



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 31, No. 8 **Three-Time Winner of the Astronomical League's Mabel Sterns Award** ☼ 2006, 2009 & 2016 August 2023

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Report on the Green Bank Star Quest 18



See page 3 for CCAS Treasurer Don Knabb's experiences at the annual star party at the Green Bank Observatory.

Membership Renewals Due

08/2023	Borowski Force Johnston & Stein Kellar Knabb Family Lurcott, L. Manigly Schultz Tiedemann Trunk Zullitti
09/2023	Borrelli Holloway Reilly Squire
10/2023	Abbott Conrad Kania, J. Kania, M. Kraynik Lane Lester Levin Rosenblatt Wirth

August 2023 Dates

- 1st** • Full Moon, the Berry Ripening Moon, 2:32 pm EDT.
- 3rd** • Saturn 2° north of the Moon in the morning sky 6:00 a.m. EDT.
- 8th** • Last Quarter Moon, 6:28 a.m. EDT.
- 16th** • New Moon, 5:35 a.m. EDT.
- 18th** • Mars is 2° below and to the right of the Moon in evening twilight.
- 24th** • First Quarter Moon, 5:57 a.m. EDT.
- 27th** • Saturn at opposition 4:00 a.m. EDT
- 30th** • Full Moon, the Halfway Moon or the Grain Moon or the Green Corn Moon, 9:36 p.m. EDT.



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.

- ☼ Friday, August 11th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset
- ☼ Saturday, August 19, 2023 • CCAS Special Observing Session: Battle of the Clouds Park w/Malvern Library, Malvern, PA.
- ☼ Saturday, September 2, 2023 • Fall Star Party at Hoopes Park, West Chester, PA. Co-sponsored with the West Chester Department of Recreation.

For more information about future observing opportunities, contact our Observing Chair, Michael Manigly.

Summer Society Events

August 2023

11th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

15th-18th • CCAS Special Camping Trip & Observing Session at [Cherry Springs State Park](#), coinciding with the Cherry Springs Park Star Party presented by the Astronomical Society of Harrisburg, Harrisburg, PA. Cherry Springs State Park, Coudersport, Pennsylvania.

17th-20th • [Stellafane Convention](#). The 84th Convention of Amateur Telescope Makers on Breezy Hill in Springfield, Vermont. Sponsored by the Springfield Telescope Makers, Inc.

18th-22nd • [Almost Heaven Star Party](#). Sponsored by the Northern Virginia Astronomy Club. Held at The Mountain Institute's Spruce Knob Mountain Center in Circleville, West Virginia.

19th • CCAS Special Observing Session: Battle of the Clouds Park w/Malvern Library, Malvern, PA. For more information, contact our Observing Chair, Michael Manigly.

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

24th • The von Kármán Lecture Series: [SunRISE: Opening a New Window on the Sun](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech, 10:00 p.m. EDT.

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

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](#).

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](#).

Book Review: *Space Cat*, by Ruthven Todd

by John Carl Hepler, CCAS Newsletter Editor & Webmaster

Every once in a while, Amazon posts a related purchase suggestion on my computer screen that actually interests me. Sometimes I even find things that satisfy more than one of my interests. Recently, I stumbled across a charming children's book entitled *Space Cat*. Written by Ruthven Todd and illustrated by Paul Galdone, it was first published in 1952 and recently reissued by Dover Publications.

Space Cat tells the tale (no pun intended) of an adventurous stray kitten who is adopted by a military pilot and subsequently stows away on an experimental rocket. Named "Flyball" by the pilot, he quickly adjusts to life in the military and becomes a mascot of the rocket project. His human, Captain Fred Stone, even has a pressure suit fabricated so Flyball can safely accompany him on the first mission to the Moon.

It's a short read, being only 70 pages, and it features delightful hand-drawn illustrations befitting a children's book written in the 1950's. Of course the sci-



Cover of children's book entitled *Space Cat* by Ruthven Todd. Dust jacket art by Paul Galdone.

ence is wonky, even by the standards of the day, but I think it just adds to the charm of the story. Todd wrote the story from the perspective of Flyball, so his experiences are presented similar to a child's understanding of the world. For example, it takes

(Continued on page 8)

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 weath-

er 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.

Report on the Green Bank Star Quest 18
by CCAS Treasurer Don Knabb



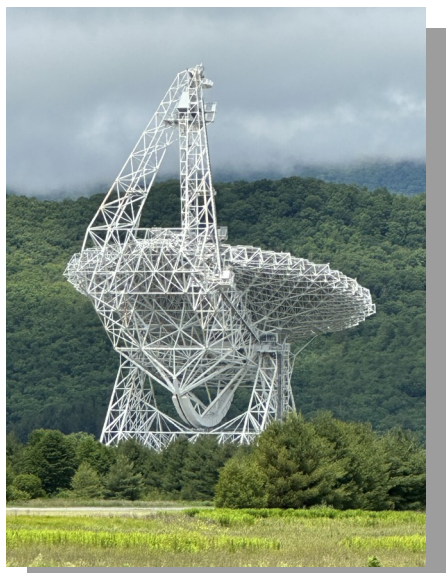
The Green Bank Observatory was established in 1956 as the National Radio Astronomy Observatory. Located in the National Radio Quiet Zone in West Virginia, it is approximately six hours by car from West Chester, Pennsylvania.

In late June, Barb and I went to the Green Bank Observatory in West Virginia for the Green Bank Star Quest. This is a regional-scale star party that has been held for 18 years. This year there were attendees from across the mid-Atlantic region, including CCAS member Chris Trunk who was joined by his brother Tom.

The event is more than just a star party. Every evening a keynote speaker makes a presentation on various topics in astronomy. Clinics and presentations (including one by me) are held throughout each day in the science center on multiple subjects, including astrophotography and radio astronomy.

While there was a children's rocket building class and launch

in previous years, this year an adult rocket building class and launch was added. This was a lot of fun with lots of cheers as the rockets climbed out of sight, then



100m Robert C. Byrd Green Bank Telescope. Image Credit: Don Knabb

parachuted back to earth.

There is a bunk house available but most attendees camp in a large, flat field that has a good view of the Green Bank Telescope, the GBT, the largest fully steerable radio telescope in the world.

The campsite is excellent with gravel roads, sanitary stations, and hot showers available in a structure next to the field and in the bunkhouse. There is a cafeteria and snack bar on site and a meal plan is offered for breakfast and dinner at a reasonable cost. Meals are a great time to get to know the attendees!

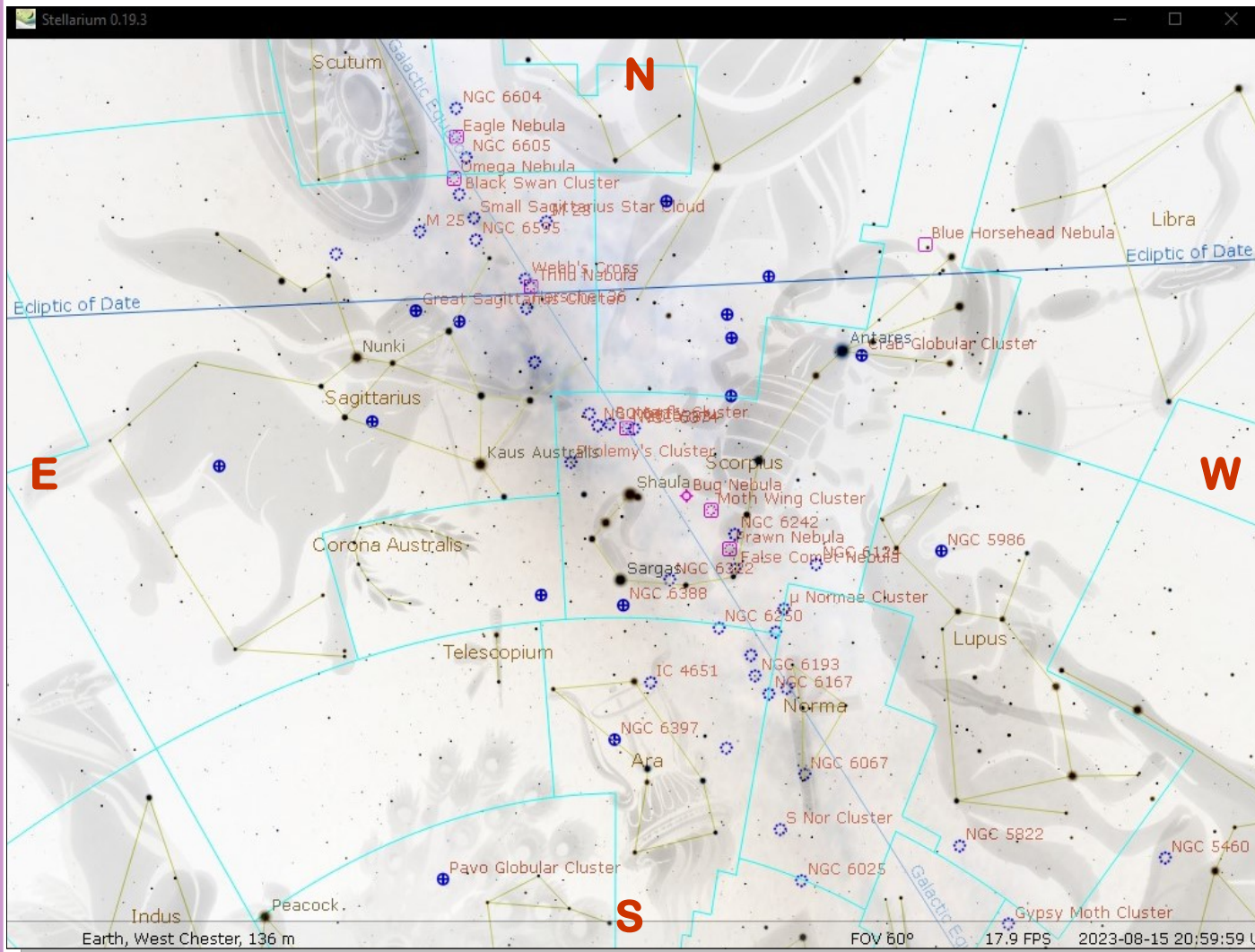
The weather was not the best; we had no clear skies. The best we had was partly cloudy with just a few holes between the

(Continued on page 11)

The Sky Over Chester County

August 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
08/01/2023	5:30 a.m. EDT	6:00 a.m. EDT	8:16 p.m. EDT	8:46 p.m. EDT	14h 15m 25s
08/15/2023	5:44 a.m. EDT	6:13 a.m. EDT	7:59 p.m. EDT	8:28 p.m. EDT	13h 45m 16s
08/31/2023	6:01 a.m. EDT	6:29 a.m. EDT	7:35 p.m. EDT	8:03 p.m. EDT	13h 06m 34s

Moon Phases					
			Full Moon	08/01/2023	2:31 p.m. EDT
Last Quarter	08/08/2023	6:28 p.m. EDT	New Moon	08/16/2023	5:38 a.m. EDT
First Quarter	08/24/2023	5:57 a.m. EDT	Full Moon	08/30/2023	9:35 p.m. EDT

August 2023 Observing Highlights

by Michael Manigly, CCAS Observing Chair

1	Full Moon 2:32 p.m. EDT – The first of two super full moons this month is named the Berry Ripening Moon.
2	Moon at perigee (222,022 miles from Earth) 1:52 a.m. EDT.
3	Saturn 2° north of the Moon in the morning sky 6:00 a.m. EDT.
4	Neptune 1.5° north of the Moon 6:00 p.m. EDT.
8	Last Quarter Moon 6:28 a.m. EDT. Jupiter is 3° below and to the right of the Moon in the evening sky. Also, the Moon passes 3° north of Uranus at 9:00 p.m. EDT.
9	Uranus passes 3° south of the Moon and the Moon is 1.4° south of the Pleiades (M45). Jupiter stands to the upper right of the Moon and Aldebaran about the same distance but below the Moon around the same time.
10	Mercury is at its greatest eastern elongation (27°) in the evening sky. The Lunar Curtiss X is visible to observers in the eastern part of North America midnight EDT. Aldebaran is to the low right of the Moon in the morning sky.
13	Venus is at inferior conjunction 7:00 a.m. EDT. Pollux is 1.7° north of the Moon. The Perseid meteor showers (ZHR=110) peak around 4 a.m. but best observing is during the predawn hours of 8/13 and 8/14.
14	The Gemini Twins, Pollux and Castor, are positioned above the thin crescent Moon during the morning twilight.
16	New Moon 5:35 a.m. EDT. The Moon is at apogee (furthest distance of the year at 252,671 miles from Earth) 7:54 a.m. EDT.
18	Mars is 2° below and to the right of the Moon in evening twilight. Also, the Moon passes 7° north of Mercury around 7:00 a.m. EDT.
20	Spica stands to the left of the Moon at nightfall.
23	Mercury is stationary 1:00 a.m. EDT. Mars, Venus, the Moon and Mercury form a “W” in evening twilight. Regulus is above to the upper left of Venus and Mars.
24	First Quarter Moon 5:57 a.m. EDT. The Moon passes 1.1° north of Antares at 10:00 p.m. EDT. Lunar Straight Wall visible this evening.
27	Saturn at opposition 4:00 a.m. EDT.
29	Uranus is stationary. Saturn is to the left of the Moon at nightfall.
30	Full Moon 9:36 p.m. EDT. Called the Halfway Moon or the Grain Moon or the Green Corn Moon. Additionally, the Moon is at perigee and Saturn is 2° above and to the right of the Moon in the evening sky.

The best sights this month: August provides two super Moons, including a Blue Moon on 30th, the Perseid Meteor showers peaking overnight on the 12th and 13th and Saturn and Jupiter return to prominence in the evening sky. The summer pro-

vides access to multiple deep sky objects including M13 and M92, bright globular clusters, M57 in Hercules and the Ring Nebula in Lyra. The Summer Triangle asterism is prominent in August as well.

Mercury appears extremely low in the Western sky during the evening twilight and it becomes more difficult to observe after mid-month. It is at its greatest eastern elongation (27°) on the 10th and the planet is stationary at 1:00 a.m. EDT on the 23rd.

Venus is at inferior conjunction at 7:00 a.m. EDT on the 13th. It will be located extremely low in the eastern evening sky at twilight by mid-month. It appears as a bright object right before sunrise on the 21st.

Mars with a minimum brightness of around 1.8 magnitude may be observed very low in the western sky after sunset and sets in the WSW during twilight. It appears 2° below and to the right of the Moon on the 18th and the planet forms a “W” with Venus, the Moon and Mercury during evening twilight on the 23rd.

Jupiter rises around 11:00 p.m. EDT but rises earlier as August progresses. It can be seen high in the south during morning twilight. The planet can be found in Aries the Ram at -2.4 magnitude early in the month. The gas giant stands to the upper right of the Moon on the 9th. A telescope will show the 4 Galilean moons and the light and dark cloud bands.

Saturn rises in the ESE around 9:00 p.m. EDT, transits after 2:00 a.m. EDT and sets in the WSW during morning twilight. It will be visible throughout the night against the background stars of Aquarius. It will be located within 4° of the Full Moon on the 2nd and 3rd. Saturn reaches opposition on the 27th.

Uranus rises close to midnight during the month of August. The planet stands between 7.5° and 9.0° NE of Jupiter during August. Uranus is stationary at 11:00 p.m. EDT on the 29th. Uranus lies in Aries and is viewable with binoculars at 5.8 magnitude.

Neptune rises around 10:00 p.m. EDT on the 1st and before 8:30 p.m. EDT on the 31st. The planet can be located 1.5° north of the Moon around 6:00 p.m. EDT on the 4th.

There are two **Full Super Moons** during the month

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Through the Eyepiece: M81 and M82, Bode's Galaxy and The Cigar Galaxy

by Don Knabb, CCAS Treasurer

M81 and M82 are perhaps the most famous pair of galaxies in the northern skies. During our July observing evening at Brandywine Red Clay Alliance the galaxies were easily visible even in skies that were not ideal. They can be seen in one field of view if you use a low power/wide field eyepiece in a telescope, or in binoculars. Both galaxies are thought to be spiral galaxies but we see them from different points of view so that M81 is the classic spiral while we see M82

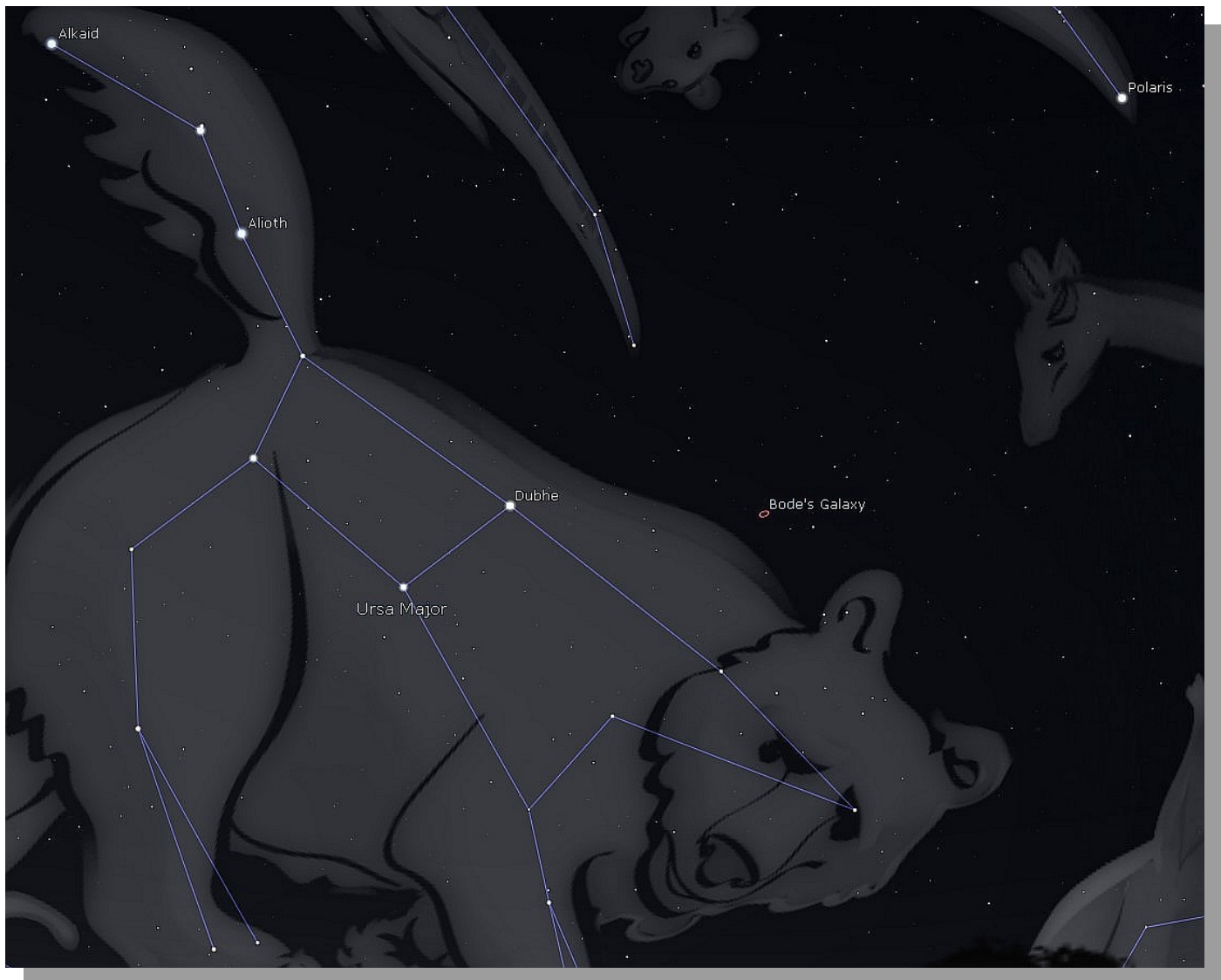
edge on, which gives it that "Cigar Galaxy" name.

Messier 81 was first discovered by Johann Elert Bode on December 31, 1774. Consequently, the galaxy is sometimes referred to as "Bode's Galaxy", or "Bode's Nebula". It wasn't until the early 20th century that so called "spiral nebula" were scientifically proven to be galaxies outside the realm of the Milky Way. In 1779, Pierre Mechain and Charles Messier re-identified Bode's object, which

was subsequently listed in the Messier Catalog as Messier 81.

August is a great time of year to see this pair of galaxies because they are not very high in the sky so you won't need to strain your neck to see them. About halfway between the northwest horizon and the Little Dipper and to the right of the Big Dipper you can find these "smudges" in binoculars in dark skies. Or for a close-up view use

(Continued on page 7)



Map created with Stellarium, the free planetarium software: <http://stellarium.org/>

Eyepiece (Cont'd)



M81. Image credit: David Hockenberry, astrophotographer

(Continued from page 6)

a telescope with a low power (wide field) eyepiece and you will be able to see the different

shapes of the galaxies. My large binoculars with 18mm eyepieces give a magnification of 37X which is just right to see both



M82. Photo credit: NASA, ESA and the Hubble Heritage Team (STScI/AURA). Acknowledgment: J. Gallagher (University of Wisconsin), M. Mountain (STScI) and P. Puxley (NSF).

galaxies in one field of view.

Using the chart on the bottom of pg. 6, you should be able to find M81 and M82.

M81 is one of the prettiest spirals in the sky as you can see in the photograph to the left taken by CCAS President David Hockenberry.

M82 is called a starburst galaxy. A recent – a few hundred million years is considered recent in astronomical time scales – close encounter with M81 deformed M82 and caused star formation to increase 10 fold compared to normal galaxies. At this time the centers of M81 and M82 are estimated to be 130,000 light years apart. The galaxies are approximately 12 million light years distant from us.

Recently over 100 freshly formed globular clusters have been discovered in M82 using the Hubble Space Telescope. Their formation is also thought to be due to the encounter with M81.

So, grab your binoculars or telescope and seek out these beautiful deep space objects.

Information credits:

- Pasachoff, Jay M. 2000. *A Field Guide to the Stars and Planets*. New York, NY.: Houghton Mifflin.
- http://en.wikipedia.org/wiki/Messier_82
- <http://www.seds.org/messier/m/m082.html>
- <http://www.robgendlerastropics.com/M82text.html>

Space Cat (Cont'd)

(Continued from page 2)

a paragraph or two to decipher that the kitten has wandered onto an airplane where he adopts Captain Fred. Other passages create a lore based on an imaginary cat culture, such as in the following paragraph:

“Flyball was a great believer in listening to the conversation around the station. He collected a great deal of useful information that way. Nowadays the conversation all seemed to be concerned with the subject of the Moon. Flyball gave no end of superior twitches of his whiskers. He knew all about the Moon and the Cat in the Moon. He knew that dogs, looking up at the full Moon, howled because there was a cat there and not a dog” (pp. 26-27).

One aspect of the books that touched me was the positive portrayal of Captain Fred and his military colleagues. Having family members who served in World War II and in the Korean War, I appreciated that the books



An example of the delightful illustrations in *Space Cat*. Captain Fred Stone and Flyball in their pressure suits. Illustration by Paul Galdone.

depicted the “can-do” attitude and confidence so typical in novels and films of the era. Soldiers and pilots were heroes and able to successfully respond to unforeseen challenges.

One great example of this portrayal in science fiction is in Howard Hawks’ classic film *The Thing from Another World*. In

that film, the soldiers were the heroes who were better able to resist the creature than the scientists, who more interested in studying the invader and endangering the world.

Flyball had three subsequent adventures, including trips to Venus and to Mars, where he met a lady Martian feline and they raised a litter of space kittens together. In the final book, Flyball and his family accompany Captain Fred on a trip to Alpha Centauri!

All four books are available on Amazon and direct from the publisher website www.doverpublications.com. If young children are part of your life, these books may offer a wonderful opportunity to introduce them to space in an imaginative way.

And yes, in addition to *Space Cat* and the three sequel books, I also purchased the T-shirt matching the book cover!

Observing (Cont'd)

(Continued from page 5)

of August. The Super Moon on the 1st is called the Berry Ripening Moon and the Super Moon on the 30th is called the Half-way Moon, the Grain Moon or the Green Corn Moon. This Super Blue Moon is also the largest Moon of 2023. The Lunar Curtiss X is visible on the 10th and the Lunar Straight Wall is visible on the 24th.

Constellations: The warm August nights allow for some fun observing opportunities. The

Summer Triangle asterism shines overhead with Scorpius and Sagittarius dominating the Southern sky. Look for the Great Square of Pegasus as night passes as it can be viewed with binoculars. If you are in a dark location where the Milky Way is visible you can locate Aquila, Cygnus and more.

Messier/deep sky: Summer presents opportunities to observe globular clusters and nebulas. M13 and M92, bright globular clusters in Hercules, are nearly

overhead and can be easily viewed with binoculars or a telescope. Look for M6 and M7 low in the southern sky. These are easy targets if you use the tail of Scorpius as a guide. Look for M4 near Antares in Scorpius and M22 in Sagittarius. You may choose to continue north to find the Swan Nebula, M17.

Comets: C2021 T-4 (Lemmon) may be visible as the Sun sets in the SW sky. 103P/Hartley 2 will

(Continued on page 14)

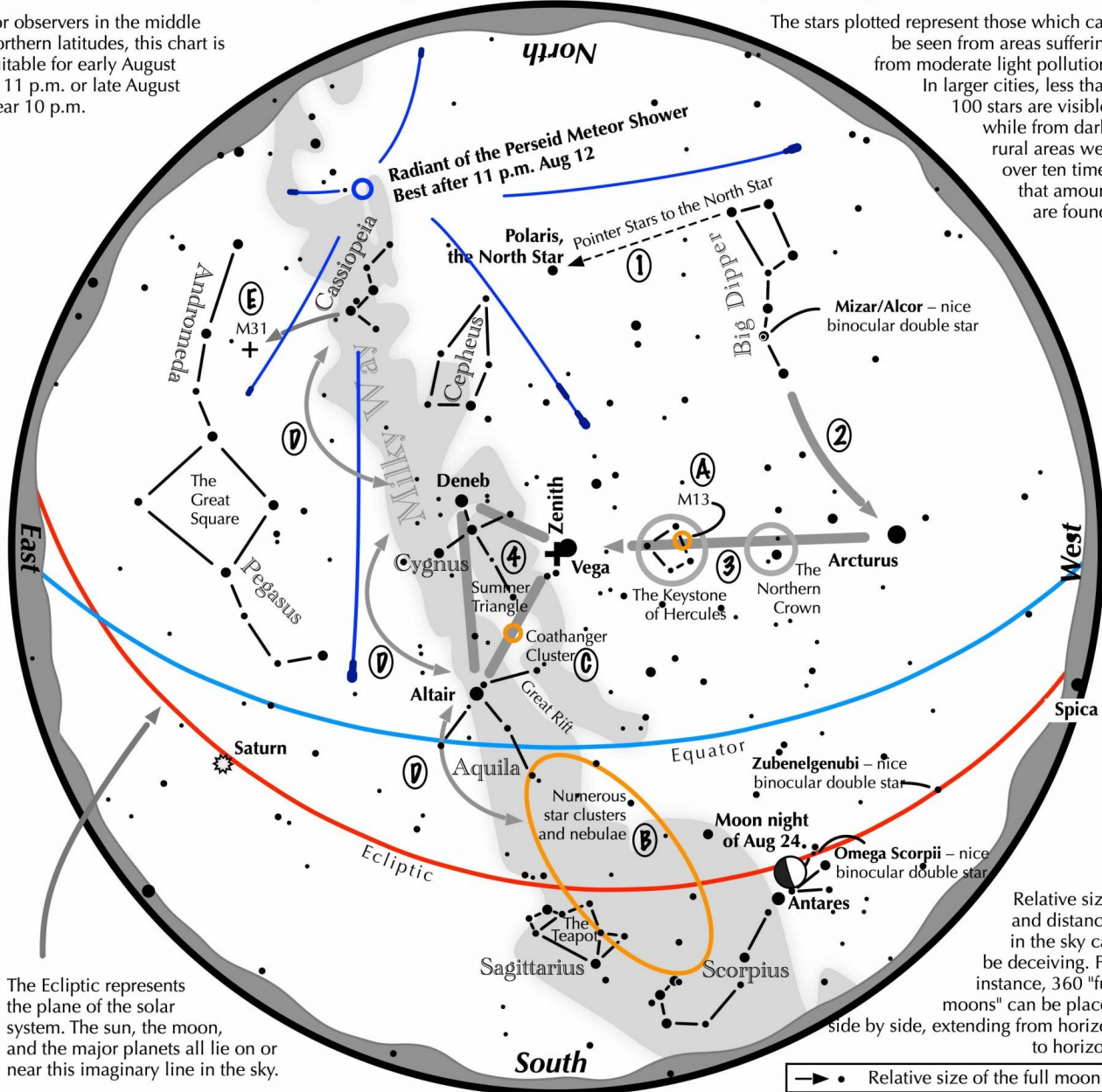
Navigating the Mid-August Night Sky

by *Astronomical League*

Navigating the mid August Night Sky

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August near 10 p.m.

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



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

Navigating the mid August night sky: Simply start with what you know or with what you can easily find.

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

Binocular Highlights

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



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

Night Sky Network: Super Blue Sturgeon Moon

by Vivian White

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.

On August 1st, catch a **full Moon** rising in the east just 30 minutes after sunset. We are seeing the entire sunlit side of the Moon as it is nearly (but not quite) in line with the Sun and Earth. The *Farmers' Almanac* calls this month's Moon the "Sturgeon Moon", for the time of year when this giant fish was once abundant in the Great Lakes. Cultures around the world give full Moons special names, often related to growing seasons or celebrations.

As the Moon rises later and later each night, the bright sunlit part appears to get smaller or "wane" —we call this a waning **gibbous Moon**. About a week later, on August 8th, we see only one half of the Moon alight. At this phase, the Moon rises around midnight and sets around noon. Have you ever seen the Moon in the daytime? You may notice this phase towards the southwest in the morning sky. Hold up a ball or egg beside it and see how the Sun lights up the same part.

By August 16th, the Moon has gone through its crescent phase and is now only showing its dark side towards the Earth. Did you know the **dark side** and the **far side** of the Moon are different? The Moon always shows the same face towards Earth due to the gravitational pull of Earth, so the far side of the Moon was only viewed by humans for the first time in 1968 with the Apollo 8 mission. However, the dark side



is pointed at us almost all the time. As the Moon orbits the Earth, the sunlit side changes

slowly until the full dark side is facing us during a **new Moon**. When the Moon is just a small crescent, you can sometimes even see the light of an **Earth-shine** reflecting off Earth and lighting up the dark side of the Moon faintly.

Then as the Moon reappears, making a waxing (or growing) **crescent Moon**, best seen in the afternoons. By the time it reaches the first quarter on August 24th, we see the other half of the

(Continued on page 11)



Image of waning crescent Moon shown next to a ball on a stick that is lit by the Sun on the same side as the Moon, with trees and a blue sky in the background. Try this with an egg or any round object when you see the Moon during the day! Credit: Vivian White

Night Sky Network (Cont'd)



[Earthshine as seen from the International Space Station](#) with the sun just set - Astronaut Photograph ISS028-E-20073 was taken on July 31, 2011, and is provided by the ISS Crew Earth Observations Facility and the Earth Science and Remote Sensing Unit, Johnson Space Center

(Continued from page 10)

Moon lit up. At this point, the Moon passes through Earth's orbit and marks the spot where the Earth was just 3 hours prior. It takes the Earth about 3 hours to move the distance between the Moon and Earth.

The Moon on August 30th is referred to as a blue moon. **Blue moons** are not actually blue in color of course; it refers to the second full Moon in any month. Since it takes 29.5 days to complete the cycle from full to new

and back to full, most months will see only one. But occasionally, you'll fit two into one month, hence the phrase "once in a blue moon." We see a blue moon about once every three years on average; the next will be in May 2026. In addition, this full Moon appears larger in the sky than any other full Moon this year—an unofficial **supermoon**. A supermoon appears larger than average because it is closer in its slightly elliptical orbit. The difference in apparent size between the smallest and largest full Moon is about the size difference between a quarter and a nickel. Even at its largest, you can always cover the whole Moon with your pinky finger extended at arm's length.

Follow the Moon with us this month and keep a Moon journal if you like - you may be surprised what you discover! moon.nasa.gov/moon-observation

Green Bank Star Quest (Cont'd)



Camping Area at Green Bank Observatory. Image Credit: Don Knabb

(Continued from page 3)

clouds. But we had some beautiful sunny days when we could hike a mile or so to the GBT.

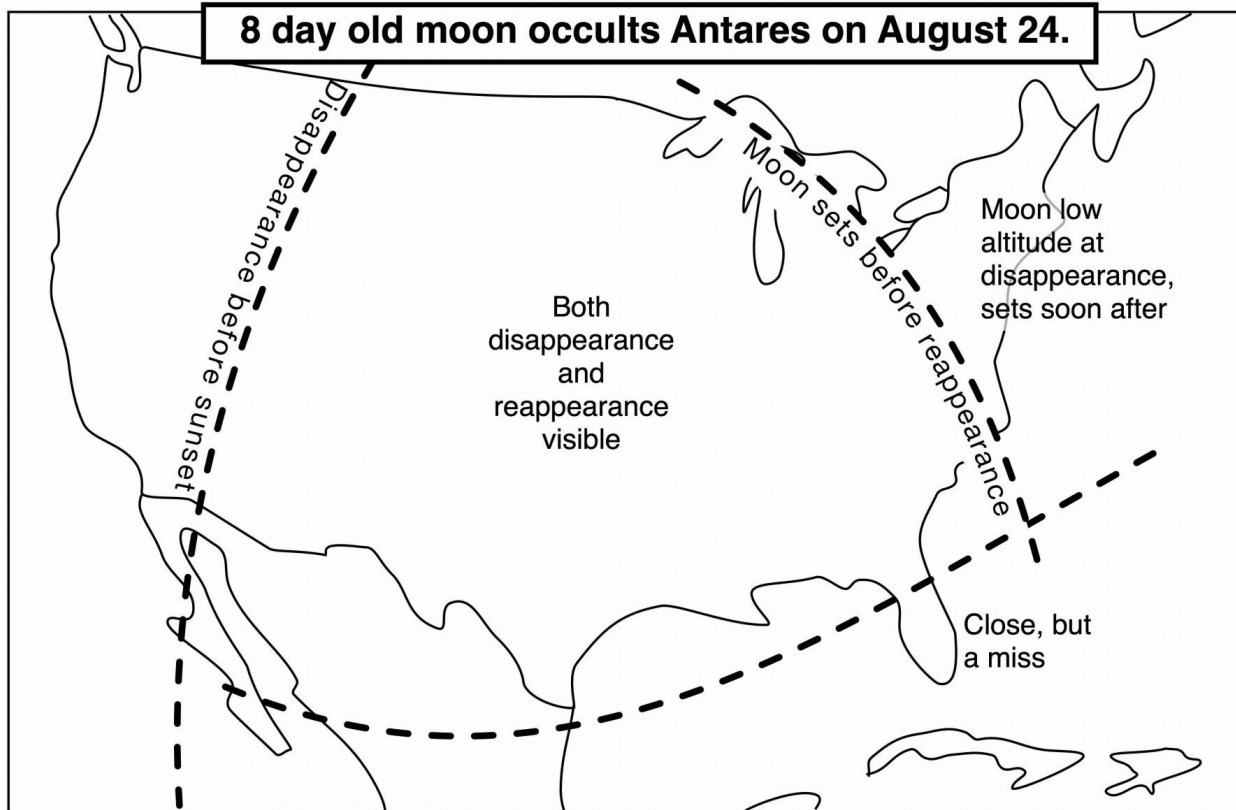
Tours of the Green Bank radio telescope and the control room are offered every day. There is also a visitor center with informative displays.

This was a wonderful event. Yes, it is a long drive, but it was certainly worth it. There is no cell phone service because the cell signal would interfere with the radio telescope operation. In fact, for miles around the site no

(Continued on page 13)

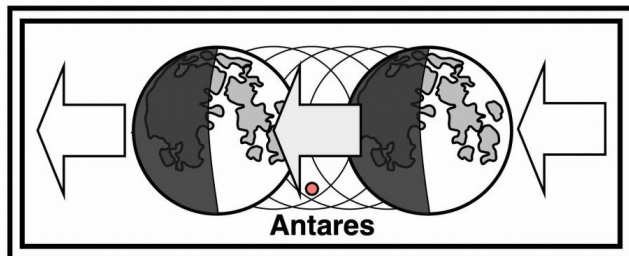
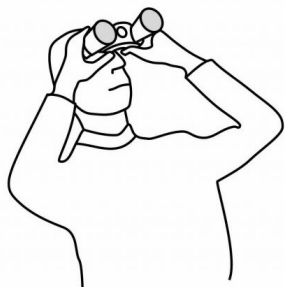
Eight Day Old Moon Occults Antares
by *Astronomical League*

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



The full occultation event on Aug. 24 of Antares by the moon occurs for the central part of the US. Both coasts will not see the complete event. For disappearance and reappearance times in your area, visit the International Occultation Timing Association webpage:

<http://lunar-occultations.com/iota/bstar/0824zc2366.htm>



Start looking in the southwest shortly after sunset on August 24. Watch the moon slowly approach Antares, then suddenly block it. Binoculars will give better view.



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

Green Bank Star Quest (Cont'd)

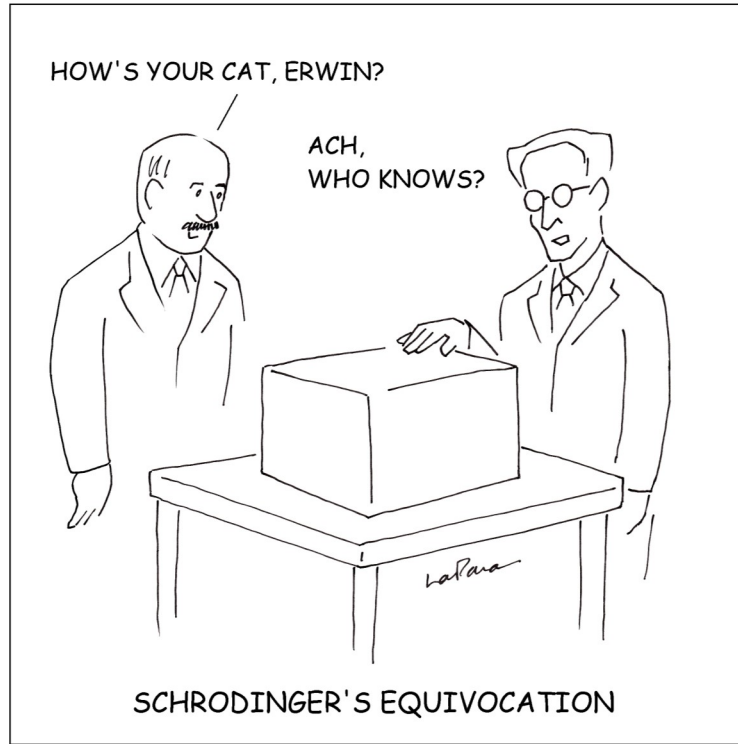
(Continued from page 11)

one is allowed to have a microwave oven unless it is placed inside a Faraday cage.

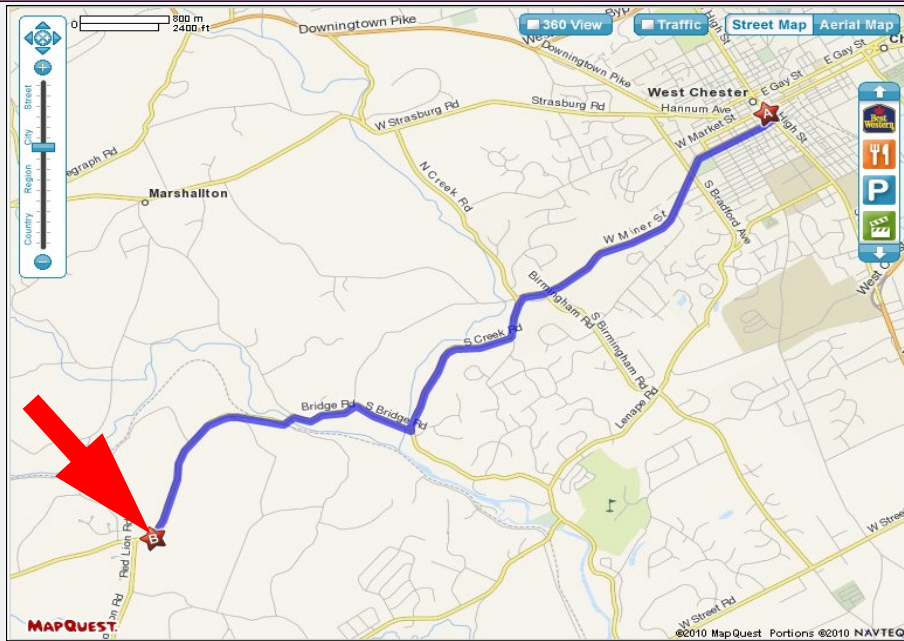
So, if you are interested in attending a regional scale star party with plenty to do during the day and spectacular skies at night (when the weather cooperates), put the Green Bank Star Quest 19, scheduled for July 3 through July 6, on your calendar for 2024!

To learn more about the Green Bank Observatory and the National Radio Quiet Zone, visit the official website at [Green Bank Observatory](http://GreenBankObservatory.org). For more information about the annual Green Bank Star Quest, visit its separate website at <https://greenbankstarquest.org/>

Classic La Para by Nicholas La Para



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).



Observing (Cont'd)

(Continued from page 8)

be glowing at magnitude 10 in Andromeda as it rises higher with each hour of the night. Despite the nearly Full Moon, catch this comet on the 31st when it will be less than 1° from M34, a star cluster in Perseus.

Asteroids: 15 Eunomia at magnitude 9.0 passes by several globular clusters including M22 during August. It will be located 2.5° NE of the tip of Sagittarius Teapot in the Southern sky.

Meteor showers: The Perseid meteor showers (ZHR=110) peak on the 12th and 13th through the night.

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

July 2023 Financial Summary

Beginning Balance	\$942
Deposits	\$575
Disbursements	-\$0
Ending Balance	\$1517

New Member Welcome!

Welcome to our new CCAS members John & Barb Marks from West Chester, 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.ida.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, and on the CCAS website. 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 2021 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.