



Observations

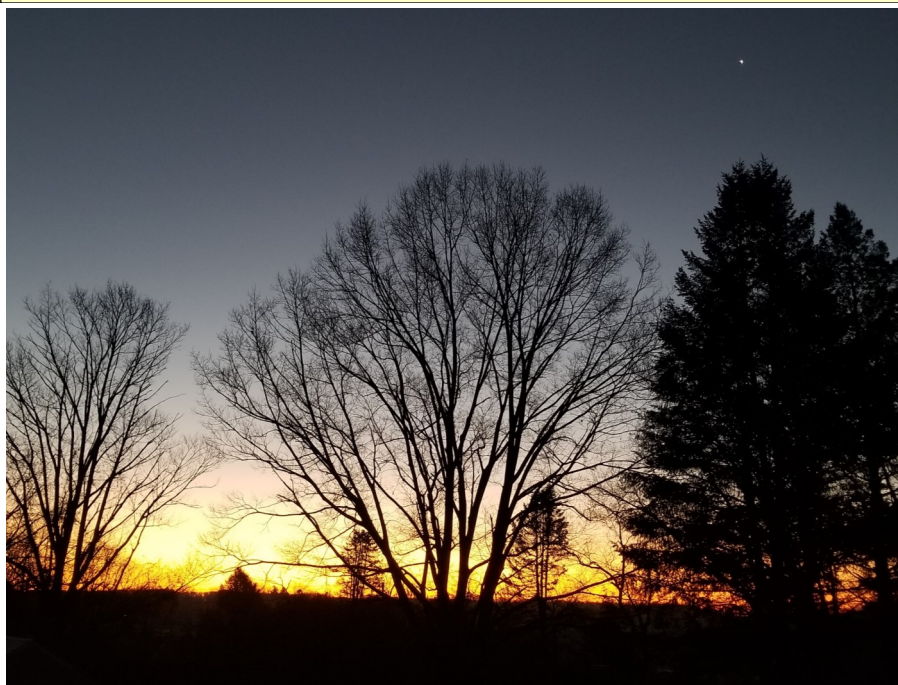
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 27, No. 1 **Three-Time** Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016 January 2019

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CCAS Original Astrophotography



Sunrise with a Prominent Venus. Image Credit: CCAS Member Steve DellaPenna

Membership Renewals Due

01/2019	Kellerman Kovacs Linskens McElwee
02/2019	Ruggeri
03/2019	Angelini Fulton Sterrett Traini Zandler Zibinski

January 2019 Dates

- 3rd/4th • Quadrantid meteor shower peaks
- 5th • New Moon, 8:28 p.m. EST
- 14th • First Quarter Moon, 1:45 a.m. EST
- 14th • The Lunar Straight Wall is visible
- 21st • Full Moon, the Full Wolf Moon, 12:16 a.m. EST
- 22nd • Venus and Jupiter are close in the pre-dawn sky
- 27th • Last Quarter Moon, 4:10 p.m. EST



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.

- ☼ **Friday, March 8, 2019** - CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset. Last regularly scheduled monthly session of the year.
- ☼ **Friday, April 5, 2019** - CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset. Last regularly scheduled monthly session of the year.
- ☼ **Saturday, April 6, 2019** - Special CCAS Night Out event at Hoopes Park, West Chester, PA.

Winter Society Events

January 2019

8th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts immediately after at 7:30 p.m. CCAS Member & NASA Solar System Ambassador Dennis O'Leary will present "New Horizons at Ultima Thule."

10th-11th • The von Kármán Lecture Series: [Red Planet Rovers and Insites](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the February 2019 edition of [Observations](#).

25th • Live public presentation, *The Expanding, Accelerating Universe*, at the [West Chester University Mather Planetarium](#). Doors open at 6:30 p.m. with presentation starting at 7:00 p.m. Cost is \$6.00.

26th • Deadline for newsletter submissions for the February 2019 edition of [Observations](#).

February 2019

7th-8th • The von Kármán Lecture Series: [Ridiculous World of Scientific Ballooning](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

12th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts immediately after at 7:30 p.m. CCAS member Phil Rossamondo will continue his series on Future Space Travel.

20th • Open call for articles and photographs for the March 2019 edition of [Observations](#).

22nd • Live public presentation, *Our Milky Way Galaxy*, at the [West Chester University Mather Planetarium](#). Doors open at 6:30 p.m. with presentation starting at 7:00 p.m. Cost is \$6.00.

26th • Deadline for newsletter submissions for the March 2019 edition of [Observations](#).

Upcoming Spring 2019 Astronomy Classes by Don Knabb, CCAS Treasurer & Observing Chair

Once again, CCAS has collaborated with the Chester County Night School to offer our class, *Astronomy, a Beginner's Guide*. Classes are Monday evenings from 7:00 to 8:00 p.m. at Rustin High School. Registration fee is \$59.00. To register yourself or a friend or family member, visit the [Chester County Night School](#) website.

- March 18 - Spaceship Earth – Roger
- March 25 - Our Moon: Phases and Faces - Steve
- April 1 - Other Kids on the Block - Dennis
- April 8 - Star Charts and Planetarium Software – Don
- April 15 - Using a Telescope - Dave
- April 29 - Beyond Naked Eye Observing (Deep Sky Stuff) - Don Miller or John Conrad

No class scheduled on April 22nd due to the Easter holiday weekend. Please contact [Don Knabb](#) if you can assist the instructors.

Watch 'Apollo's Daring Mission' on PBS Online



Apollo astronauts and engineers tell the inside story of how the first mission to the moon, Apollo 8, pioneered groundbreaking technologies that would pave the way to land a man on the moon and win the space race. Watch online at [PBS.org](#)

January 2019 CCAS Meeting Agenda by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on January 8, 2019, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. CCAS Member & NASA Solar System Ambassador Dennis O'Leary will present "New Horizons at Ultima Thule."

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

Christmas Telescope Report

by CCAS Member Pete Kellermann



Pete & His New Scope at the Holiday Party

Dave Hockenberry gave me a new telescope at this year's holiday party. The telescope was a 30mm Jr. Science Explorer telescope from the Hallmark Store. Every year about this time I hit department, drug and clothing stores, like Kohl's, Walmart, Target and CVS, just to name a few. I want to see what telescopes they are selling for that year. Every Christmas, stores that normally don't sell telescopes suddenly stock them.

Last year fewer stores had them and this year they were even harder to find. This is alarming. Does this mean kids aren't interested in looking at the moon or stars anymore? Or, are the marketing people finally listening to the so-called experts out there? The ones who say, "These scopes aren't worth using, so don't waste your money!"

The reason I started doing the Christmas Telescope report

many years ago is that I discovered firsthand these so-called experts were blowing smoke. They judge a telescope on very fine expensive instruments, not by the users' expectations. In the case of the Christmas Telescope, it is through the eyes of kid's. Kids don't know what false color is and wouldn't recognize it unless it was pointed out to them along with a dozen other problems. What I am looking at are very cheap, common telescopes—what uninformed parents are going to pick up for their kids. Through the years, only a few I discovered were completely useless. Most are 100% toys and this year's scope fits that bracket.

I know Dave is just waiting to see what I can see through this scope because he knows if anyone can see anything, I can. I don't judge a telescope by its looks or by what it is made of. In

this case, it is 100% plastic, the lens may very well be plastic; I can't be sure because I can't take this scope apart without breaking it since it is glued together. The objective is 30mm. The inside of the optical tube is black plastic with no field stops. The draw tube is white plastic with one field stop. The diagonal is the typical cheap diagonal. This scope came with three eyes marked 20X 30X and 40X. I was able to determine the focal length of the optical tube was 400mm and so as I expected, the eyepieces were 20mm, 12.7mm, and 10mm.

The first thing I discovered wrong with the scope right out of the box was that it wouldn't stay in focus. The problem was that, with the scope tilted at an angle, the weight of the eyepiece allowed the drawtube to back out. There is no way of adjusting it like you can on the bigger scopes. So, you have to think like a kid, "How do I solve this problem?" The answer: a few layers of scotch tape on the inside of the focuser tube.

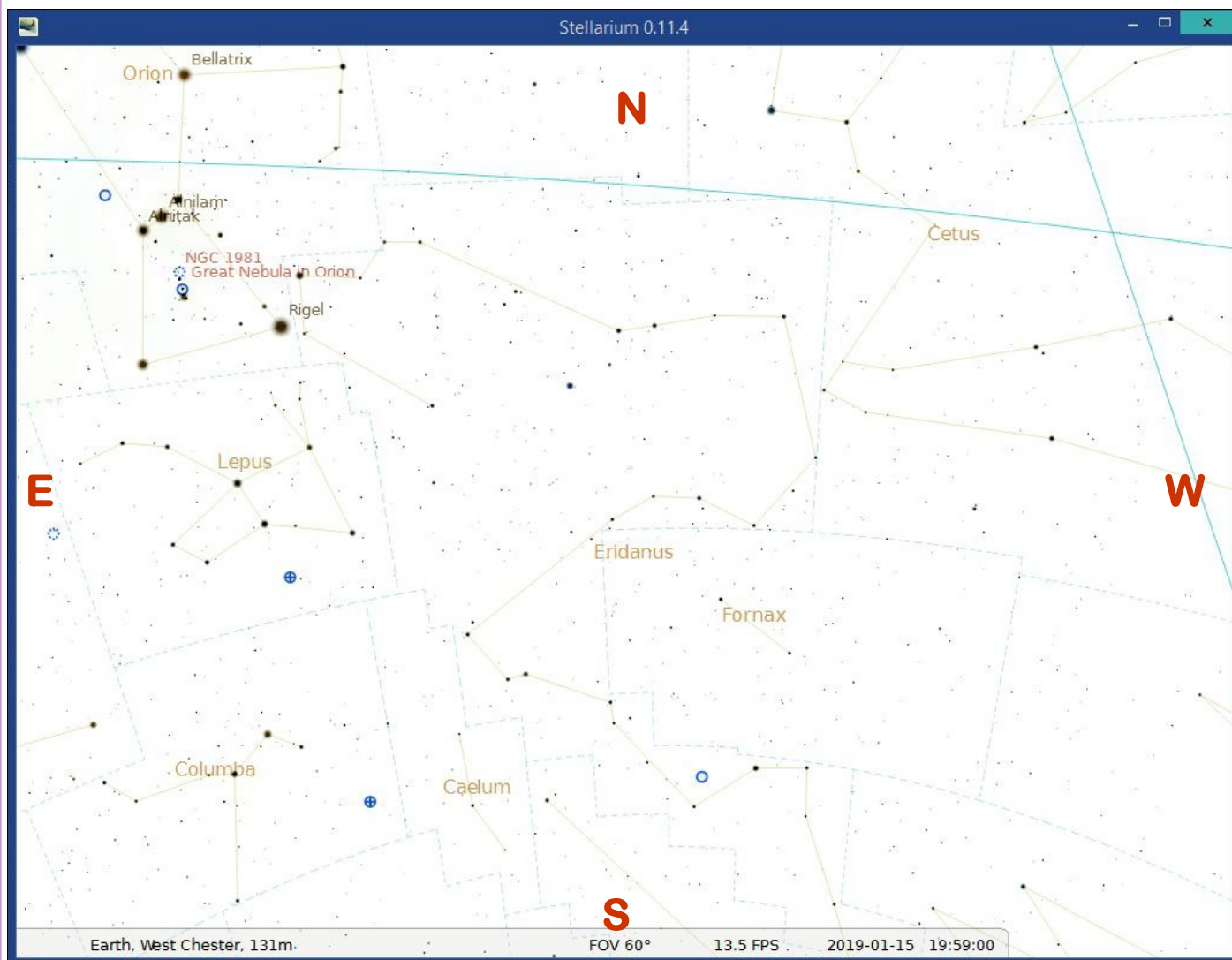
Once I solved that problem, my first target was the first thing any kid is going for, the moon. Tuesday night was not a full moon—but getting there. The first thing was there where four moons in a row overlapping each other with the second one from the top being nice and clear. I ran and got another .965 diagonal and inserted that, and problem solved. I'm not sure, but I believe the mirror is a second surface mirror and not a first surface mirror. I continued the night with the other diagonal.

(Continued on page 9)

The Sky Over Chester County

January 15, 2019 at 8:00 p.m. ET

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



Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
01/01/2019	6:51 a.m. EDT	7:22 a.m. EDT	4:46 p.m. EDT	5:16 p.m. EDT	9h 23m 47s
01/15/2019	6:50 a.m. EST	7:20 a.m. EST	4:59 p.m. EST	5:29 p.m. EST	9h 39m 14s
01/31/2019	6:41 a.m. EST	7:10 a.m. EST	5:07 p.m. EST	5:47 p.m. EST	10h 08m 19s
Moon Phases					
First Quarter	01/14/2019	1:45 a.m. EST	New Moon	01/05/2019	8:28 p.m. EST
Last Quarter	01/27/2019	4:10 p.m. EST	Full Moon	01/21/2019	12:16 a.m. EST

January 2019 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

3/4	Quadrantid meteor shower
5	New Moon, 8:28 p.m. EST
14	First Quarter Moon, 1:45 a.m. EST
14	The Lunar Straight Wall is visible
20/21	Total lunar eclipse
21	Full Moon, the Full Wolf Moon, 12:16 a.m. EST
22	Venus and Jupiter are close in the pre-dawn sky
27	Last Quarter Moon, 4:10 p.m. EST

The best sights this month: A total lunar eclipse is the event not to be missed during January. This occurs on the night of January 20/21. Earlier in the month the Quadrantid meteor shower peaks on the night of January 3/4 and with no Moon in the sky this should be a good show.

Mercury: Mercury is low in the pre-dawn sky during the first few days of January and is not observable the rest of the month.

Venus: Venus shines like a brilliant beacon in the pre-dawn sky rising around 3:30 a.m. early in the month. But as the month progresses Venus drops lower in the sky and meets with Jupiter on January 22nd.

Mars: During all of January the red planet is about half-way up the southwestern sky as darkness falls.

Jupiter: Jupiter rises around 5 a.m. early in January and meets with Venus on January 22nd.

Saturn: Saturn passes behind the Sun on January 2nd and becomes visible very low in the glow of the sunrise late in the month.

Uranus and Neptune: Neptune leads Mars and Uranus trails Mars as the planets march across the January sky.

The Moon: Full Moon is on January 21st at 16 minutes after midnight. We are treated to a total

eclipse of the Moon, beginning on January 20th at 10:34 p.m. with totality beginning at 11:41 pm. The total eclipse lasts for slightly over an hour, ending at 12:43 a.m. The eclipse finishes when the Moon fully emerges from Earth's shadow by 1:51 a.m.

According to Native Americans, the full Moon during January is the Full Wolf Moon. Amid the cold and deep snows of midwinter, the wolf packs howled hungrily outside Indian villages, so it was named the Full Wolf Moon. Sometimes it was also referred to as the Old Moon, or the Moon after Yule. Some called it the Full Snow Moon, but most tribes applied that name to the next full Moon.

Constellations: Auriga, Taurus, Orion and Gemini are the highlights of the January skies. But the nights are so long that you can see many "summer" constellations setting early in the evening and many "spring" constellations rising if you stay up late. Dress warmly and sit in your lounge chair and see how many constellations you can record toward the Constellation Hunter club.

Messier/deep sky: During the winter months we are looking away from the center of the Milky Way, so the sky is not as full of deep sky wonders as during the summer. But, the sky is clear and there are still many beautiful objects for us to enjoy. Don't miss the trio of clusters in Auriga, and not far away is another nice cluster, M35, at the feet of the twins of Gemini. And below and behind Orion is Canis Major with the cluster M41, the Little Beehive, not far from the brightest star in the night sky, Sirius.

Comets: Comet 46P/Wirtanen will be visible through all of January. A sky map is in the January issue of Astronomy magazine, or use your favorite astronomy app.

Meteor showers: The Quadrantid meteor shower peaks in the early morning hours of January 4th. This is the briefest meteor shower of the year, so if you want to see these shooting stars you need to go out after midnight and watch the skies. The sky will be quite dark since New Moon is just a day later, so this could be one of the best meteor showers of the year.

Through The Eyepiece: M42, the Orion Nebula

by Don Knabb, CCAS Treasurer & Observing Chair

If you recently received any new equipment for observing the night sky you will want to get out under the cold and clear January sky to give them a try. One of the first objects to gaze at should be the Orion Nebula, also known as Messier 42, M42, or NGC 1976.

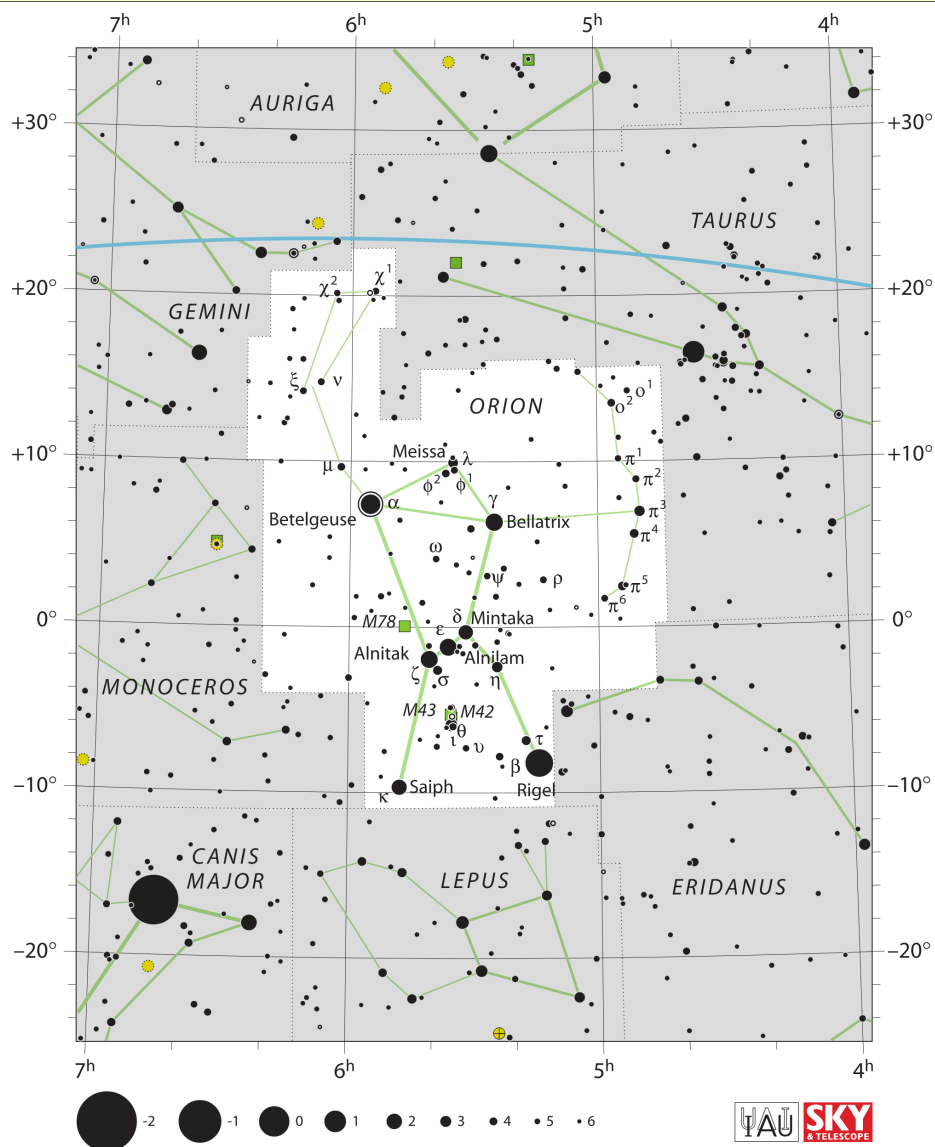
The Orion Nebula is situated south of Orion's Belt. It is located approximately 1,270 light years away and is estimated to be 24 light years across. Older texts frequently referred to the Orion Nebula as the Great Nebula in Orion or the Great Orion Nebula. Yet older astrological texts refer to it as Ensis, Latin for "sword".

The Orion Nebula is one of the most interesting objects in the sky. To the naked eye, it looks like a star in the sword of the constellation Orion, but with binoculars or a telescope, you can see that it is actually a large glowing cloud of material. This is believed to be a huge star formation region. The bright part of the nebula is the glow of many luminous, newborn stars shining on the surrounding gas cloud that they collapsed from.

On page 6 is an image of the Orion Nebula taken by the author with image processing provided by Dave Hockenberry

The stars that are being born in the Orion Nebula are part of an open cluster. When all of the stars have formed, what will remain is a clump of a few hundred to a thousand stars which are all roughly the same age.

(Continued on page 7)



Star map credit: IAU and Sky & Telescope magazine (Roger Sinnott & Rick Fienberg)

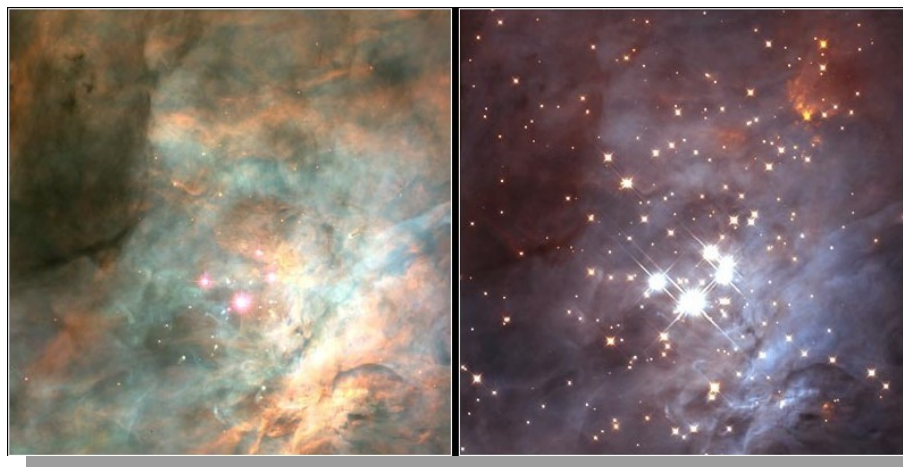
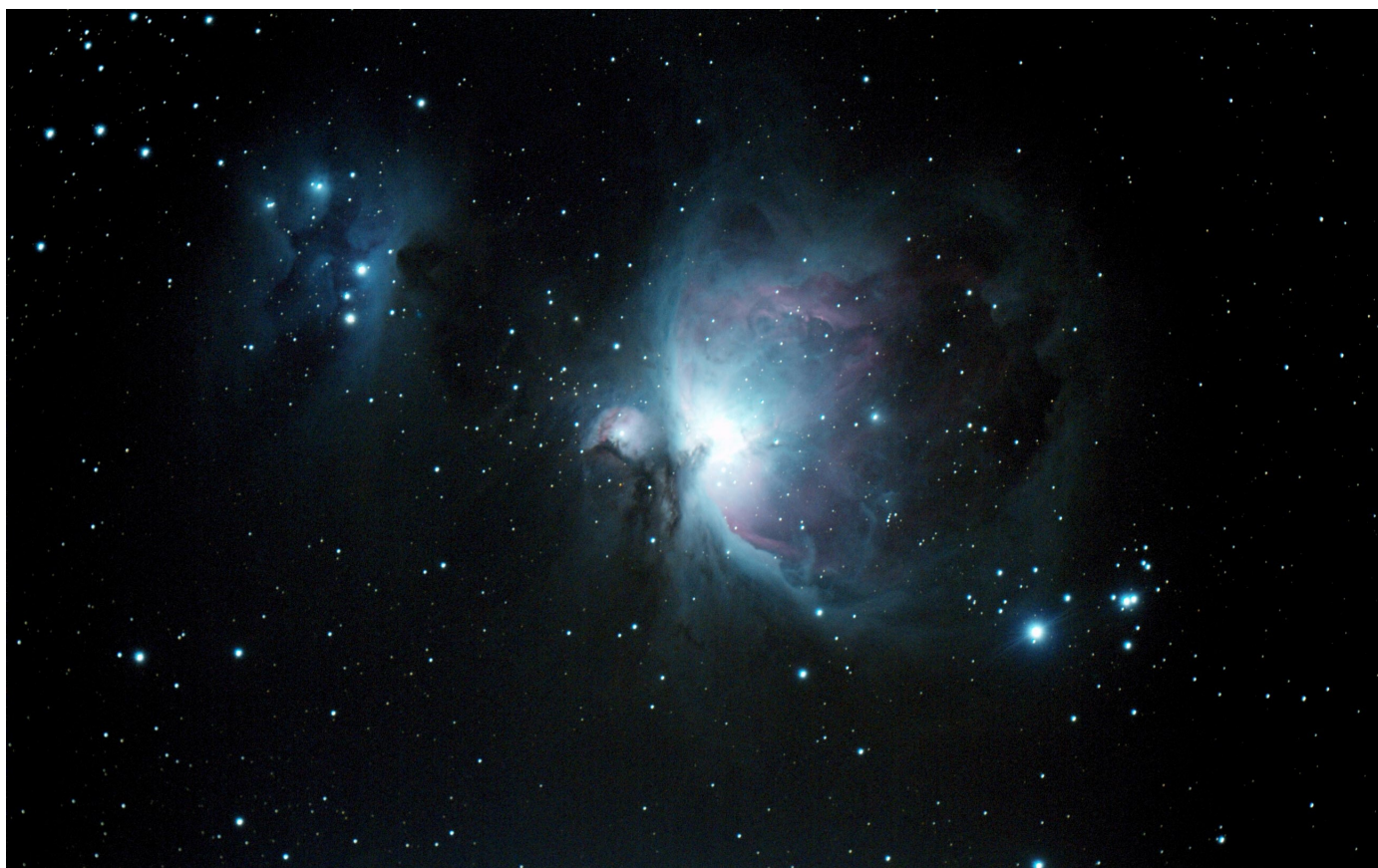


Photo credit: NASA

Eyepiece (Cont'd)



Don Knabb/Dave Hockenberry - Chester County Astronomical Society

These stellar siblings are dominated by a few very massive, very bright stars called the Trapezium. The Trapezium is made up of just a few stars, but it outshines all the rest of them combined. Astronomers believe that the majority of the glow from the gas in the nebula comes from light from the stars of the Trapezium. Maybe in a few hundred million years, there will be planets like the Earth forming around some of the new stars in the cluster.

To the left are pictures from NASA of the Trapezium in optical (left) and infrared light (right) from the Hubble Space Telescope.

With naked eyes under dark skies I can just see the glow of the Orion Nebula, but with binoculars the nebulosity really comes through. With a telescope you can zoom in to see the Trapezium, which looks more like the image in the right photo above since the eye cannot detect the colors seen in the left photo. They are a beautiful collection of jewels in the eyepiece.

Information credits:

- Pasachoff, Jay M. 2000. *A Field Guide to the Stars and Planets*. New York, NY. Houghton Mifflin.
- [http://www.astro.wisc.edu/~dolan/constellations/](http://www.astro.wisc.edu/~dolan/constellations/messier/m42.html)

[messier/m42.html](http://www.astro.wisc.edu/~dolan/constellations/messier/m42.html)

- http://en.wikipedia.org/wiki/Orion_Nebula
- Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books
- Sky map: https://commons.wikimedia.org/wiki/File:Orion_IAU.svg

NASA Night Sky Notes: January's Evening Eclipse and Morning Conjunctions

by David Prosper

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.

Observers in the Americas are treated to an evening total lunar eclipse this month. Early risers can spot some striking morning conjunctions between Venus, Jupiter, and the Moon late in January.

A total lunar eclipse will occur on January 20th and be visible from start to finish for observers located in North and South America. This eclipse might be a treat for folks with early bed-times; western observers can even watch the whole event before midnight. Lunar eclipses takes several hours to complete and are at their most impressive during total eclipse, or totality, when the Moon is completely enveloped by the umbra, the darkest part of Earth's shadow.

During totality, the color of the Moon can change to a bright orange or red thanks to the sunlight bending through the Earth's atmosphere - the same reason we see pink sunsets. The eclipse begins at 10:34 pm Eastern Standard Time, with totality beginning at 11:41 pm. The total eclipse lasts for slightly over an hour, ending at 12:43 am. The eclipse finishes when the Moon fully emerges from Earth's shadow by 1:51 am. Convert these times to your own time zone to plan your own eclipse watching; for example, observers under Pacific Standard Time



will see the eclipse start at 7:34 pm and end by 10:51 pm.

Lunar eclipses offer observers a unique opportunity to judge how much the Moon's glare can interfere with stargazing. On eclipse night the Moon will be in Cancer, a constellation made up of dim stars. How many stars

you can see near the full Moon before or after the eclipse? How many stars can you see during the total eclipse? The difference may surprise you.

During these observations, you may spot a fuzzy cloud of stars relatively close to the Moon; this is known as the "Beehive Cluster," M44, or Praesepe. It's an open cluster of stars thought to be about 600 million year old and a little under 600 light years distant. Praesepe looks fantastic through binoculars.

Mars is visible in the evening and sets before midnight. It is still bright but has faded considerably since its closest approach to Earth last summer. Watch the red planet travel through the

(Continued on page 9)



Have you ever wondered how eclipses occur? You can model the Earth-Moon system using just a couple of small balls and a measuring stick to find out! The "yardstick eclipse" model shown here is set up to demonstrate a lunar eclipse. The "Earth" ball (front, right) casts its shadow on the smaller "Moon" ball (rear, left). You can also simulate a solar eclipse just by flipping this model around. You can even use the Sun as your light source! Find more details on this simple eclipse model at bit.ly/yardstickclipse

Night Sky Notes (Cont'd)

(Continued from page 8)

constellation Pisces throughout January.

Venus makes notable early morning appearances beside both Jupiter and the Moon later this month; make sure to get up about an hour before sunrise for the best views of these events.

First, Venus and Jupiter approach each other during the third full week of January. Watch their conjunction on the 22nd, when the planets appear to pass just under 2 ½ degrees of each other.

The next week, observe Venus in a close conjunction with a crescent Moon the morning of the 31st. For many observers their closest pass - just over half a de-

gree apart, or less than a thumb's width held at arm's length - will occur after sunrise. Since Venus and the Moon are so bright you may still be able to spot them, even after sunrise. Have you ever seen Venus in the daytime?

If you have missed Saturn this winter, watch for the ringed planet's return by the end of the month, when it rises right before sunrise in Sagittarius. See if you can spot it after observing Venus' conjunctions!

You can catch up on all of NASA's current and future missions at nasa.gov

Telescope (Cont'd)

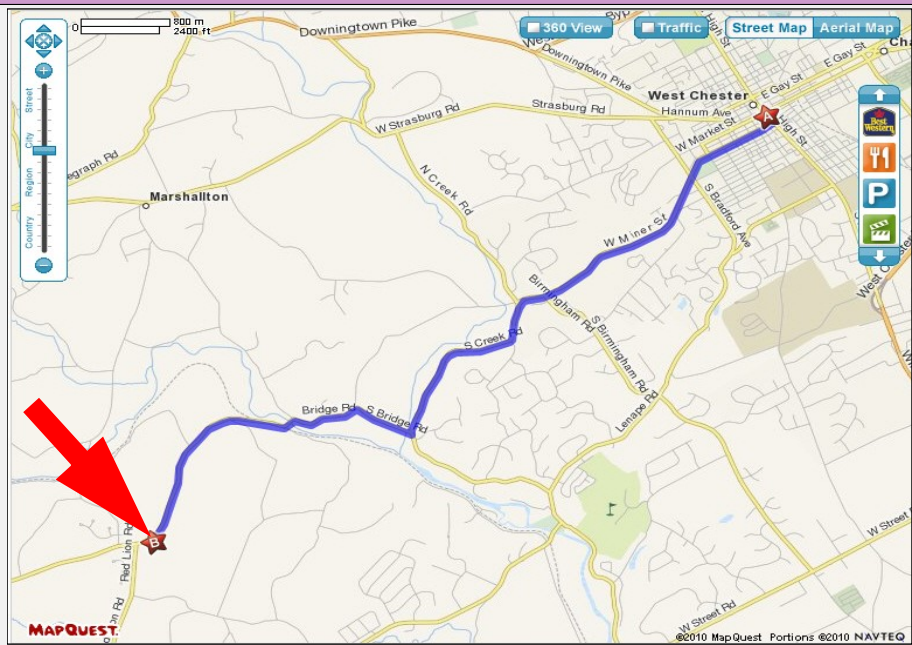
(Continued from page 3)

Although the seas stood out nicely, I had problems seeing any craters in any of the eyepieces and so I dug out my .965 eyepieces including some Unitron eyepieces. The view was the same for both the cheap eyepiece as with the 25mm Unitron. I find the performance on the moon to be a little disappointing. Oh yes, the moon had a very bright blue halo; that I expected.

Exiting the star test, I lined up Alpheratz. Not surprising, lots of false color, this will be typical of all bright stars, a bright reddish blob, many light strikes. Surprisingly, when moving over to the Milky Way in Cassiopeia, and despite a very bright moon,

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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

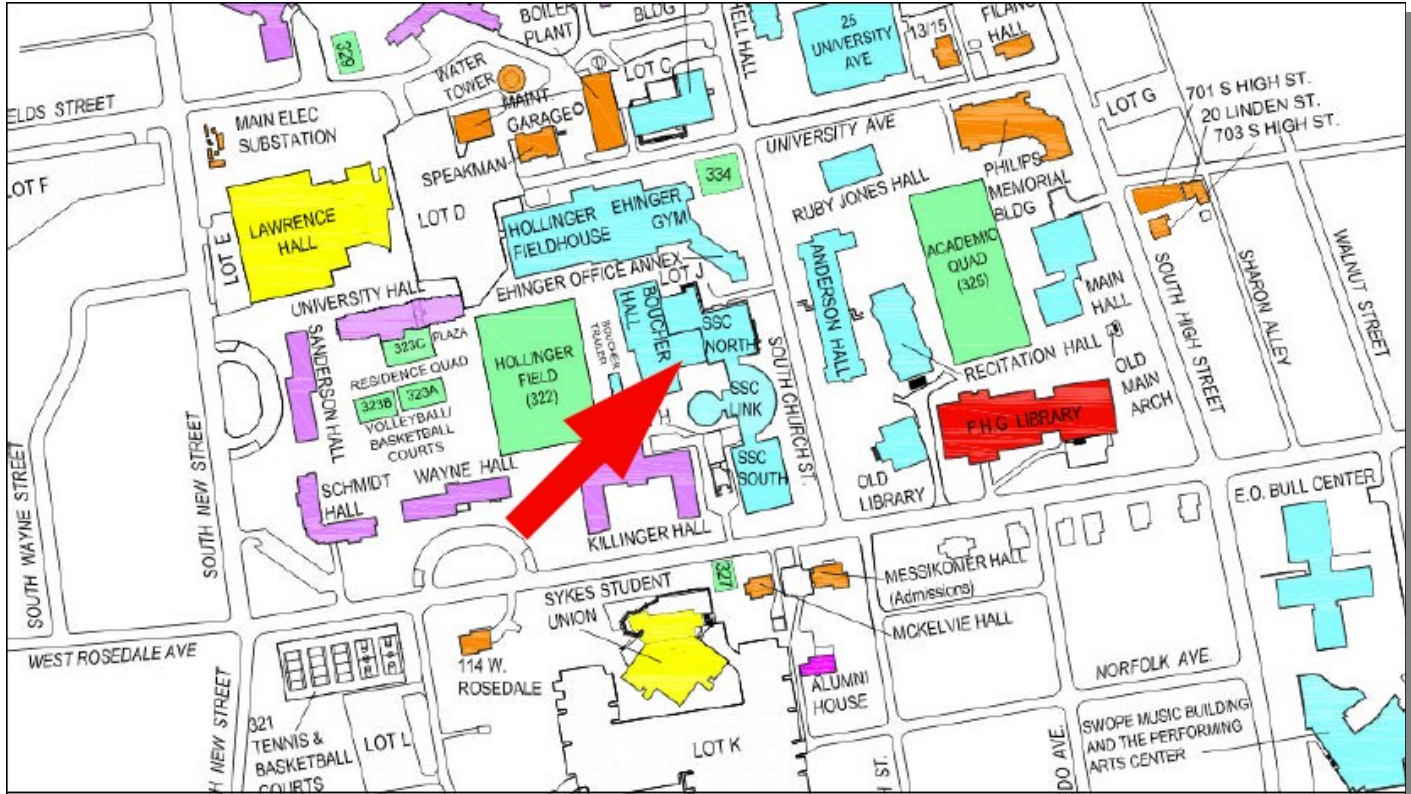
<http://brandywinewatershed.org/>

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).



Telescope (Cont'd)

(Continued from page 9)

the Milky Way proved to be the best viewing. The faint stars where nice discs that filled the field of view.

Being only 29° F., this was a short night. No amount of cans of anti-freeze (beer) seemed to help. I finished the night with the Pleiades. At low power, 20X, the major seven and many fainter stars filled the field of view. It made a nice finish to the night.

I don't see CCAS members rushing to buy this scope and I know Dave bought this as a joke, but I will continue to experiment with it. I know, only me!!!!

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

Dec. 2018 Financial Summary

Beginning Balance	\$1,046
Deposits	\$260
Disbursements	-\$0
Ending Balance	\$1,306

New Member Welcome!

Welcome new CCAS members Steve DellaPenna from Coatesville, and Chris Etherington 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
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>



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: 215-667-8309
Fax: 215-965-1524

Hours:
Tuesday thru Saturday: 10AM to 6PM
Sunday and Monday: 11AM 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 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: TBA

Webmaster and Newsletter: John Hepler
410-639-4329

Public Relations: TBA

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.

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