Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 20, No. 3 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ¤ 2006 & 2009* *March 2012*

In This Issue

Membership Renewals Due

03/2012	End LaFrance
04/2012	Baker Imburgia Popovich Swearingen
05/2012	Fletcher Long Znamensky

Waxing Gibbous Moon, by Don Knabb

Important March 2012 Dates

8th • Full Moon, 4:39 p.m.

11th • Daylight Savings Time starts at 2:00 a.m.

14th • Last Quarter Moon, 9:25 p.m.

22nd • New Moon, 10:37 a.m.

30th • First Quarter Moon, 3:41 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 24, 2012** - Night Out at Hoopes Park, West Chester. The free public event is co-hosted with the West Chester Recreation Department. The observing session starts at sunset.

¤ **Saturday, April 21, 2012** - CCAS Special Observing Session, Anson Nixon Park, Kennett Square. The observing session starts at sunset.

Winter / Spring 2012 Society Events

March 2012

7th • PA Outdoor Lighting Council monthly meeting, Bucktown Branch of National Penn Bank, 1111 Ridge Rd, (Rt. 23 just west of Rt. 100) in South Coventry Township, PA, starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the PA Outdoor Lighting Council website.

13th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. Meet & Greet over coffee and refreshments for members and non-members alike from 7:00 p. m. to 7:30 p.m. The meeting starts immediately after at 7:30 p.m. CCAS Member Speaker: Dennis O'Leary, "NASA's Discovery Missions: Recent Solar System Revelations—Part One."

20th • West Chester University Planetarium Show, "The Evening Star," in the Schmucker Science Building. The show starts at 7 p.m. and runs approximately one hour. For more information and reservations, visit the planetarium's webpage.

20th • Open call for articles and photographs for the April 2012 edition of Observations.

24th • CCAS Monthly Observing Session, Hoopes Park, West Chester. The observing session starts at sunset.

26th • Deadline for newsletter submissions for the April 2012 edition of *Observations*.

April 2012

4th • PA Outdoor Lighting Council monthly meeting, Bucktown Branch of National Penn Bank, 1111 Ridge Rd, (Rt. 23 just west of Rt. 100) in South Coventry Township, PA, starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the PA Outdoor Lighting Council website.

10th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. Meet & Greet over coffee and refreshments for members and non-members alike from 7:00 p. m. to 7:30 p.m. The meeting starts immediately after at 7:30 p.m. CCAS Member Speaker: Dennis O'Leary, "NASA's Discovery Missions: Recent Solar System Revelations—Part Two."

20th • West Chester University Planetarium Show, "The Angry Red Planet," in the Schmucker Science Building. The show starts at 7 p.m. and runs approximately one hour. For more information and reservations, visit the planetarium's webpage.

20th • Open call for articles and photographs for the May 2012 edition of Observations.

21st • CCAS Special Observing Session, Anson Nixon Park, Kennett Square. The observing session starts at sunset..

26th • Deadline for newsletter submissions for the May 2012 edition of *Observations*.

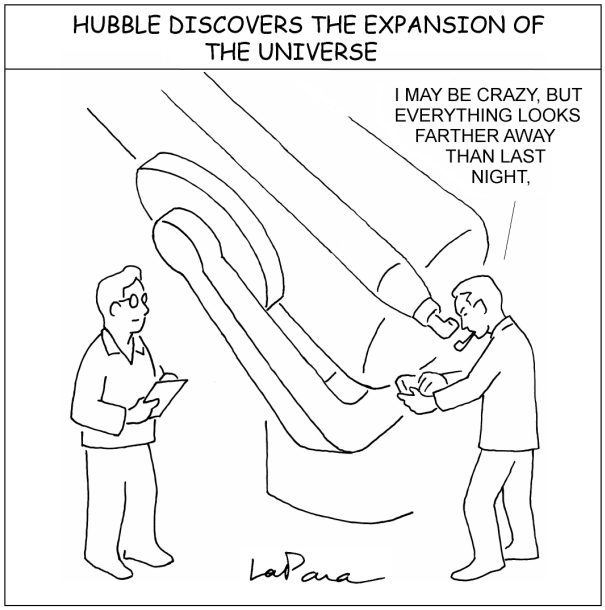
Minutes from the February 14, 2012 CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- There were 15 people in attendance.
- President Roger Taylor welcomed new member Carmen DiGiovanni to CCAS.
- Don Knabb then presented a "tour" of Stellarium and gave a practical review of the software's functions. Don then went over highlights for February using the software, especially a close alignment of Jupiter, Venus, and the Moon at the end of the month. He is considering doing this as a monthly feature of our CCAS meetings to give the group advanced information about observing highlights.
- Next on the program was "Movie Night" presenting the IMAX Hubble film narrated by Leo DiCaprio. Fresh popcorn was provided by Don and Barb. The movie was followed by group discussion about future space telescope missions.
- Congratulations were given to Roger Taylor for becoming "Pop Pop" with the recent birth of his grandson Corwin. Perhaps a future member of CCAS!!

Nicholas's Humor Corner

by Nicholas La Para



CCAS T-Shirts, Long Sleeve T-Shirts, & Sweatshirts

by Kathy Buczynski, CCAS Education Chair

We are taking orders for Ts, long sleeve Ts and Sweatshirts with the CCAS Logo on the front. The Ts are navy blue and are a 80/20 cotton/poly blend.

The sweatshirts (pictured at right), are also navy blue, and are a 80% cotton/20% polyester heavyweight fleece (8.2-oz.). The sweatshirts feature:

- 100% polyester micro-Sherpa lining in body and 3-piece hood (6.7-oz.)
- nylon sleeve lining
- antique zipper with durable pull
- rib-knit sleeve cuffs and bottom
- pouch pocket

All three styles will have the CCAS logo (pictured at right) printed in white on the navy fabric.

Prices are:

T-Shirts: $7.50
Long-Sleeve T-Shirt: $9.50
Sherpa Sweatshirt: $35.00

Kathy Buczynski is coordinating orders. Please place your order by Friday, March 24 and make your check or money order payable to CCAS and send to:

Kathy Buczynski
106 Afton Way
West Chester, PA

Please include type of garment (s) and size(s).

Great for those cold nights under the stars!

CCAS Logo on Front of all 3 Shirts

The Mercury Thirteen

by Roger Taylor, CCAS President

After all the Hoopla and hype commemorating the 50th anniversary of manned space flight this past month, I thought I might bring this little counterpoint to you.

I was looking through some resources to find information on the NASA astronaut program when I came across a little article on National Public Radio about the *Mercury Thirteen*. I knew about the men of the Mercury 7 team which included among others, John Glen. I was quite surprised to find out who the *Mercury Thirteen* were.

It seems that in 1961 and 1962, there was a top secret program to train women astronauts! This was before John Glen made his first orbital flight and before men walked on the Moon. The FLAT program had chosen 25 expert women pilots to be

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This Month's Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our meeting this month is on March 13, 2012, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Our speaker this month is CCAS member Dennis O'Leary, who will present "NASA's Discovery Missions - recent Solar System Revelations - Part One."

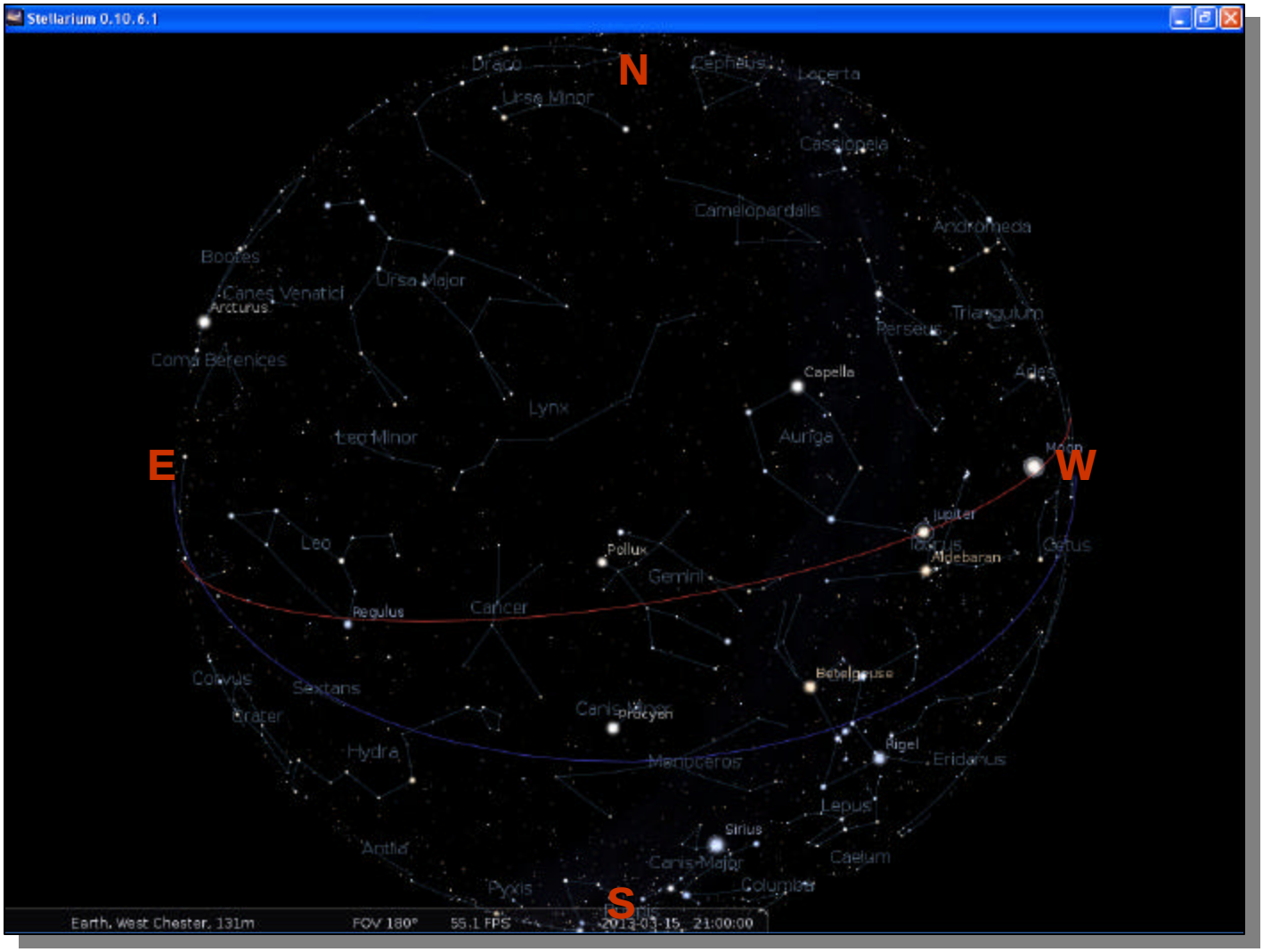
Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a change, CCAS members will be notified via e-mail with as much advance notice as possible.

We are looking for presenters for our meetings in May and June of this year. If you are interested in presenting at either of these meetings, or even during our upcoming autumn sessions, please contact me at programs@ccas.us.

The Sky Over Chester County

March 15, 2012 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
03/01/2012	6:06 a.m. EST	6:33 a.m. EST	5:53 p.m. EST	6:20 p.m. EST	11h 19m 49s
03/15/2012	6:44 a.m. EDT	7:11 a.m. EDT	7:08 p.m. EDT	7:35 p.m. EDT	11h 56m 35s
03/31/2012	6:18 a.m. EDT	6:46 a.m. EDT	7:24 p.m. EDT	7:52 p.m. EDT	12h 38m 49s

Moon Phases					
First Quarter	03/30/2012	3:41 p.m. EDT	Last Quarter	03/14/2012	9:25 p.m. EDT
Full Moon	03/08/2012	4:39 p.m. EST	New Moon	03/22/2012	10:37 a.m. EDT

March 2012 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

March 1 – 10	Mercury is in good position for viewing a half hour after sunset
March 3	Mars is at opposition tonight and is visible all night
March 8	Full Moon, 4:39 a.m.
March 10 – 24	Look for the zodiacal light in the western sky in early evening
March 11	Daylight-Saving Time begins at 2 a.m.
March 12 – 13	Venus and Jupiter pass each other just 3 degrees apart
March 14	Last Quarter Moon, 9:25 p.m.
March 20	Spring begins at the equinox at 1:14 a.m.
March 22	New Moon, 10:37 a.m.
March 25	The Moon is near Jupiter
March 26	The Moon is near Venus and the Pleiades
March 27	The Moon is to the right of Aldebaran and the Hyades
March 30	First-quarter Moon, 3:41 p.m.

The best sights this month: Planets, planets, planets! We have a stellar collection (is that right?) of planetary delights to gaze upon during March.

About a week before and after March 13th look into the area of the sky where the Sun set earlier in the evening and you will see two bright "stars" close together in the sky perhaps a third of the way up from the horizon to the zenith. Those are not stars! They are the planets Jupiter and Venus, with the brighter one being Venus.

At the end of March we can see the crescent Moon flying close in the sky to both these bright planets. On March 25th the Moon is very close to Jupiter and on March 26th the Moon and Venus are very close. That is also the night when Venus is at its highest place in the sky for this year.
On the other side of the sky is another wonderful show; the Red Planet Mars! In early March, Mars is at its closest approach to Earth and shining at its brightest. It is nearly as bright as Sirius, the brightest star in the entire night sky that is shining brightly in the south to the lower left of Orion.

Mercury: A few days surrounding March 4th is the best time to observe this elusive planet closest to the Sun. On the 4th Mercury is approximately 18 degrees above the Sun and does not set until the sky is dark. Look to the west a little after 6:00 p.m. and follow the line from Jupiter through Venus to find Mercury.

Venus: As mentioned in the best sights to see this month, Venus and Jupiter are very close on March 13th and a few days before and after that day. From that day on Jupiter sinks into the west but Venus continues to climb higher into the night sky, reaching a maximum of 46 degrees east of the Sun on the 13th.

Mars: Mars is at opposition on March 3rd, so it rises in the east as the Sun sets in the west. The red planet is easy to find in the east an hour or two after sunset due to its distinctive reddish color. Mars is best observed with a telescope near midnight when it is high in the sky.

Jupiter: Jupiter continues to fall lower into the sky with each passing day as we pull away from this gas giant in our race around the Sun. Take a look through a telescope as soon as it becomes dark to have the best view of the king of the planets.

Saturn: By the end of March Saturn is rising only an hour after sunset. You can use the bright star Spica as a guide to finding the ringed beauty rising in the east.

Uranus and Neptune: Both gas giants are too close to the Sun to observe during March.

The Moon: The Moon is full this month on March 8th. This is the Full Worm Moon according to Native Americans. As the temperature begins to warm and the ground begins to thaw, earthworm casts ap-

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Thirteen (Cont'd)

(Continued from page 3)

trained as Astronauts. These amazing women went through the same training program as their male counterparts. These grueling tests subjected the subjects to extremes of heat and cold, deprivation and endurance. After the program was finished thirteen women remained. They became known as the Mercury 13.

Interesting enough, some of the women outperformed the men, particularly in the areas of disorientation recovery and pain tolerance. On completion of their qualification these thirteen women were then told to go home and put their affairs in order and to report for training at Naval Aviation Training Center in Pensacola Florida.. While they were at home they received a telegram telling them that the program had been cancelled and thanked the women for their service.

That, as they say, was that.

When Dr. Randy Lovelace, director of astronaut training, sent these Fellow Lady Astronaut Trainees, or FLATs that fateful message, he paved the way for Russian cosmonaut Valentina Tereshkova to became the first woman in space. The Soviet Union was able to take the honor of sending the first.

It was not until the Freedom of Information act allowed documents to be declassified, that it was discovered that then President of the United States Lyndon Johnson had signed the order that no women were to be allowed to become astronauts. Apparently, there had been some resistance from the male astronauts, and the "good old boy" culture set the cause of U.S. women in space back twenty years. Also uncovered were records showing that there was a secret congressional testimony to the House Committee on Science and Astronautics on the subject of re-instating the women in the space program, but that too led to an unfavor-

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Jerrie Cobb poses next to a Mercury spaceship capsule. Although she never flew in space, Cobb, along with 24 other women, underwent physical tests similar to those taken by the Mercury astronauts with the belief that she might become an astronaut trainee. Jerrie Cobb passed all the training exercises, and ranked in the top 2% of all astronaut candidates, male or female.

Thirteen (Cont'd)

(Continued from page 6)

able decision.

It was not until 1983 when astrophysicist Sally Ride became the first American women into space, that that prohibition was lifted. Ride served as a mission specialist or the seventh space shuttle mission.

It took thirty five years for the first woman to pilot and command a spacecraft mission. This achievement happened July 26 2005 and belonged to Eileen Collins. She was the first to pilot the space shuttle after the Columbia accident. Since Sally Ride's first flight, just over fifty women have been in space. It is interesting that those outmoded attitudes could still be with us this late in our history. It is now commonplace for almost every Shuttle mission to contain women crewmembers. We have come a long way. Sometimes when we think that things do not change, we get this reminder that we do have the capacity to grow and change.

It is with sadness that I think about those twenty five women who tried, and the thirteen who succeeded, who had their dreams taken from them. Taken from them on a whim. I wonder about the stories they tell their grandchildren. Do they say that grandma was nearly an Astronaut, or do they not say nothing at all?

[Ed. Note: This article first appeared in the February 2010 edition of Observations.]

Curiosity, the Stunt Double

by Dr. Tony Phillips, NASA Science News

With a pair of bug-eyes swiveling on a stalk nearly 8 feet off the ground, the 6-wheeled, 1800-lb Mars rover Curiosity doesn't *look* much like a human being. Yet, right now, the mini-Cooper-sized rover is playing the role of stunt double for NASA astronauts.

"Curiosity is riding to Mars in the belly of a spacecraft, where an astronaut would be," explains Don Hassler of the Southwest Research Institute in Boulder, Colorado. "This means the rover experiences deep-space radiation storms in the same way that a real astronaut would."

Indeed, on Jan. 27th, 2012, Curiosity's spacecraft was hit by the most intense solar radiation storm since 2005. The event began when sunspot AR1402 produced an X2-class solar flare. (On the "Richter Scale of Solar Flares," X-flares are the most powerful kind.) The explosion accelerated a fusillade of protons and electrons to nearly light speed; these subatomic bullets were guided by the sun's magnetic field almost directly toward Curiosity.

When the particles hit the outer walls of the spacecraft, they shattered other atoms and molecules in their path, producing a secondary spray of radiation that Curiosity both absorbed and measured.

"Curiosity was in no danger," says Hassler. "In fact, we intended all along for the rover to experience these storms en route to Mars."

Unlike previous Mars rovers, Curiosity is equipped with a Radiation Assessment Detector. The instrument, nicknamed "RAD," counts cosmic rays, neutrons, protons and other particles over a wide range of biologically-interesting energies. RAD's prime mission is to investigate the radiation environment on the surface of Mars, but researchers have turned it on early so that it can also probe the radiation environment *on the way* to Mars as well.

Even when the sun is quiet, Curiosity is bombarded by a slow drizzle of cosmic rays—high-energy particles accelerated by distant black holes and supernova explosions. In the aftermath of the Jan. 27th X-flare, RAD detected a surge of particles several times more numerous than the usual cosmic ray counts. Hassler's team is still analyzing the data to understand what it is telling them about the response of the spacecraft to the storm.

As of February 2012, "we still have 6 months to go before we reach Mars. That's plenty of time for more solar storms."

A stunt double's work is never done.

Through the Eyepiece: The Horsehead Nebula, Barnard 33

by Don Knabb, CCAS Treasurer & Observing Chair

Horsehead Nebula
Image credit: Dave Hockenberry

If you page through any collection of photographs of deep sky objects you will certainly find the Horsehead Nebula included. Only by chance does the dark nebula resemble the head of a horse - but its coincidental appearance has led to its becoming one of the most photographed objects in the sky. Just as we stare at the clouds on a summer day and see dragons, cats, telescopes and all sorts of shapes we like to find familiar shapes in the night sky.

The Horsehead Nebula is a challenging telescopic object. One needs a reasonably large telescope and dark, clear skies to see this nebula. Long exposure photographs however bring the Horsehead Nebula into easy view, as in the photograph above by CCAS Program Chair Dave Hockenberry.

Although William Henry Pickering was officially credited

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Through the Eyepiece (cont'd)

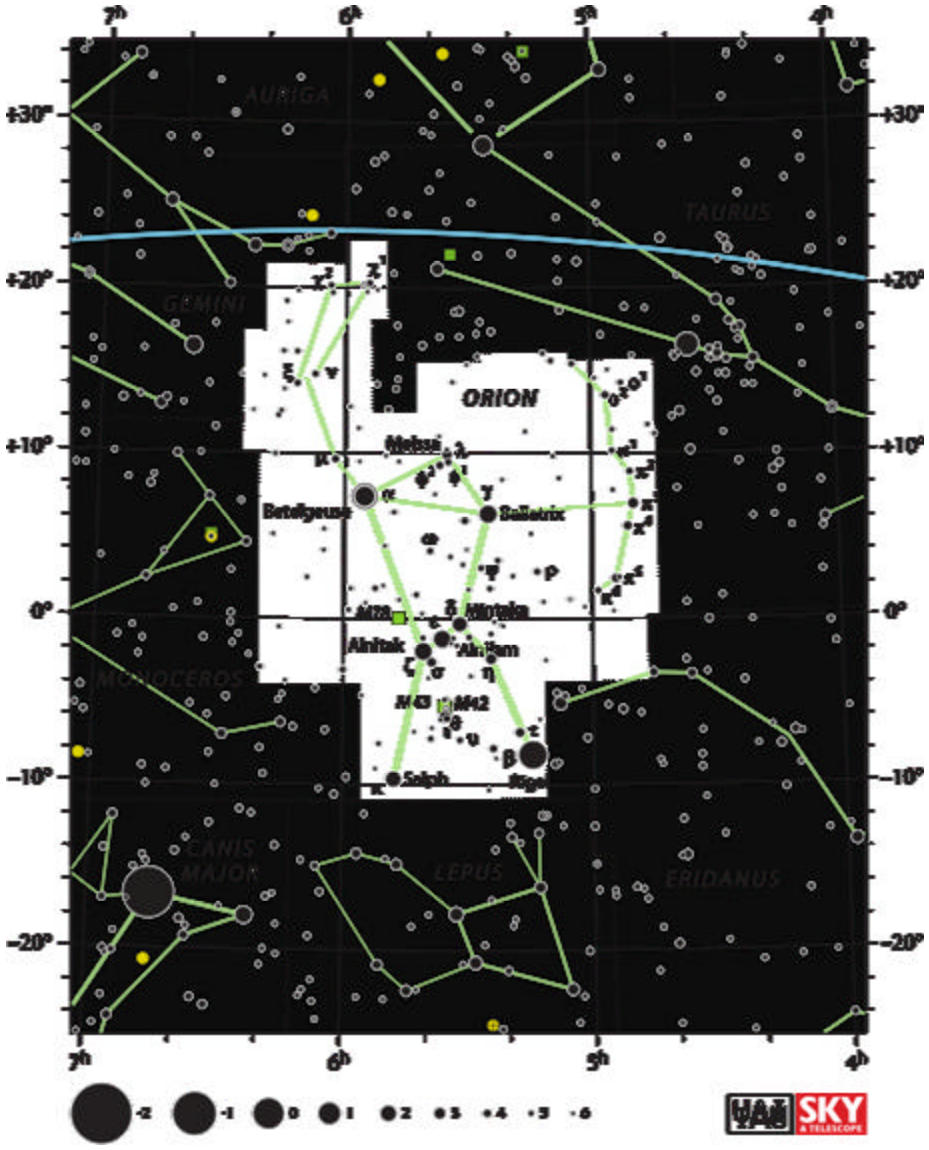
with its discovery in 1889, the Horsehead Nebula was first recorded on a photographic plate taken by Williamina Paton Fleming at the Harvard College Observatory in 1888. The first published description of the Horsehead Nebula was given by E. E. Barnard in 1913, and it was first cataloged by him as Barnard 33 in 1919.

The pink/red glow originates from hydrogen gas predominantly behind the nebula, ionized by the nearby bright star Sigma Orionis. The darkness of the Horsehead is caused mostly by thick dust. Streams of gas leaving the nebula are funneled by a strong magnetic field. Bright spots in the Horsehead Nebula's base are young stars just in the process of forming.

But the Horsehead Nebula is slowly vanishing. The same stars that cause the pink cloud to glow are eroding the dark cloud that forms the nebula. Within a few thousand years, it'll disappear entirely.

Look for the Horsehead in the south just after the sky is fully dark. The nebula is located just to the south of the star Alnitak, which is farthest east (left) on Orion's Belt, and is part of the much larger Orion Molecular Cloud Complex.

Here's the technical information on Dave's fantastic image: Shot 1/31/12 and 2/9/12 with QSI 583 wsg camera through Astro-



Star chart credit: http://en.wikipedia.org/wiki/Horsehead_Nebula

tech AT8RC telescope at 1625 mm FL, on AP 1200 mount. Autoguided off-axis with SX Lodestar camera and Maxim DL. Image capture with Maxim DL. Calibrated, deconvolved, stacked, DDP adjustment and RGB creation in CCDStack. L-RGB merge and further adjustments in Photoshop and Noise Ninja. 160 minutes Luminance (16 X 10-minute exposures), 45minutes each RGB (9 X 5-minute exposures). FITS Liberator courtesey of ESA.

Information credits:
Sky Safari Pro Mac app
http://www.absoluteastronomy.com/topics/Horsehead_Nebula
http://stardate.org/radio/program/horsehead-nebula
http://apod.nasa.gov/apod/ap100513.html

The Hidden Power of Sea Salt, Revealed

by Dauna Coulter

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle. "We're finding that Aquarius can monitor even small scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

NASA Space Place

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better under-

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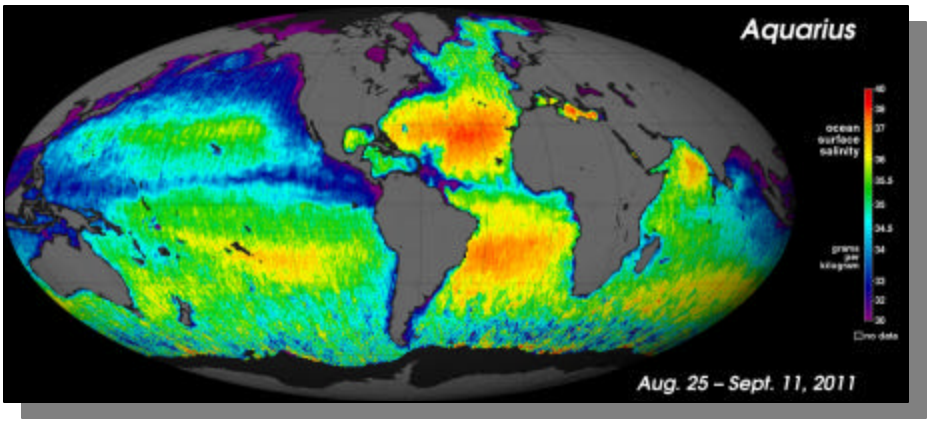

Aquarius produced this map of global ocean salinity. It is a composite of the first two and a half weeks of data. Yellow and red represent areas of higher salinity, with blues and purples indicating areas of lower salinity.

Space Place (Cont'd)

(Continued from page 10)

standing of the seasonal cycles that determine climate."
Stay tuned for the salty results.

Read more about the Aquarius mission at aquarius.nasa.gov.

Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground. All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at spaceplace.nasa.gov/ocean-currents.

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

Observing (Cont'd)

(Continued from page 5)

pear (an earthworm cast is a nice word for worm poop), heralding the return of the robins. This full moon is also called the Full Crow Moon, the Full Crust Moon and the Full Sap Moon.

Constellations: Early in the evening the "big guy" Orion dominates the sky in the southwest, with bright Capella in Auriga nearly overhead. Leo the Lion is in the southeast and as the night progresses you can see some spring constellations rising such as Boötes, Corona Borealis and Hercules.

Messier/deep sky: Take a few more gazes at the Orion Nebula before it settles into the west as spring marches on. The Big Dipper is high in the sky so take this opportunity to look for galaxies M81 and M82. With a low power eyepiece in your telescope they might be in the same field of view depending on your

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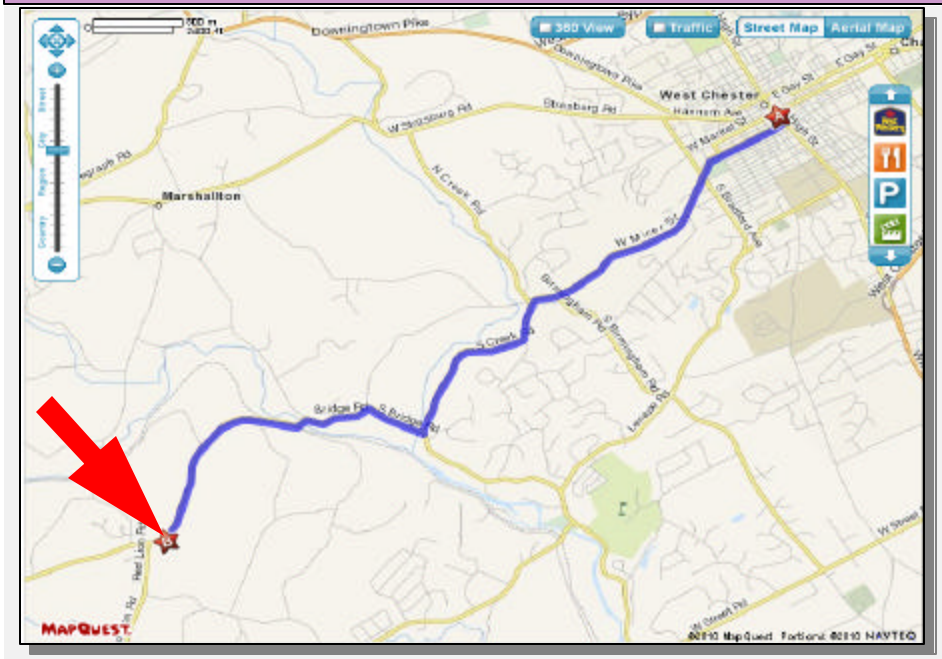
CCAS Directions



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 year-round) are held at the Myrick Conservation Center of the Brandywine Valley Association.

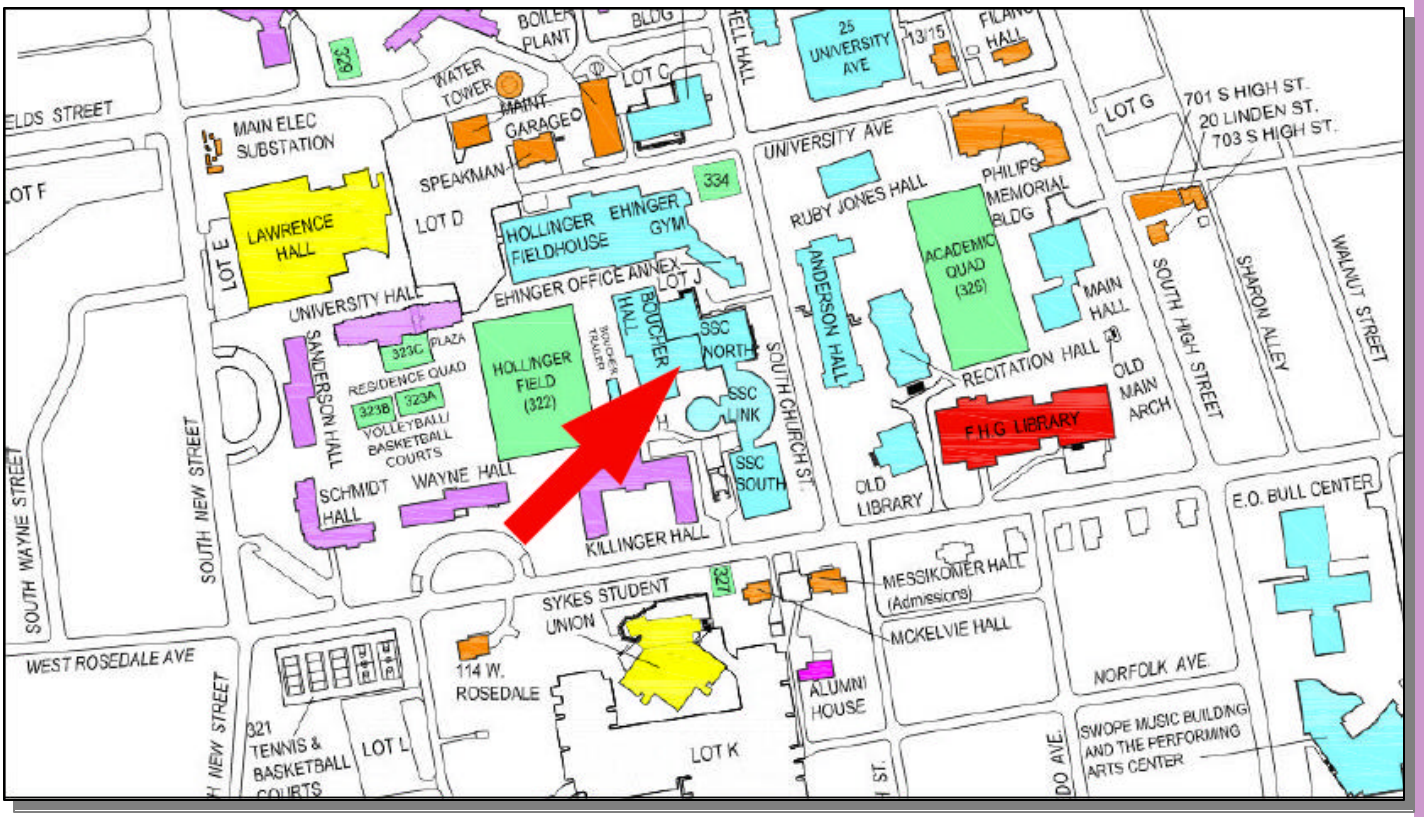
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route 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).

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).



Observing (Cont'd)

(Continued from page 11)

equipment. For more of a challenge, look for the 10th magnitude galaxies M65 and M66 in Leo.

Comets: Comet C/2009 P1 (Garradd) should be shining at magnitude 6 or 7 during March as it travels through the constellation Hercules. The sky chart in Sky and Telescope is now out of date, but keep an eye on that website for an updated chart.

Meteor showers: There are no major meteor showers during March.

CCAS Membership Information and Society Financials

Treasurer's Report

by Don Knabb

Feb 2012 Financial Summary

Beginning Balance	$1,583
Deposits	$50
Disbursements	$320
Ending Balance	$1,313

New Member Welcome!

Welcome new CCAS members David Macaleer, from Glenmoore, Connor McMahon from West Chester, and Carmen DiGiovanni from Paoli, 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.

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

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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

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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.

Astronomy Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$34.00** which is much less than the individual subscription price of $42.95 (or $60.00 for two years). If you want to participate in this special Society discount offer, **contact our Treasurer Don Knabb.**