



Observations

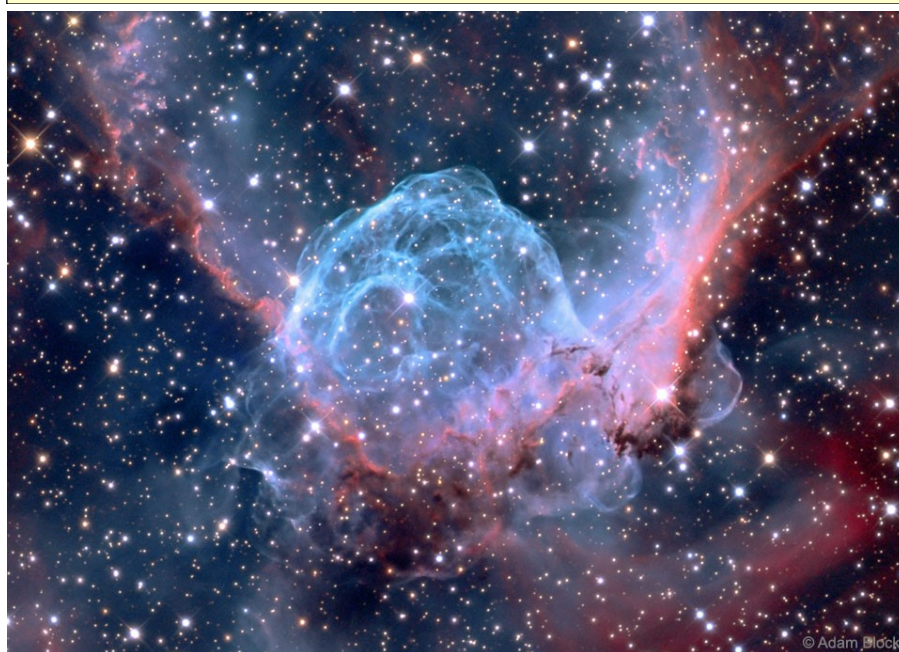
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 25, No. 11 **Three-Time** Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016 November 2017

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Thor's Helmet Emission Nebula



Cataloged as NGC 2359, the emission nebula is located about 12,000 light-years away toward the constellation of the Big Dog (Canis Major). Image Credit & Copyright: Adam Block, Mt. Lemmon SkyCenter, U. Arizona

Membership Renewals Due

11/2017	Buczynski Cavanaugh Holenstein Luttrell & Pollard Taylor
12/2017	Bogard Bogusch Kozik O'Leary
01/2018	Caruso Holmstrom Kellerman Kovac Linskens McElwee Stocker

November 2017 Dates

- 4th** • Full Moon, the Full Hunter's Moon or the Rivers Freezing Moon, 1:22 p.m. EDT
- 5th** • Daylight Saving Time ends, 2:00 a.m.
- 10th** • Last Quarter Moon, 3:36 p.m. ET
- 17th** • The Leonids meteor peak in the pre-dawn hours
- 18th** • New Moon, 6:42 a.m. ET
- 26th** • First Quarter Moon, 12:42 a.m.
- 28th** • Saturn and Mercury are close together in the southwest



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.

- ☼ **Wednesday, November 1, 2017** - CCAS Special Observing Session, Plush Mills assisted living facility lecture and Moon viewing. The session is scheduled for 7:00-8:30 PM.
- ☼ **Friday, November 10, 2017** - CCAS regular monthly observing session, Myrick Conservancy Center, BRC. The observing session starts at sunset. Last session until March 2018.

Autumn/Winter 2017 Society Events

November 2017

1st • 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.

10th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

14th • CCAS Monthly Meeting starting at 7:30 p.m. in Room 113, Merion Science Center (former Boucher Building), West Chester University. Guest Speaker: Phil Rossomando from the Planetary Society.

16th-17th • The von Kármán Lecture Series: [Mars 2020, or There and Back Again](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the December 2017 edition of [Observations](#).

26th • Deadline for newsletter submissions for the December 2017 edition of [Observations](#).

December 2017

1st • Plush Mills Assisted Living facility lecture and Moon viewing, 7:00-8:30 p.m.

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.

9th • CCAS Holiday Party at the Hockenberry-Miller home, 1477 Valley Road, Glen Mills, PA, 19342. Details about directions, parking, and food/drinks will be forthcoming in December Observations before the event.

14th-15th • The von Kármán Lecture Series: [Weight Watching from Space: Tracking Earth's water cycle with GRACE Follow-On](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

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

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

Minutes from the October 10, 2017, CCAS Meeting

by Ann Miller, CCAS Secretary

- Club President Roger Taylor welcomed 22 CCAS members and guests to the October meeting.
 - He then presented a special NASA Pluto flyby "3-D" construction of New Horizons data.
- Next, Pete Kellerman presented a brief video he took of a Nike-modified launch at Wallops Island.
- Observing Chair Don Knabb presented pictures from recent event at retirement village, and a Sky Safari "what's up" for the month in October.
- Speaker John Conrad, NASA Solar System Ambassador and CCAS Member, gave his presentation entitled "A Hitchhiker's Guide to the Solar System."
 - This was a summation of NASA and other spacecraft exploration of our solar system over the last 60 years.
 - It started with one of our furthest reaches in space, Voyager 1 - now 130 Billion miles from Earth, beyond Kuiper Belt.
 - Next was a quick recap of solar system evolution
 - John's talk then focused on NASA spacecraft across 60 years.
 - Spacecraft are better than telescopes - closer, sometimes can orbit, and sometimes land! Much better resolution, direct measurements.
 - Recent NASA missions focus on 2 big questions - life elsewhere and explaining solar system evolution.
- Meeting concluded with a reminder that November will be our last BRC "outside" meeting for the year.

November 2017 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on November 14, 2017, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Our guest speaker is Guest Speaker: Phil Rossomando from the Planetary Society.

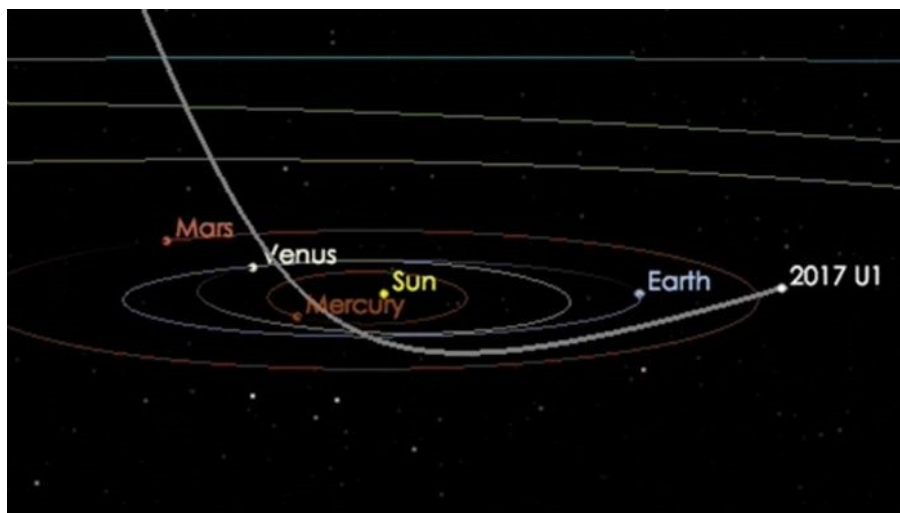
Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a

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

Astronomers Are Tracking Distant Visitor to Solar System

by Paul Voosen, *Science Magazine*



A visualization of the path of the asteroid or comet now named A/2017 U1 is taking through the solar system. Graphic credit: NASA/JPL-Caltech.

For the first time, astronomers are tracking a distant visitor streaking through our solar system. Around the world, telescopes are swiveling to welcome, and then wave farewell to, a new guest to the solar system: a fast-moving asteroid, or potentially a comet. It could be the first interstellar object to visit the solar system that has been detected and observed by astronomers, NASA announced yesterday.

Discovered on 19 October at the University of Hawaii's Pan-STARRS 1 telescope on Haleakalā, the object, temporarily dubbed "A/2017 U1," is 400 meters in diameter and moving quickly. It was first detected by Rob Weryk, an astronomer at the University of Hawaii (UH) in Honolulu, and confirmed by the European Space Agency's telescope on Tenerife in the Canary Islands.

The object's incoming motion—25.5 kilometers per second—

was so extreme that astronomers believe it is not the kind of asteroid or comet typically seen inside the solar system.

"This is the most extreme orbit I have ever seen," said Davide Farnocchia, a trajectory expert at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California, in a release. "It is going extremely fast and on such a trajectory that we can say with confidence that this object is on its way out of the solar system and not coming back."

Based on its current trajectory, the visitor came from the constellation Lyra and approached our solar system from "above," perpendicular to the plane that most planets orbit the sun. On 9 September, it made its closest approach to the sun, with gravity then tugging it on a route "under" the solar system. On 14 October, it made its closest pass by Earth, at 60 times the distance to the moon. It is now looping back above the planetary plane and, traveling at 44 kilometers

per second, is shooting toward the constellation Pegasus.

It's no surprise that such a space rock, or comet, exists—scientists expect such grist to be wobbling around the galaxy, the ejected remnants of planetary formation. More observations are needed, and coming, to confirm its origins. Ultimately, the visitor will need a name, and rules do not yet exist for naming such extra-solar system guests.

"We have long suspected that these objects should exist, because during the process of planet formation a lot of material should be ejected from planetary systems. What's most surprising is that we've never seen interstellar objects pass through before," said Karen Meech, an astronomer at UH's Institute for Astronomy in Honolulu specializing in small bodies and their connection to solar system formation.

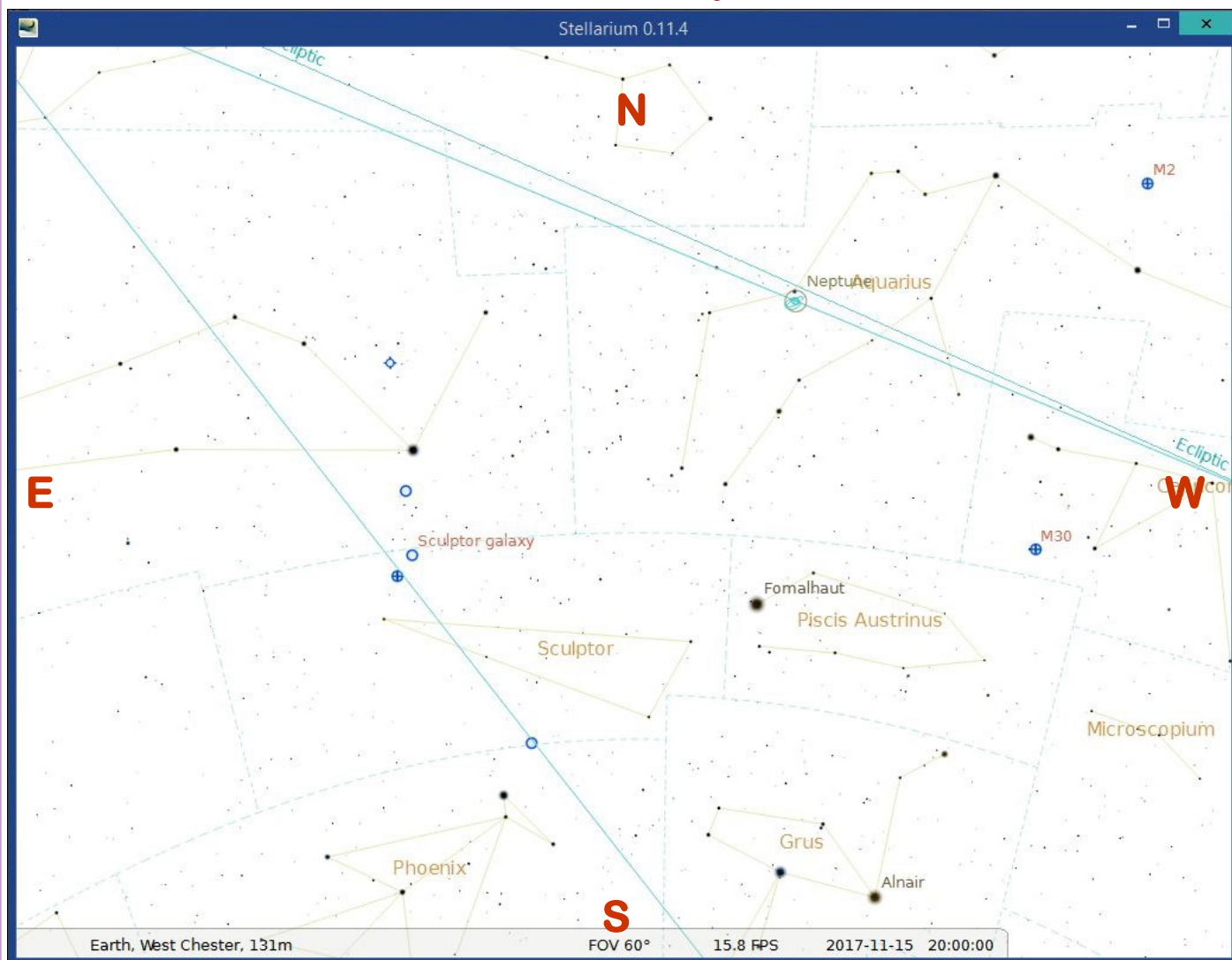
Because this is the first object of its type ever discovered, rules for naming this type of object will need to be established by the International Astronomical Union.

"We have been waiting for this day for decades," said JPL's Center for Near-Earth Object Studies Manager Paul Chodas. "It's long been theorized that such objects exist—asteroids or comets moving around between the stars and occasionally passing through our solar system—but this is the first such detection. So far, everything indicates this is likely an interstellar object, but more data would help to confirm it."

The Sky Over Chester County

November 15, 2017 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
11/01/2017	7:03 a.m. EDT	7:31 a.m. EDT	5:59 p.m. EDT	6:27 p.m. EDT	10h 28m 01s
11/15/2017	6:18 a.m. EST	6:47 a.m. EST	4:46 p.m. EST	5:15 p.m. EST	9h 58m 12s
11/30/2017	6:34 a.m. EST	7:04 a.m. EST	4:38 p.m. EST	5:07 p.m. EST	9h 33m 51s
Moon Phases					
Last Quarter	11/10/2017	3:36 p.m. EST	Full Moon	11/04/2017	1:22 p.m. EDT
First Quarter	11/26/2017	12:02 p.m. EST	New Moon	11/18/2017	6:42 a.m. EST

November 2017 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

4	Full Moon, the Full Hunter's Moon or the Rivers Freezing Moon, 1:22 p.m.
5	Daylight Saving Time ends
5	The Moon occults Aldebaran
10	Last Quarter Moon, 3:36 p.m.
17	Leonid Meteor shower peaks in the predawn hours
18	New Moon, 6:42 a.m.
20	The crescent Moon is near Saturn in the southwest, and Mercury is below the pair
25	The Lunar X is visible around 6:00 p.m.
26	First Quarter Moon, 12:42 a.m.
26	The Lunar Straight Wall (Rupes Recta) is visible
28	Saturn and Mercury are close together low in the southwest

The best sights this month: We can still catch Saturn during November before gets lost in the glare of the setting Sun. Seeing Saturn is the highlight of November since the other bright planets are either in the dawn sky or behind the Sun. But if you grab your binoculars or telescope you should be able to find Uranus, which is at opposition on November 19th. Uranus is small in the eyepiece, but it has a distinct green color so it is fairly easy to identify.

Mercury: Mercury is close to Saturn near the end of the month. Look low in the southwest not long after sunset.

Venus: Our sister planet rises about an hour before the Sun and shines brightly in the predawn sky.

Mars: The red planet rises several hours before the Sun and is currently in the constellation Virgo.

Jupiter: Jupiter passed behind the Sun at the end of October, so wait until the end of November to see it

in the predawn sky. On the morning of November 16th there will be a nice grouping of Venus, Jupiter and the waning crescent Moon in the east.

Saturn: Saturn is sinking toward the sunset but can still be observed during most of November. On November 20th there will be a nice grouping of Saturn, Mercury and the waxing crescent Moon low in the southwest.

Uranus and Neptune: We had a fine view of Uranus at Brandywine Red Clay Alliance during our October observing evening and both Uranus and Neptune continue to be in good position for viewing during November.

The Moon: The Moon is full on November 4th. This is the Full Beaver Moon. For Native Americans, the time of this full moon was the time to set beaver traps before the swamps froze, to ensure a supply of warm winter furs. It is sometimes also referred to as the Frosty Moon, but I don't think they were referring to the snowman, even though the Moon kind of looks like the head of a snowman. Native Canadian tribes called this the Rivers Freezing Moon.

During the evening of November 5th, the Moon occults Aldebaran in the constellation Taurus the Bull. Occultations are fun to watch, both and the Moon passes in front of a star and when it blinks back into existence as the star reemerges from behind the Moon.

Constellations: Now that we are well into autumn and back to Eastern Standard Time there are many hours of star gazing possible without staying up late. The Summer Triangle is past center stage and is heading for the western horizon. Pegasus is well up in the southern sky in the early evening, and the jewels that are the Pleiades are rising in the east. Capella in Auriga is a bright point of light above Taurus. As it gets a bit later our old friend Orion returns from his summer vacation.

Messier/deep sky: There are many deep sky treats in the autumn and winter sky. Some of my favorites this time of year are the three star clusters in Auriga, M36, M37 and M38. Compare the structure of these open clusters and log them as a great start in pursuit

(Continued on page 10)

Through The Eyepiece: Herschel's Garnet Star in Cepheus, Mu Cephei

by Don Knabb, CCAS Treasurer & Observing Chair

While enjoying a series of clear skies in mid October I stumbled across a beautiful red star in the constellation Cepheus. I was looking for a "triple star" that is included in the list of one of the Astronomical League observing clubs and as I star-hopped from the bottom of Cepheus this distinctly red star stood out in the eyepiece. Naturally, I had to know more about this unique star, which turns out to be Mu Cephei, and it is referred to as Herschel's Garnet Star.

Mu Cephei is a red supergiant star. It appears garnet red and is located at the edge of the IC 1396 nebula. Mu Cephei is one of the most luminous red supergiants in the Milky Way. It is also one of the largest stars so far discovered. Mu Cephei is one of the largest and brightest stars visible not only to the naked eye but in the entire Galaxy. Mu Cephei is so large that its actual apparent disk is readily discernable with professional telescopes!

Were The Garnet Star placed in the Sun's position it would reach between the orbit of Jupiter and Saturn. Mu Cephei could fit around 2 billion Suns into its volume. Only five known stars are believed to be larger than it. The luminosity of Mu Cephei is estimated at approximately 400,000 times that of our Sun.

The deep red color of Mu Cephei was noted by William Herschel, who described it as "a very fine deep garnet colour, such as the periodical star o Ceti". Though sometimes known as "Erakis," it is more familiarly



Herschel's Garnet Star in Cepheus, Mu Cephei

referred to as "Herschel's Garnet Star," the name honoring both the star's deep color and Sir William Herschel, who in 1781 discovered the planet Uranus and who also founded modern observational astronomy with vast numbers of other discoveries that included infrared radiation.

Note to science fiction fans – when I first learned the formal name of this star as Erakis I immediately thought of the planet in Frank Herbert's *Dune* novel. However, the planet in *Dune* is named Arrakis.

Strongly colored stars have always fascinated astronomers. The long history of red-star observations begins in the early 19th century, with famous observers such as Angelo Secchi and Thomas Espin. And those

who think that stars are not highly colored need only look at Mu Cephei.

Mu Cephei is nearing death. It has begun to fuse helium into carbon, whereas a main sequence star fuses hydrogen into helium. When a supergiant star has converted elements in its core to iron, the core collapses to produce a supernova and the star is destroyed, leaving behind a vast gaseous cloud and a small, dense remnant. For a star as massive as Mu Cephei the remnant is likely to be a black hole.

Finding Herschel's Garnet Star is not difficult, but since it shines at 4th magnitude it is not very bright in our light polluted Chester County skies. Binoculars are a great help, as is a tele-

(Continued on page 7)

Eyepiece (Cont'd)



Image Source: Stellarium, the free planetarium software

(Continued from page 6)

scope. Cepheus is between Ursa Minor and Cassiopeia and is a somewhat dim constellation in

the shape of a house. The Garnet Star is in the basement of this house, nearly equidistant from the two “foundation” stars.

When you find it you will know it because of the distinct red color. It is best seen from the Northern hemisphere from August to January.

Information sources:

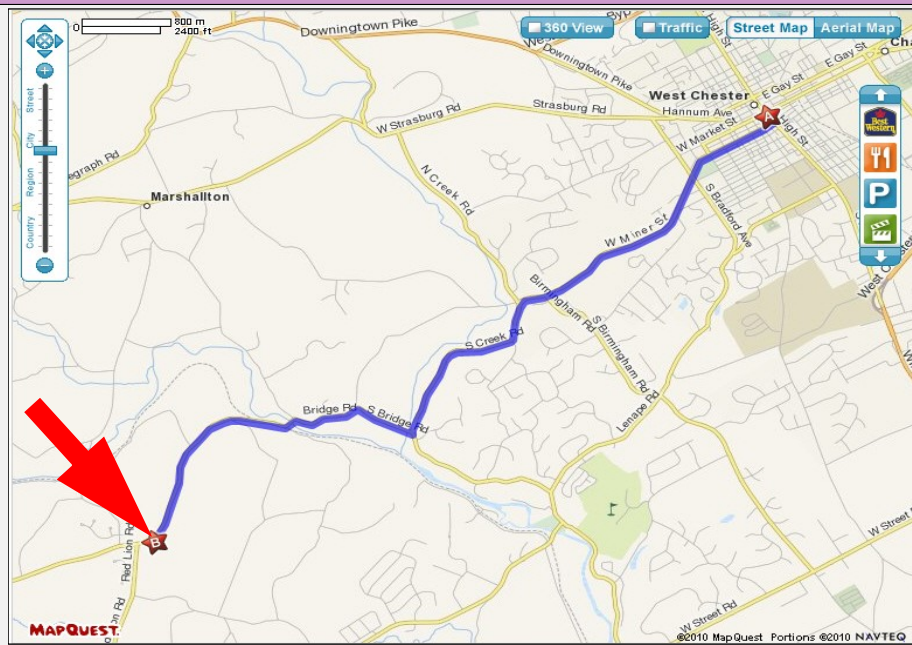
Sky Safari app, adapted from STARS by Jim Kaler, Professor Emeritus of Astronomy, University of Illinois

<http://stars.astro.illinois.edu/sow/garnet.html>

http://www.nightskyinfo.com/archive/mu_cephei/

https://en.wikipedia.org/wiki/Mu_Cephei

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.

Spooky in Space: NASA Images for Halloween

courtesy NASA/Jet Propulsion Laboratory

This article is provided by NASA Space Place.

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

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

Have you ever seen a cloud that looks sort of like a rabbit? Or maybe a rock formation that looks a bit like an elephant? Although you know that a cloud isn't really a giant rabbit in the sky, it's still fun to look for patterns in images from nature. Can you spot some familiar spooky sites in the space images included in this article?

This might look like the grinning face of a jack-o'-lantern, but it's actually a picture of our Sun! In this image, taken by NASA's Solar Dynamics Observatory, the glowing eyes, nose and mouth are some of the Sun's active regions. These regions give off lots of light and energy. This causes them to appear brighter against the rest of the Sun. Active regions are constantly changing locations on the Sun. On the day this image was captured, they just happened to look like a face!

On the upper left on pg. 9 is a Hubble Space Telescope image of Jupiter. Do you notice something that looks like a big eye peeking back at you? That's actually the shadow of Jupiter's moon Ganymede as it passed in front of the planet's Great Red Spot. Jupiter's Great Red Spot is a gigantic, oval shaped storm that is larger than Earth and is shrinking. It has been on Jupiter for several hundred years, and



its winds can swirl up to 400 miles per hour!

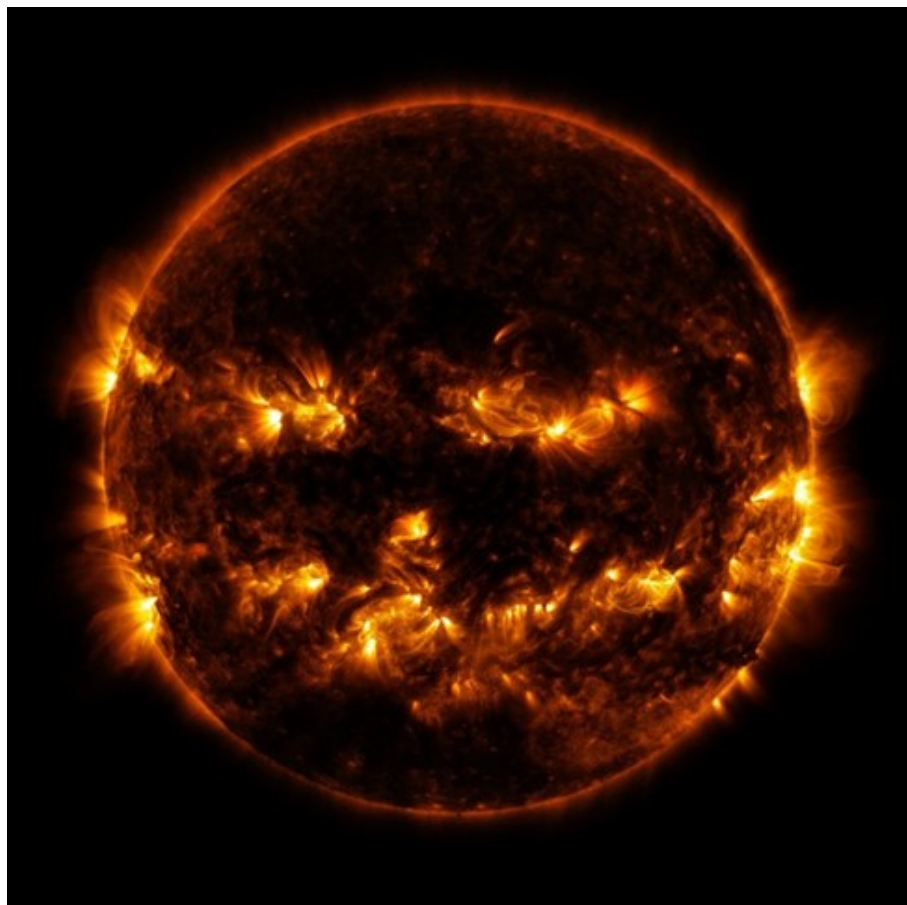
Can you see the profile of a witch in the image in the upper right? This image, from NASA's Wide-Field Infrared Survey Explorer, shows the Witch Head nebula. The nebula is made up of

clouds of dust heated by starlight. These dust clouds are where new stars are born. Here, the dust clouds happen to be in the shape of an open mouth, long nose and pointy chin.

The Black Widow Nebula looks like a giant spider in space. It is a huge cloud of gas and dust containing massive young stars. Radiation and winds from these stars push the dust and gas around, creating a spider-like shape. This image is from NASA's Spitzer Space Telescope.

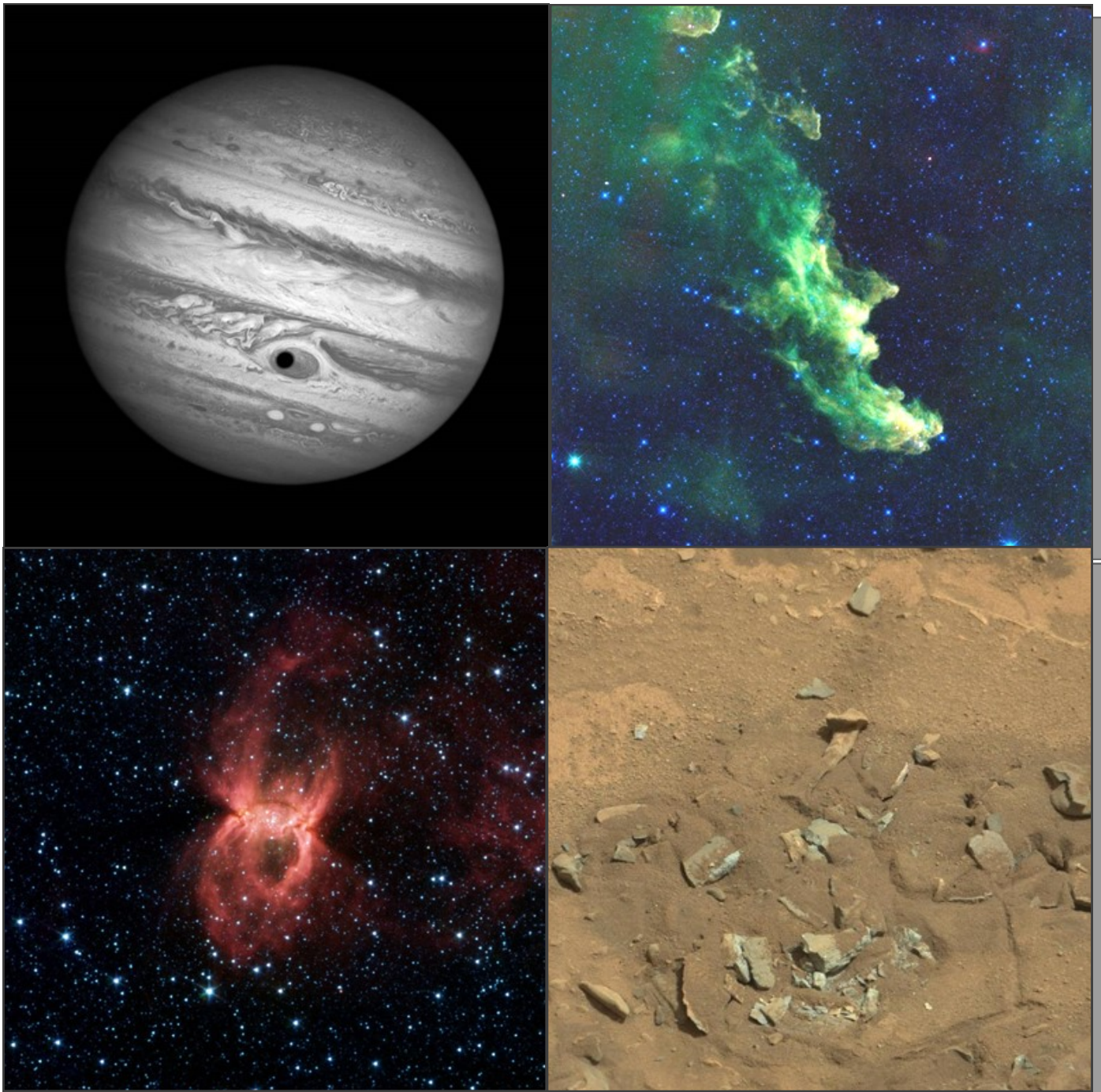
Did a skeleton lose one of its leg bones on Mars? Nope! It's just an image of a Martian rock.

(Continued on page 9)



Credit: NASA/GSFC/SDO

Halloween (Cont'd)



Upper row, left to right: Jupiter; Witch Head Nebula. Lower row: left to right: Black Widow Spider Nebula; Martian rock.

(Continued from page 8)

NASA's Curiosity rover captured the image of Mars in the lower right. The rock was probably shaped to look this way over time by wind or water. If life

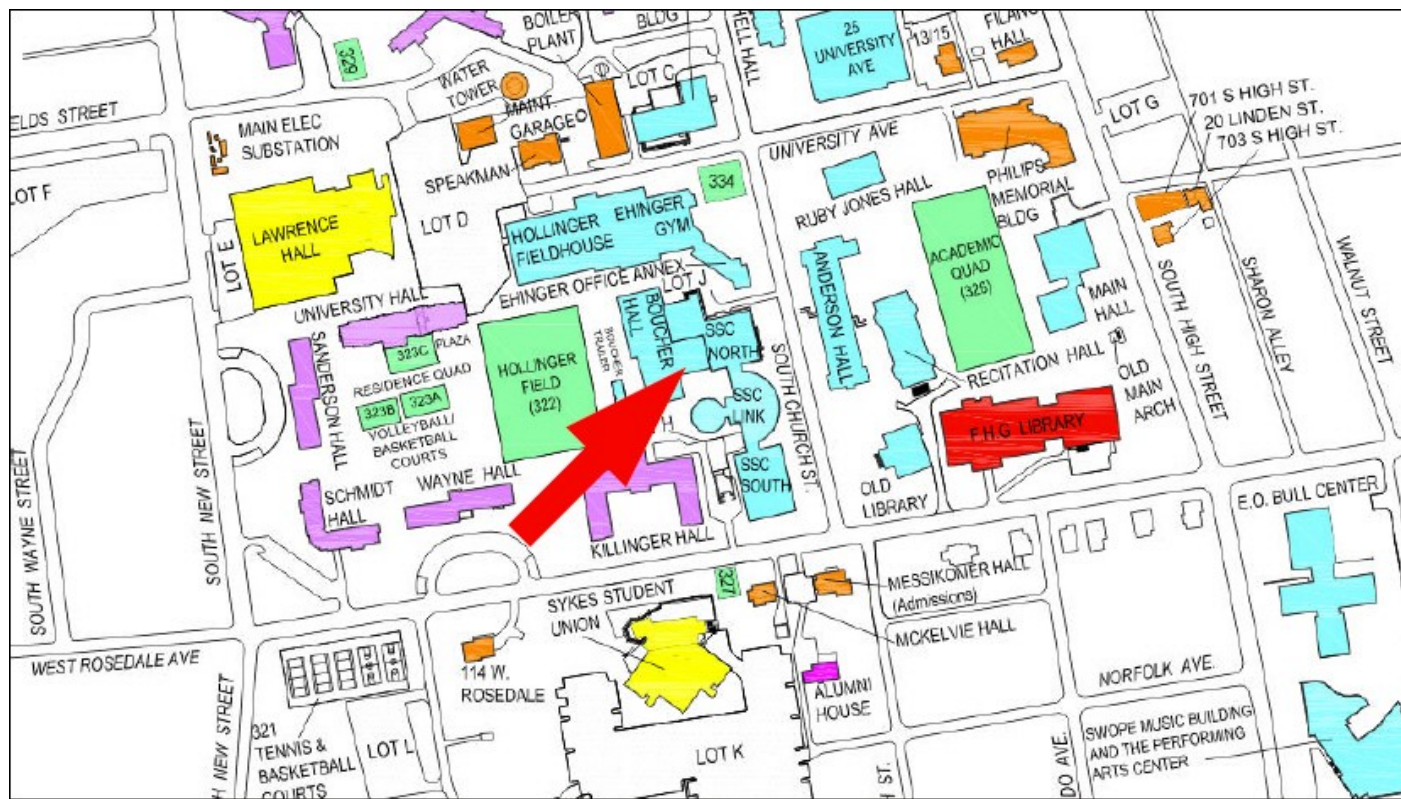
ever existed on Mars, scientists expect that it would be small organisms called microbes. So, it isn't likely that we'll ever find a large fossil on Mars!

To learn some fun planet facts and make a planet mask, check out NASA Space Place: <https://spaceplace.nasa.gov/planet-masks>

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 112 in Merion Science Center (formerly the Boucher Building), attached to the Schmucker Science Center. The Schmucker Science Center is located at the corner of S. Church St & W. Rosedale Ave. Parking is generally available across Rosedale in the Sykes Student Union parking lot (Lot K).



Observing (Cont'd)

(Continued from page 5)

of the binocular or telescopic Messier club of the Astronomical League.

Comets: There are no bright comets visible during November.

Meteor showers: The Leonid meteor shower peaks during the predawn hours of November 17th. We can expect up to 15 fast moving meteors per hour. With New Moon occurring the next evening we won't have any moonlight to spoil the show. Expect bright meteors because the Leonids are considered the fastest of any meteors!

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

Oct. 2017 Financial Summary

Beginning Balance	\$1,312
Deposits	\$35
Disbursements	\$0
Ending Balance	\$1,347

New Member Welcome!

Welcome new CCAS members Keith Baker from Glen Mills, PA, Daniel Kerkel from West Chester, PA, and Sheila Sykes-Gatz, also 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!

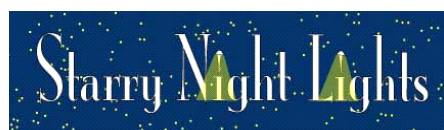
Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

<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:

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
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