



bservations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 26, No. 8 **Three-Time** Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016 August 2018

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CCAS Original Astrophotography



M82 the Cigar Galaxy, by Dave Hockenberry. See pg. 9 for photo details.

Membership Renewals Due

| | |
|---------|---|
| 8/2018 | Buki Dwyer Knabb & Family Lurcott, L. Tiedemann |
| 09/2018 | Lurcott, E. Squire Family Stein Family |
| 10/2018 | Johanson Kresch Lane Lester Rosenblatt Skelton |

August 2018 Dates

- 4th • Last Quarter Moon, 2:17 p.m. EDT
- 11th • New Moon, 5:57 a.m. EDT
- 12th-13th • The Perseid meteor shower peaks in the pre-dawn hours
- 18th • First Quarter Moon, 3:48 a.m. EDT
- 20th • The Moon is near Saturn in Sagittarius
- 26th • Full Moon, the Ripening Moon, 7:56 a.m. EDT
- 31st • Venus is about 1 degree from Spica



CCAS Upcoming Nights Out

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, August 18, 2018** - Natural Lands Trust Multi-Club Event, Moon & Planet Party, ChesLen Preserve, Coatesville, PA. For non-members registration is required with The Natural Lands Trust.
- ☼ **Saturday, September 8, 2018** - CCAS Special Joint Observing Session with Atglen Library at Wolf's Hollow County Park, Atglen, PA.
- ☼ **Friday, September 14, 2018** - CCAS Special Observing Session at Starr Farm Park, Downingtown, PA. The observing session is scheduled from 7:30 pm to 9:00 pm.
- ☼ **Saturday, September 15, 2018** - CCAS Special Observing Session at Hoopes Park, West Chester, PA. For more information, contact our Observing Chair, Don Knabb.
- ☼ **Saturday, September 29, 2018** - CCAS Special Observing Session at Bucktoe Creek Preserve, Avondale, PA, from 7:00 pm to 9:00 pm. The event is open to be public but registration for non-CCAS members is required.

Summer 2018 Society Events

August 2018

9th-10th • The von Kármán Lecture Series: [Spitzer Beyond: The Incredible Continuing Adventures of the Spitzer Space Telescope](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

11th • CCAS Special Observing Session at Hickory Run State Park, White Haven, PA.

17th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

18th • Natural Lands Trust Multi-Club Event, [Moon & Planet Party](#), ChesLen Preserve, Coatesville, PA.

20th • Open call for articles and photographs for the September 2018 edition of [Observations](#).

26th • Deadline for newsletter submissions for the September 2018 edition of [Observations](#).

September 2018

8th • CCAS Special Observing Session, Wolf's Hollow and Atglen Library joint event.

6th-7th • The von Kármán Lecture Series: [NASA@60: The Role of the Robots](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

7th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

11th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts immediately after at 7:30 p.m. Guest Speaker: TBA

11th-14th • CCAS Special Camping & Observing Session at Cherry Springs State Park, Coudersport, PA.

14th • CCAS Special Observing Session, Starr Farm Park, Downingtown, PA.

15th • CCAS Special Observing Session at Hoopes Park, West Chester, PA.

20th • Open call for articles and photographs for the October 2018 edition of [Observations](#).

22nd • Fall Equinox. 9:54 pm EDT. First day of autumn.

26th • Deadline for newsletter submissions for the October 2018 edition of [Observations](#).

29th • CCAS Special Observing Session at Bucktoe Creek Preserve, Avondale, PA, from 7:00 pm to 9:00 pm. The event is open to be public but registration for non-CCAS members is required through The Land Conservancy for Southern Chester County website.

Meade LXD75 Telescope Available

by Don Knabb, CCAS Treasurer & Observing Chair



A CCAS member recently donated a Meade LXD75 telescope to the club. This is a Schmidt-Newtonian design and is mounted on a Meade Go-To equatorial mount. This scope is not appropriate as a lending scope for our club since it is complicated to use and has a few problems. But for someone who wants to take the leap to a Go-To type telescope and likes to tinker and solve problems, this is an excellent opportunity to do so at very low cost. I don't know the age of the scope, but I would guess it is perhaps 10 years old. It was not an inexpensive telescope!

I tested the scope under the stars and it has some good points and some not so good points. On the good side, the scope is very good optically. I had wonderful views of Jupiter and the

Moon and found several deep sky objects despite a first quarter Moon to fill the sky with light. The bad points are that there is no finder scope and no eyepieces with the scope. That's not a big deal, since any 1 1/4 inch eyepieces will work with the scope and there are several options to get eyepieces at reasonable prices, such as going to Skies Unlimited and shopping on their used equipment table. The lack of a finder scope can also be remedied with a \$35 Rigel Quick Finder.

More importantly, the Go-To mount seems to have some problems. Several times I performed a successful alignment and found several objects automatically, but then the scope seemed to lose its alignment with the sky and was far off when seeking objects. But with a finder scope the telescope can be used quite easily in manual mode and it should track objects across the sky as a clock drive would do. For power, the scope has a battery box that requires 8 D cells, or you will need to supply a 12 volt power pack.

The scope is not too heavy, but the mount is fairly heavy. That's a good thing because it makes the mount stable, but it is a little harder to handle because of the weight.

So if you want to have some fun with a nice but slightly dated telescope send a note to me at dknabb01@comcast.net. If we have several interested members you can share the scope or we can draw names from a hat.

September 2018 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on September 11, 2018, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Guest Speaker: TBA.

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 2018-2019 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

Multi-club Astronomy Event at the ChesLen Preserve on Saturday August 18th

by Fred DeLuca



CCAS Members Participated in the 2015 Natural Lands Star Party.

The Natural Lands Trust is hosting a **Moon & Planet Party** on Saturday, August 18, 2018, from 7:00 PM to 9:00 PM. The location is the Lenfest Center at the ChesLen Preserve, the property across the road from where Friday Night Lights was held, 1199 Cannery Road Coatesville, PA.

The event is a free, family-friendly, no frills event. That night will have a first quarter Moon and a line up of planets to entertain attendees. As in the past, no pets or alcohol permitted. There will be some snacks and refreshments available courtesy of Natural Lands.

Anyone who is interested in bringing their choice of night time optics to share the night sky with attendees, please reply directly to me at fred-world@verizon.net.

The last time Natural Lands held a dedicated astronomy event like this was in 2015 (see photo at left), when we had many volunteers and a few hundred attendees of all ages.

We will have access to the Main Building's audio/video equipment to do presentations. There will be at least one indoor presentation, a 15-minute talk given two or three times during the evening, so those arriving later won't miss the information. Please **contact me** if you have a brief presentation that would be appropriate for a general audience. Having several talks, done in rotation, might work well.

This is a free event for all ages. CCAS volunteers need only notify me of your intentions to help, but all guests, i.e., family

(Continued on page 9)

CCAS Summer Gathering & Celebration of 25 Years of CCAS

by Don Knabb, CCAS Treasurer & Observing Chair

Please join Barb and me on Saturday, September 1st from 6:00 – 10:00 p.m. for the CCAS summer picnic. This will also be an opportunity for us to celebrate the 25th anniversary of the creation of the Chester County Astronomical Society!

With the recent examination of the 20 inch Ed Lurcott club telescope, we are all set to see some sights in the sky. If you've never seen M13, the Great Globular Cluster in Hercules, through this telescope you really need to gaze

into the eyepiece at that glorious collection of stars. And Jupiter, Saturn and Mars will also be fantastic, not to mention many other sights to see.

As we have done in the past, we'll supply sandwiches, seltzers, and beer. Please bring something to contribute, such as an appetizer, snack, salad, or dessert. Please note that this is an "adult only" event.

Our phone number is 610-436-5702 and our address is 988

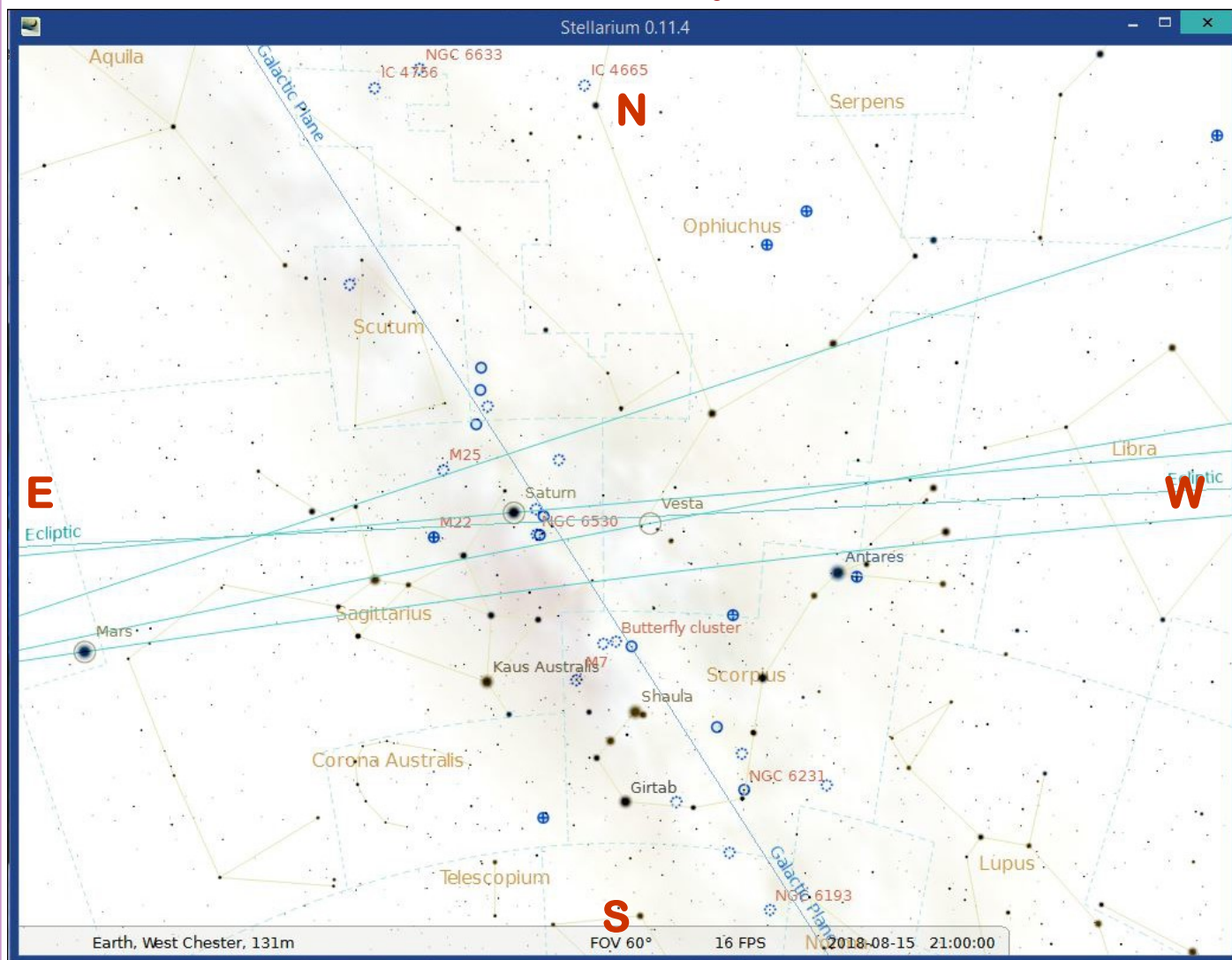
Meadowview Lane. Our home is located southwest of downtown West Chester. A Google Maps search will provide good directions to our house. The house is at the end of a cul-de-sac and 988 is on the mailbox. We have a long driveway and the house has a garage facing the street.

Please **RSVP** to dknabb00@comcast.net if you plan to attend so that we know how much food to prepare.

The Sky Over Chester County

August 15, 2018 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 |
|---------------|-----------------------|---------------|---------------|---------------------|---------------|
| 08/01/2018 | 5:28 a.m. EDT | 5:59 a.m. EDT | 8:14 p.m. EDT | 8:44 p.m. EDT | 14h 14m 58s |
| 08/15/2018 | 5:43 a.m. EDT | 6:12 a.m. EDT | 7:57 p.m. EDT | 8:26 p.m. EDT | 13h 44m 45s |
| 08/31/2018 | 5:59 a.m. EDT | 6:27 a.m. EDT | 7:33 p.m. EDT | 8:01 p.m. EDT | 13h 06m 02s |
| Moon Phases | | | | | |
| Last Quarter | 08/04/2018 | 2:17 p.m. EDT | New Moon | 08/11/2018 | 5:57 a.m. EDT |
| First Quarter | 08/18/2018 | 3:48 a.m. EDT | Full Moon | 08/26/2018 | 7:56 p.m. EDT |

August 2018 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

| | |
|-------|--|
| 4 | Last Quarter Moon, 2:17 p.m. EDT |
| 11 | New Moon, 5:57 a.m. EDT |
| 12&13 | The Perseid meteor shower peaks in the pre-dawn hours |
| 14 | Venus is near the crescent Moon |
| 16 | Jupiter is very near Alpha Librae and the Moon is not far away |
| 17 | Venus is at greatest elongation |
| 18 | First Quarter Moon, 3:48 a.m. EDT |
| 19 | The Lunar Straight Wall is visible |
| 20 | The Moon is near Saturn in Sagittarius |
| 26 | Full Moon, the Ripening Moon, 7:56 a.m. EDT |
| 31 | Venus is about 1 degree from Spica |

The best sights this month: The parade of planets continues during August with Venus, Jupiter, Saturn and Mars spanning the night sky. This month we also are treated to the Perseid Meteor shower, and with new Moon just the day before the peak it should be a great show.

Mercury: Mercury is visible in the pre-dawn sky late in the month.

Venus: Our sister planet achieves greatest eastern elongation on August 17th and shines at a brilliant -4.6 magnitude.

Mars: The red planet is bigger and brighter than it has been since 2003 the entire month, so if you look at only one thing in the sky during August, make it be Mars. In mid-August Mars crosses the meridian around 11:30, so wait until then to see it through the least amount of Earth's atmosphere.

Jupiter: Gaze upon Jupiter while you can because by month's end it will be setting around 10:30. On August 16th Jupiter is near Alpha Librae (Zubenelgenubi - say that fast 3 times in a row!).

Saturn: The ringed beauty is in excellent viewing position around 9:30 during August. The rings are

tilted at more than 26 degrees so they really stand out in the eyepiece of a telescope.

Uranus and Neptune: The distant gas giants can only be observed in the hours before dawn.

The Moon: Full Moon is on August 26th. Native Americans called this the Full Sturgeon Moon. The fishing tribes are given credit for the naming of this Moon, since sturgeon, a large fish of the Great Lakes were most readily caught during this month. A few tribes knew it as the Full Red Moon because as the Moon rises it appears reddish through the sultry haze of summer. Native Canadians called this the Ripening Moon.

Constellations: The Summer Triangle rules the night sky overhead after you stare at the wonders in the southern sky. Find a driveway, put down a sleeping bag and feel the heat of the sun come back out of the driveway, warming your back as you stare upward at Cygnus as it flies down the Milky Way. It's easy to hold binoculars straight up if you are lying on your back. Scan around the Summer Triangle with your binoculars to find the Coat Hanger Cluster and the Cygnus Star Chain. Then just drink in the stars of our home galaxy the Milky Way.

Messier/deep sky: M13 and M92, bright globular clusters in Hercules are nearly overhead so they are in a great position for viewing with binoculars or a telescope. Don't miss the southern Messier objects in Scorpius and Sagittarius while we have the chance to see them. That part of the sky is filled with incredible objects that are visible for only a short time from Chester County.

Comets: There are no bright comets in the sky during August.

Meteor showers: It is again time for the most popular meteor shower of the year, the Perseid meteor shower! This year is excellent for viewing the shower since New Moon occurs just a day before the shower's peak. To see the most meteors, look in the late night/early morning on the nights of August 12 and 13. My favorite part of this shower is earlier in the evening when you will see fewer shooting stars but you have a good chance of seeing an "Earth grazer" that travels nearly all the way across the sky. Don't miss this shower! When you see a fireball fly cross the sky you will never forget it.

Through The Eyepiece: Messier 6, the Butterfly Cluster

by Don Knabb, CCAS Treasurer & Observing Chair

During the summer months I find myself irresistibly drawn to the southern sky. This part of the sky is visible to us for only a few months, and it is full of incredible objects to gaze upon. One of these objects is the open cluster Messier 6, also known as the Butterfly Cluster.

From a dark sky site, the cluster is detectable with the naked eye, close to the "stinger" of Scorpius. It is next to what many observers consider its companion object, M7, Ptolemy's Cluster.

The bright star that represents the 'stinger' on the tail of the Scorpion is Shaula. With binoculars or a telescope with a low power eyepiece, scan to the northeast, up and to the left slightly. Under dark skies it will show as a hazy patch in the sky, but do not confuse it with its brighter, southeastern neighbor, M7.

In binoculars, Messier 6 stars will all appear to be around the same brightness and the 'butterfly' asterism will be unmistakable. In a telescope, many more stars will be revealed – making the namesake a bit harder to recognize, but more interesting because more stars are seen and color is distinguished. However, watch this cluster on nights when there is a little fine cloud in the sky or moonlight. You'll see the shape in a telescope quite clearly then! Be sure to stay a minimum magnification when using a telescope, because this is a large open star cluster.



Image: The Butterfly Cluster. Image source: Stellarium.org

An open cluster is a group of up to a few thousand stars that were formed from the same giant molecular cloud and have roughly the same age. More than 1,100 open clusters have been discovered within the Milky Way galaxy, and many more are thought to exist. They are loosely bound to each other by mutual gravitational attraction and become disrupted by close encounters with other clusters and clouds of gas as they orbit the galactic center. Open clusters generally survive for a few hundred million years. In contrast, the more massive globular clusters of stars exert a stronger gravitational attraction on their members, and can survive for many billions of years.

M6 is estimated to contain about 80 stars, all moving through space together in an area spanning about 12 to 25 light years across – and may have formed anywhere from 51 to 95 million years ago.

It is commonly believed that the first astronomer to record the Butterfly Cluster's position in the sky was Giovanni Battista Hodierna in 1654. However, Robert Burnham, Jr. has suggested in the "Celestial Handbook" that Ptolemy may have seen it while noting the Ptolemy Cluster M7.

Charles Messier observed M6 on May 23, 1764. He commented on the cluster: "In the same night of May 23 to 24, 1764, I have determined the position of a cluster of small stars between the bow of Sagittarius and the tail of Scorpius: At simple view [with the naked eye], this cluster appears to form a nebula without stars, but the slightest instrument which one employs to examine it makes one see that it is nothing but a cluster of small stars."

Robert Burnham, Jr. comments "The present author regards this as one of the most attractive

(Continued on page 7)

Eyepiece (Cont'd)



Image credit: Ole Nielsen https://en.wikipedia.org/wiki/Butterfly_Cluster#/media/File:M6a.jpg

(Continued from page 6)

clusters in the heavens for small instruments, a completely charming group whose arrangement suggests the outline of a butterfly with open wings.”

So while this beautiful cluster is visible low in the south during the summer months don't miss the opportunity to gaze upon it and look for the butterfly in the sky!

Information credits:

- Dickinson, Terence 2006. Nightwatch: a practical guide to viewing the universe. Buffalo, NY. Firefly Books
- http://en.wikipedia.org/wiki/Butterfly_Cluster
- <http://www.theskyscrapers.org/messier-6-and-messier-7>
- <http://www.universetoday.com/31219/messier-6/>

Report on the First Annual CCAS Cherry Springs State Park Camping Trip

by Don Knabb, CCAS Program Chair & Treasurer



CCAS Members participated in the First Annual Cherry Springs Camping/Observing Trip, July 10-13, 2018

In mid-July, a group of CCAS members and friends went to the First Annual CCAS Cherry Springs State Park camping trip. We went to experience the dark

night sky at Cherry Springs State Park in north-central Pennsylvania. The location of the park is between “the middle of nowhere” and “where the hell am

I”. So, it makes for a long drive to get there, but the night sky is truly amazing.

Of the three nights we stayed at the park, two of them were very clear. Several of our group arrived a day earlier than the rest of us and they report that the sky was even better that night, although I don't see how it could be better. The Milky Way arched overhead from horizon to horizon. The Lagoon Nebula was easily visible to the naked eye, as was the Coat Hanger Cluster and the Double Cluster. There were so many stars it was at times hard to get one's bearings to find constellations.

The field was shared with at least 50 other campers. The equipment that people brought varied

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The Best Meteor Shower of the Year

by Jane Houston Jones and Jessica Stoller-Conrad

This article is distributed by NASA Space Place.

With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

If you're a fan of meteor showers, August is going to be an exciting month! The Perseid meteor shower is the best of the year, and in 2018, the peak viewing time for the shower is on a dark, moonless night—perfect for spotting meteors.

The best time to look for meteors during this year's Perseid shower is at the peak, from 4 p.m. EDT on Aug. 12 until 4 a.m. EDT on the Aug. 13. Because the new Moon falls on the peak night, the days before and after the peak will also provide very dark skies for viewing meteors. On the days surrounding the peak, the best time to view the showers is from a few hours after twilight until dawn.

Meteors come from leftover comet particles and bits from broken asteroids. When comets come around the Sun, they leave a dusty trail behind them. Every year Earth passes through these debris trails, which allows the bits to collide with our atmosphere and disintegrate to create fiery and colorful streaks in the sky—called meteors.

The comet that creates the Perseid meteor shower—a comet called Swift-Tuttle—has a very wide trail of cometary dust. It's so wide that it takes Earth more than three weeks to plow all the



way through. Because of this wide trail, the Perseids have a longer peak viewing window than many other meteor showers throughout the year.

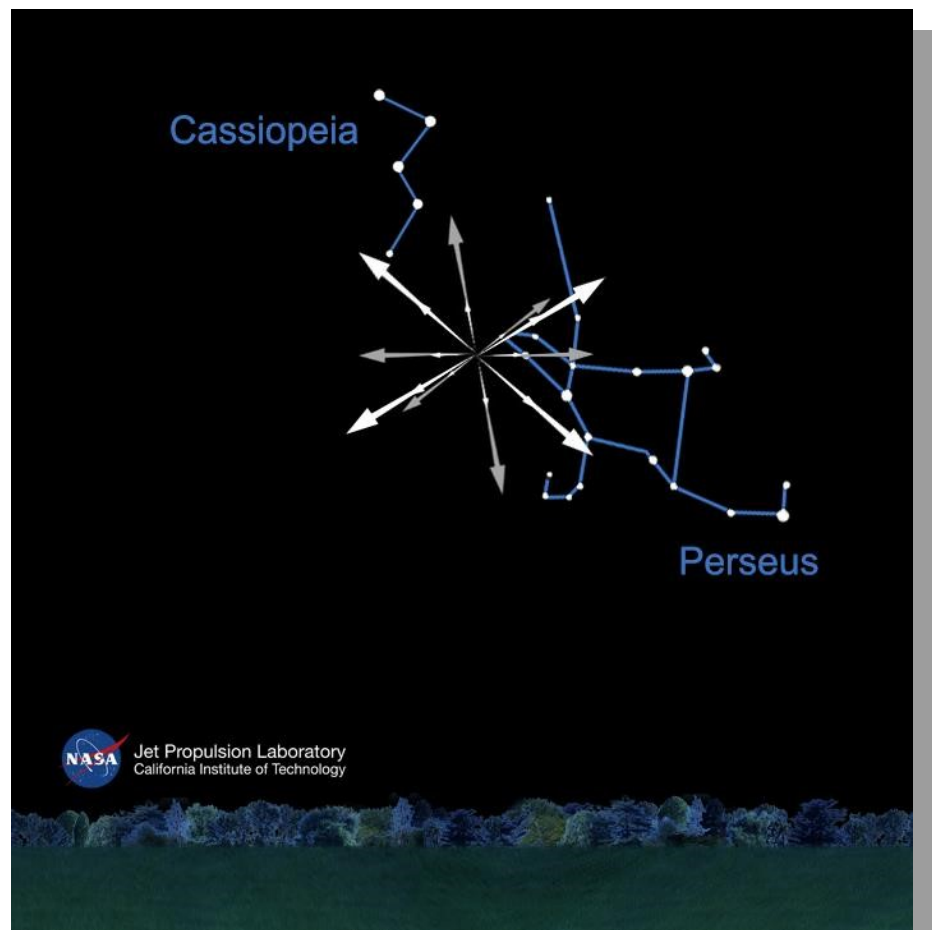
In fact, this year you should be

able to see some meteors from July 17 to Aug. 24. The rates of meteors will increase during the weeks before Aug. 12 and decrease after Aug. 13. Observers should be able to see between 60 and 70 meteors per hour at the shower's peak.

The Perseids appear to radiate from the constellation Perseus, which is where we get the name for this shower. Perseus is visible in the northern sky soon after sunset this time of year. Observers in mid-northern latitudes will have the best views.

However, you don't have to look

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Caption: The Perseid meteor showers appear to radiate from the constellation Perseus. Perseus is visible in the northern sky soon after sunset this time of year. Credit: NASA/JPL-Caltech

Space Place (Cont'd)

(Continued from page 8)

directly at the constellation Perseus to see meteors. You can look anywhere you want to; 90 degrees left or right of Perseus, or even directly overhead, are all good choices.

While you're watching the sky for meteors this month, you'll also see a parade of the planets Venus, Mars, Jupiter and Saturn—and the Milky Way also continues to grace the evening sky. In next month's article, we'll take a late summer stroll through the Milky Way. No telescope or binoculars required!

Catch up on all of NASA's current—and future—missions at www.nasa.gov

Moon & Planet Party (Cont'd)

(Continued from page 3)

members, children, etc., should be registered so that Natural Lands has an expected headcount.

Instructions addressing arrival time and set-up for the volunteers will be forthcoming as we near the event date. If you have any questions, please drop me a line, and thanks to all who consider helping. Clear skies to all!

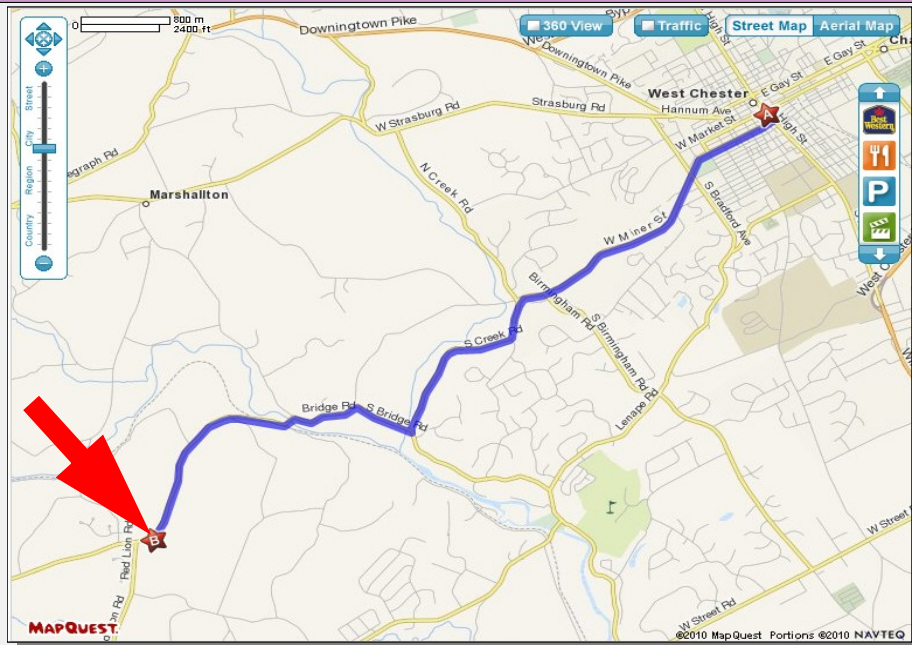


CCAS Original Astrophotography

On the cover: M82 the Cigar Galaxy, by CCAS Program Chair Dave Hockenberry. Image acquired between 3/17/201 and 11/23/2017 with a Hyperion 12 inch astrograph telescope, QSI 583wsg camera guided off-axis with Lodestar X2 and SX active optics unit. 12 X 900 second Lum frames, 3 hours Red, Green and Blue frames 600 seconds each, and 3 hours Ha filter 30 minutes each exposure.

Images processed with CCD-Stack and Photoshop CC. M82 is commonly known as the Cigar galaxy due to its shape easily seen visually in a modest telescope. But as an active galactic nucleus, it looks more like the "Exploding Cigar" galaxy in long exposure astrophotographs.

CCAS Directions



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.

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).

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).



Cherry Springs (Cont'd)

(Continued from page 7)

from Pete Kellerman's "toy" 50mm scope, to numerous Dobs, refractors and compound scopes, including a 16 inch Schmidt-Cat, all the way up to a 36 inch Dob. Unfortunately, the evening the Dob pulled in the clouds also rolled in. Nonetheless, the other evenings we saw amazing sights in the eyepiece and Pete Kellerman observed numerous dim deep sky objects with his "toy" scope.

So mark your calendar for next May when we'll head back to Cherry Springs!

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

July 2018 Financial Summary

| | |
|-------------------|---------|
| Beginning Balance | \$1,204 |
| Deposits | \$70 |
| Disbursements | -\$527 |
| Ending Balance | \$746 |

New Member Welcome!

Welcome new CCAS member Carol Ann Krus from Malvern, PA, and Angelo Zullitti from Upper Chichester, 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
3225 North First Avenue
Tucson, AZ 85719

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.LymePA.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 Park City, Utah.

Phone: 877-604-7377
Fax: 877-313-2889

<http://www.starrynightlights.com>



Lighthouse Outdoor Lighting is a dedicated lifetime corporate member of the International Dark-Sky Association. 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.

Phone: 484-291-1084

<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

<http://www.skiesunlimited.net>



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<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 Hepler
21103 Striper Run
Rock Hall, MD 21661

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 (410) 639-4329 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: Roger Taylor
610-430-7768

Vice President: Liz Smith
610-842-1719

ALCor, Observing, and Treasurer: Don Knabb
610-436-5702

Secretary: Ann Miller
610-558-4248

Librarian: Barb Knabb
610-436-5702

Program: Dave Hockenberry
610-558-4248

Education: Kathy Buczynski
610-436-0821

Webmaster and Newsletter: John Hepler
410-639-4329

Public Relations: Deb Goldader
610-304-5303

CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER.....\$25/year
SENIOR MEMBER.....\$10/year
STUDENT MEMBER.....\$ 5/year
JUNIOR MEMBER.....\$ 5/year
FAMILY MEMBER.....\$35/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 Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95**, much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

To **start** a new subscription, make **sure** you make out the check to the **Chester County Astronomical Society**, note that it's for *Sky & Telescope*, and mail it to Don Knabb.

To **renew** your "club subscription" contact Sky Publishing directly. Their phone number and address are in the magazine and on their renewal reminders. If you have **any** questions call Don first 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). If you want to participate in this special Society discount offer, **contact our Treasurer Don Knabb**.

