



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 24, No. 7

Two-Time Winner of the Astronomical League's Mabel Sterns Award ☼ 2006 & 2009

July 2016

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NGC 6814: Grand Design Spiral Galaxy from Hubble



Image Credit: [ESA/Hubble](#) & [NASA](#); Acknowledgement: [Judy Schmidt](#)

July 2016 Dates

- 4th • New Moon, 7:00 a.m.
- 11th • Lunar X is visible at approximately 7:00 p.m.
- 11th • First Quarter Moon, 8:51 p.m.
- 19th • Full Moon, 6:56 p.m.
- 26th • Last Quarter Moon, 6:59 p.m.
- 29th/30th • The Delta Aquariid meteor shower peaks



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, July 1st, 2016** - CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

☼ **Friday, July 8, 2016** - [6th Annual Friday Night Lights at ChesLen Preserve](#), Coatesville, PA. For more information, contact Delaware Astronomical Society President Fred De Lucia, at fred-world@verizon.net.

Membership Renewals Due

07/2016	Johnston Piehl
08/2016	Buki Knabb Family Lurcott, L.
09/2016	Armored Lurcott, E.

Summer 2016 Society Events

July 2016

1st • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

4th • Juno spacecraft scheduled to arrive at Jupiter at 8:35 p.m. PDT (Earth Received Time). At 10:30 p.m. orbit insertion and NASA TV commentary will begin. Watch the events online at <http://www.nasa.gov/nasatv>

6th • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. For more information and directions, visit the [PA Outdoor Lighting Council](#) website.

8th • [6th Annual Friday Night Lights at ChesLen Preserve](#), Coatesville, PA.

20th • Open call for articles and photographs for the August 2016 edition of [Observations](#).

24th-25th • The von Kármán Lecture Series: [To Boldly Go... Well, You Know: NASA's Dawn Mission to the Asteroid Belt](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

26th • Deadline for newsletter submissions for the August 2016 edition of [Observations](#).

27th-30th • CCAS Star Party at Blue Mountain Vista in New Ringgold, PA. This is a private dark sky observing site owned by Frank Colissimo. For more details, contact Observing Chair [Don Knabb](#).

August 2016

3rd • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. For more information and directions, visit the [PA Outdoor Lighting Council](#) website.

5th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

11th-12th • The von Kármán Lecture Series: [The Rosetta Mission: Comet C-G up Close](#), at the Jet Propulsion Laboratory, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

11th-12th • Perseid Meteor Shower Peaks. The Perseids is one of the best meteor showers to observe, producing up to 60 meteors per hour at their peak. The shower's peak usually occurs on August 12th & 13th, but you may be able to see some meteors any time from July 23rd through August 22nd.

20th • Open call for articles and photographs for the September 2016 edition of [Observations](#).

26th • Deadline for newsletter submissions for the September 2016 edition of [Observations](#).

First Annual Chester County Astronomical Society Star Party at Blue Mountain Vista

by Pete Kellerman



View of the field at Blue Mountain Vista

Okay everyone, mark your calendars for July 27 through 30th for Chester County Astronomical Society's first annual Star Party at Blue Mountain Vista. Camping is available for about 20 cars on the field. There is no running water on the field but there is a port-a-potty, a couple of outlets for charging

equipment and wifi. This is a private observing field run by Frank Colosimo, a friend I have known for many years. The skies are generally mag 6.2 and have good horizons. The field is located almost on the top of a mountain. The field is perfectly safe, there are cameras on the



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September 2016 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on September 13, 2016, starting at 7:30 p.m. The meeting will be held in Room 112, Merion Science Center (former Boucher Building), West Chester University. Our speaker will be Alex Hill, a senior post-doctorate fellow at Haverford College. His research is on interstellar gas mediums.

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, Frank Angelini will speak at the October meeting, and John Conrad will be presenting in November. We are looking for presenters for future meetings in our spring 2017 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

First Contact Lens and Mirror Cleaner

by Don Knabb, CCAS Treasurer & Observing Chair



First Contact Cleaning Kit



Leo helping to stabilize the telescope between couch cushions

It seems that no matter how carefully one handles an eyepiece or a telescope, dirt finds its way onto the lens or mirror of our equipment. If you search the internet for how to clean an eyepiece/objective lens/mirror you can find some great information. The first thing most articles say is to only clean your equipment if you must because if done improperly you can do more harm than good.

So I've been putting off cleaning my good eyepieces and telescope for far too long, but after asking Dave Hockenberry how he cleans his equipment I decided to give it a try following his recommendations.

I bought a kit called First Contact from Photonic Cleaning Technologies. Their website is photoniccleaning.com. You can also buy First Contact from Newport Corporation at newport.com but their price is higher, although they also sell other cleaning accessories.

I won't go into detail of the step by step process since that is supplied with the kit, but I'll make this more of a photo essay so you can see how the process proceeds.

First, here is the kit (upper left image). The small bottle has a brush attached to the top like a nail polish bottle.

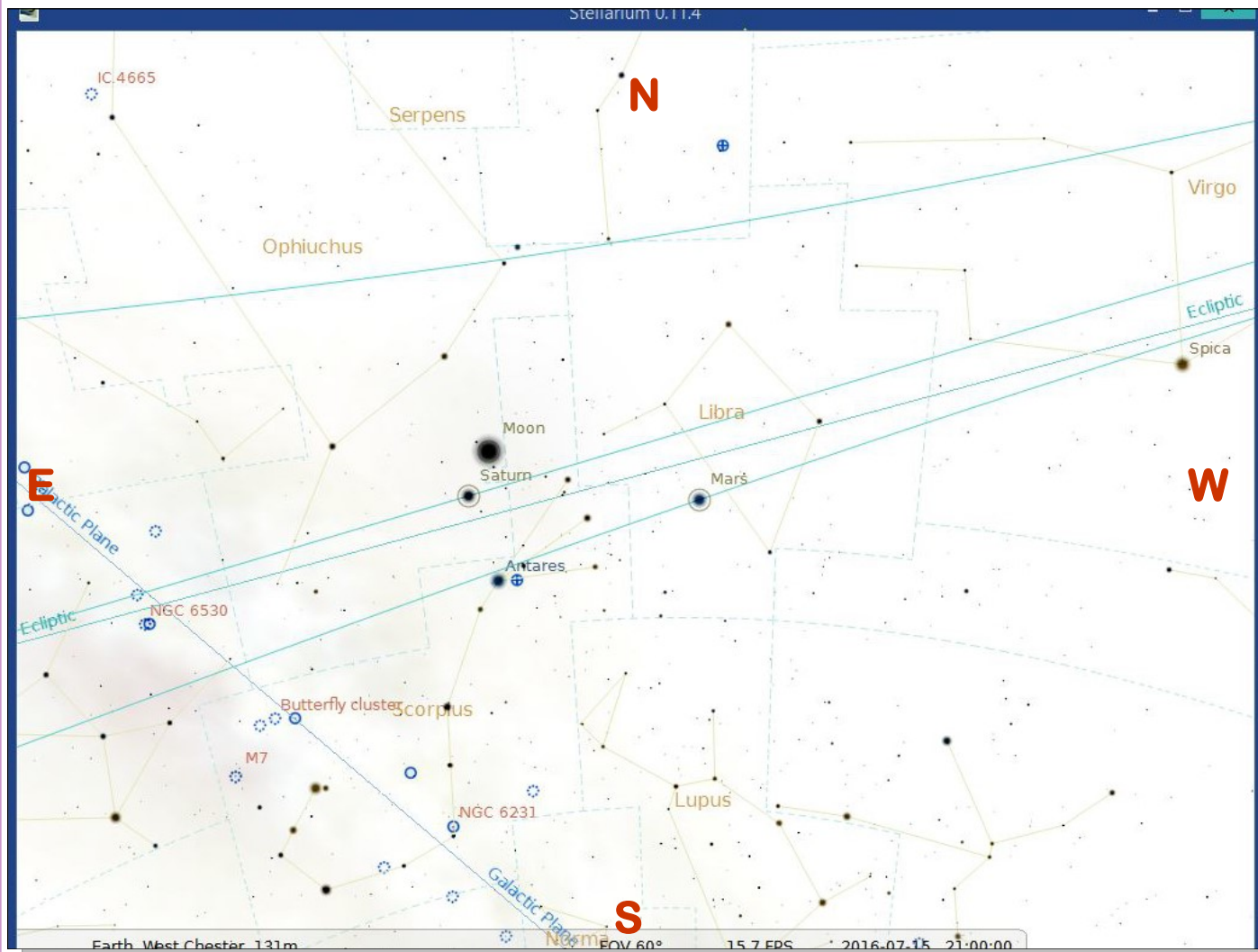
Since the cleaner is a polymer fluid that one applies to an eyepiece, objective lens or mirror, you need to have the item you are cleaning so that the surface

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The Sky Over Chester County

July 15, 2016 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
7/01/2016	5:03 a.m. EDT	5:36 a.m. EDT	8:33 p.m. EDT	9:06 p.m. EDT	14h 57m 11s
7/15/2016	5:13 a.m. EDT	5:45 a.m. EDT	8:28 p.m. EDT	9:00 p.m. EDT	14h 43m 00s
7/31/2016	5:28 a.m. EDT	5:59 a.m. EDT	8:15 p.m. EDT	8:45 p.m. EDT	14h 16m 02s

Moon Phases					
New Moon	7/04/2016	7:00 a.m. EDT	First Quarter	7/11/2016	8:51 p.m. EDT
Full Moon	7/19/2016	6:56 p.m. EDT	Last Quarter	7/26/2016	6:59 p.m. EDT

July 2016 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

3	The waxing crescent Moon is near Regulus low in the west
4	New Moon
8/9	The Moon is near Jupiter
11	First quarter and the Lunar X is visible around 7 p.m.
14/15	The Moon, Mars and Saturn form a nice group in the evening
19	Full Moon, the Full Buck Moon or Full Thunder Moon
26	Last Quarter Moon
29/30	The Delta Aquariid meteor shower peaks
30	Mercury is near Regulus as twilight deepens

The best sights this month: Planets continue to rule the evening sky, with Mercury and Venus joining the crowd at the end of the month. The view due south with Mars, Saturn and Scorpius is just beautiful! And we have a lunar treat when on July 11th the famous Lunar X is visible while the Sun still shines in the sky.

Mercury: To see the planet closest to the Sun look for it low in the fading glow of sunset near the end of July. Mercury will be near Regulus in Leo the Lion on the 30th.

Venus: Our sister planet reappears as the “evening star” late in the month. Like Mercury, look for it low in the fading glow of sunset near the end of July.

Mars: The red planet is falling behind us in our race around the Sun, but it still presents a lot of detail when observed at high power. Wait until late at night when Mars is well above the horizon to get the best views of surface features. In mid-June on a hazy evening I was able to see quite a bit of detail at 150X.

Jupiter: Look at Jupiter just after it gets fully dark for the best view of the king of the planets. Jupiter

never disappoints for stunning views in the eyepiece of a telescope! In mid-June I saw the shadow of one of Jupiter’s moons pass over the planet.

Saturn: The ringed planet was at opposition in early June, so it will be higher in the sky during July and nearly as impressive in the eyepiece of a telescope. The best view of Saturn will be around 11:00 p.m. when it is near the meridian. Look for the Cassini Division, the break between the main inner and outer rings.

Uranus and Neptune: The outer gas giants are best observed just before dawn for the next several months.

The Moon: Full moon is on July 19th. Native Americans called this the Full Buck Moon because July is normally the month when the new antlers of buck deer push out of their foreheads with coatings of velvety fur. It was also often called the Full Thunder Moon, since thunderstorms are most frequent during this time of year. This Full Moon has also been called the Full Hay Moon.

On July 11th the Lunar X is visible around 7 p.m. I have seen the Lunar X in a dark sky, but not while the Sun remains in the sky. Sounds like an observing challenge! Let’s see who can get the best picture of this event. Even an iPhone held to the eyepiece of a telescope can capture the Lunar X!

Constellations: Fireflies, warm nights and the hazy stars of summer; this is July! This is one of the few months of the year when you can lay a blanket down on the lawn and not be cold, so enjoy it even if it is hot and humid during the day. Arcturus will be setting in the west and the Summer Triangle will be nearly at the zenith. If you sit up for a bit and look to the south you will see the big bug of summer, Scorpius. Then grab your binoculars and scan from Scorpius up the Milky Way through Sagittarius, on to Aquila and Cygnus and beyond!

Messier/deep sky: Globular clusters and nebula rule the summer sky for anyone with a telescope or binoculars. Sagittarius is full of Messier objects such as the Trifid and the Lagoon nebulas. In Scorpius is M4, a globular cluster that is easy to find us-

(Continued on page 9)

Through the Eyepiece: NGC 6633, Open Cluster in Ophiuchus

by Don Knabb, CCAS Treasurer & Observing Chair

Open clusters are among my favorite objects for observing. They can be found with any type of equipment from small binoculars to large telescopes. The only limitation for telescopic observing is that many open clusters are quite large so if you have a long focal length telescope you might not capture all of the cluster in the eyepiece.

The constellation Ophiuchus, the Serpent Bearer, is high in the southeast as darkness falls during July. Ophiuchus was one of the 48 constellations listed by the 2nd-century astronomer Ptolemy, and it remains one of the 88 modern constellations. To find NGC 6633 first find Rasalhague, the brightest star in Ophiuchus and the one that is at the ear of Ophiuchus in the sky map below. From Rasalhague, scan down and to the left.

NGC 6633 is nearly as large as the Full Moon and contains 30 stars which make it shine at a total magnitude of 4.6. The brightest star is of mag 7.6. Its age is estimated at 660 million years.

NGC 6633 was discovered by the Swiss astronomer Philippe Loys de Chéseaux around 1745. It was independently rediscovered by Caroline Herschel on July 31, 1783. Her brother William included it in his catalog as H VIII.72.

This magnificent object is contained in a large number of observing lists, such as No. "S11" in Paul Ahnert's Easy Object List, in the Saguaro Astronomy Club's 110 Best NGC List, in



Sky map created with Stellarium planetarium software.

the South African Astronomical Observatory Best Sky Objects List, in the Royal Astronomical Society of Canada's Finest N.G.C. Objects list, and in the

Astronomical League's Deep Sky Binocular Club List. Below is a picture recently taken by CCAS Program Chair Dave

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NGC6633 in Ophiuchus. Image credit: David Hockenberry. Imaged 6/10/2016 with a Hyperion 12.5" astrograph telescope and a QSI583wsg camera on an AP 1200 GEM. Guiding with SX Lodestar X2 camera and SXV-AOLF active optics unit. Image acquisition and equipment control by MaxIm DL. Image processing in CCD-Stack and Photoshop CS3. Stack of 7 X 200 second red, green and blue Astrodon Gen 2 filters each. Image scale 0.434 arcseconds/pixel.

Cleaning Kit (cont'd)



Before Cleaning



Dental Floss Handle



After Cleaning

(Continued from page 3)

of the lens or mirror is fairly flat. With the help of Leo our cat to stabilize my 5-inch refractor, I used the sofa to hold the telescope upright (see bottom image on pg. 3).

Above left is a “before” picture of the objective lens. The camera really highlighted the dirt. To the naked eye it did not appear nearly as bad as it looks and the evening before I had great views of Mars, Saturn and Jupiter with the scope.

I applied the polymer fluid as instructed, let it set just a minute or two then “painted on” a length of unwaxed dental floss. You can see the dried fluid and



Canned Air from Newport Corp.

dental floss “handle” in the middle photo above.

I waited at least a half hour, then removed the film. As you can see in the photo in the upper right, the lens is not perfect but is dramatically better than before the cleaning. In the few minutes until I grabbed my phone to take a picture a bit of cat fur found its way onto the lens.

The cat fur, and other dust, is easily removed with a blast of “canned air” that Dave also recommended. I bought that from Newport Corporation.

I am very pleased with the results using First Contact. The kit is not inexpensive, but considering the investment most of us have in our equipment it is well worth the cost. The kit I bought will probably clean all my eyepieces several times over. I may need to buy a bit more to clean the mirror of my 12 inch Dobsonian, but I plan to give it a try later this summer. And I need to figure out how to get fluid from the larger bottles into the small bottle, but I think Photonic Cleaning Technologies has some disposable eyedroppers I can use for that.

CCAS Star Party (Cont'd)

(Continued from page 2)

entries to monitor coming and going of vehicles. You may pitch your tent right next to your car as well as setting up your telescope. For those of you that do not wish to camp, there a Days Inn at Pottsville (1-570-291-3979) or a Microtel Inn & Suite by Wyndham in Hamburg (610-562-4234). Both are about

12 miles from the field. For those of you wishing to stay off site, you can leave your scopes and equipment set up during the day.

The dates for the event are Wednesday through Sunday, come and go as you wish but if there are enough people interest-

(Continued on page 10)

Hubble's Bubble Lights Up the Interstellar Rubble

by Dr. Ethan Siegel

When isolated stars like our Sun reach the end of their lives, they're expected to blow off their outer layers in a roughly spherical configuration: a planetary nebula. But the most spectacular bubbles don't come from gas-and-plasma getting expelled into otherwise empty space, but from young, hot stars whose radiation pushes against the gaseous nebulae in which they were born. While most of our Sun's energy is found in the visible part of the spectrum, more massive stars burn at hotter temperatures, producing more ionizing, ultraviolet light, and also at higher luminosities. A star some 40-45 times the mass of the Sun, for example, might emit energy at a rate hundreds of thousands of times as great as our own star.

The Bubble Nebula, discovered in 1787 by William Herschel, is perhaps the classic example of this phenomenon. At a distance of 7,100 light years away in the constellation of Cassiopeia, a molecular gas cloud is actively forming stars, including the massive O-class star BD+60 2522, which itself is a magnitude +8.7 star despite its great distance and its presence in a dusty region of space. Shining with a temperature of 37,500 K and a luminosity nearly 400,000 times that of our Sun, it ionizes and evaporates off all the molecular material within a sphere 7 light years in diameter. The bubble structure itself, when viewed from a dark sky location, can be seen through an amateur telescope with an aperture as small as 8" (20 cm).

As viewed by Hubble, the thick-



ness of the bubble wall is both apparent and spectacular. A star as massive as the one creating this bubble emits stellar winds at approximately 1700 km/s, or 0.6% the speed of light. As those winds slam into the material in the interstellar medium, they

push it outwards. The bubble itself appears off-center from the star due to the asymmetry of the surrounding interstellar medium with a greater density of cold gas on the "short" side than on the longer one. The blue color is due to the emission from partially ionized oxygen atoms, while the cooler yellow color highlights the dual presence of hydrogen (red) and nitrogen (green).

The star itself at the core of the nebula is currently fusing helium at its center. It is expected to live only another 10 million years or so before dying in a spectacular Type II supernova explosion.



Image credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA), of the Bubble Nebula as imaged 229 years after its discovery by William Herschel.

Observing (Cont'd)

(Continued from page 5)

ing Antares as a guide. If you have a low western horizon look for NGC 6231 where the tail of Scorpius turns to the east. This open cluster is called the Northern Jewel Box.

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

Meteor showers: The Delta Aquariid meteor shower peaks the night of July 29/30. We won't have an impressive shower, but one might see 10 fast meteors per hour. This meteor shower has a broad peak, so you can look a day or two before or after the peak and still see meteors. The waning crescent Moon will not interfere with the fast, small meteors.

Eyepiece (Cont'd)

(Continued from page 6)

Hockenberry.

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 by mutual gravitational attraction and become disrupted by close encounters with other clusters and clouds of gas as they orbit the galactic center. This can result in a migration to the main body of the galaxy and a loss of cluster members through internal close encounters.

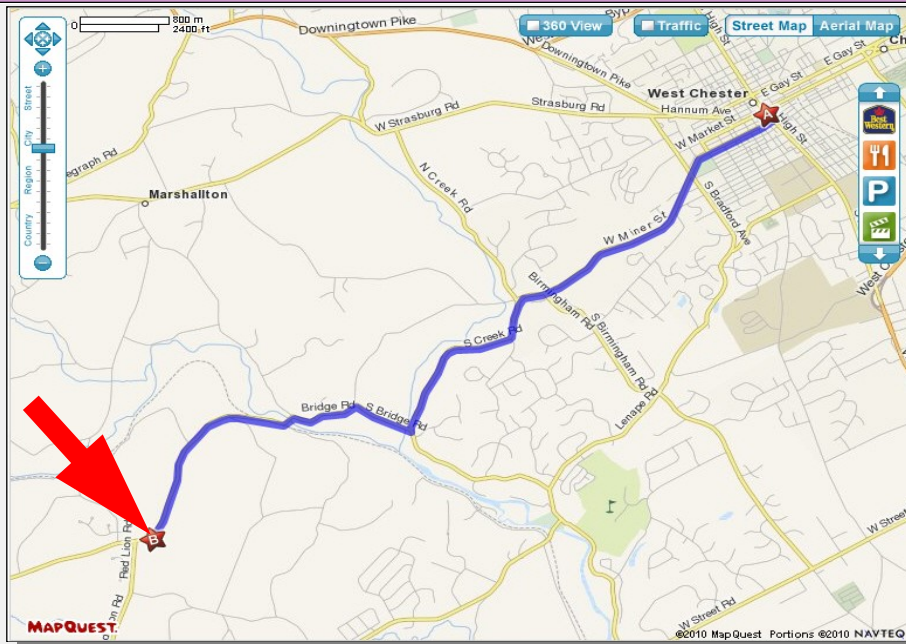
Open clusters generally survive

for a few hundred million years, with the most massive ones surviving for a few billion years. In contrast, the more massive globular clusters of stars exert a stronger gravitational attraction on their members, and can survive for longer. Open clusters have been found only in spiral and irregular galaxies, in which active star formation is occurring.

Information credits:

https://en.wikipedia.org/wiki/NGC_6633
<http://messier.seds.org/xtra/ngc/n6633.html>
https://en.wikipedia.org/wiki/Open_cluster
<https://en.wikipedia.org/wiki/Ophiuchus>

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 BVA 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).



Star Party (Cont'd)

(Continued from page 7)

ed, we will tour the Yuengling Brewery in Pottsville on Friday and Hawk Mountain on Saturday. If anyone wants to give a talk, that will be welcomed. Hope to see you there.

There is no charge for the use of the field but Frank Colosimo will certainly accept donations for field maintenance. Please contact me by July 22th so I have a head count. You can reach me by phone at 610-873-0162 and my e-mail address is kellstar60@gmail.com.

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

June 2016 Financial Summary

Beginning Balance	\$2,984
Deposits	\$142
Disbursements	\$320
Ending Balance	\$2,806

New Member Welcome!

Welcome new CCAS member Sean McCausland from West Chester. 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:

John Hepler
21103 Stripper 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 John Hepler, the newsletter editor, at: newsletter@ccas.us.

CCAS Website

John Hepler is the Society's Webmaster. You can check out our Website at: <http://www.ccas.us>

John 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 John 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.

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