Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 20, No. 2 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ¤ 2006 & 2009* *February 2012*

In This Issue

Membership Renewals Due

02/2012	Kalinowski & Family La Para
03/2012	End LaFrance
04/2012	Baker Imburgia Popovich Swearingen

NGC 7023, the iris Nebula

By Dave Hockenberry. Shot 8/23/11 with QSI 583 wsg camera through AstroTech AT8RC telescope at 1625mm focal length, on an AP 1200 GEM mount. Autoguided with SX Lodestar camera off-axis and Maxim DL. Image acquisition with Maxim DL. Calibrated, hot pixel removal, stacked, RGB creation, deconvolution, and DDP adjustments in CCDStack. L-RGB merge and final adjustments with Photoshop CS3 and Noise Ninja. Luminance was 10 frames of 10 minute exposures, RGB was 4 frames 5 minutes each through AstroDon filters. FITS Liberator courtesy of ESA.

Important February 2012 Dates

7th • Full Moon, 4:54 p.m.

14th • Last Quarter Moon, 12:04 p.m.

21st • New Moon, 5:35 p.m.

29th • First Quarter Moon, 8:21 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.

¤ **Friday, February 24, 2012** - CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date Saturday, February 25th).

¤ **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.

Winter 2012 Society Events

February 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.

14th • 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. Program: A Spectacular Movie is promised — refreshments & popcorn served!

17th • West Chester University Planetarium Show, "Closest to the Sun," 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 February 2012 edition of Observations.

24th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date February 25th). The observing session starts at sunset.

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

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*.

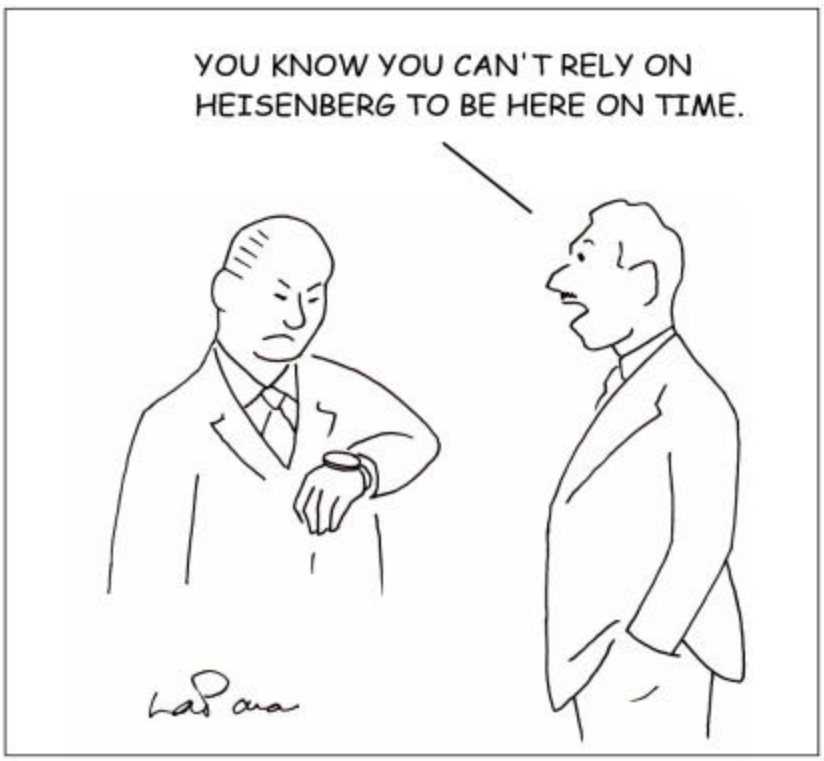
Minutes from the January 10, 2012 CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- The Chester County Astronomical Society convened January 10, 2012 with 21 people in attendance.
- The Executive Committee had recommended a change in our meeting format to open with a social gathering at 7:00 PM. New members and guests were invited to fellowship with our regular club members. Excellent food and refreshments were provided by several CCAS members.
- President Roger Taylor called our meeting to order with greetings and introductions to our new members.
- New member packets designed by Roy Kalinowski and Don Knabb were distributed.
- The officers of the Society were identified for the newcomers.
- Our guest speaker and CCAS member Gaston Baudat presented our January presentation, "Astrophotography and Autoguiding." The lecture presented the new On-Axis Guiding System his company InovationForesight has invented, produced and is currently marketing. Gaston's On-Axis guiding system (ONAG) is listed in Sky & Telescope Magazine as a "Hot Product 2012."

Nicholas's Humor Corner

by Nicholas La Para



This Month's Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our meeting this month is on January 10, 2012, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. We're showing a surprise movie that we know everyone will enjoy. Refreshments and popcorn will be available.

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 Von Kármán Lecture Series at JPL

by John Hepler, CCAS Webmaster & Newsletter Editor

I found a really interesting lecture series last month while searching for information to post on our website. Some of you are probably very familiar with the lecture program, but for me it was a nice surprise.

The Theodore von Kármán Lecture Series, named after JPL's founder, and presented by JPL's Office of Communication and Education, brings the excitement of the space program's missions, instruments and other technologies to both JPL employees and the local community. Lectures take place twice per month, on consecutive Thursdays and Fridays. The Thursday lectures take place in JPL's Theodore von Kármán Auditorium, and Friday lectures take place at Pasadena City College's Vosloh Forum. Both start at 7:00 PM.

So you're probably thinking, "I can't make it out to Pasadena in the middle of winter!" Ahh, but you don't have to! The Thursday evening lectures are webcast online (and then archived on the website for later viewing). So you get the best of both worlds: an exciting lecture series without having to leave your home!

The next lecture is scheduled for February 16 & 17, 2012. Entitled "Climate Sciences and the Climate Center of JPL." According to the von Kármán lecture Series website, the topic is, "Understanding the far-reaching effects of climate change and how to adapt to these effects is one of the great challenges facing society today."

Visit the office website at http://www.jpl.nasa.gov/events/lectures.cfm for more information and upcoming lecture descriptions.

Book Review: Astronomy with an Opera Glass

by Dave Hockenberry

The year 1888 saw an explosion of popular interest magazines and books in the United States. Among them was a curious small book, "Astronomy with an Opera Glass" by Garrett P. Serviss. Serviss was an author and regular contributor to the New York Sun. He majored in general science at Cornell and took a law degree at Columbia, but he never really practiced either. His true loves were astronomy and journalism, and he became well known to the American public through the NY Sun as a writer with a knack for explaining scientific details. This ultimately led him to be invited by Andrew Carnegie to present a series of articles he collectively called "The Urania Lectures" on a tour of nearly two years throughout the United States. After the Urania tour he settled in the New York area and wrote a syndicated newspaper column devoted to astronomy and other sciences. According to contemporary accounts he was unquestionably the most widely read author on astronomy than anyone prior to his time. Of the fifteen books he wrote, eight are devoted to astronomy. This was by far and away his favorite subject. He also wrote six works of fiction, all of which would be classified as science fiction today. He has sometimes been referred to as the "American Jules Verne."[1]

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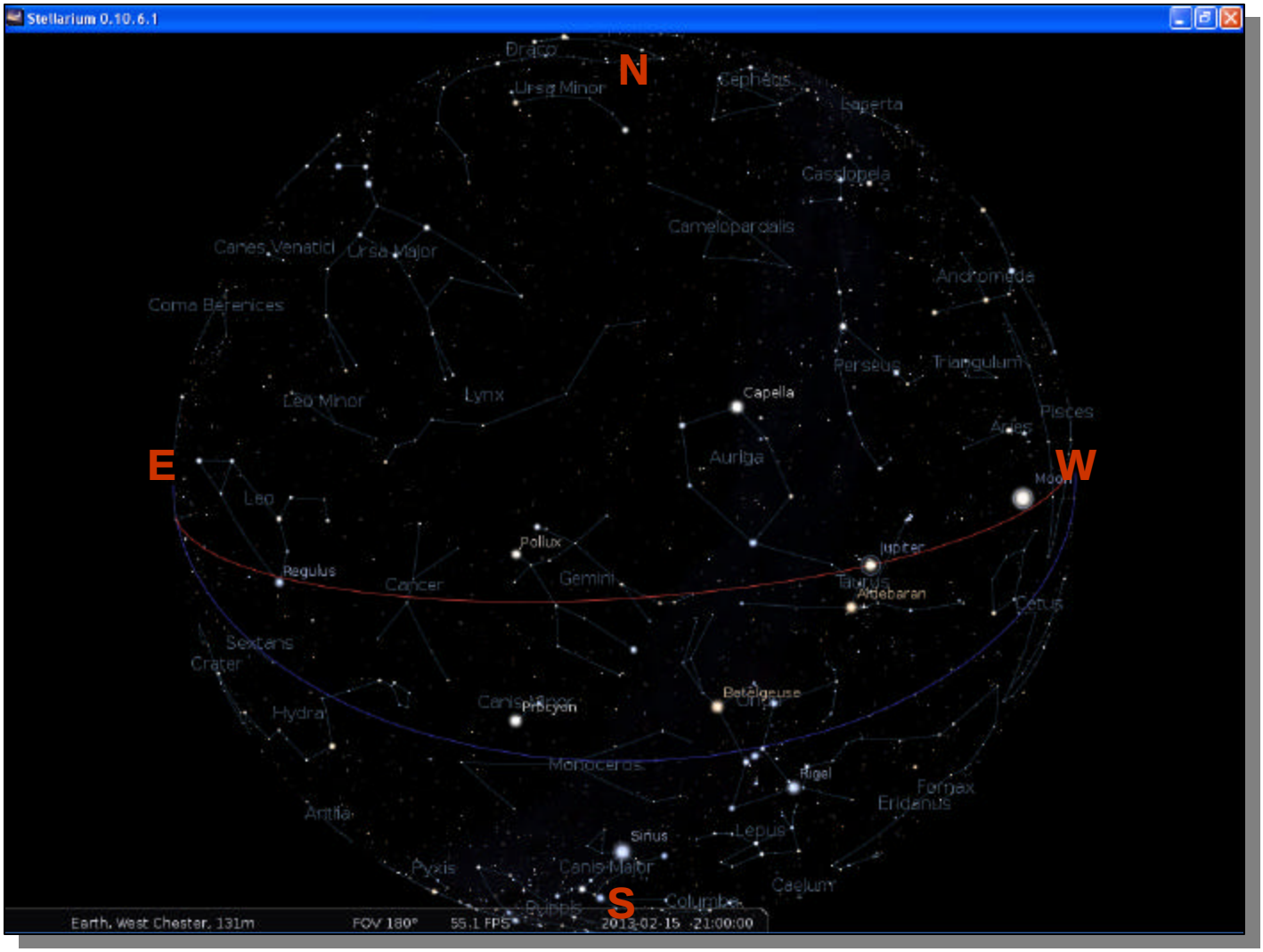
The Sky Over Chester County

February 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
02/01/2012	6:41 a.m. EST	7:10 a.m. EST	5:19 p.m. EST	5:48 p.m. EST	10h 09m 46s
02/15/2012	6:26 a.m. EST	6:54 a.m. EST	5:36 p.m. EST	6:04 p.m. EST	10h 41m 54s
02/29/2012	6:08 a.m. EST	6:35 a.m. EST	5:52 p.m. EST	6:19 p.m. EST	11h 17m 13s

Moon Phases					
First Quarter	02/29/2012	8:21 p.m. EST	Last Quarter	02/14/2012	12:04 p.m. EST
Full Moon	02/07/2012	4:54 p.m. EST	New Moon	02/21/2012	5:35 p.m. EST

February 2012 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

February 1	The Moon is between the Pleiades and the Hyades
February 7	Full Moon, 4:54 p.m.
February 9	Mars rises next to the Moon around 8 p.m.
February 14	Last Quarter Moon, 12:04 p.m.
February 21	New Moon, 5:35 p.m.
February 25	The Moon is near Venus
February 26	The Moon is near Jupiter
February 28, 29	The Moon is near the Pleiades and the Hyades
February 28	Mercury is visible half an hour after sunset
February 29	First-quarter Moon, 8:21 p.m.

The best sights this month: Three planets; Venus, Jupiter and Mars; can easily be seen during the evening hours of February and with a little effort late in the month you can add Mercury to the list. The Moon, Venus and Jupiter put on a great show at month's end.

Mercury: The elusive planet closest to the Sun can be seen in the glow of the sunset at the end of the month. Use binoculars to scan the horizon about a half hour after sunset. Once you find it in binoculars you will probably be able to find it naked eye.

Venus: As each day of February passes we see Venus higher in the sky at sunset. And as Venus gets higher each day, Jupiter gets lower. By month's end they are close enough to be sure to draw your attention.

Mars: I saw Mars in late January rising in the east through some trees, but the red color came shining through. It will be growing brighter and rising earlier through February until it rises near sunset at the end of the month. The best telescopic viewing time is near midnight, when Mars will be high in the sky and you will be looking through less of our atmosphere.

Jupiter: Jupiter falls 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: Saturn rises around 10:30 p.m. during February and is not high enough in the sky for easy viewing until well past midnight. It is easy to find in the pre-dawn sky fairly high in the southwest sky near Spica.

Uranus and Neptune: Neptune is too close to the Sun to be visible during February, but you can find blue-green Uranus only 1/3 degree south of Venus on February 9th. A sky map of Uranus' location in the sky can be found at http://skyandtelescope.com.

The Moon: The Moon is full this month on February 7th. According to Native Americans this is the Full Snow Moon since the heaviest snow usually falls during this month. Some tribes also referred to this Moon as the Full Hunger Moon, since harsh weather conditions in their areas made hunting very difficult.

Constellations: During February, if it is warm enough, I enjoy staring for a long time toward the south to enjoy the constellations with bright stars. This includes Taurus with Aldebaran, Orion with Betelgeuse and Rigel, Canis Major with Sirius and Canis Minor with Procyon. Betelgeuse, Sirius and Procyon make up the Winter Triangle.

Messier/deep sky: Studying deep sky objects during the chill nights of February can be a challenge. But, there are many wonderful deep sky sights in these cold winter skies. Carry your summer lounge chair outside, lay a blanket on it and wrap yourself in a sleeping bag. Dress REAL warmly, grab your binoculars and just stare at the beautiful Pleiades. The star clusters in Auriga are almost directly overhead, well positioned for viewing through the minimum amount of atmosphere. M41, an open cluster of stars, is just below Sirius. Then look to the east and find the Beehive in Cancer. At a dark sky site

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Opera Glass (Cont'd)

(Continued from page 3)

"Astronomy with an Opera Glass," as with several of his books, started out as a series of articles intended to popularize amateur astronomy and naked-eye observing. At the suggestion of a friend he collected these articles and reworked them into an illustrated book that was first published in 1888. Since that time the book has been almost continuously in print or reprint, and is still available today. First editions have become something of a collectors item, if in very good condition. Serviss was writing at an explosive time in large telescope construction and innovation, first in Europe and then in the United States. The spectrograph and other new innovations were also being explored as astronomical instruments, so Serviss was well positioned as an author at the birth of modern astronomy.

Unlike most introductory works, this book does NOT start off with the sun and planets. It starts off by encouraging the reader to explore for themselves the "many interesting phenomena of the universe that are visible with little or no assistance from optical instruments." He then spends the next chapter guiding the reader through what constitutes a suitable opera glass. These were small, very low power binoculars intended for close up views of stage performances or amateur bird watching. Recommended aperture was 1.6 inches, and typical magnifications were 3 to 6 power. He does spend a brief amount of time on stronger "field" glasses, but seems to advocate using reasonable quality low-power opera glasses for most of the topics he covers in the book. He gives no advice on telescopes.

Serviss then launches straight away into the stars of the Spring sky. He explains the apparent motion of the stars in the sky with very plain language, only using degrees, hours, days, months and years, the zenith, and the four points of the compass. Although virtually all astronomers were accustomed to using right ascension and declination (or azimuth) systems, Serviss seems to purposefully avoid more precise coordinates in order to keep a beginning skywatcher at ease. He then presents an all sky map, for 11:00 PM. It takes a modern reader some getting used to, as the maps seem rather quaint and decidedly "low tech." But if one remembers the age in which these illustrations were created and published, then the reader can be somewhat charitable to the charts. He includes stars down to magnitude 3 or 4. Again, this seems rather skimpy. But the real strength of this method comes when you take the book outside on a dark, typically urban or suburban area night. Indeed, then one can appreciate just how well the chart corresponds to what a beginner would actually see and understand. He then picks the most conspicuous constellation, Leo, with the most conspicuous star, Regulus, and begins his tour. His step-by-step directions to finding interesting colored stars, double stars, variable stars, stars with unusual proper motion, nebula, Messier objects, and clusters are skillful and easy to follow. He peppers his narrative with the mythology, often from several cultures, about the constellations and their stories. Classical poetry in small amounts also adds to the flavor. He covers in this section the Zodiac and how they are positioned in the sky without ever referring to the ecliptic in all but the simplest terms.

I have yet to read a more concise, understandable explanation of the solstice and equinox points as the one delivered by Serviss. Where more detailed close-up charts are needed to find fainter objects, the limitations of early publishing charts becomes apparent. The Greek letters are difficult to see even indoors in full illumination, much less outside in the dark with a flashlight. In Serviss' defense, he says himself that "it cannot all be accomplished in an hour. You may have to devote two or three evenings to such observations, and make many trips indoors to consult the map before mastering the subject" (p. 10)[2]. He also, in the course of his discussion, brings up the names and accomplishments of both ancient through 19th century astronomers. The language is delicious. In describing M35 in a higher power instrument,

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Opera Glass (Cont'd)

(Continued from page 6)

for example, he quotes "from Admiral Smyth's description, 'it presents a gorgeous field of stars, from the ninth to the sixteenth magnitude, but with the center of mass less rich than the rest. From the small stars being inclined to form curves of three or four, and often with a large one being at the root of the curve, it somewhat reminds one of the bursting of a sky-rocket.' And Webb adds that there is an 'elegant festoon near the center, starting with a reddish star.' No one can gaze upon this marvelous phenomenon, even with the comparatively low powers of the opera glass, and reflect that all these swarming dots of light are really suns, without a stunning sense of the immensity of the material world" (p. 19). And this is before Hubble kicked the Milky Way out of the exclusive galaxy club!

The book then marches through the seasons with similar charts and descriptions. The narrative at times is quite intriguing. When describing Antares, Serviss writes:

"Antares rather gains in redness when viewed with a glass. Its color is very remarkable, and it is a curious circumstance that with powerful telescopes a small, bright green star is seen apparently almost touching it. Antares belongs to Secchi's third type of suns, that in which the spectroscopic appearances suggest the existence of a powerfully absorptive atmosphere, and which are believed on various grounds to be, as Lockyer has said, "in the last visible stages of cooling;" in other words, almost extinct. This great, red star probably in actual size exceeds our sun, and no one can help feeling the sublime nature of those studies which give us reason to think that here we can actually behold almost the expiring throes of a giant brother of our giant sun. Only, the lifetime of a sun is many millions of years, and its gradual extinction …may occupy a longer time than the whole duration of the human race" (p. 33).

The ideas are roughly correct, if not off by a few billion years. But then again, this is before the Hertzpsrung-Russell diagram! Another fascinating speculation and debate is included about the variable star Algol. Serviss presents the ideas purported by the leading astronomers of the day, from large sunspots and a rapid rotation period to the existence of a huge, dark body "revolving swiftly around it at close quarters in an orbit whose plane is directed edgewise towards the earth, so that at regular intervals this dark body causes a partial eclipse of Algol" (p. 84). Although neither mechanism proved to be correct, given the marvels of exoplanets that we read about today from the Kepler telescope using this same principle can we smirk so smugly?

His treatment of the Winter skies is very exhaustive and complete, and he then turns his final chapter to the Moon, the Planets, and the Sun. Again, his maps of the Lunar surface may seem sparse. But through the eyes of a beginner there is plenty here to work on, and what is there is quite accessible to the simplest of binoculars even today. The planets go up to and include Uranus. Neptune and Pluto of course aren't, so at least as far as Pluto is concerned the consortium of today's astronomers agree with Serviss completely!

So why review or even bother with such an old book? I have several reasons. Despite its age, the basics of observing haven't changed in thousands of years. Some texts and maps explain it well, others badly.

Despite the Victorian prose and run-on sentences Serviss does it extraordinarily well. He adds passion and great narrative to the work, and this keeps the reader engaged and interested. His treatment of the mythology behind the constellations and named stars is incredible, inclusive in a way that puts Wikipedia to shame. His references to his contemporary observers and astronomers are wonderful. His treatment of the leading theories of his day is not only informative, but gives the modern reader a real perspective of how far our understanding of the universe has come since this book was published. Thus this little book has something to offer anyone, from rank beginner to seasoned pro. Before there was Carl Sa-

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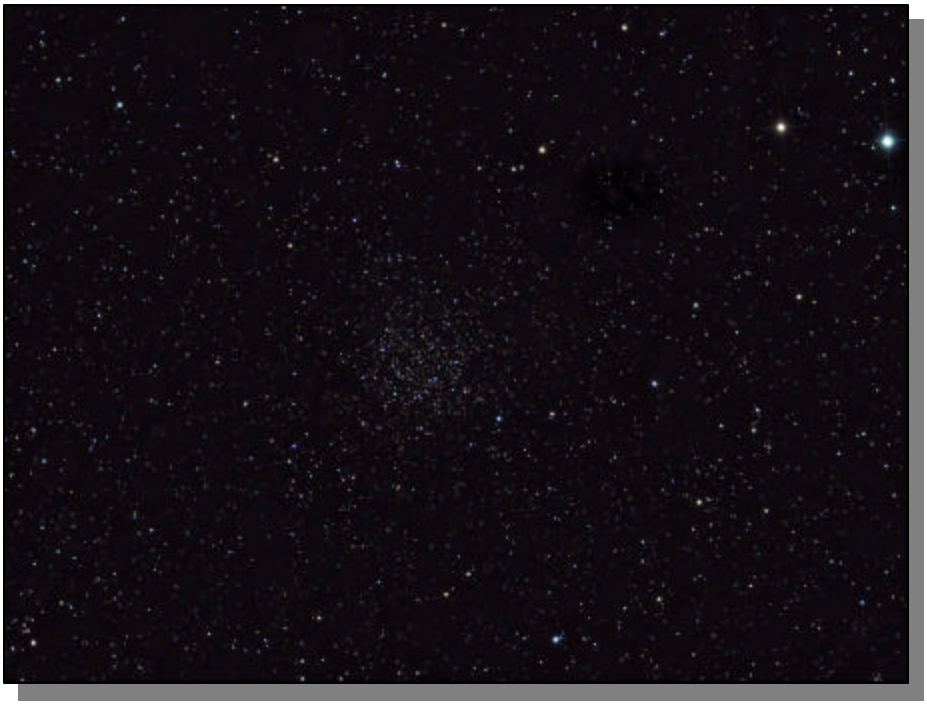
Through the Eyepiece: Caroline's Rose, NGC 7789

by Don Knabb, CCAS Treasurer & Observing Chair

While observing the deep sky objects of Cassiopeia during the Thanksgiving holiday I saw an object named Caroline's Rose, also known NGC 7789, on the star map, so I entered it into the controller of our "go to" Dobsonian telescope. I had never heard of this object before that evening. What appeared in the eyepiece was an incredible sight! Barb was inside by the fireplace with a cat on her lap, but I called her to the eyepiece to share in this wonder of the night sky.

NGC 7789 is an open cluster that lies in the constellation Cassiopeia near the plane of our Milky Way galaxy. One of the major omissions from Messier's catalogue, it was discovered by Caroline Hershel in 1783. This cluster is known as Caroline's Rose because when seen visually its loops of stars and dark lanes look like a swirling pattern of rose petals. I was fortunate to have excellent viewing conditions that night, and I saw immediately the reason for the cluster's name. The loops of stars weave a beautiful tapestry in the eyepiece with such depth as I have never before seen. It certainly helped that I was using a Denkmeier binoviewer and a 12 inch mirror telescope, but this object is within the reach of almost any telescope.

The upper right image was provided by Brent Crabb, an amateur astrophotographer in southern California. Although this is an excellent image of Caroline's Rose, the only way to appreciate this beautiful object is with your eye at the eyepiece of a telescope at a dark sky site.



Caroline's Rose, NGC 7789
Image credit: Brent Crabb, astrophotographer

This splendid cluster is large, rich, fairly dense and well-resolved. The cluster covers an area half the size of the full moon. At least 150 stars are visible in a 16' area. The cluster's brighter members are 11th and 12th magnitude objects distributed in concentric rings. The cluster has no distinct border and its outlying stars seem to blend into the surrounding star field. With a total apparent magnitude of 6.7, NGC 7789 compares favorably with many of Messier's star clusters.

Caroline Herschel, born in 1750, was a German-British astronomer, the sister of astronomer Sir William Herschel with whom she worked throughout both of their careers. At the age of ten, Caroline was struck with typhus, which stunted her growth and she never grew past four foot three. Due to this deformation, her family assumed that she would never marry and that it was best for her to remain a house servant. Instead she became a significant astronomer in collaboration with William.

Caroline discovered 8 comets and over a dozen deep sky objects between 1783 and 1797 using a small telescope given to her by her brother William. Caroline once rode 30 miles on horseback, at night, to the Royal Greenwich Observatory, in order to report a comet that she had discovered. She wanted to be

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Through the Eyepiece (cont'd)

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sure there would be no delay in its confirmation.

NGC 7789 is an open or galactic star cluster about 8,000 light-years distant toward the constellation Cassiopeia and lies near the plane of our Milky Way galaxy. All the stars in the cluster were likely born at the same time but the brighter and more massive ones have more rapidly exhausted the hydrogen fuel in their cores.

An open cluster is a group of up to a few thousand stars that were formed from the same giant molecular cloud and have roughly the same age. More than 1,100 open clusters have been discovered within the Milky Way galaxy, and many more are thought to exist. They are loosely bound to each other by mutual gravitational attraction and become disrupted by close encounters with other clusters and clouds of gas as they orbit the galactic center. Open clusters generally survive for a few hundred million years. In contrast, the more massive globular clusters of stars exert a stronger gravitational attraction on their members, and can survive for many billions of years.

Caroline Herschel
Image credit: http://en.wikipedia.org/wiki/Caroline_Herschel

To find Caroline's Rose use the sky chart that I created using Stellarium, the free download planetarium software. Once you find Cassiopeia, find Caph, the bright star near Cassiopeia's right elbow in the sky map. Then scan to the west to find Caroline's Rose.

(Continued on page 11)

NGC 7789 Image credit: Stellarium planetarium software, a free download

The Nerdiest Video Game Ever

by Dr. Tony Phillips

NASA has a job opening. Wanted: People of all ages to sort, stack, and catalogue terabytes of simulated data from a satellite that launches in 2015. Agile thumbs required.

Sorting terabytes of data? It's more fun than it sounds.

In fact it's a game: Satellite Insight. The Space Place Team at the Jet Propulsion Laboratory created the entertaining app for iPhones to get the word out about GOES-R, an advanced Earth science satellite built by NOAA and NASA.

Described by the *Los Angeles Times* as possibly "the nerdiest game ever," Satellite Insight may be downloaded for free from Apple's app store. Be careful, though, once you start playing it's hard to stop. Some reviewers have likened it to Tetris, one of the most popular video games of all time.

GOES, short for "Geostationary Operational Environmental Satellite," is the workhorse spacecraft for weather forecasters. NOAA operates two (at a time) in geosynchronous orbit, one above the west coast of N. America and one above the east coast. They monitor clouds, wind, rain, hurricanes, tornadoes and even solar flares. The GOES program has been in action since 1975.

GOES-R is the next-generation satellite with advanced technologies far beyond those of the older GOES satellites. It has sensors for lightning detection, wildfire mapping, storm tracking, search and rescue, solar imaging, and more. Many of the sensors are trailblazers. For example, the Advanced Baseline Imager has 60 times the capability of the current imager—16 channels instead of 5. It has twice the spatial resolution and five times the temporal refresh rate, including the 30-second imaging of weather systems over a region of 1000 km x 1000 km. Also, the Geostationary Lightning Mapper can count and pinpoint lightning bolts over the Americas 24/7. It's the first such detector to fly on a geosynchronous satellite, and it could lead to transformative advances in severe storm warning capability.

All in all, GOES-R represents a "huge technological leap from the current GOES." We know this because Satellite Insight tells us so. The app has an informative "Learn More" feature where players can find out about the satellite and the data they have been sorting.

Which brings us back to sorting data. It's a bit like eating Cheerios; just don't tell the kids it's nutritious, and they love it. Helping GOES-R gather and stash data from all those advanced

(Continued on page 11)

New iPhone game is first NOAA app and only the second NASA game app. Just as with the real GOES-R, the challenge with Satellite Insight is to keep up with the massive influx of weather and other environmental data.

Space Place (Cont'd)

(Continued from page 10)

sensors is just as satisfying, too—a dose of Earth science wrapped in thumb-flying fun.

More information about Satellite Insight may be found on the web at http://itunes.apple.com/us/app/satellite-insight/id463588902?mt=8. The game also available in web form (flying thumbs optional) at http://spaceplace.nasa.gov/satellite-insight.

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

Opera Glass (Cont'd)

(Continued from page 7)

gan, or Jack Horkheimer, or Brian Cox, or Neil deGrasse Tyson, there was Garrett P. Serviss. Our modern champions for the everyman observer stand on his shoulders, and owe him a great debt because he popularized astronomy for the masses in America FIRST.

Indeed, Serviss never fails to inject the sense of wonder that we all share about the night sky into his prose. Truly, Serviss has done us a great service, and I invite anyone who wants to learn the night sky for the first time or to take a fond look back at yesteryear to take a look. A modern copy of the 1903 edition is available to all CCAS members through our librarian, Barb Knabb.

Notes:

1. Reference about Garrett P. Serviss in Wikipedia
2. Page numbers from the modern reproduction of the 1903 8th edition, D. Appeton and Company

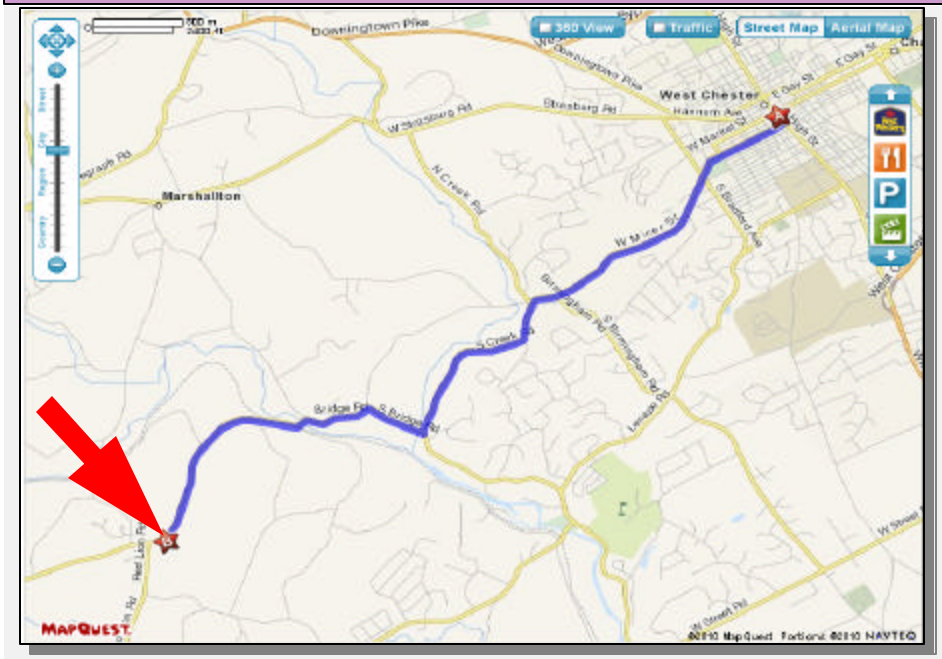
Eyepiece (cont'd)

(Continued from page 9)

Information credits:

http://www.nightsky.at/Photo/GalClu/NGC7789_WN.html
http://observing.skyhound.com/archives/oct/NGC_7789.html
http://apod.nasa.gov/apod/ap990709.html
http://en.wikipedia.org/wiki/NGC_7789

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.

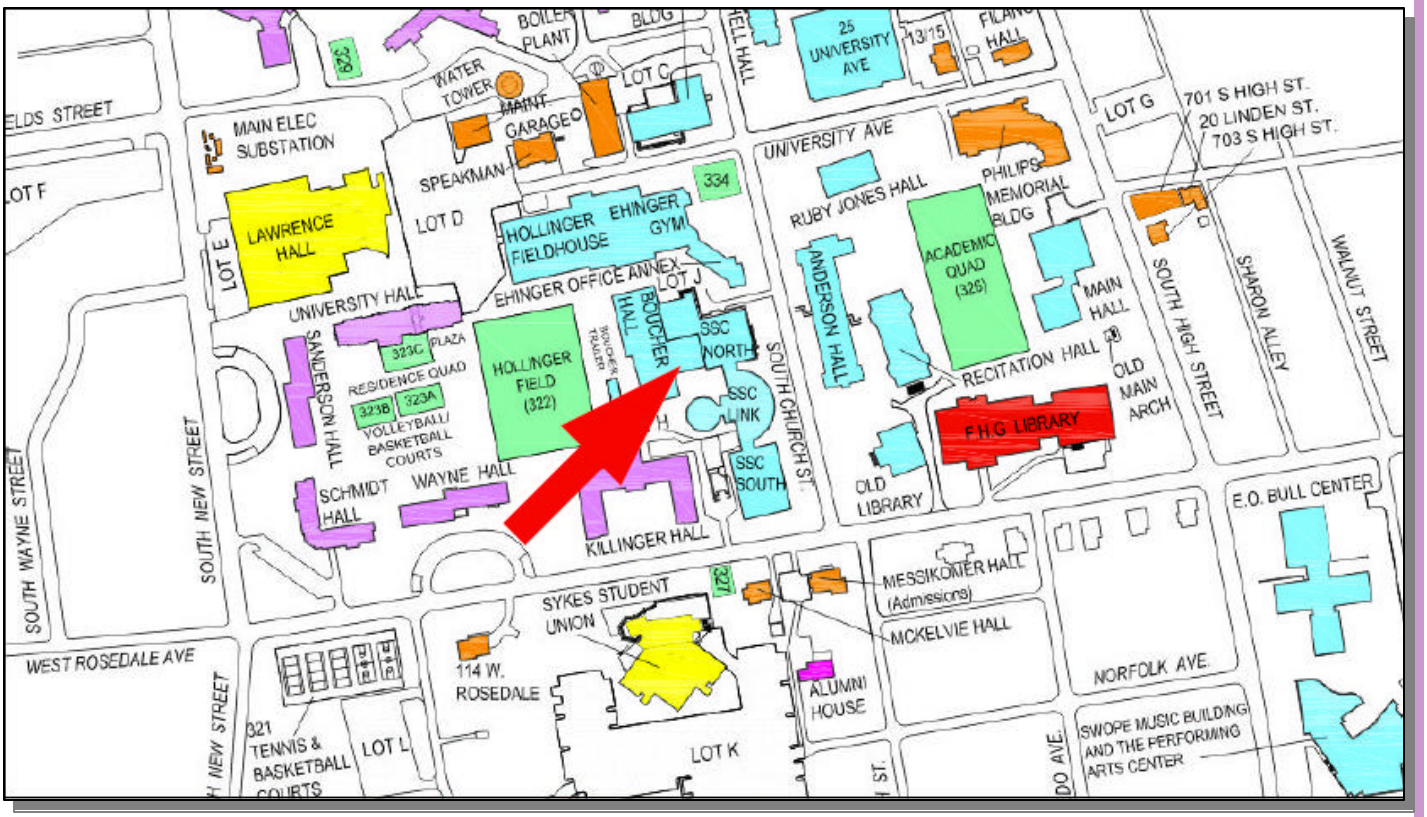
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route 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 5)

you will be able to see it naked eye as a dim fuzzy shape.

Comets: Comet P/2006 (Levy) is visible low in the south not far from Sirius, the brightest star in the sky. You will need large binoculars or a telescope to find this 8th magnitude fuzz-ball from the void. A finder chart is printed in the February issue of Astronomy magazine.

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

CCAS Membership Information and Society Financials

Treasurer's Report

by Don Knabb

Jan 2012 Financial Summary

Beginning Balance	$1,463
Deposits	$175
Disbursements	$55
Ending Balance	$1,583

New Member Welcome!

Welcome new CCAS members Eric Golub, from Malvern; Thota L Prasad, from Chester Springs; and Lindsay Rich, David Linskens, Darrin Loeliger, 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.

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 724-801-8789
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.**