



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 20, No. 11 Two-Time Winner of the Astronomical League's Mabel Sterns Award ☼ 2006 & 2009 November 2012

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Rigel & the Witch Nebula



IC 2118, the Witch Head Nebula spans about 50 light-years and is composed of interstellar dust grains reflecting Rigel's starlight. Photo courtesy of Rogelio Bernal Andreo

Membership Renewals Due

| | |
|---------|---|
| 11/2012 | Buczynski Hepler Holenstein O'Hara Taylor Zibinski |
| 12/2012 | Bogusch Franchi O'Leary Phipps Ramasamy |
| 01/2013 | Golub Labroli Linskens Loeliger Prasad Rich Smith |

Important November 2012 Dates

- 6th • Last Quarter Moon, 7:36 p.m.
- 13th • New Moon, 5:08 p.m.
- 17th • Leonid Meteor Shower Peaks
- 20th • First Quarter Moon, 9:32 a.m.
- 28th • Full Moon, 9:46 a.m.



Autumn 2012 Society Events

November 2012

2nd • West Chester University Planetarium Show: "Dethroning Earth," in the Schmucker Science Building. The show starts at 7 p.m. and run approximately one hour in length. For more information and reservations, visit the planetarium's [webpage](#).

4th • Daylight Savings Time Ends - Set Clock Back 1 Hour.

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

8th • The von Kármán Lecture Series: [Exploring New Worlds with the Dawn Mission](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

13th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts at 7:30 p.m. CCAS Member Speaker: Frank Angelini will present "the Trials, Tribulations, and Triumphs of Setting up a Home Observatory."

20th • [Fall Astronomy Day](#). The theme of Astronomy Day 2012 is "Bringing Astronomy to the People," CCAS Monthly Observing Session, Hoopes Park, West Chester. The observing session starts at sunset.

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

26th • Deadline for newsletter submissions for the November 2012 edition of [Observations](#).

December 2012

4th • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the [PA Outdoor Lighting Council](#) website.

6th • The von Kármán Lecture Series: [GRAIL Unwraps the Moon](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

7th • West Chester University Planetarium Show: "Twinkle, Twinkle, Little Star," in the Schmucker Science Building. The show starts at 7 p.m. and run approximately one hour in length. For more information and reservations, visit the planetarium's [webpage](#).

14th • CCAS Holiday Party. The party is for CCAS members and their families and starts at 7:00 p.m. See the December 2012 edition of *Observations* for location and directions.

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

26th • Deadline for newsletter submissions for the November 2012 edition of [Observations](#).

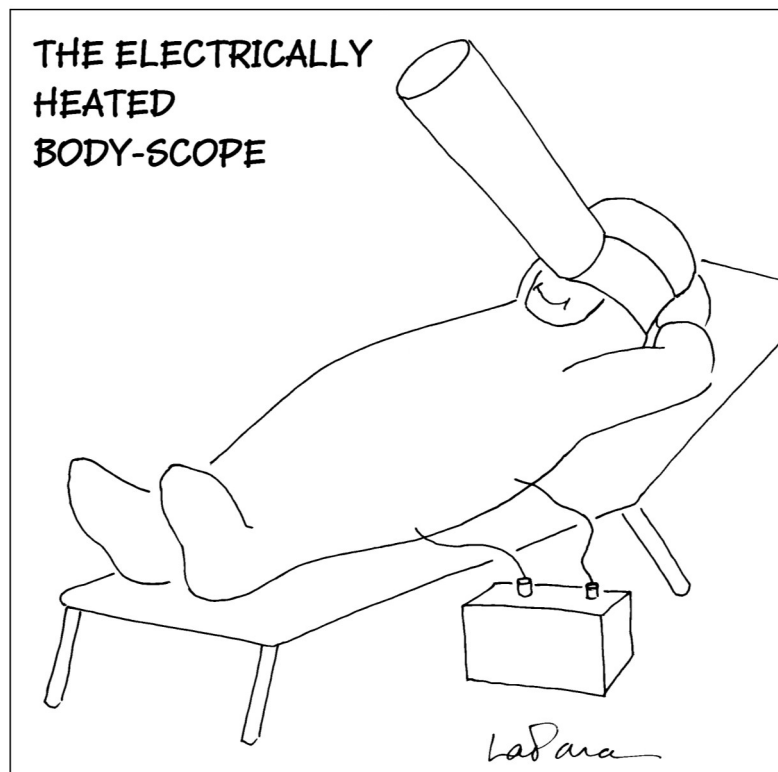
Minutes from the October 9, 2012 CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- 15 members in attendance were welcomed by our president Roger Taylor.
- Don Knabb our observing chair gave us our monthly sky tour on Stellarium. Suggestions for night sky viewing for the Boy Scout Star Party were given through Stellarium by Don.
- Kathy Buczynski gave a photo tour of her visit the Museo Galileo in Florence, Italy in September 2012. During the International Year of Astronomy in 2009, the Galileo telescope from this museum was curated to the Franklin Institute by Derrick Pitts their Chief Astronomer. Kathy was able to contact Giorgio Strano at Museo Galileo through Derrick Pitts and have a personal guided tour of the Museum. She also had the opportunity to tour the library at the museum, which contained original text from Aristotle and Plato. In addition, the Halloween touches to the tour were the photos of Galileo's preserved and severed fingers.
- Our guest speaker for the October meeting was Veronique Petit, PhD from West Chester University who presented "A Pair of Extra Goggles". Her area of research included Massive Stars, the electromagnetic spectrum, and x-ray observing. She also discussed in detail the Chandra X-ray Observatory and the data collection that she uses in her research.
- Our annual Holiday Part is scheduled for Friday, December 14, 2012. We will be celebrating at the home of Don and Barb Knabb.

Nicholas's Humor Corner

by Nicholas La Para



New iPad App from the Space Place

by NASA

Introducing Space Place Prime!

Space Place Prime is a spinoff of The Space Place, but for the iPad and a multigenerational audience. It is a content presentation app, updated daily via wireless connection, that gathers some of the best and most recent offerings from NASA. It taps timely educational and easy-to-read articles from the website, as well as daily updates of NASA space and Earth images and the latest informative videos.

The interface is a grid of images, which you can slide with your finger any which way to your heart's content. Each feature is represented by a unique image, labeled with an icon to show whether it is an image, video, article, or activity. Tapping on the image takes you to the feature. For a more organized view, a list mode presents separate menus of images, videos, and articles (including activity articles).

You can share the images and short videos with your class using a digital projector and a HDMI adapter for the iPad.

Space Place Prime is available free in the Apple App Store. See iTunes preview at itunes.apple.com/us/app/space-place-prime/id543935008?mt=8.



November 2012 Speaker

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on November 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. CCAS member Frank Angelini will present "the Trials, Tribulations, and Triumphs of Setting up a Home Observatory."

Please note that inclement weather or changes in speakers'

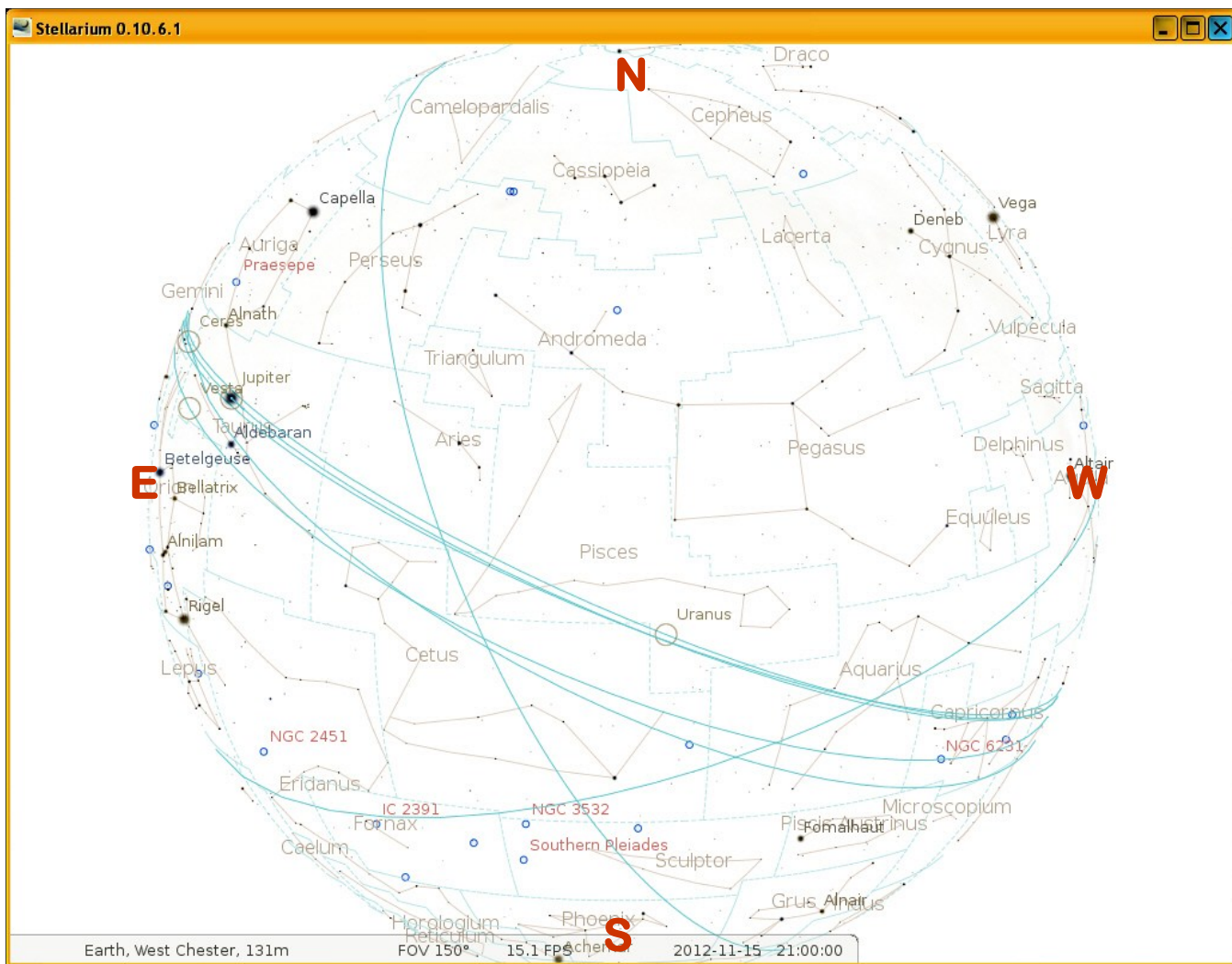
schedules may affect the program. In the event there is a change, CCAS members will be notified via e-mail with as much advance notice as possible.

We are looking for presenters for our Spring 2013 monthly sessions, please contact me at programs@ccas.us.

The Sky Over Chester County

November 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 |
|------------|-----------------------|---------------|---------------|---------------------|---------------|
| 11/01/2012 | 7:02 a.m. EDT | 7:30 a.m. EDT | 5:58 p.m. EDT | 6:26 p.m. EDT | 10h 27m 32s |
| 10/15/2012 | 6:17 a.m. EST | 6:46 a.m. EST | 4:44 p.m. EST | 5:13 p.m. EST | 9h 57m 47s |
| 10/31/2012 | 6:33 a.m. EST | 7:03 a.m. EST | 4:36 p.m. EST | 5:06 p.m. EST | 9h 33m 34s |

| Moon Phases | | | | | |
|--------------|------------|---------------|---------------|------------|---------------|
| Last Quarter | 11/06/2012 | 7:36 p.m. EST | First Quarter | 11/20/2012 | 9:32 a.m. EST |
| New Moon | 11/13/2012 | 5:08 p.m. EST | Full Moon | 11/26/2012 | 9:46 a.m. EST |

November 2012 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

| | |
|--------|--|
| 1 | Jupiter is very close to the Moon |
| 1 – 11 | Watch for fireballs from the Taurid meteor shower |
| 4 | Daylight-Saving Time ends, “Fall back” |
| 6 | Last Quarter Moon, 7:36 p.m. |
| 13 | New Moon, 5:08 p.m. |
| 13/14 | Total eclipse of the Sun visible in Australia and the South Pacific |
| 17 | The Leonid meteor shower peaks |
| 20 | First-quarter Moon, 9:32 a.m. |
| 28 | Full Moon and penumbral eclipse for western North America, 9:46 a.m. |
| 28 | Jupiter is very close to the Full Moon |

The best sights this month: The king of the planets, Jupiter, returns to the evening hours, rising at nightfall at the end of the month and shining at a brilliant -2.8 magnitude. On November 1st the just past full Moon has Jupiter perched just above it. There is also a possibility of fireballs from the Taurid meteor shower around the time of October 28th to November 11th.

Although we’ll need to watch it on the Internet, the first total solar eclipse in over two years occurs on November 13/14. It is visible in Australia and the South Pacific. It’s too bad we cut that sub-orbital rocket ship from this year’s budget or we could have made a field trip.

Mercury: Mercury can be seen in the pre-dawn sky for several days around November 27th.

Venus: Our sister planet continues to light up the pre-dawn sky, rising about 3 hours before the Sun.

Mars: The opportunity for good observing of the red planet is now behind us until next year. Yes, you can find it low in the west 45 minutes after sunset, but it is so low in the sky that you will need binoculars to find it.

Jupiter: Jupiter rises two hours after sunset at the

beginning of November and is already above the horizon as night falls at the end of the month. By later evening it is shining brightly high in the east. Jupiter is close to the Moon on November 1st and November 28th.

Saturn: The ringed planet is visible in the pre-dawn sky beginning at the middle of the month. From November 23rd to the 30th Saturn and Venus are within 4 degrees of each other and within 1 degree of each other on the mornings of November 26th and 27th.

Uranus and Neptune: Both of these distant gas giants are well positioned for telescopic viewing just after the sky becomes fully dark. Sky maps to locate these planets can be found at skypub.com, the website of Sky and Telescope magazine.

The Moon: The Moon is full on November 28th. The Full Moon of November is called the Full Beaver Moon. For Native Americans, the time of this Full Moon was the time to set beaver traps before the swamps froze, to ensure a supply of warm winter furs. Another interpretation suggests that the name Full Beaver Moon comes from the fact that the beavers are now actively preparing for winter. It is sometimes also referred to as the Frosty Moon.

Constellations: Now that we are well into autumn and back to Eastern Standard Time after November 4th, there are many hours of star gazing possible without staying up late. The Summer Triangle is past center stage and is heading for the western horizon. Pegasus is well up in the southern sky in the early evening, and the jewels of the sky, the Pleiades, are rising in the east. Capella in Auriga is a bright point of light above Taurus. As it gets a bit later our old friend Orion returns from his summer vacation.

Messier/deep sky: There are many deep sky treats in the autumn and winter sky. My favorite this time of year is the trio of star clusters in Auriga, M36, M37 and M38. Compare the structure of these open clusters and log them as a great start in pursuit of the binocular or telescopic Messier club of the As-

(Continued on page 10)

A Cosmic Tease: Trials of the Herschel Space Telescope Science Teams

by Dr. Marc J. Kuchner

Vast fields of marble-sized chunks of ice and rock spun slowly in the darkness this week, and I sat in the back of a grey conference room with white plastic tables spread with papers and laptops. I was sitting in on a meeting of an international team of astronomers gathered to analyze data from the Herschel Infrared Observatory. This telescope, sometimes just called Herschel, orbits the Sun about a million miles from the Earth.

The meeting began with dinner at Karl's house. Karl charred chorizo on the backyard grill while the airplanes dribbled into Dulles airport. Our colleagues arrived, jetlagged and yawning, from Germany, Sweden, and Spain, and we sat on Karl's couches catching up on the latest gossip. The unemployment level in Spain is about twenty percent, so research funding there is hard to come by these days. That's not nice to hear. But it cheered us up to be with old friends.

The meeting commenced the next morning, as the vast fields of ice and rock continued to spin—shards glinting in the starlight. Or maybe they didn't. Maybe they didn't exist at all.

You see, this team is looking at a series of images of stars taken by a device called a bolometer that is blind to ordinary starlight. Instead, the bolometer inside Herschel senses infrared light, a kind of light that we would probably refer to as heat if we could feel it. But the idea of pointing



the bolometer at the stars was not to collect ordinary starlight. It was to measure heat coming from the vicinity of these stars, like an infrared security camera, in case there was something else to be found lurking nearby.

And lo and behold, for a handful of stars, the bolometer measurements were off the charts! Maybe something was orbiting these stars. From the details of the bolometer readings—which channels lit up and so on—you would guess that this stuff took the form of majestic fields or rings of icy and rocky particles. It would be a new kind of disk, a discovery worth writing home to Madrid about.

There are several teams of astronomers analyzing data from

(Continued on page 7)



Samuel Pierpoint Langley, who developed the bolometer in 1878. His instrument detects a broad range of infrared wavelengths, sensitive to differences in temperature of one hundred-thousandth of a degree Celsius (0.00001 C). In 1961, Frank Low developed the germanium bolometer, which is hundreds of times more sensitive than previous detectors and capable of detecting far-infrared radiation.

Bolometer (cont'd)

(Continued from page 6)

the Herschel Space Telescope. They call themselves by oddly inappropriate sounding acronyms: GASPS, DUNES, DEBRIS. For the time being, the scientists on these teams are the only ones with access to the Herschel data. But in January, all the data these teams are working on will suddenly be released to the public. So they are all under pressure to finish their work by then. The team whose meeting I was sitting in on would like to publish a paper about the new disks by then.

But it's not so simple. The stars that this team had measured were relatively nearby as stars go, less than a few hundred light

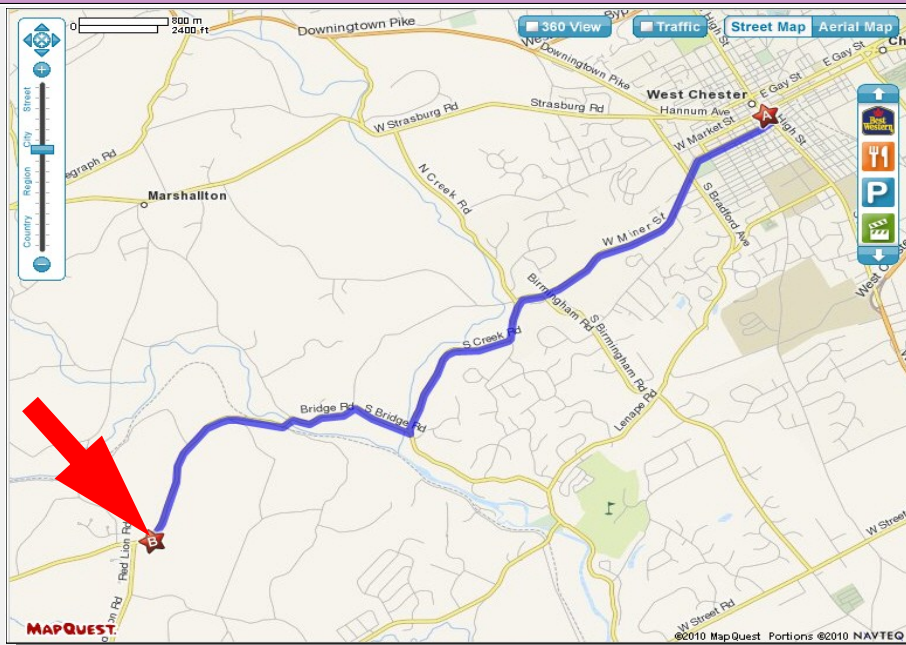
years. But the universe is big, and full of galaxies of all kinds—a sea of galaxies starting from maybe a hundred thousand light years away, and stretching on and on. Maybe one of those background galaxies was lined up with each of the stars that had lit up the bolometer—fooling us into thinking they were seeing disks around these stars.

The team argued and paced, and then broke for lunch. We marched to the cafeteria through the rain. Meanwhile, vast fields of marble-sized chunks of ice and rock spun slowly in the darkness. Or maybe they didn't.

What else did Herschel recently uncover? Find out at [\[spaceplace.nasa.gov/comet-ocean\]\(http://spaceplace.nasa.gov/comet-ocean\).](http://</p></div><div data-bbox=)

Dr. Marc J. Kuchner is an astrophysicist at the Exoplanets and Stellar Astrophysics Laboratory at NASA's Goddard Space Flight Center. NASA's Astrophysics Division works on big questions about the origin and evolution of the universe, galaxies, and planetary systems. Explore more at <http://www.science.nasa.gov/astrophysics/>.

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 Open Clusters in Auriga: M36, M37 and M38

by Don Knabb, CCAS Treasurer & Observing Chair

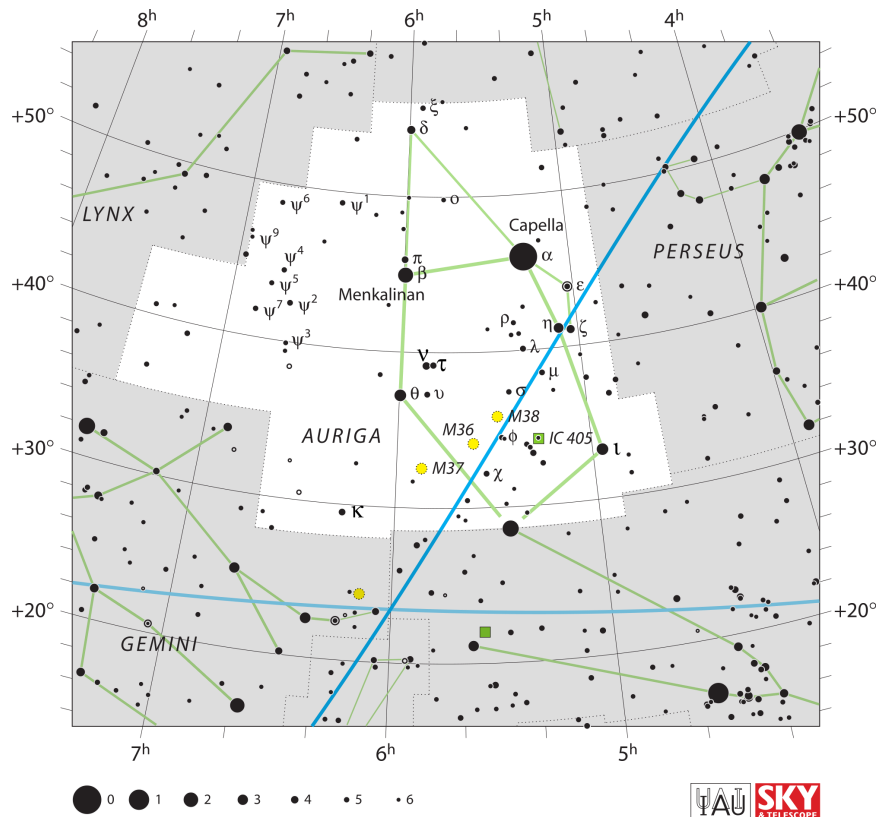
As autumn begins and the time arrives when the leaves start to turn color and fall to the ground, I always look forward to the bright star Capella rising in the east not long after sunset. I often ask myself, is that a plane, a UFO, or Capella? Capella, in the constellation Auriga, is the 6th brightest star in the sky. Auriga is called the Charioteer, or sometimes the Wagoneer. Auriga is one of the oldest constellations going back to Babylonian times.

Here's today's trivia for you: What other meanings are associated with the word Auriga? How about "a Roman slave chauffeur"? Or the name of a spaceship in the movie *Alien: Resurrection*? This is according to Wikipedia.....

When I see Capella, rising in the glow of West Chester on our northeastern horizon, I know the deep sky wonders of the autumn and winter sky are not far behind. The first of these deep sky objects I look for are the three open star clusters in Auriga; M36, M37 and M38.

Open clusters, also called galactic clusters, contain fewer and younger stars than globular clusters. Also unlike globular clusters, open clusters are generally confined to the plane of our galaxy. I like to look at all three in a short time span and compare the unique appearance of each cluster to the others.

Auriga has many open clusters and other objects because the



Map credit: http://upload.wikimedia.org/wikipedia/commons/9/92/Auriga_IAU.svg



M36, The Pinwheel Cluster, photo taken by CCAS member Pete LaFrance

Milky Way runs through it. M36, M37 and M38 are all visible in binoculars or a small telescope in suburban skies. A larger

telescope resolves individual stars. The clusters are about 4100, 4400, and 4200 light years

(Continued on page 9)

Eyepiece (Cont'd)

(Continued from page 8)

distant, respectively. Their apparent visual magnitudes are 6.3, 6.2, and 7.4, respectively.

M36, known as the Pinwheel Cluster, is a rather faint cluster of about 50 to 60 stars, in a very compact area. A large scope is necessary to resolve the individual stars. The brightest members are arranged in chains that give the cluster a crab-like appearance.

M37, which has no common name, is considered the most spectacular of the three Messiers. Binoculars will only show a large fuzz ball, you really need a telescope to delve deep into this cluster. A medium sized scope should reveal at least twelve red giants, with the brightest one found at the center of the cluster. Some observers find this star more orange than red. The cluster is considered to be about 200 million years old.

M38, which carries the nickname Starfish Cluster, is just to the northwest of M36. Some observers have described this cluster of about a hundred stars as having a cross-shape or an oval shape.

So aim your binoculars or telescope toward Auriga and add M36, M37 and M38 to your Messier Club list!



M37, photo taken by Pete LaFrance



M38, the Starfish Cluster, photo taken by Pete LaFrance

Information sources:

Pasachoff, Jay M. 2000. A Field Guide to the Stars and Planets. New York, NY. Houghton Mifflin.
http://en.wikipedia.org/wiki/Auriga_%28constellation%29

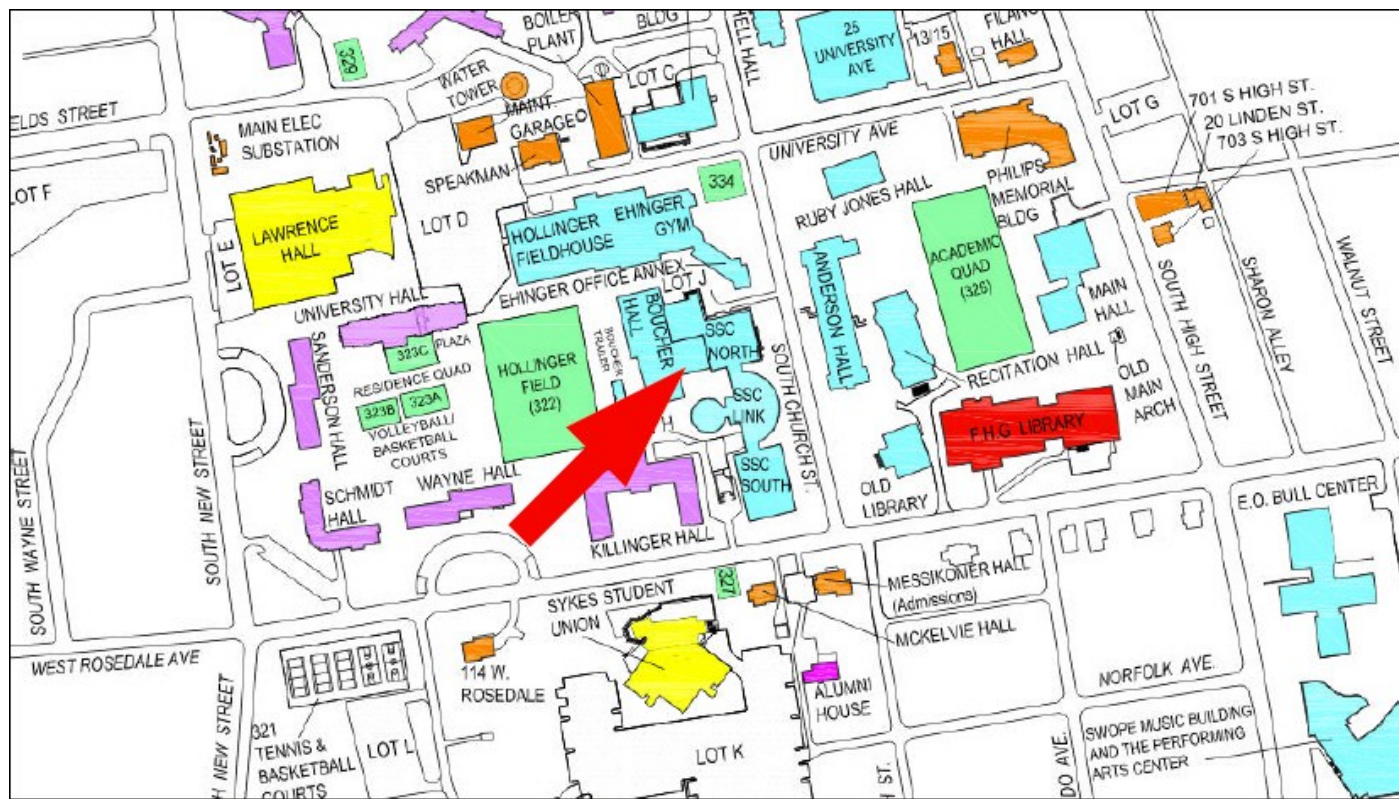
<http://www.coldwater.k12.mi.us/lms/planetarium/myth/auriga.html>
http://www.dibonsmith.com/aur_con.htm
http://www.seds.org/Maps/Stars_en/Fig/auriga.html

iPad app Sky Safari Pro

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)
 tronomical League.

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

Meteor showers: The Taurid meteor shower peaks during the first two weeks of November, and there is reason to expect some bright fireballs during this period, but they will be few and far between. The Leonid meteor shower should be quite a bit better with up to 20 shooting stars per hour predicted at the peak on the night of November 17th. The best time for observing the show is in the early morning hours.

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

Oct 2012 Financial Summary

| | |
|-------------------|---------|
| Beginning Balance | \$1,349 |
| Deposits | \$118 |
| Disbursements | \$0 |
| Ending Balance | \$1,467 |

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!



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 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.greeneearthlighting.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 is a retailer of telescopes, binoculars, eyepieces and telescope accessories from Meade, Celestron, Televue, Orion, Stellarvue, Takahashi, Vixen, Losmandy and more.

Skies Unlimited
Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Phone: 610-327-3500 or 888-947-2673
Fax: 610-327-3553

<http://www.skiesunlimited.net>



Located in Manayunk, Spectrum Scientifics educates and entertains customers with an array of telescopes, microscopes, binoculars, science toys, magnets, labware, scales, science instruments, chemistry sets, and much more.

4403 Main Street
Philadelphia, PA 19127

Phone: 215-667-8309
Fax: 215-965-1524

Hours:

Tuesday thru Saturday: 10AM to 6PM
Sunday and Monday: 11AM to 5PM

<http://www.spectrum-scientifics.com>

CCAS Information Directory

CCAS Lending Telescopes

Contact Don Knabb to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Don's phone number is 610-436-5702.

CCAS Lending Library

Contact our Librarian, Barb Knabb, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings, and on the CCAS website. Barb's phone number is 610-436-5702.

Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to: newsletter@ccas.us

Or mail the contribution, typed or handwritten, to:

John Hepler
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

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