



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

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M57, The Ring Nebula



By Gaston Baudat. Image taken from his observatory at Glenmoore PA on August 23rd 2011. Scope: C11 at f/10; Mount: CGE; Imager: SBIG ST4000XCM + SBIG AO8; Guider: On axis guider ONAG + SBIG remote guider head; Exposure: 27 x 3 minutes for a total of 81 minutes; and Software: Maxim DL + PS.

Important October 2011 Dates

- 3rd** • First Quarter Moon, 11:15 p.m.
- 8th/9th** • Draconid Meteor Shower Peaks
- 11th** • Full Moon, 11:06 p.m.
- 19th** • Last Quarter Moon, 11:30 p.m.
- 21st/22nd** • Orionid Meteor Shower Peaks
- 26th** • New Moon, 3:56 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, October 1, 2011** - Fall National Astronomy Day. Anson Nixon Park, Kennett Square, PA.
- ☒ **Friday, October 21, 2011** - CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date October 22nd).

Membership Renewals Due

11/2011	Buczynski Hepler Holenstein O'Hara
12/2011	Bogusch
01/2012	Labroli
02/2012	Kalinowski & Family La Para

Autumn 2011 Society Events

October 2011

1st • Fall National Astronomy Day. Night Out at Anson Nixon Park, Kennett Square, PA. The free public event starts at sunset. For more information, contact our Observing Chair, Don Knabb.

5th • PA Outdoor Lighting Council monthly meeting starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the [PA Outdoor Lighting Council](#) website.

11th • DVD Lecture Series: "Comet Shoemaker-Levy 9 and Jupiter," a half-hour video presentation of a lecture by Dr. David M. Meyer, Northwestern University. Room 113, Merion Science Center (former Boucher Building), West Chester University. The presentation immediately precedes the monthly meeting and starts at 7:00 p.m.

11th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts at 7:30 p.m. Guest Speaker: Dr. Scott Engle, Villanova University, "Cepheid Variables."

20th • Open call for articles and photographs for the November 2011 edition of [Observations](#).

21st • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date October 22nd). The observing session starts at sunset.

21st • West Chester University Planetarium Show, "The King of the Planets", in the Schmucker Science Building. The show starts at 7 p.m. Reservations are required. For more information and reservations, visit the planetarium's [webpage](#).

26th • Deadline for newsletter submissions for the November 2011 edition of [Observations](#).

28th • Reservations start for the November 18th planetarium show at the WCU Planetarium. For more information, visit the planetarium's [webpage](#).

November 2011

5th • PA Outdoor Lighting Council monthly meeting 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 • DVD Lecture Series: "The Sagittarius Star Cloud," a half-hour video presentation of a lecture by Dr. David M. Meyer, Northwestern University. Room 113, Merion Science Center (former Boucher Building), West Chester University. The presentation immediately precedes the monthly meeting and starts at 7:00 p.m.

8th • 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: Don Knabb, "Travelog on Trip to Palomar Telescope/Hale Observatory."

18th • West Chester University Planetarium Show, "Astronomy on the Internet: The Good, the Bad & the Ugly", in the Schmucker Science Building. The show starts at 7 p.m. Reservations are required. For more information and reservations, visit the planetarium's [webpage](#).

20th • Open call for articles and photographs for the December 2011 edition of [Observations](#).

25th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date October 22nd). The observing session starts at sunset.

25th • Reservations start for the December 16th planetarium show at the WCU Planetarium. For more information, visit the planetarium's [webpage](#).

26th • Deadline for newsletter submissions for the December 2011 edition of [Observations](#).

Minutes from the September 13, 2011 CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- Approximately 14 members and 2 guests were in attendance.
- We have started a new video series for this year. "Experiencing Hubble: Understanding the Greatest Images of the Universe" with David M. Meyer, PhD, professor of Physics and Astrophysics at Northwestern University narrating. We viewed the first in the series of lectures titled "The Rationale for a Space Telescope."
- President Roger Taylor welcomed our members back from the summer hiatus. Two public observing sessions were announced for Hoopes Park on September 17 and Anson Nixon Park on October 1. Our summer picnic at Stargazers Vineyard was cancelled due to Hurricane Irene. An alternative date/venue is being investigated.
- Our guest speaker Andrej Prsa, PhD, professor of Astronomy and Astrophysics at Villanova University, presented "Advances in Modeling Eclipsing Binary Stars in the Era of Large Surveys Using PHOEBE and EBAL." Dr. Prsa is also the lead scientist for studying binary stars systems on the Kepler Space Telescope team and gave us an update on that research.

Nicholas's Humor Corner

by Nicholas La Para



October 2011 Guest Speaker

by Dave Hockenberry, CCAS Program Chair

Our meeting this month is scheduled for October 11, 2011 starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Our guest speaker is Dr. Scott Engle from Villanova University. His presentation is entitled, "Cepheid Variables."

Please note that inclement weather or changes in speakers' schedules may affect the pro-

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

We are looking for presenters for our winter/spring 2012 season. If you are interested in presenting or know someone who would be an interesting guest speaker, please contact our Program Chairperson Dave Hockenberry at programs@ccas.us.

Distinguished Speakers at Haverford College

by Dr. Beth Willman

Dr. Margaret J. Geller and Dr. Scott J. Kenyon of the Smithsonian Astrophysical Observatory will present "Two Views of the Universe" on Wednesday, November 2, 2011, at 4:30 p.m. in Sharpless Auditorium, Haverford College. Their contributions in science range from the formation of the solar system (Dr. Kenyon) to discovery of the largest known patterns in the universe (Dr. Geller). For details, see the [Haverford website](#).

Equipment Review: TeleVue Delos Eyepiece

by Dave Hockenberry



The author's 10mm Delos, shown here between the 13mm Ethos on the left, and a 6mm Radian on the right for comparison. Photo by Ann Miller.

With much fanfare and a heavy advertising blitz, TeleVue introduced their new line of telescopic eyepieces at NEAF this Spring. After the smashing success of the Ethos line, expectations were understandably quite high about the new line, called

the Delos. The line takes the name of the Greek island where Apollo is reputed to have been born, but is according to the manufacturer also a tribute to Paul Dellechiaie. Dellechiaie is the optics designer of the Ethos, the Delos, and several other

TeleVue products. Currently the Delos is available in 6mm and 10mm models, and both fit into a standard 1.25 inch port. These are designed to be parfocal with other 1.25 inch TeleVue products. Although not quite as wide as the astounding 100 degree FOV the Ethos sports, the Delos advertises a generous 72 degree FOV and allows 20mm eye relief.

Those who enjoyed the Radian and Nagler eyepieces will appreciate the telescoping eyepiece barrel also available on the Delos, which has been thoughtfully calibrated on the side of the barrel. At a list price of \$315.00 for either size, this line is about half the cost of the flagship Ethos product, which makes the Delos an attractive alternative for stargazers who are minding their astro budget

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Boo's Necklace, a Newly Discovered Telescopic Asterism in Sagittarius

by Don Knabb



Boo's Necklace, a circular, telescopic asterism in the constellation Sagittarius, in the heart of the Milky Way.

If you attend CCAS star parties in the late fall or winter months you might hear about an asterism called Kathy's Triangle. An asterism is a grouping of stars, usually part of a constellation, or it might be made up of stars from several constellations. Some examples that we are all familiar with are the Big Dipper, the Summer Triangle and the Great Square of Pegasus. Kathy's Triangle is a grouping that Kathy Buczynski often points out in the constellation Taurus the Bull.

To my knowledge, there is no such thing as The International Committee of Official Asterism Recognition or anything like

that (if there is, please let me know!) so I hereby stake claim to a new asterism, Boo's Necklace.

One day this summer I was getting some lessons on astrophotography from our Program Chair, Dave Hockenberry, when I noticed a unique grouping of



*Boo the cat.
Isn't she beautiful?*
(All images by the author)

stars in a wide field shot I took of the upper portion of the constellation Sagittarius. This grouping might not show up very well in the newsletter, but it is quite distinct in the original digital file. It is a nearly circular grouping of approximately 10 stars, all 9th or 10th magnitude.

When I showed this grouping to Barb she immediately said they look like a necklace. In fact, they would make a nice necklace for our little black cat, Boo, thus the name Boo's Necklace.

I've included a photo with several stars and Messier objects identified to help you find Boo's

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Hoopes Park Star Party a Success!

by Don Knabb



Photos from the recent Star Party at Hoopes Park, West Chester. *Courtesy Don Knabb*

A big THANK YOU to the Society members who came to Hoopes Park on September 17, 2011, for the star party. The star party was cohosted with West Chester Recreation at Hoopes Park in West Chester. Despite the rain and cloudy skies during the late afternoon, the skies parted for a few hours and we had a great time at Hoopes Park in West Chester this evening. We had seven pieces of observing gear supported by club members sharing the night sky with several dozen enthusiastic participants from the local community. We had kids who were just learning to talk though senior citizens, and everyone was interested to see the night sky.

We saw globular star clusters, double stars, nebulas, galaxies, open clusters and even Comet Garradd! The only thing missing was a planet, but the trees at Hoopes Park kept Jupiter under cover for this event.

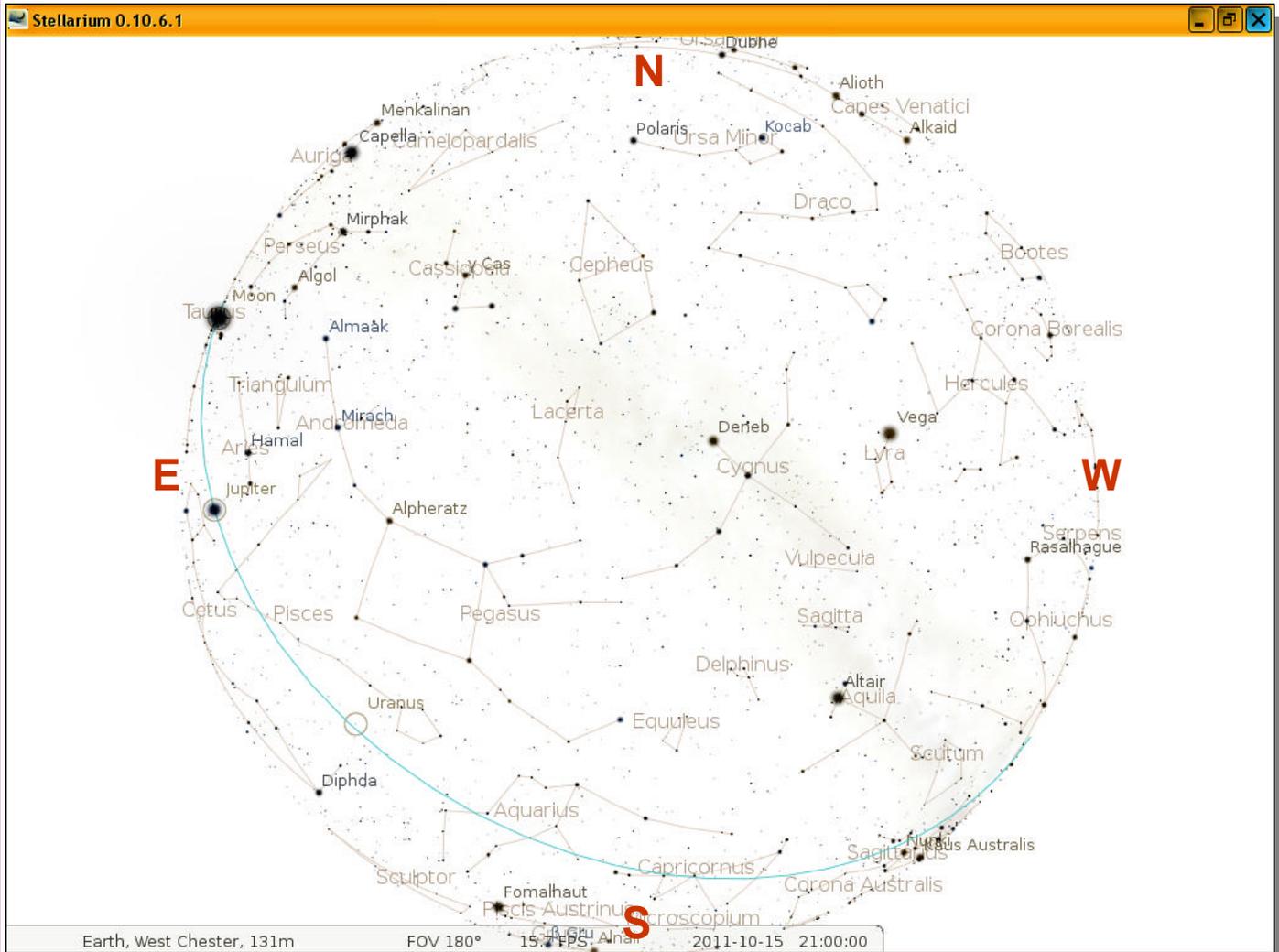
Our next event is scheduled for Fall Astronomy Day, October 1st at Anson Nixon Park in Kennett Square. Anson Nixon Park has a broader horizon compared to Hoopes Park. Jupiter will be rising a bit earlier and we'll have a beautiful crescent Moon.

So come out and help at this star party if you can!

The Sky Over Chester County

October 15, 2011 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
10/01/2011	6:30 a.m. EDT	6:57 a.m. EDT	6:43 p.m. EDT	7:10 p.m. EDT	11h 46m 03s
10/15/2011	6:44 a.m. EDT	7:11 a.m. EDT	6:21 p.m. EDT	6:48 p.m. EDT	11h 09m 59s
10/31/2011	7:01 a.m. EDT	7:29 a.m. EDT	5:59 p.m. EDT	6:27 p.m. EDT	10h 30m 49s

Moon Phases					
First Quarter	10/03/2011	11:15 p.m. EDT	Last Quarter	10/19/2011	11:30 p.m. EDT
Full Moon	10/11/2011	11:06 p.m. EDT	New Moon	10/26/2011	3:56 p.m. EDT

October 2011 Observing Highlights

by Don Knabb, CCAS Secretary & Observing Chair

October 1	Antares is close to the crescent Moon low in the southwest
October 3	First-quarter Moon, 11:15 p.m.
October 8/9	The Draconid meteor shower peaks
October 11	Full Moon, 11:06 p.m.
October 12 – 14	Jupiter is near the Moon
October 14, 15	The Pleiades are near the Moon
October 19	Last Quarter Moon, 11:30 p.m.
October 21/22	The Orionid meteor shower peaks
October 26	New Moon, 3:56 p.m.
October 27	Use binoculars to see Mercury, Venus and a very thin crescent Moon together
October 28/29	Jupiter is at opposition

The best sights this month: The king of the planets, Jupiter, is in excellent position for viewing during the clear, crisp October nights. Watch the dance of the Galilean moons that follow Jupiter through the sky like moths around a light bulb!

Mercury: You can find the planet closest to the Sun during the last week of October, but you will need binoculars to see it in the bright twilight following sunset, very near the horizon.

Venus: The “evening star” is beginning its show that will extend through the entire winter. Shining at magnitude -3.9 Venus is visible low in the glow of the setting Sun, dipping below the horizon about an hour after the Sun at month’s end.

Mars: Mars is rising during the wee small hours of the night. I’ll be waiting a few months to enjoy the red planet in the eyepiece of a telescope. But, I will admit to having watched the 1953 version of *Invaders from Mars* recently. What can you say about a movie in which you can see the zippers on the back of the monster’s costume?

Jupiter: Jupiter reaches opposition from the Sun on the night of October 28/29, when it will be visible

from sunset to sunrise. Blazing at magnitude -2.9 the disk of Jupiter is nearly 50 arc-seconds wide. Near midnight Jupiter will be more than 60 degrees high in the southern sky so the viewing will be excellent. There are few events more exciting than seeing one of the Galilean moons slip behind Jupiter or appear from behind the planet’s disk. You can watch the moon’s position change from minute to minute!

Saturn: Late in the month Saturn reappears in the pre-dawn sky, rising about an hour and a half before the Sun. That’s much earlier than I rise, even on a work day and especially on the weekend.

Uranus and Neptune: Both gas giants can be seen late in the evening hours during October. You can find sky maps for both planets at skyandtelescope.com.

The Moon: Full Moon occurs on October 11th. This full Moon is often referred to as the Full Hunter’s Moon, Blood Moon, or Sanguine Moon. Many moons ago, Native Americans named this bright moon for obvious reasons. The leaves are falling from trees, the deer are fattened, and it’s time to begin storing up meat for the long winter ahead. Because the fields were traditionally reaped in late September or early October, hunters could easily see fox and other animals that come out to glean from the fallen grains. Probably because of the threat of winter looming close, the Hunter’s Moon is generally accorded with special honor, historically serving as an important feast day in both Western Europe and among many Native American tribes.

On the evenings of October 12th and 13th a just-past-full Moon is close to Jupiter. Then on October 28th a thin crescent Moon will be near Antares, Venus and Mercury.

Constellations: During October we begin to lose the summer triangle and all the delights it holds, but here come the fall and winter treasures! The dim but

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Equipment Review (cont'd)

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but want a premium quality accessory for their telescope. Since the introduction of the Delos at NEAF this year, it took a few months for this product to become available at local dealers. It has been available at our local distributor, Skies Unlimited, since mid-August. I just happened to be up at Skies last month to purchase a telescope cover when Bob Black mentioned that the Delos had just arrived the previous day. Needless to say, I found that I just couldn't resist. Bob prefers the 6 mm model, but I opted for the 10 mm, and I had my reasons. At this point, I am sure that some of our regular readers are thinking, "Wait a minute, Hockenberry. You're a photography geek. What are you doing writing about eyepieces when you don't even look through a telescope anymore?"

And I will readily concede the point. But as it happened, the Delos became available 2 days before heading up to our CCAS Observing Chair and Librarian's dark sky oasis in the Poconos, AKA Starry Nights. If there is a discerning eye to the sky among our club members, it belongs to Don Knabb. And with his recent acquisition of a large mirror Dobsonian from Orion, I knew that there would be plenty of know-how on hand to help me field test this product. Even if I can't shoot pictures through it.

And so we arrived at Starry Nights with the Delos in hand,

box unopened. It made its first appearance on Don's kitchen table. Those familiar with TeleVue products will find it immediately recognizable, as the overall exterior design looks very similar to the Nagler, Panoptic, or Radian designs, albeit somewhat larger. It sports the usual black housing with bright green TeveVue lettering, and Don immediately appreciated the expandable barrel he enjoys in some of his other lenses.

This is NOT the monster one pound behemoth Ethos. But it IS a large unit, and heavier than most 10mm products out there. Like the Ethos, those who need critical balance for their telescope mounts to work well should take the extra time to adjust their tubes or add weights up front of the OTA for smooth guiding. Despite the weight, the overall tube is narrower than comparable Naglers, making this a good candidate for bino viewers or those with large astro binoculars. The fit and finish is exactly what one would expect from any TeleVue product, meaning excellent.

Of course, it rained continuously for the next 2 days. But on our last night up there, the clouds disappeared and we had a gorgeous clear night with the Moon up later in the evening. Don set up his Big Bopper Dob and his Big Binos, and we settled in for a night of viewing. I was especially keen on getting the Delos into the big Dob. There is a rumor circulating that some of Al

Nagler's products only work well with APO refractors, as they are the main stay of the TeleVue market. Let me put that rumor in its grave right here and now. Through Don's big reflector the view was magnificent. We first went after several clusters, notably the Wild Duck and several others in the Sagittarius region. The field of view was wonderful, and the stars were pin point all the way to the edge of the field. We expected no color aberrations with this telescope, and indeed there were none. The FOV is noticeably smaller than the Ethos, so with the Delos you don't feel like you are going to fall into the image. But it was more than generous, especially given the 1200 mm focal length of the Dob. There was still plenty of room at the edge of the field to contain the larger clusters.

The Swan nebula was our next target, and again the image was tack-sharp and incredibly gratifying despite the objects proximity to the horizon. But the best test was later in the evening. We got Neptune sighted in, and the image was not only sharp, but the wonderful blue-green color of the disc was perfectly represented through the Delos. The smiles and exclamations from our Observing Chair completely validated my evaluation – this is yet another winner from TeleVue. We both noticed that the exact focus point, even on a Dob OTA, was very narrow and critical. Just a smidge in either direc-

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Equipment Review (cont'd)

(Continued from page 8)

tion of the rack and pinion focuser meant blur. Given the weight of this unit, and the critical focus (which presumably would be even MORE critical on a refractor) one might want to have a robust focusing mechanism that locks or can handle a fair amount of weight without slipping. Because of the expandable barrel, I found eye relief to be more comfortable with the Delos than with my 13mm Ethos. Subsequent viewing through my 10" Meade SCT at a recent CCAS event at Hoopes Park confirmed the initial impressions through the Dob. This eyepiece works just as well in reflectors as it does refractors.

That being said, I have my complaints. Not with the Delos, but with where it fits in the overall market. This product is intended to replace the TeleVue Radian line. To those of us who have been around the astro community for a while, this should sound an alarm. The Radian was one of those true workhorse eyepieces that gave great image quality at a good price, and was just plain tough. It could take abuse and with minimal care deliver performance even in the worst of conditions. When the current stock or Radians is sold, there will be no more. So those of you that were thinking of updating your collection of Radians, do it fast. The Delos is pricier – much pricier – than the Radian. For the segment of the market that wants to use two

identical eyepieces for binocular viewers or astro binoculars, the Delos fills the bill geometrically. But having to buy two of these will cost as much if not a little more than a single Ethos. Most of us work hard for our paycheck, and these prices mean hard choices. Furthermore, our Observing Chair has found that for his big Oberwerks binoculars, NONE of the TeleVue lenses – including the Delos – fit the critical distance needed in the eyepiece sockets. So for this instrument, TeleVue of any type is probably not an option without custom fittings. Those with binocular viewers or specialty instruments may want to “try before you buy” in the case of the Delos.

So this reviewer, with concurrence from our Observing Chair, gives the Delos two thumbs up for performance and especially eye relief and ease of use. It remains to be seen if TeleVue will, as they did with the Ethos, expand this line to fill all the sizes of the Radians they are intended to replace. It is an excellent if somewhat heavy and pricey eyepiece and it remains to be seen if the market for binocular viewers will embrace the Delos given the expense. I will mourn, however, the loss of the time-tested Radian. Those who feel likewise will, undoubtedly, be spending yet more time scouring the offerings on AstroMart.

For more info go to www.TeleVue.com or visit Bob and Ted at our local dealer, [Skies Unlimited](#).

Observing Highlights (cont'd)

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huge Great Square of Pegasus dominates the southern sky and by 9:00 we can find the jewels of the night – the Pleiades rising in the east. Stay up late and Taurus the Bull leads Orion the Hunter up from the eastern horizon.

Messier/deep sky: We say goodbye to the riches of Sagittarius and Scorpius, but our sister galaxy Andromeda makes up for that loss. And the double cluster in Perseus is reasonably high in the northeastern sky. If you stay up late the three clusters in Auriga, M36, M37 and M38 are excellent telescopic objects.

Comets: At the recent star party at Hoopes Park in West Chester we saw Comet Garradd, a dim fuzzy in the eyepiece of large binoculars. Good viewing conditions continue through October, so seek out this visitor from the outer solar system while you have the opportunity!

Although hopes were high that another comet, Comet Elenin, would reach naked eye brightness in October, recent photographs show it dimming rapidly, suggesting the comet is breaking up. I guess those rumors about Comet Elenin destroying the Earth aren't true after all.

Meteor showers: We have two meteor showers during October, the Draconid shower on October 8/9 and the Orionid shower on

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Through the Eyepiece: The Witch's Broom, NGC 6960 in Cygnus

by Don Knabb, CCAS Secretary & Observing Chair

What better topic for the October newsletter than an object called The Witch's Broom! This wispy cloud is a popular target for astrophotographers and Dave Hockenberry's picture shows all the wispy detail of this faint object. The Witch's Broom is a difficult object for telescopic observing, but I intend to give it a try if the rainy weather ever clears.

Approximately ten thousand years ago, before the dawn of recorded human history, a bright "star" must suddenly have appeared in the night sky and faded after a few weeks. Today we know this light was an exploding star and the colorful expanding cloud that remains is most often called the Veil Nebula. The expanding debris cloud gains its colors by sweeping up and exciting existing nearby gas. The supernova remnant lies about 1400 light-years away towards the constellation of Cygnus. The bright star 52 Cygni is visible with the unaided eye from a dark location but is unrelated to the ancient supernova.

The Veil Nebula has several other names such as the Cygnus Loop, Cirrus Nebula, Bridal Veil Nebula and Filamentary Nebula. All refer to the nebula's wispy streaks and elegant lace-like filamentary structures.

The structure is so large that several NGC numbers were assigned to various arcs of the nebula. There are three main visual

components: The Western Veil (also known as Caldwell 34), consisting of NGC 6960, the Witch's Broom, near the foreground star 52 Cygni; The Eastern Veil (also known as Caldwell 33), whose brightest area is NGC 6992, and Pickering's Triangle (or Pickering's Triangular Wisp), brightest at the north central edge of the loop, but visible in photographs continuing toward the central area of the loop.

Pickering's Triangle is much fainter, and has no NGC number. It was discovered photographically in 1904 by Williamina Fleming (after the New General Catalogue was published), but credit went to Edward Charles Pickering, the director of her observatory, as was the custom of the day.

The entire Veil Nebula spans 3 x 3 degrees of sky, equal to over five times the size of the full

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Image credit: Dave Hockenberry, CCAS Program Chair

Image Info: Shot 8/5/11 and 8/8/11 with QSI 583 wsg camera, through Astrotech AT8RC 'scope, focal length 1625 mm on an AstroPhysics 1200 GEM. Autoguided with SX Lode-star camera off-axis and Maxim DL5. Image capture in Maxim DL5. Calibrated, hot pixel filter,

registered, stacked, deconvolved and RGB creation in CCDStack. L-RGB merge and final adjustments in Photoshop CS3. FITS Liberator courtesy of ESA. 2 hours Luminance (12 X 10 minute images), 45 minutes (9 X 5 minute images) each RGB with AstroDon filters.

Through the Eyepiece (cont'd)

(Continued from page 10)

Moon. The Witch's Broom appears to lie close to the bright star 52 Cygni, the brightest star in the Dave Hockenberry's photo, but 52 Cygni is just a foreground star at a distance of 206 light years that is aligned by coincidence along the same line of sight.

There are few directly visible supernova remnants, but the Veil is one of the finest. The Witch's Broom is sometimes called the Network Nebula. When finely resolved, some parts of the image appear to be rope-like filaments. The standard explanation is that the shock waves are so thin that the shell is visible only when viewed exactly edge-on, giving the shell the appearance of a filament. Undulations in the

surface of the shell lead to multiple filamentary images, which appear to be intertwined.

The nebula was discovered in 1784 by William Herschel. He described the western end of the nebula as "Extended; passes thro' 52 Cygni... near 2 degree in length", and described the eastern end as "Branching nebulosity... The following part divides into several streams uniting again towards the south."

Wisps like this are all that remain visible of a Milky Way star. At the time of the supernova, the expanding cloud was likely as bright as a crescent Moon, remaining visible for weeks to people living at the dawn of recorded history. Even though the nebula has a relatively bright integrated magni-

tude of 7, it is spread over so large an area that the surface brightness is quite low, so the nebula is notorious among astronomers as being difficult to see. However, an observer can see the nebula clearly in a telescope using an OIII filter (a filter isolating the wavelength of light from doubly ionized oxygen), as almost all light from this nebula is emitted at this wavelength. An 8-inch telescope equipped with an OIII filter shows the delicate lacework apparent in photographs, and with an OIII filter almost any telescope could conceivably see this nebula. Some argue that it can be seen without any optical aid except an OIII filter held up to the eye.

The Veil Nebula and the Witch's Broom are well positioned during October for telescopic observation. You will find it several degrees south of epsilon Cygni, the third brightest star in Cygnus, shining at magnitude 2.5. This star is named Gienah, which is the Arabic word for wing. Note that this is not the star you see in Dave's photo, that is the much fainter 52 Cygni.

Information credits:

iPad application Sky Safari Pro
http://en.wikipedia.org/wiki/NGC_6960
http://www.astropix.com/HTML/SHOW_DIG/NGC6960_Witch's_Broom_Nebula.HTM
<http://apod.nasa.gov/apod/ap080819.html>

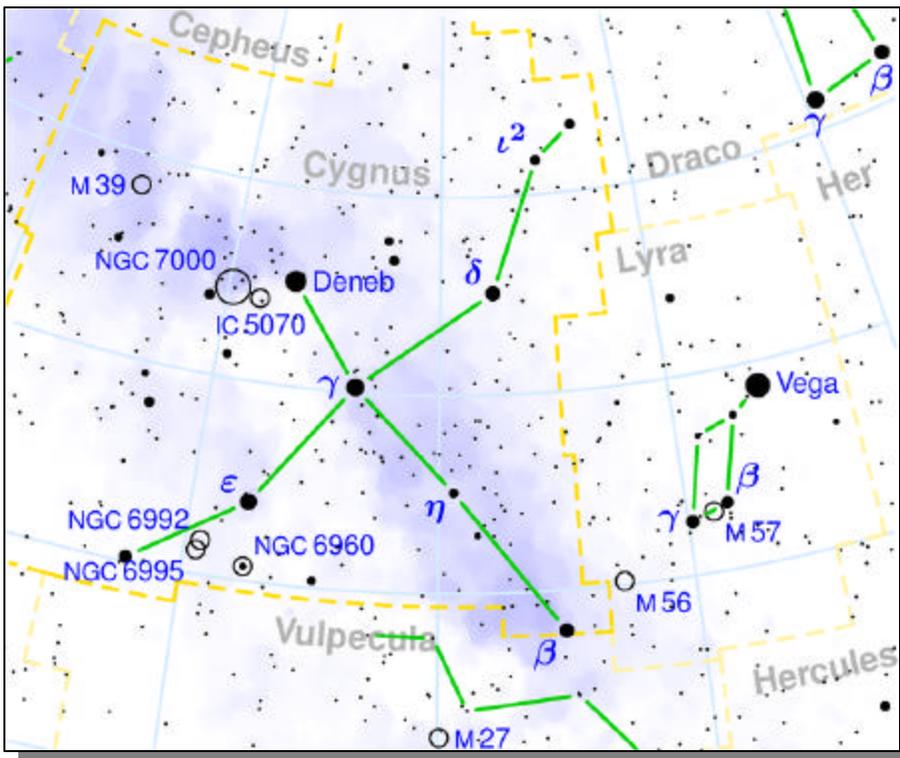


Image credit: <http://en.wikipedia.org/wiki/Cygnus>

Dark Clues to the Universe

by Dr. Marc Rayman

Urban astronomers are always wishing for darker skies. But that complaint is due to light from Earth. What about the light coming from the night sky itself? When you think about it, why is the sky dark at all?

Of course, space appears dark at night because that is when our side of Earth faces away from the Sun. But what about all those other suns? Our own Milky Way galaxy contains over 200 billion stars, and the entire universe probably contains over 100 billion galaxies. You might suppose that that many stars would light up the night like daytime!

Until the 20th century, astronomers didn't think it was even



possible to count all the stars in the universe. They thought the universe was infinite and unchanging.

Besides being very hard to imagine, the trouble with an infinite universe is that no matter where you look in the night sky, you should see a star. Stars should overlap each other in the sky like tree trunks in the middle of a very thick forest. But, if this were the case, the sky would be blazing with light. This problem

greatly troubled astronomers and became known as “Olbers’ Paradox” after the 19th century astronomer Heinrich Olbers who wrote about it, although he was not the first to raise this astronomical mystery.

To try to explain the paradox, some 19th century scientists thought that dust clouds between the stars must be absorbing a lot of the starlight so it wouldn't shine through to us. But later scientists realized that the dust itself would absorb so much energy from the starlight that eventually it would glow as hot and bright as the stars themselves.

Astronomers now realize that the universe is not infinite. A finite universe—that is, a universe of limited size—even one with trillions of stars, just wouldn't have enough stars to light up all of space.

Although the idea of a finite universe explains why Earth's sky is dark at night, other factors work to make it even darker.

The universe is expanding. As a result, the light that leaves a distant galaxy today will have much farther to travel to our eyes than the light that left it a million

(Continued on page 13)



This Hubble Space Telescope image of Galaxy NGC 4414 was used to help calculate the expansion rate of the universe. The galaxy is about 60 million light-years away. Credit: NASA and The Hubble Heritage Team (STScI/AURA)

Space Place (Cont'd)

(Continued from page 12)

years ago or even one year ago. That means the amount of light energy reaching us from distant stars dwindles all the time. And the farther away the star, the less bright it will look to us.

Also, because space is expanding, the wavelengths of the light passing through it are expanding. Thus, the farther the light has traveled, the more red-shifted (and lower in energy) it becomes, perhaps red-shifting right out of the visible range. So, even darker skies prevail.

The universe, both finite in size and finite in age, is full of wonderful sights. See some bright,

beautiful images of faraway galaxies against the blackness of space at the Space Place image galleries. Visit <http://spaceplace.nasa.gov/search/?q=gallery>.

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



Happy Halloween !!!

Necklace Asterism (Cont'd)

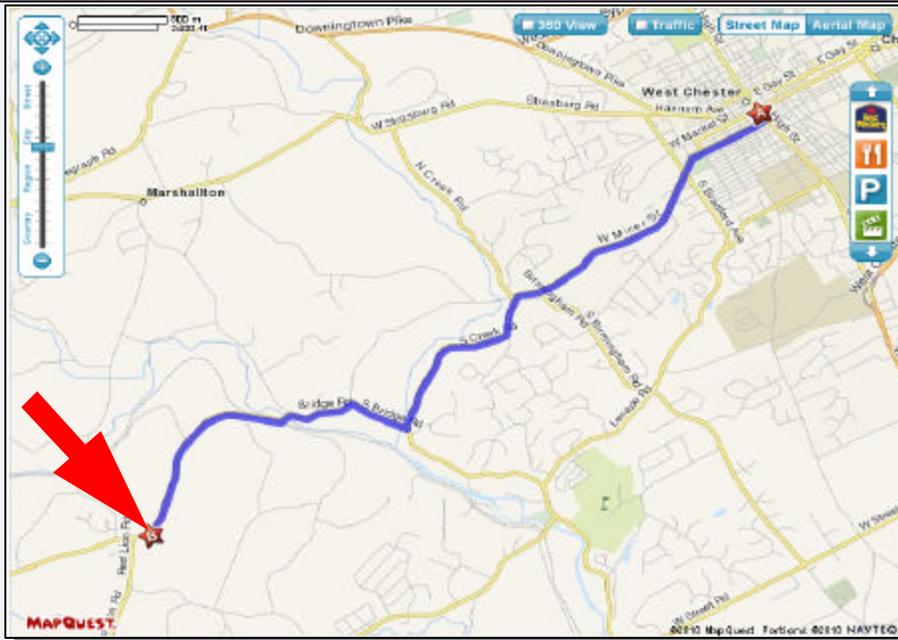
(Continued from page 4)

Necklace in the sky. You need to look closely, but in the center of the photo is Boo's Necklace.

And I'll include a picture of Boo the cat. She was named Boo by the facility who rescued her since she was found during October and is a classic Halloween black cat.

Asterisms are usually naked eye objects, but what the heck, so you need a telescope to see these faint stars, I'm still calling it an asterism. I challenge our members skilled in astrophotography to submit a better picture of Boo's Necklace. That won't be difficult, since I am a real beginner at this path to madness.

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 Highlights (cont'd)

(Continued from page 9)

October 21/22. The Draconid shower is usually considered to be a minor shower, but it is possible we'll see a rise in activity since the shower's parent comet, Comet Giacobini-Zinner reaches its closest approach to the Sun next February. The Orionid shower normally yields up to 20 meteors per hour. The best viewing time for this shower is around 2:00 a.m. on October 22nd. It's a Saturday, so why not give it a try; you can sleep late the following morning!

CCAS Membership Information and Society Financials

Treasurer's Report by Liz Smith

August 2011 Financial Summary

Beginning Balance	\$1,856
Deposits	\$75
Disbursements	\$0
Ending Balance	\$1,931

New Member Welcome!

Welcome new CCAS member Garret Bullard of 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:

Liz Smith
1567 Shadyside Rd.
West Chester PA 19380

The current dues amounts are listed in the *CCAS Information Directory*. Consult the table of contents for the directory's page number in this month's edition of the newsletter.

Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at \$30.00 for one year. Send to:

International Dark-Sky Association
3225 North First Avenue
Tucson, AZ 85719

Phone: 520-293-3198
Fax: 520-293-3192
E-mail: ida@darksky.org

For more information, including links to helpful information sheets, visit the IDA web site at:

<http://www.darksky.org>

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 society. 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 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 (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 and Observing:	Don Knabb 610-436-5702
ALCor and Treasurer:	Liz Smith 610-842-1719
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:

Liz Smith
1567 Shadyside Rd.
West Chester PA 19380

Phone: 610-842-1719
e-mail: treasurer@ccas.us

Sky & Telescope 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 Liz Smith.

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 Liz first at 610-842-1719.

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 Liz Smith**.