Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 21, No. 1 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ☼ 2006 & 2009* *January 2013*

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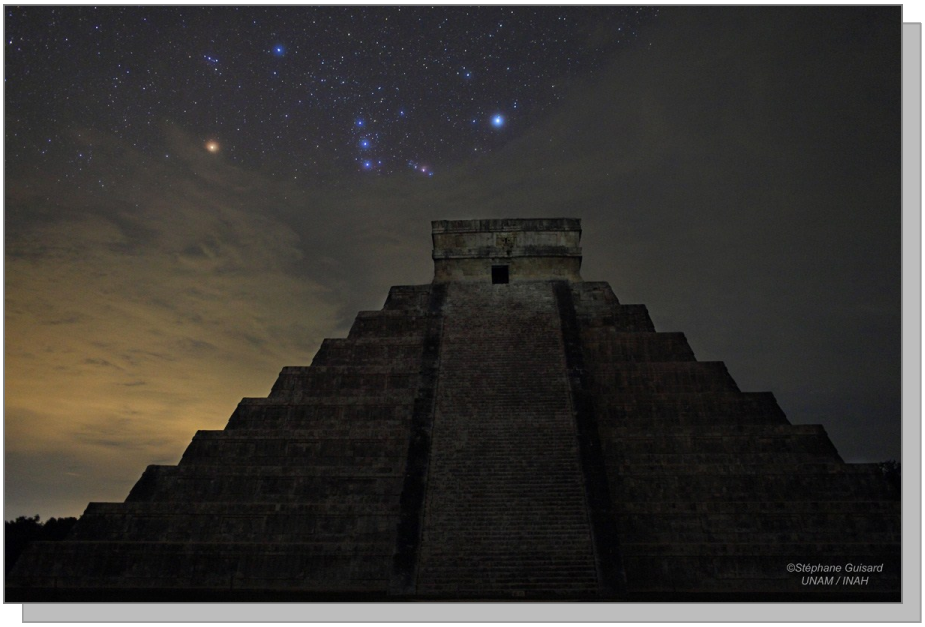
And the World did not End



Orion over El Castillo (See page 7 for more information)
Image Credit & Copyright: Stéphane Guisard (Los Cielos de America, TWAN)

Important January 2013 Dates

3rd • Quadrantid Meteor Shower Peaks

4th • Last Quarter Moon, 10:58 p.m.

11th • New Moon, 2:44 p.m.

18th • First Quarter Moon, 6:45 p.m.

26th• Full Moon, 11:38 p.m.

CCAS Upcoming Nights Out

CCAS has several "nights out" scheduled over the next few months. Members are encouraged to help out during these events any way they can. See below for more information.

☼ **Saturday, March 16, 2013**. Spring Star party. Co-sponsored with the West Chester Department of Recreation in Hoopes Park, West Chester. The observing session will be in the field near the pavilion. Session is scheduled for 7:30 PM to 9:30 PM.

☼ **Saturday, March 30, 2013.** Bucktoe Creek Preserve Star Party, Kennett Square, PA. For more information, contact our Observing Chair, Don Knabb.

Winter 2013 Society Events

January 2013

2nd • 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 • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. Meet & Greet over coffee and refreshments from 7:00 to 7:30 p.m. The meeting starts immediately after at 7:30 p.m. Speaker: Dr. Karen Vanlandingham, "Renovations to the WCU Planetarium."

17th • The von Kármán Lecture Series: Probing the Dark Sector with Euclid, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the February 2013 edition of Observations.

26th • Deadline for newsletter submissions for the February 2013 edition of Observations.

February 2013

1st • West Chester University Planetarium Show: "Binary Stars, Celestial Twins," in the Schmucker Science Building. The show starts at 7 p.m. For more information and reservations, visit the WCU Public Planetarium Shows webpage.

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 • Reservations start for the March 1st planetarium show at the WCU Planetarium.

11th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date February 12th). The observing session starts at sunset.

12th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. Meet & Greet over coffee and refreshments from 7:00 to 7:30 p.m. The meeting starts immediately after at 7:30 p.m. CCAS Speaker: TBA.

14th • The von Kármán Lecture Series: Geoengineering and Climate Intervention: What We Need to Know, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the March 2013 edition of Observations.

26th • Deadline for newsletter submissions for the March 2013 edition of Observations.

CCAS Original Astrophotography

by Dave Hockenberry, CCAS Program Chair

The Cocoon Nebula in Cygnus. Shot 8/23/12, 9/13/12, and 9/16/12 with QSI 583 wsg camera through AstroTech AT8RC telescope at 1625 mm FL. Autoguided with SX Lodestar camera and SX AO Adaptive optics unit and Maxim DL Pro. Image capture with Maxim DL. Images calibrated, stacked, Luminance deconvolution and RGB merged in CCDStack. L-RGB merge and further adjustments in Photoshop CS5. Sky background noise reduction with Noise Ninja. 200 minutes Luminance (20 X 10 minute exposures), 50 minutes each (10 X 5 minute exposures) Red, Green and Blue frames through AstroDon filters. FITS Liberator courtesy of ESA.

This object consists of the nebula Sharpless 2-125, and the open cluster IC5146. At the top of the image where there is an apparent dearth of stars in this otherwise rich star field is the beginning of Barnard 168, a dark nebula that starts here and trails up and to the left for some distance out of the field of view. The Cocoon nebula is about 15 light-years across and lies at an approximate distance of 3,300 light years from Earth.

Minutes from the December 14, 2012 CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- No minutes were recorded as the monthly meeting was replaced by the Society's annual holiday party. See page 6 for photos of the evening.

RIP Sir Patrick Caldwell Moore

by Dave Hockenberry, CCAS Program Chair

The astronomical community lost one of its champions 12/9/2012 with the expected yet still sad passing of Sir Patrick Alfred Caldwell Moore. Friends and colleagues reported that he died peacefully at his home in West Sussex, U.K. several days after being discharged from the hospital. He was 89 years old.

He was the host of the longest running television show in history, The Sky at Night which first aired in April, 1957. His monthly broadcasts were seen throughout the world on BBC 1. The accompanying magazine of the same title was also circulated widely. Sir Patrick did his last broadcast from his home 6 days before he died. It was his final episode of the program so many Britons and astronomers everywhere had grown to love over half a century.

He was born in 1923 in Middlesex, England with a heart condition. His mother gave him a copy of G.F. Chamber's book, "The Story of the Solar System," while being educated at home. In his biography he reported that this book sparked a lifelong interest in astronomy. He turned down an appointment at Cambridge and lied about his age to enter the Royal Air Force at the outbreak of WWII. He served as a navigator with Bomber Command, and rose to the rank of Flight Lieutenant. During his training in Canada he met both Albert Einstein and Orville Wright. The war years brought tragedy for him as well. In one of the German bombing raids his fiancé' Lorna, a nurse, was killed when a bomb exploded near the ambulance she was driving. Sir Patrick never married nor had any children, saying to friends that "second best" was never for him.

After the war he wrote his first book, "Guide to the Moon" published in 1952. He typed it on his 1908 Woodstock manual typewriter, which he used well into his 80's. While teaching at the Holmewood School he set up a 12.5" reflector in his backyard and began a lifelong interest in the moon, using lunar libation to map parts of the dark side that become visible. He later advised both the Russians and NASA during the 1960s lunar probes and Apollo missions.

He had his first television appearance in the early 1950's in a debate on the existence of UFOs. He was later invited to do his own astronomy show by the BBC, which in April 1957 became The Sky at Night. One of the highlights of his broadcasting career came in 1959, when in return for his help as an advi-

January 2013 Speaker

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on January 8, 2013, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Dr. Karen Vanlandingham will present an update on the planned renovations to the WCU Planetarium.

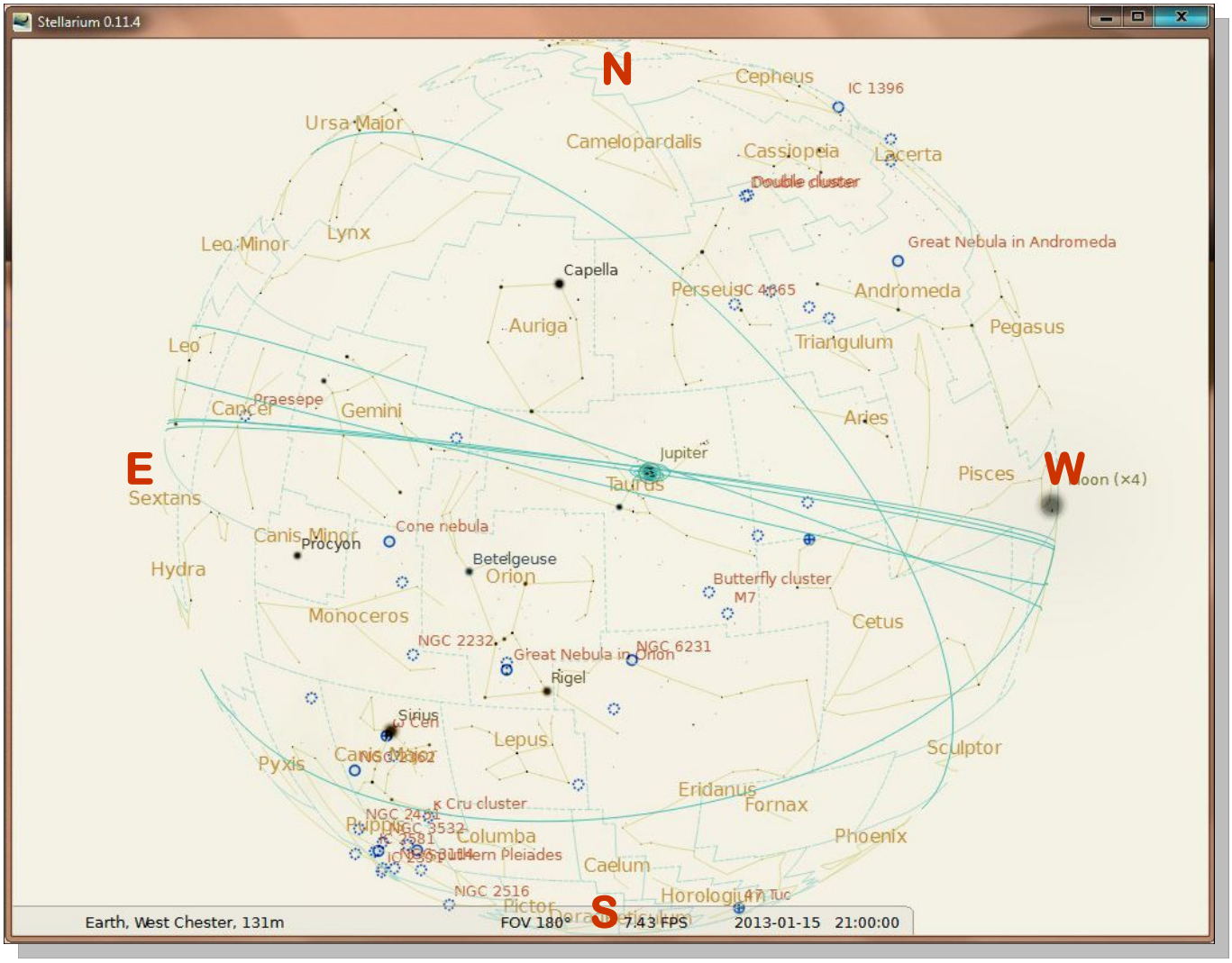
Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a change, CCAS members will be notified via e-mail with as much advance notice as possible.

We are looking for presenters for our meetings in April and May of this year, along with the sessions this coming autumn. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

The Sky Over Chester County

January 15, 2013 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
1/01/2013	6:52 a.m. EST	7:22 a.m. EST	4:47 p.m. EDT	5:17 p.m. EST	9h 24m 04s
1/15/2013	6:51 a.m. EST	7:20 a.m. EST	5:00 p.m. EST	5:30 p.m. EST	9h 39m 53s
1/31/2013	6:41 a.m. EST	7:10 a.m. EST	5:19 p.m. EST	5:48 p.m. EST	10h 09m 15s

Moon Phases					
Last Quarter	1/04/2013	10:58 p.m. EST	First Quarter	1/18/2013	6:45 p.m. EST
New Moon	1/11/2013	2:44 p.m. EST	Full Moon	1/26/2013	11:38 p.m. EST

January 2013 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

3	**The Quadrantid meteor shower peaks**
4	**Last Quarter Moon 10:58 PM EST**
11	**New Moon 2:44 PM EST**
18	**First-quarter Moon 6:45 PM EST**
21	**The waxing gibbous Moon is very close to Jupiter**
26	**Full Moon 11:38 PM EST**

The best sights this month: Jupiter continues to be the highlight of the evening skies. On the 21st Jupiter and the Moon have a close encounter and they are in the region of the Hyades cluster with Aldebaran on one side and the Pleiades on the other!

Mercury: Mercury is not easily observed during January.

Venus: Our sister planet continues to pull ahead of us in the never ending race around the Sun (well, never is perhaps too strong a word, but the race will go on for a very long time). That means it is lower each day in the morning sky and the "morning star" will soon transition to being the "evening star".

Mars: The opportunity for good observing of the red planet is now behind us until later this year. Yes, you can still find Mars low in the southwest at dusk, but it is so low in the sky that you will need binoculars or a telescope to find it.

Jupiter: Jupiter continues to be the main event in the evening sky throughout January. Big and bright in the sky or the eyepiece of a telescope the king of the planets is high in the sky during the evening viewing hours. On January 21st the Moon is very close to Jupiter. It does not get any better than this!

Saturn: The ringed planet is visible in the pre-dawn sky all month, rising just after midnight by the end of the month.

Uranus and Neptune: Neptune is diving into the glow of the sunset as January progresses but Uranus remains in good position for viewing for several hours after sunset. Sky maps to locate these planets can be found at http://skypub.com, the website of Sky and Telescope magazine.

The Moon: Full moon is on January 26th. According to Native Americans, this 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.

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: There are no bright comets in the sky during January.

Meteor showers: The Quadrantid meteor shower peaks on January 3 and is active for a day before and after the peak. A few years ago I observed several dozen Quadrantid meteors, many very bright. It was one of the best meteor showers I have ever seen. The Moon will be rising just before midnight so the observing will be good until about 1 a.m.

CCAS 2013 Holiday Party
Photos submitted by Don & Barb Knabb






CCAS members and their families gathered in the home of Don and Barb Knabb on the evening of December 14th, 2012, to celebrate the holiday season and the culmination of another successful year for the society. Hosts Don and Barb made everyone feel welcome (as always) and members brought a dish to share.

Orion over El Castillo

courtesy of D. Flores and B. Pichardo (Inst. Astronomia UNAM), P. Sánchez and R. Nafate (INAH)

This month's newsletter cover photograph was Astronomy Picture of the Day's photograph for December 21, 2012. Welcome to the December solstice, a day the world does not end ... even according to the Mayan Calendar.

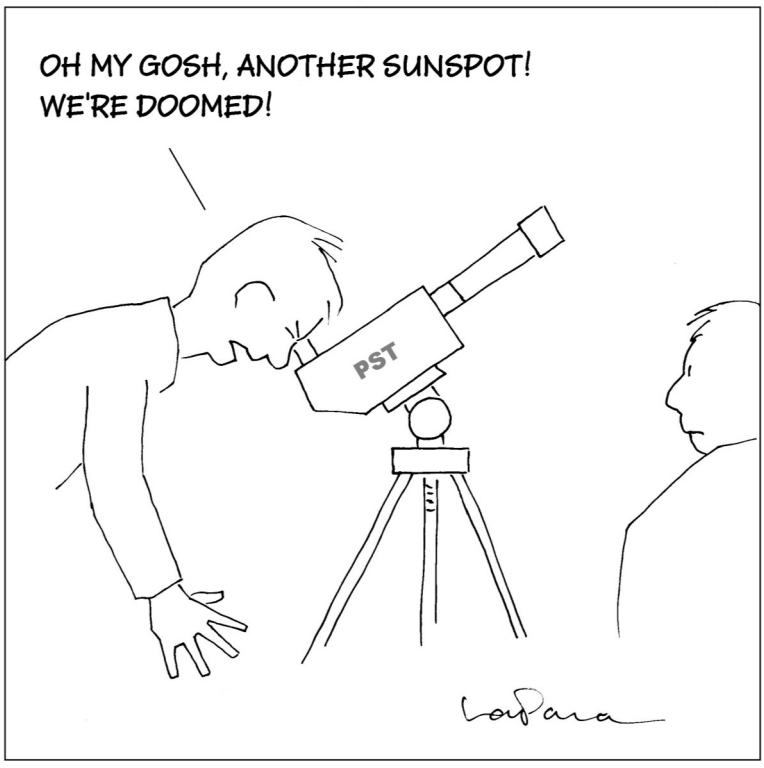
To celebrate, consider this dramatic picture of Orion rising over El Castillo, the central pyramid at Chichén Itzá, one of the great Mayan centers on the Yucatán peninsula. Also known as the Temple of Kukulkan it stands 30 meters tall and 55 meters wide at the base. Built up as a series of square terraces by the pre-Columbian civilization between the 9th and 12th century, the structure can be used as a calendar and is noted for astronomical alignments.

In fact, the Mayans were accomplished astronomers and mathematicians, accurately using the cyclic motions of the stars, Sun, Moon, and planets to measure time and construct calendars.

Peering through clouds in this night skyscape, stars in the modern constellation Orion the Hunter represented a turtle in the Mayan sky.

Nicholas's Humor Corner

by Nicholas La Para



Caldwell Moore (cont'd)

(Continued from page 3)

sor he was the first Westerner to see and broadcast live the first pictures available from the Russian Luna 3 probe. He would later cover many of the Apollo missions to the moon. The Sky at Night continued uninterrupted except for one episode in 2004 when he missed a broadcast due to food poisoning. He is listed in the Guinness Book of World Records as having the longest running TV serial in history. His monocle, rapid delivery and eccentricity made him one of the most recognizable figures on the BBC.

He was elected a fellow of the Royal Astronomical Society in 1945. In 2001 he was elected an Honorary Fellow of the Royal Society, the only amateur astronomer to ever hold that position. He was also Knighted the same year. He published 40 books and did countless interviews over the years. He once quipped that he was the only man alive to have met Orville Wright the first man in flight, Yuri Gagarin the first man in space, and Neil Armstrong the first man on the moon.

To astronomers he is the author of the "Caldwell" observing list, which he monikered with his middle name. Many of us have pointed our glass, mirrors, or cameras at objects in the Caldwell list, a challenge that will continue for many future generations of amateur astronomers.

(Continued on page 9)

Partnering to Solve Saturn's Mysteries

by Diane K. Fisher

From December 2010 through mid-summer 2011, a giant storm raged in Saturn's northern hemisphere. It was clearly visible not only to NASA's Cassini spacecraft orbiting Saturn, but also astronomers here on Earth—even those watching from their back yards. The storm came as a surprise, since it was about 10 years earlier in Saturn's seasonal cycle than expected from observations of similar storms in the past. Saturn's year is about 30 Earth years. Saturn is tilted on its axis (about 27° to Earth's 23°), causing it to have seasons as Earth does.

But even more surprising than the unseasonal storm was the related event that followed.

First, a giant bubble of very warm material broke through the clouds in the region of the now-abated storm, suddenly raising the temperature of Saturn's stratosphere over 150 °F. Accompanying this enormous "burp" was a sudden increase in ethylene gas. It took Cassini's Composite Infrared Spectrometer instrument to detect it.

According to Dr. Scott Edgington, Deputy Project Scientist for Cassini, "Ethylene [C_2H_4] is normally present in only very low concentrations in Saturn's atmosphere and has been very difficult to detect. Although it is a transitional product of the thermochemical processes that normally occur in Saturn's atmosphere, the concentrations detected concurrent with the big 'burp' were 100 times what we would expect."

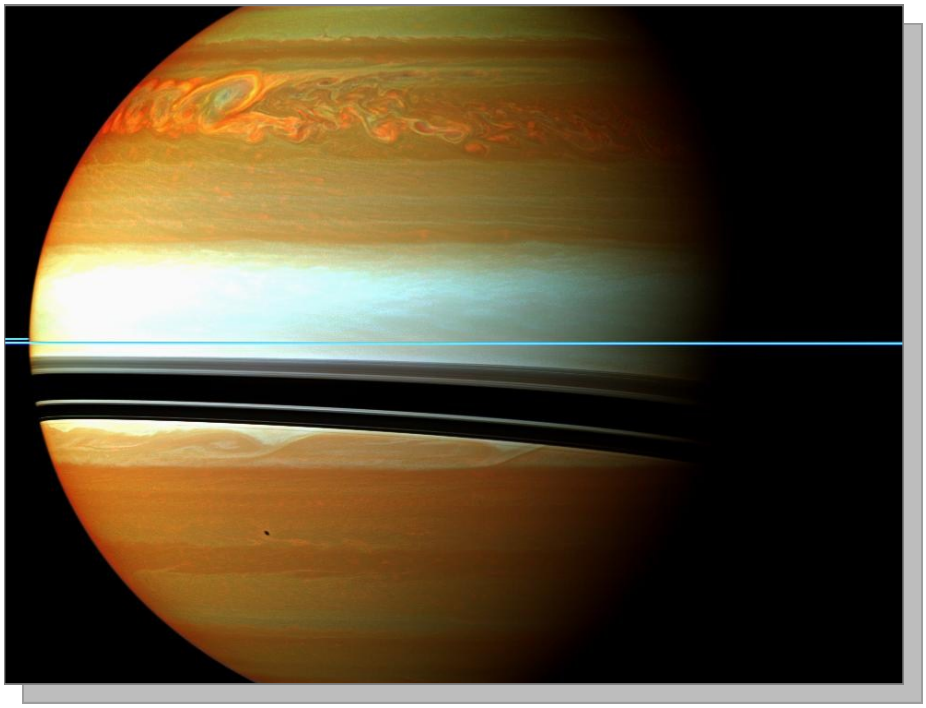
So what was going on?

Chemical reaction rates vary greatly with the energy available for the process. Saturn's seasonal changes are exaggerated due to the effect of the rings acting as venetian blinds, throwing the northern hemisphere into shade during winter. So when the Sun again reaches the northern hemisphere, the photochemical reactions that take place in the atmosphere can speed up quickly. If not for its rings, Saturn's seasons would vary as predictably as Earth's.

But there may be another cycle going on besides the seasonal one. Computer models are based on expected reaction rates for the temperatures and pressures in Saturn's atmosphere, explains Edgington. However, it is very difficult to validate those models here on Earth. Setting up a lab to replicate conditions on Saturn is not easy!

Also contributing to the apparent mystery is the fact that haze on Saturn often obscures the view of storms below. Only once in a while do storms punch through the hazes. Astronomers may

(Continued on page 9)



This false-colored Cassini image of Saturn was taken in near-infrared light on January 12, 2011. Red and orange show clouds deep in the atmosphere. Yellow and green are intermediate clouds. White and blue are high clouds and haze. The rings appear as a thin, blue horizontal line.

Saturn (cont'd)

(Continued from page 8)

have previously missed large storms, thus failing to notice any non-seasonal patterns.

As for atmospheric events that are visible to Earth-bound telescopes, Edgington is particularly grateful for non-professional astronomers. While these astronomers are free to watch a planet continuously over long periods and record their finding in photographs, Cassini and its several science instruments must be shared with other scientists. Observation time on Cassini is planned more than six months in advance, making it difficult to immediately train it on the unexpected. That's where the volunteer astronomers come in, keeping a continuous watch on the changes taking place on Saturn. Edgington says, "Astronomy is one of those fields of study where amateurs can contribute as much as professionals."

Go to http://saturn.jpl.nasa.gov/ to read about the latest Cassini discoveries. For kids, The space Place has lots of ways to explore Saturn at http://spaceplace.nasa.gov/search/cassini/.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Caldwell Moore (cont'd)

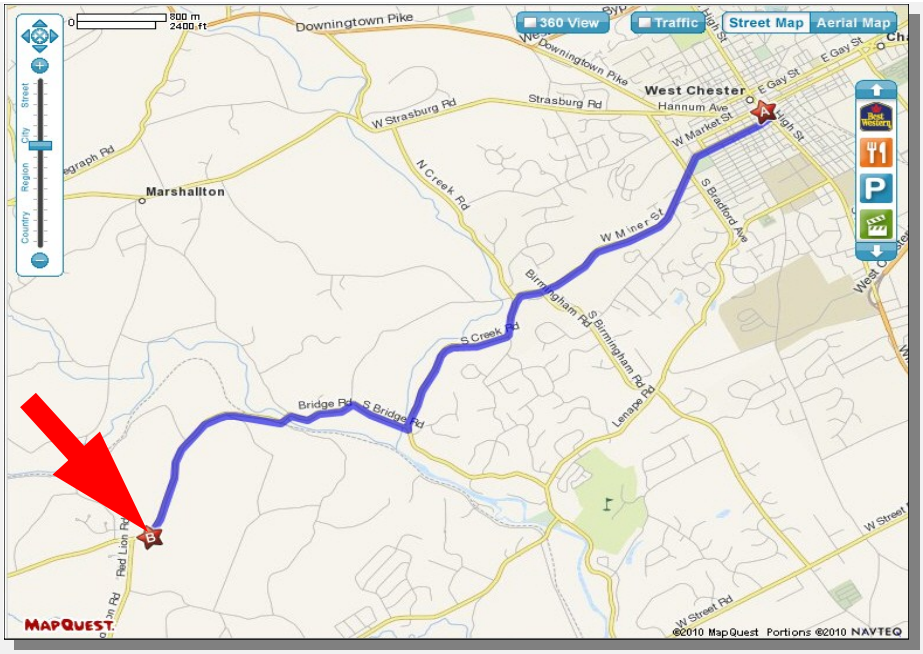
(Continued from page 7)

He now takes his place among the Titans like Garrett P. Serviss, Carl Sagan, and Jack Horkheimer who used whatever media they had available to promote our passion to the public. Fortunately a new generation is ready to continue that mission, such as Neil Tyson, Brian Cox, and Alex Philippenko. But there was only one Sir Patrick Moore, and our community was lucky to have him with us as long as we did. Rest in peace, Sir Patrick. Jolly well done!

Sources:

- BBC News at www.bbc.co.uk/news/uk-10525469
- Wikipedia
- 80 Not Out – the Autobiography, 2003, by Sir Patrick Moore

CCAS Directions



Brandywine Valley Association
1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090
http://brandywinewatershed.org/

BVA 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 Valley Association

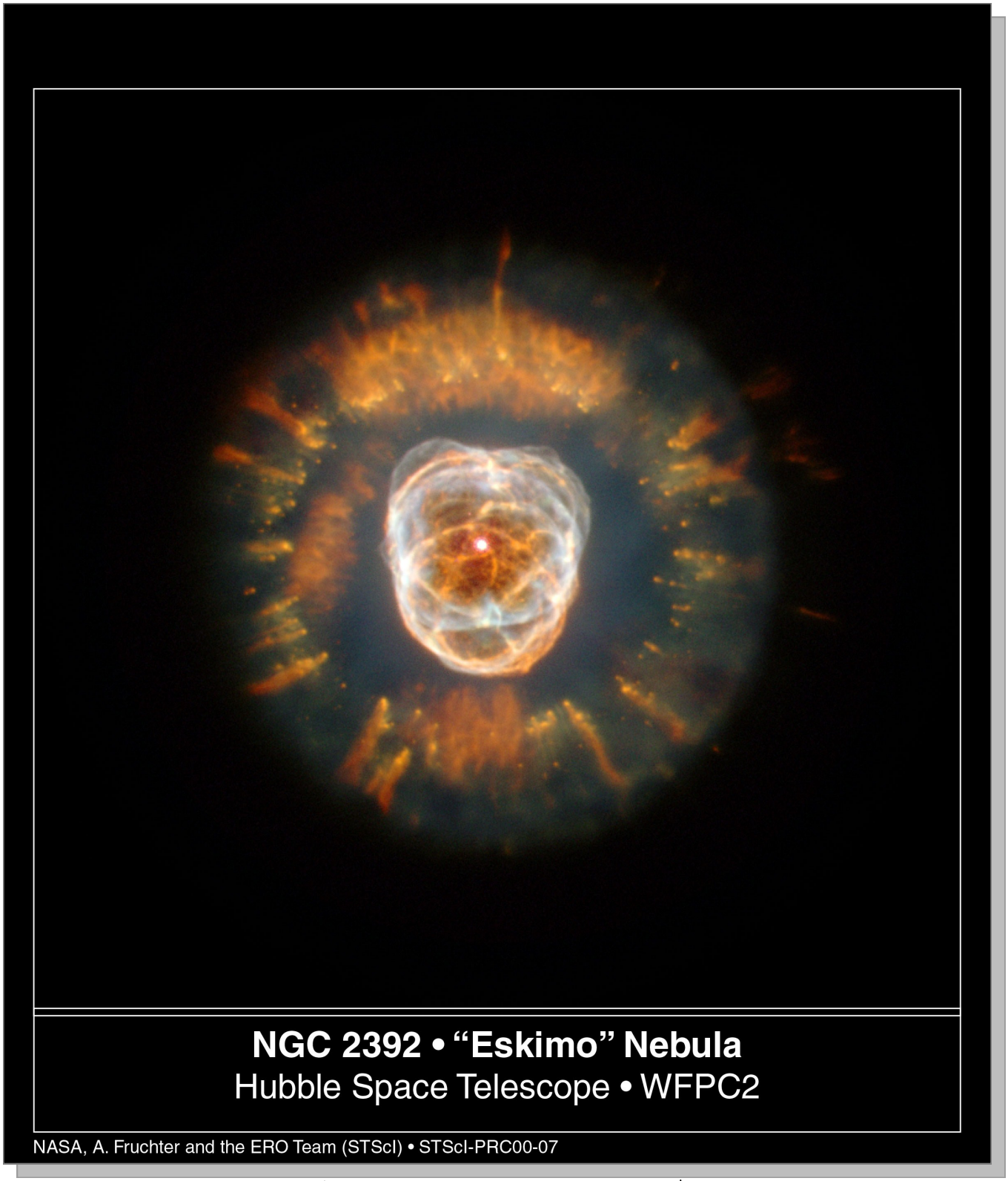
The monthly observing sessions (held February through November) are held at the Myrick Conservation Center of the Brandywine Valley Association.

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).

Through the Eyepiece: The Eskimo Nebula, NGC 2392

by Don Knabb, CCAS Treasurer & Observing Chair



Now that we are into the really cold observing time of the year, I thought I'd write an article about the Eskimo Nebula, since the Eskimos set the standard for dealing with cold conditions. The Eskimo Nebula, NGC 2392, is also called the Clown Face

(Continued on page 11)

Eyepiece (Cont'd)

Star map courtesy of Stellarium.org

(Continued from page 10)

Nebula.

Astronomer William Herschel discovered the Eskimo Nebula in 1787. Herschel described it as "A star 9th magnitude with a pretty bright middle, nebulosity equally dispersed all around. A very remarkable phenomenon."

From ground based telescopes the nebula resembles a person's head surrounded by a furry parka hood. In 2000, the Hubble Space Telescope provided the image above. The gas clouds of the nebula are so complex they are not fully understood.

The Eskimo Nebula is clearly a planetary nebula, and the gas seen above composed the outer layers of a sun-like star only 10,000 years ago. The inner filaments visible above are being ejected by a strong wind of particles from the central star. The outer disk contains unusual light-year long orange filaments.

NGC 2392 is included in the Astronomical League Herschel 400 observing program. It lies about 3000 light-years away and is visible with a small telescope in the constellation of Gemini. The chart below is from Stellarium planetarium software.

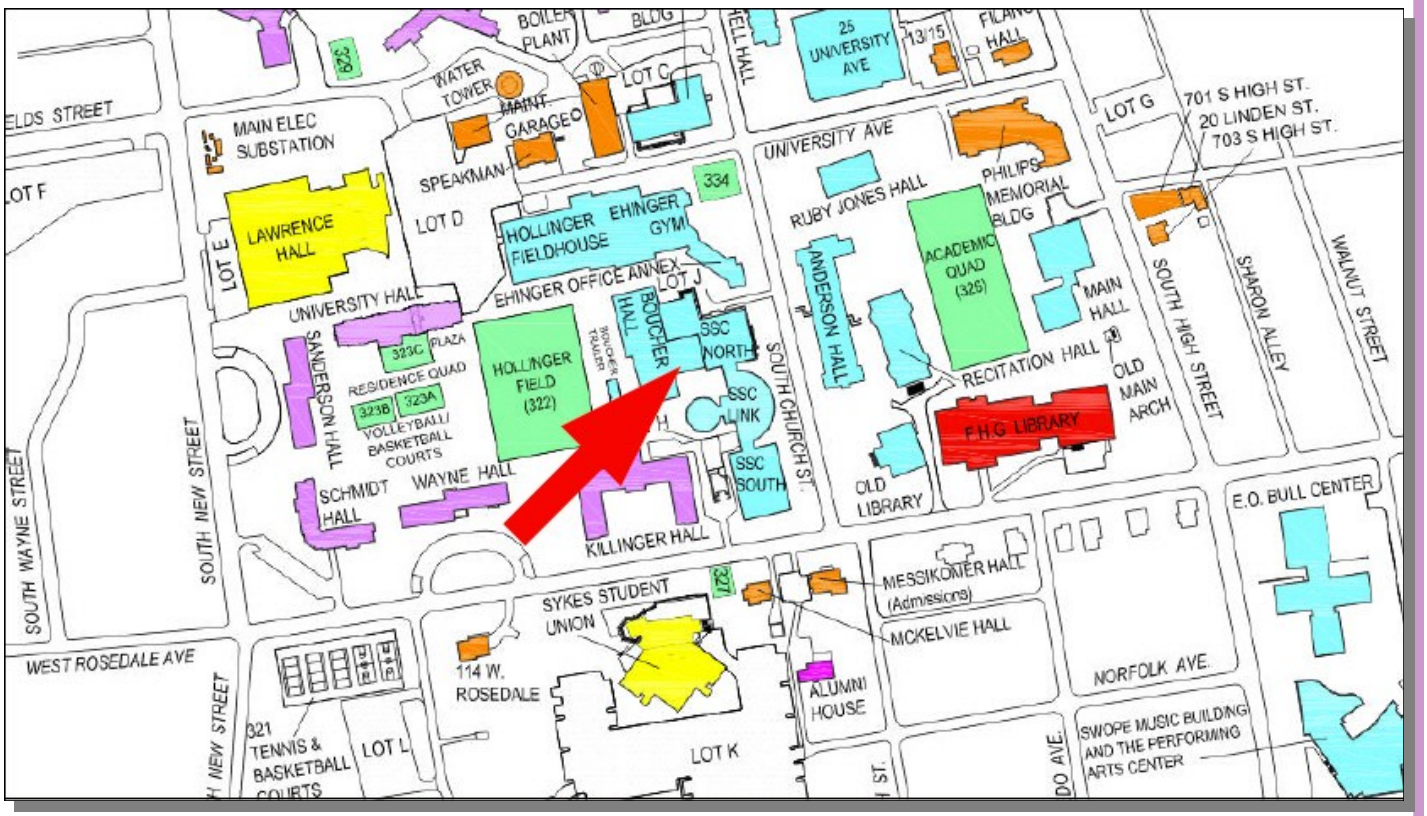
Andromeda is high in the sky

(Continued on page 12)

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 113 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).



Eyepiece (Cont'd)

(Continued from page 11)

during the early evening hours of January, so I am looking forward to seeking out this distant fuzz ball in the sky. Of course, I will be bundled up like an Eskimo when I look to the stars!

Information sources:

- http://www.nasa.gov/multimedia/imagegallery/image_feature_762.html
- http://archives.cnn.com/2000/TECH/space/01/24/hubble.awakes/
- http://en.wikipedia.org/wiki/Eskimo_Nebula

CCAS Membership Information and Society Financials

Treasurer's Report

by Don Knabb

Dec 2012 Financial Summary

Beginning Balance	$1,642
Deposits	$0
Disbursements	$33
Ending Balance	$1,609

New Member Welcome!

Welcome new CCAS member Anthony DiGregorio of 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.

CCAS Information Directory

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

Note that our CCAS Webmaster John Hepler has a link to the IDA home page set up on our Society's home page at **http://www.ccas.us**.

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"!

CCAS Event Information

We've set up a special phone number you can dial to find out if our monthly observing session and other scheduled events will be held or postponed. Call **610-436-0829** after 5 PM ET to hear a recording to find out the latest news.

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!

Starry Night Lights

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

★ ★ ★ ★ ★

Green Earth Lighting
Formerly
Outdoor Lighting Associates

Green Earth Lighting is a dedicated lifetime corporate member of the International Dark-Sky Association. GEL's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

Green Earth Lighting LLC
620 Onion Creek Ranch Rd
Driftwood, Texas 78619

Phone: **512-944-7354**

http://www.greenearthlighting.com

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our organization. This information is provided as a service to our members and the public only.

Skies UNLIMITED

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

★ ★ ★ ★ ★

Spectrum Scientifics
Quality Science Products for All Ages

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
2115 Lazor St.
Apt. 227
Indiana, PA 15701

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 (724) 801-8789 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 724-349-5981
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 & Tele*scope Magazine Group Rates

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

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

To **renew** your "club subscription" contact Sky Publishing directly. Their phone number and address are in the magazine and on their renewal reminders. If you have **any** questions call Don first at 610-436-5702.

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