Also, Lunar Straight Wall this evening.
23	Fall Equinox 1:50 a.m. EDT. Autumn arrives in the northern hemisphere at this time.
25	Algol at minimum 7:30 p.m. EDT.
26	Saturn is 3° northeast of the Moon 9:00 p.m. EDT
27	Moon at perigee (223,639 miles from Earth) 8:59 p.m. EDT.
29	Full Moon 5:58 a.m. EDT.

The best sights this month: Saturn and Jupiter dominate the September sky. Under optimal sky conditions you can see up to six (6) planets this

month. Mercury and Venus are low in the West just after sunset, Jupiter appears in the East and Saturn in the Southern sky. Uranus and Neptune appear in the Western sky in the early morning hours. The Summer Triangle, Lyra, Cygnus and Aquila are prominent constellations and it's the last chance to see the Messier objects in Sagittarius and Scorpius.

Mercury is too close to the Sun to be observed early in the month. It rises in ESE but very low during morning twilight. The planet is stationary on the 15th. It reaches it greatest western elongation (18° in the morning sky on the 22nd.

Venus dominates the morning sky. Its brilliance can be observed during the last hour before dawn. Its magnitude is around -4.0 early in September. Look for the crescent Moon to be due west of the planet on the 11th and look for M44 – the Beehive Cluster about 4° southwest of the Moon.

Mars is challenging to see in the west after sunset. Occultation by the thin crescent Moon occurs on the 16th.

Jupiter is close to the left of the Moon at first light on the 4th and lower right of the Moon on the 5th. The planet is stationary on the 14th. The gas giant rises in the ENE before 10 p.m. and transits before 5 a.m.

Saturn is visible all night in Aquarius. It can be seen low in the SE sky after sunset. The bright gibbous Moon lies 3° below Saturn on the 26th. The ringed planet shines at magnitude 0.4 at the beginning of September but dims to 0.1 by mid-month.

Uranus is best viewed while viewing Jupiter. Swing east a few degrees to view this distant planet. The planet rises in the late evening hours.

Neptune is in the sky all night during September. The planet achieves opposition on the 19th. It appears closest to Earth during the calendar year and is best viewed with binoculars or a telescope.

The Moon: The Full Moon is on the 29th. This month's Full Moon is called the Harvest Moon because it occurs closest to the autumn equinox. Additionally, it gave extended light for farmers to pick their crops. Other names include the Fruit Moon, Green Corn Moon, Mate Calling Moon and Moose Calling Moon.

(Continued on page 8)

Through the Eyepiece: Albireo, the Double Star in Cygnus

by Don Knabb, CCAS Treasurer

During September look upward into the night sky while facing south and you cannot miss the Summer Triangle. Within the triangle is what is often considered the best double star in the sky, Albireo in Cygnus the Swan.

Cygnus, often informally termed the Northern Cross, represents the swan that Zeus, the Greek god, turned into during one of his romantic escapades. On early autumn evenings, Cygnus is high overhead, appearing to fly south along the bright sparkling band of the Milky

Way. Albireo is the star that marks the head of the swan.

Albireo is one of the most beautiful double stars, probably the finest in the night sky for small telescopes and is often shown to attendees at our public night sky observing events. The two components are known as *Beta Cygni A* and *B*. A is the primary member of the system, a golden yellow star shining at 3rd magnitude, while B is known as the companion, a fainter 5th-magnitude star with a beautiful bluish color.

Seen at even slight magnification, Albireo unfolds from a bright single point into a beautiful double star of strikingly different colors. At 380 light years distant, the two bright stars of Albireo are comparatively far from each other and take about 75,000 years to complete a single orbit. The brighter yellow star is itself a binary star system, but too close together to be resolved even with a telescope.

Albireo is the fifth brightest star in the constellation Cygnus.

(Continued on page 7)



Location of Albireo in Cygnus. Map created with Stellarium, the free planetarium software: <http://stellarium.org/>

Eye-piece (Cont'd)



Photo credit: Hunter Wilson, <http://hwilson.zenfolio.com/fl29011888>, Creative Commons file on <https://en.wikipedia.org/wiki/Albireo#/media/File:NewAlbireo.jpg>

(Continued from page 6)

Although it has the Bayer designation beta (normally the second brightest star in a constellation), it is fainter than three other stars in Cygnus.

Albireo is easy to find in the September sky. Find the Summer Triangle high in the southern sky, and then look for the “Northern Cross” shape of Cygnus. Albireo is marked on the star chart on the opposite page.

Information credits:

- Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books
- <http://en.wikipedia.org/wiki/Albireo>
- <http://www.nightskyinfo.com/archive/albireo/>
- <http://antwrp.gsfc.nasa.gov/apod/ap050830.html>

Horkheimer/O'Meara Award (Cont'd)

(Continued from page 2)

sions could sending an untrained American to space have? I supposed I would find out...

NASA had informed us that they didn't recommend following through with this plan, as they were nervous about Tito having the right amount of training. However, we knew they were trying to save themselves in case something went wrong. On April 28, 2001, Dennis Tito, our flight engineer, Yury Baturin, and I boarded a Soyuz spacecraft to the International Space Station.

Although I'd had my doubts about Tito, he quickly set to helping out on the ISS. His only official jobs were enjoying the

tremendous view of Earth and taking pictures, however, he also helped pick out which food would be eaten during the meals. He was not in the way at all, he fit in perfectly, and he helped when he was not required to do so. We took to calling him “Titov,” the name of our country's second man in space. We returned home on May 1, 2001.

So, the world's first space tourist was not a tourist, but an active member of our community on the ISS. My last mission in space was flying with him, and I'm glad I got the chance to do so. I became the head of KazCosmos six years later, but I still fondly remember this expe-

rience. Titov looked back on this as one of the best things that ever happened to him. Despite NASA's initial negative opinions, he still has a positive outlook on the American space agency. I, along with some of the world, believe that if Titov hadn't gone up to space with us on that fateful day, many other people may not have seen the potential of space tourism. The future is bright, bold, and a little easier to embrace, because of Dennis Tito. And this marks the end of my tale and the beginning of our future.

[Editor's Note: Essay reprinted from September 2023 Edition of Astronomical League magazine Reflector]

CCAS Scholarship Awardees (Cont'd)

(Continued from page 3)

geoscience, she has always had a great interest in astronomy. She is actively involved in the Mather Planetarium on campus, where she works and engages with the community about the wonders of the universe.

Outside of school and work, Marissa loves to travel, listen to music, be outdoors, and spend time with family and friends. Marissa is especially grateful for her friends and faculty at WCU, who she credits with strengthening her passion for her career path and encouraged her to be a better student.

Marissa is extremely appreciative to have been awarded a Chester County Astronomical Society scholarship which will greatly support her educational journey. This generous assistance has not only alleviated some financial burden but has also reaffirmed her dedication to her studies and future career in the geosciences.

Finn Schmidhuber is a junior majoring in computer science major with a physics and astronomy minor at WCU. He is extremely interested in astronomy, creating art, listening to music, and programing.

Finn was born in Pfaffenhofen, Germany, and moved to the United States at age two, residing in New Cumberland, Pennsylvania. He first became interested in astronomy in early high school after his brother took an interest in the subject. To pursue his passion for information technology, Finn chose WCU because of its focus on leadership in the honors college, which he



Finn Schmidhuber, WCU Junior in Computer Science & CCAS Scholarship Awardee

was accepted into upon his admission to the university.

His underlying interest peaked when he took an intro to astronomy class at WCU and felt a true passion for the field. This passion evolved into more astronomy classes and a decision to select an astronomy minor. As he explored more classes, Finn uncovered a potential research opportunity. This upcoming academic semester, Finn will be

conducting undergraduate astronomy research alongside his astronomy professor, Dr. Marc Gagne. The research consists of studying X-rays emitted from a large star using computer simulations and data analysis techniques. He hopes to continue learning even more about astronomy and to develop his skills as an astronomer as a result of these research studies.

Looking to the future, Finn plans to complete his undergraduate degree and set his sights towards a career that focuses on astronomy through information technology, such as with NASA. To further his education, Finn plans to go to graduate school for a master's or doctorate in astronomy or information technology.

He is extremely thankful to have been awarded a Chester County Astronomical Society scholarship and plans to use this CCAS scholarship to continue his studies at West Chester and to advance his knowledge in all things related to astronomy!

Observing (Cont'd)

(Continued from page 5)

Constellations: Hercules and the Summer Triangle asterism shines near the zenith during September with the Milky Way arching across the sky if you have dark sky conditions. Stay up late and the autumn constellations will rise in the east, look for the Great Square of Pegasus, Cassiopeia and Perseus.

Messier/deep sky: The Southern Messier objects disappear this month but the Andromeda

galaxy makes up for the loss. What a sight! Stay up late and you can observe the open star cluster in Auriga: M36, M37 and M38.

Comets: There are no bright comets visible during September.

Asteroids: No asteroids visible this month.

Meteor showers: There are no significant meteor showers this month.

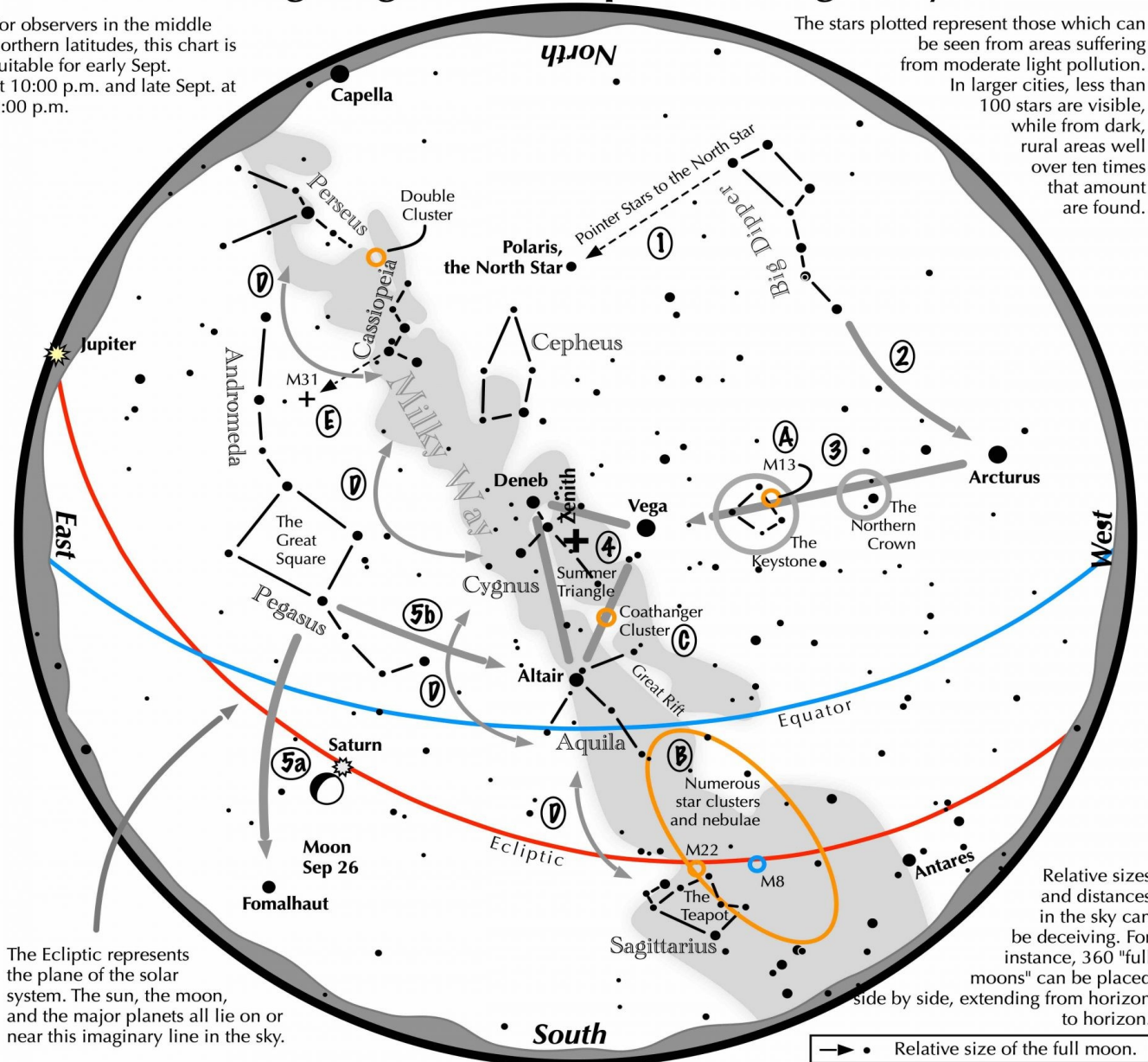
Navigating the Mid-August Night Sky

by Astronomical League

Navigating the mid September Night Sky

For observers in the middle northern latitudes, this chart is suitable for early Sept. at 10:00 p.m. and late Sept. at 9:00 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 September 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 September evening sky.
- 3 Nearly overhead shines a star of similar brightness as Arcturus, 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 The stars of the summer triangle, Vega, Altair, and Deneb, shine overhead.
- 5 The westernmost two stars of the Great Square, which lies high in the east, point south to Fomalhaut. The southernmost two stars point west to Altair.

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.



Night Sky Network: Looking Beyond the Stars

by Brian Kruse

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.

Looking up in awe at the night sky, the stars and planets pop out as bright points against a dark background. All of the stars that we see are nearby, within our own Milky Way Galaxy. And while the amount of stars visible from a dark sky location seems immense, the actual number is measurable only in the thousands. But what lies between the stars and why can't we see it? Both the Hubble telescope and the James Webb Space Telescope (Webb) have revealed that what appears as a dark background, even in our backyard telescopes, is populated with as many galaxies as there are stars in the Milky Way.

So, why is the night sky dark and not blazing with the light of all those distant galaxies? Much like looking into a dense forest where every line of sight has a tree, every direction we look in the sky has billions of stars with no vacant spots. Many philosophers and astronomers have considered this paradox. However, it has taken the name of Heinrich Wilhelm Olbers, an early 19th century German astronomer. Basically, Olbers Paradox asks why the night sky is dark if the Universe is infinitely old and static – there should be stars everywhere. The observable phenomenon of a dark sky leads us directly into the debate about the very nature of the Universe – is it eternal and static, or is it dynamic and evolving?

It was not until the 1960s with



the discovery of the Cosmic Microwave Background that the debate was finally settled, though various lines of evidence for an evolving universe had

built up over the previous half century. The equations of Einstein's General Theory of Relativity suggested a dynamic universe, not eternal and unchanging as previously thought. Edwin Hubble used the cosmic distance ladder discovered by Henrietta Swan Leavitt to show that distant galaxies are moving away from us – and the greater the distance, the faster they're moving away. Along with other evidence, this led to the recognition of an evolving Universe.

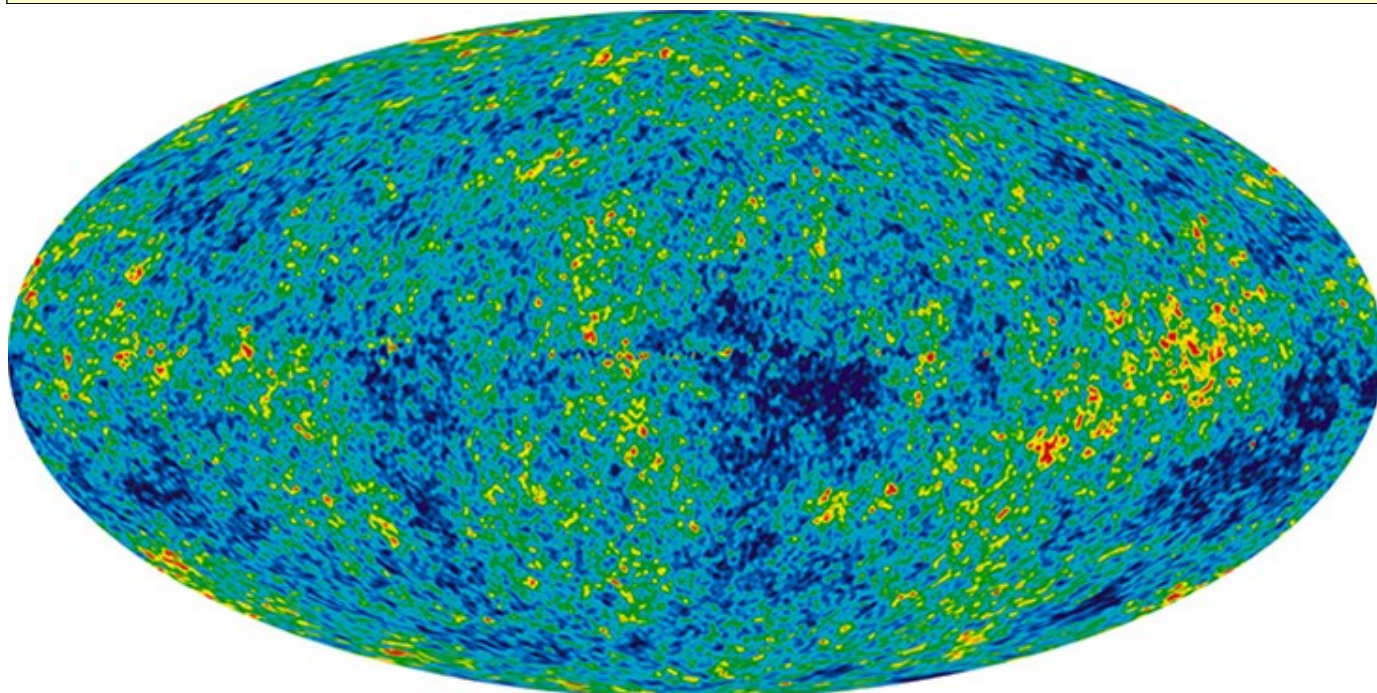
The paradox has since been resolved, now that we under-

(Continued on page 11)



NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail. This slice of the vast universe is approximately the size of a grain of sand held at arm's length by someone on the ground. (Image Credit: NASA, ESA, CSA, STScI) <https://bit.ly/webbdeep>

Night Sky Network (Cont'd)



The oldest light in the universe, called the cosmic microwave background, as observed by the Planck space telescope is shown in the oval sky map. An artist's concept of Planck is next to the map. The cosmic microwave background was imprinted on the sky when the universe was just 380,000 years old. It shows tiny temperature fluctuations that correspond to regions of slightly different densities, representing the seeds of all future structure: the stars and galaxies of today. (Image credit: ESA and the Planck Collaboration - D. Ducros) <https://go.nasa.gov/3qC4G5q>

(Continued from page 10)

stand that the Universe has a finite age and size, with the speed of light having a definite value. Here's what's happening – due

to the expansion of the Universe, the light from the oldest, most distant galaxies is shifted towards the longer wavelengths of the electromagnetic spectrum.

So the farther an object is from us, the redder it appears. The Webb telescope is designed to detect light from distant ob-

(Continued on page 13)

CCAS Member Speaker (Cont'd)

(Continued from page 3)

The *Osiris-Rex* mission is unique in that Bennu is believed to be extremely carbon-rich in its composition (potentially containing organic compounds), and particularly ancient – Bennu is likely to have formed in the first 10 million years of our Solar System's history, offering us a time capsule passing through space for over 4.5 billion years without experiencing any major compositional change.

In this regard, samples from Bennu may preserve and shed insight into conditions of the

early Solar System, early Earth, and our understanding of the properties of near-Earth asteroids. *Osiris-Rex* is currently in the final stages of its 4.4-billion-mile round trip home, scheduled to touch down in Utah and return its sample materials from Bennu on September 24th.

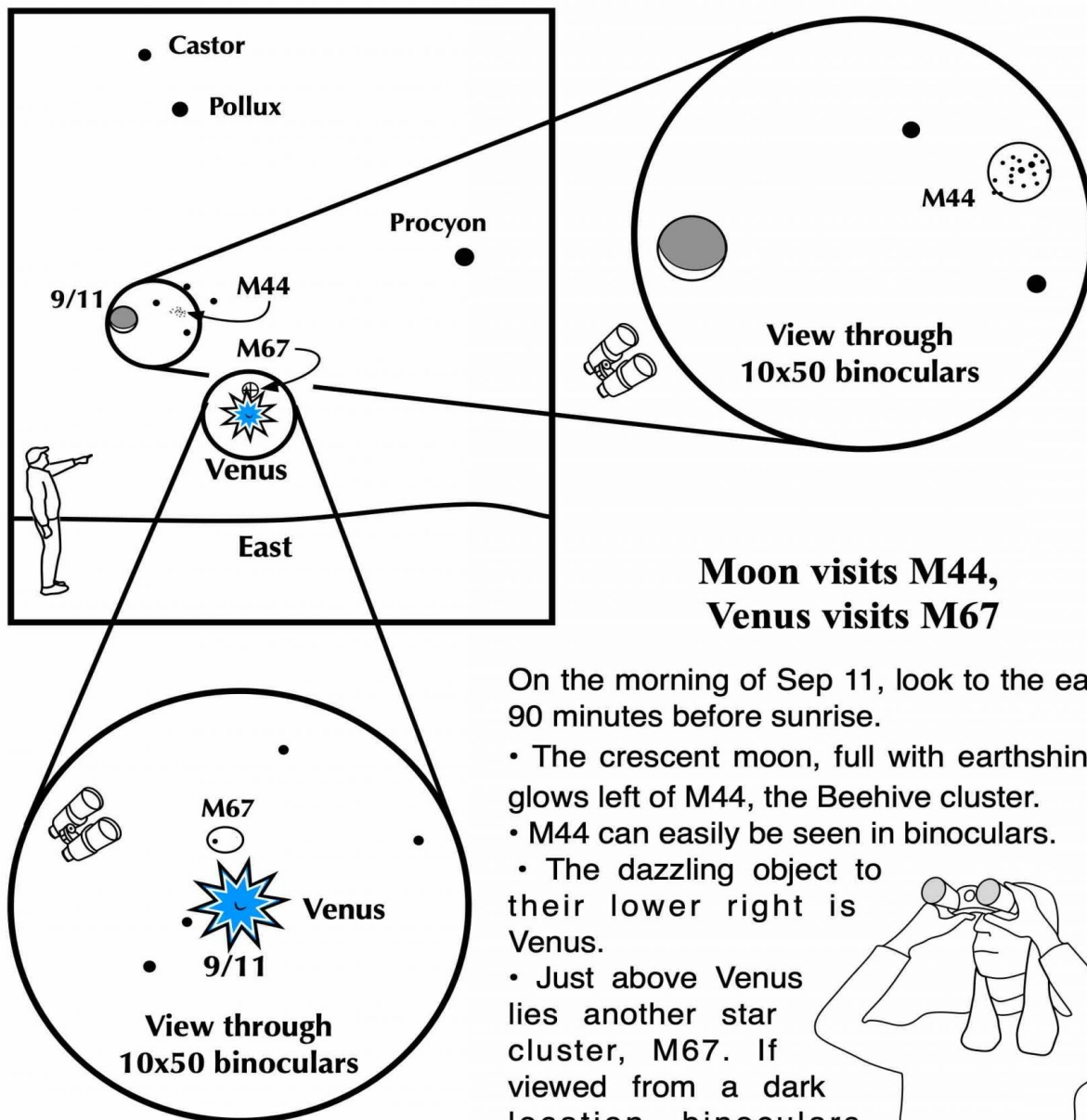
John will describe the development and details of this mission, its major objectives, and the information NASA has gleaned thus far from this mission and is likely to gain in the years ahead.

About the speaker: John Conrad followed his childhood inter-

est in space and spaceflight – just before the dawn of the Space Age – earning his Astronautical Engineering degrees from the US Air Force Academy and Purdue University and assuming leadership roles in space programs for the Air Force, NASA, and the aerospace industry. Upon retirement, he was selected by NASA/JPL as a NASA Solar System Ambassador. In this role, he reaches a broad range of audiences with the latest and greatest in NASA's programs and achievements.

(Continued on page 14)

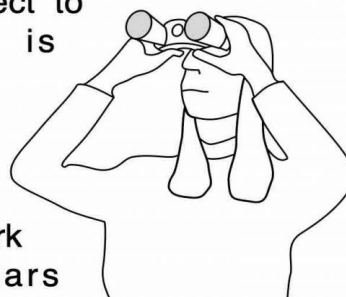
If you can see only one celestial event in the morning this September, see this one.



Moon visits M44, Venus visits M67

On the morning of Sep 11, look to the east 90 minutes before sunrise.

- The crescent moon, full with earthshine, glows left of M44, the Beehive cluster.
- M44 can easily be seen in binoculars.
- The dazzling object to their lower right is Venus.
- Just above Venus lies another star cluster, M67. If viewed from a dark location, binoculars should reveal its fuzzy presence.
- If the binoculars are securely mounted, the tiny crescent of Venus should be barely discerned amid the planet's glare.



Night Sky Network (Cont'd)

(Continued from page 11)

jects in infrared light, beyond the visible spectrum. Other telescopes detect light at still longer wavelengths, where it is stretched into the radio and microwave portions of the spectrum. The farther back we look, the more things are shifted out of the visible, past the infrared, and all the way into the microwave wavelengths. If our eyes could see microwaves, we would behold a sky blazing with the light of the hot, young Universe – the Cosmic Microwave Background.

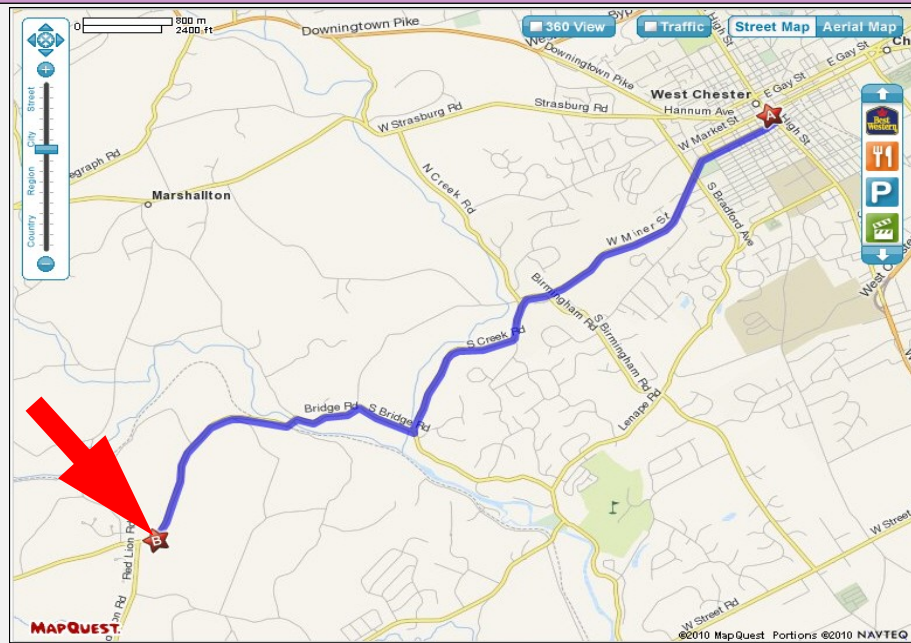
The next time you look up at the stars at night, turn your attention to the darkness between the stars, and ponder how you are seeing the result of a dynamic, evolving Universe.

Classic La Para by Nicholas La Para



"ISN'T THIS COSMETOLOGY 101?"

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

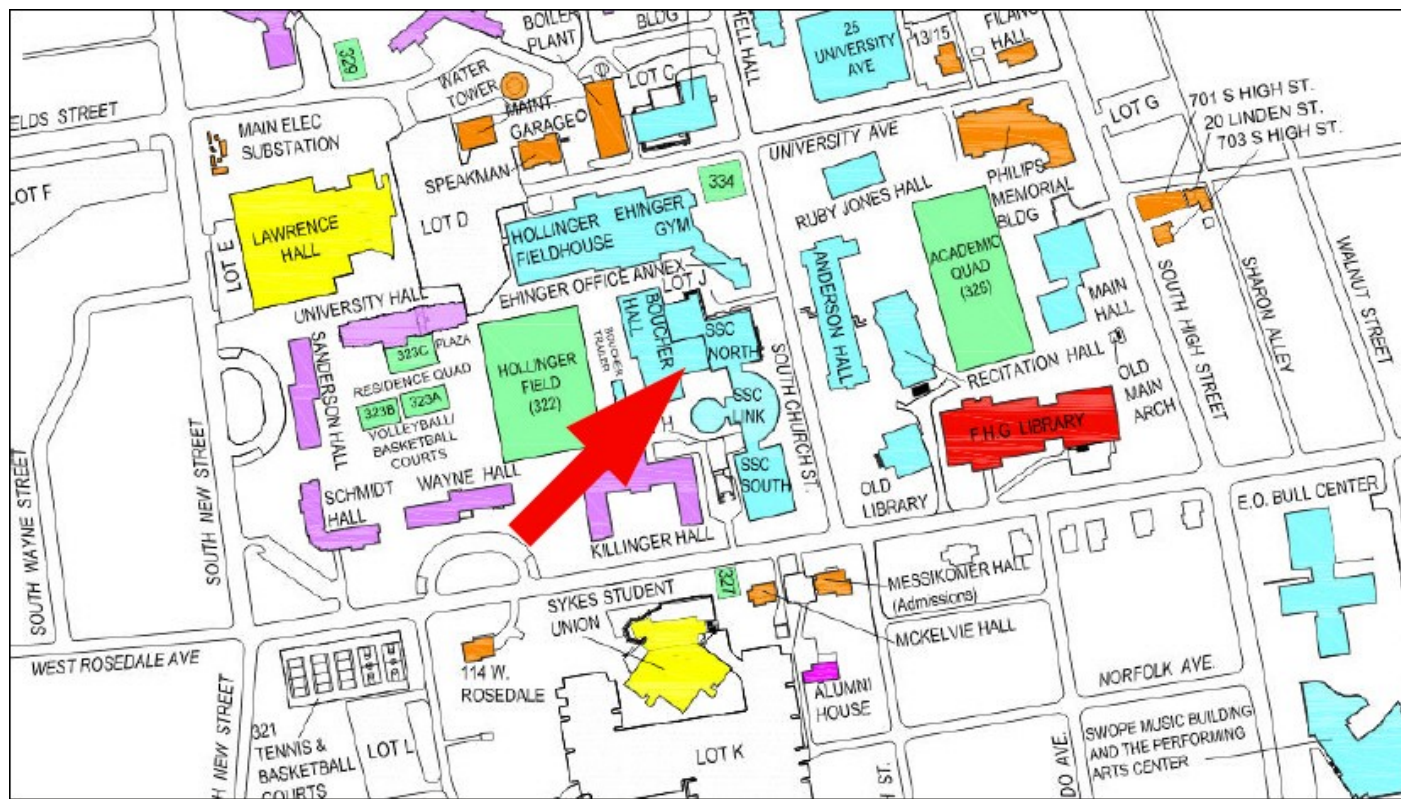
1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090
<http://brandywinewatershed.org/>

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).



Speaker (Cont'd)

(Continued from page 11)

John has been an active member of CCAS and The Planetary Society and a speaker for events in both organizations, addressing a number of topics drawing considerable interest from diverse audiences, including *Global Climate Change: The View from Space*, *A Hitchhiker's Guide to the Solar System—Celebrating the 60th Anniversary of NASA*, *The Cassini/Huygens Mission to Saturn and its Moons*, and most recently, *DART—The World's First Asteroid Deflection Test*.

We are glad to welcome John back to the podium for the start of our 2023-2024 season!

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

Aug. 2023 Financial Summary

Beginning Balance	\$1517
Deposits	\$95
Disbursements	-\$829
Ending Balance	\$784

New Member Welcome!

Welcome to our new CCAS member Mayukh Das from Malvern, 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.



Skies Unlimited is a retailer of telescopes, binoculars, eyepieces and telescope accessories from Meade, Celestron, Televue, Orion, Stellarvue, Takahashi, Vixen, Losmandy and more.

Skies Unlimited
Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Phone: 610-327-3500 or 888-947-2673
Fax: 610-327-3553
Email: info@skiesunlimited.com

<http://www.skiesunlimited.net>



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.

CCAS Lending Library

Contact our Librarian, Barb Knabb, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings. Barb's phone number is 610-436-5702.

Contributing to *Observations*

Contributions of articles 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

Or mail the contribution, typed or handwritten, to:

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

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

Librarian: Barb Knabb
610-436-5702

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.