



# Observations

A Monthly Publication Of The  
CHESTER COUNTY ASTRONOMICAL SOCIETY

**AUGUST 2007**

(VOLUME 15, NO. 8)

Visit our website at [www.ccas.us](http://www.ccas.us)

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## Important August 2007 Dates

- 5** Last Quarter Moon, 5:30 p.m. EDT.
- 12** New Moon, 7:03 p.m. EDT.
- 13** Perseid Meteor Shower peaks at about 1:00 a.m. EDT.
- 17/ CCAS Observing Session**
- 18** Location: Brandywine Valley Association  
Time: sunset, or earlier (see page 4).
- 20** First Quarter Moon, 7:54 p.m. EDT.
- 28** Full Moon, 6:35 a.m. EDT

## Autumn Schedule of Events

Sept. 11—CCAS Monthly Meeting

**Sept. 15—Observing Session**

**Anson B. Nixon Park in Kennett Square**

Oct. 9—CCAS Monthly Meeting

Oct. 12/13—Observing Session at BVA

Oct. 20—CCAS Bus Trip to New York

Nov. 13—CCAS Monthly Meeting

Nov. 9/10—Observing Session at BVA

Dec. 7/8—Observing Session at BVA

Dec. 11—CCAS Holiday Party

“How can you teach children to reach for  
the stars if they have never seen the  
stars?”

(James J. Anderson)

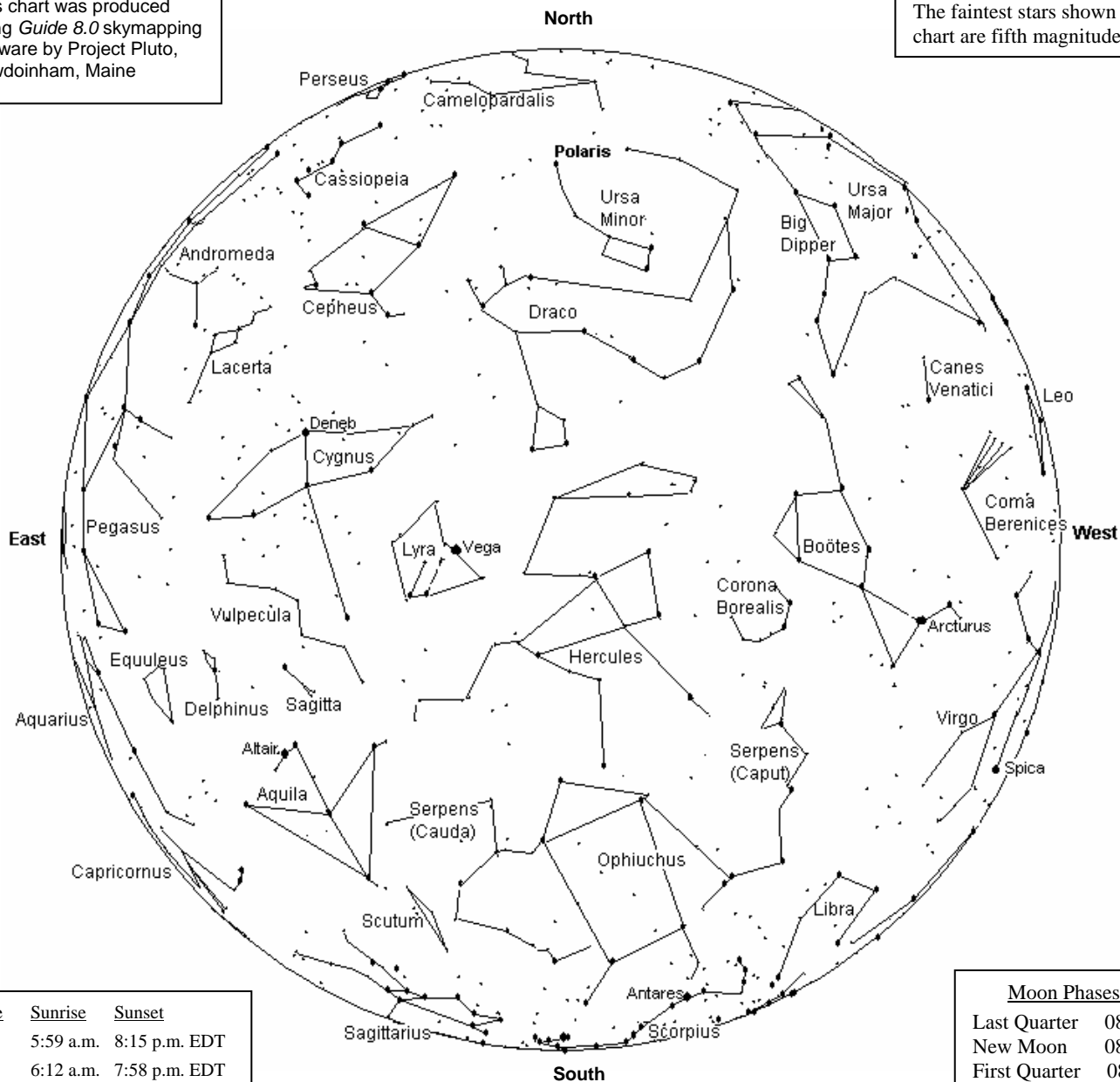
**Fight Light Pollution!**

Join the Dark Sky Association (see page 12)



This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



Date	Sunrise	Sunset
8/1	5:59 a.m.	8:15 p.m. EDT
8/15	6:12 a.m.	7:58 p.m. EDT
8/30	6:26 a.m.	7:36 p.m. EDT

Moon Phases	
Last Quarter	08/05
New Moon	08/12
First Quarter	08/20
Full Moon	08/28

## The sky over Chester County August 15, 2007 at 9:00 p.m. EDT

### The Planets, by Don Knabb

**Mercury:** The planet closest to the Sun shines brightly in the morning twilight at magnitude -1.3 for the first few days of August, then it disappears for the rest of the month.

**Venus:** During August Venus passes us in the race around the Sun, so it disappears from the evening sky and emerges into the dawn sky at the end of the month. You can still catch Venus in the sunset sky early in the month very low toward the horizon.

**Mars:** The Red Planet is now rising just before midnight and is high in the sky as dawn approaches. Our view of Mars will improve during the next few months. Let's just hope the dust storms on the planet don't shut down the two NASA robotic rovers on the planet.

**Jupiter:** The King of the Planets is low in the southern sky but oh what a sight it is! Wait for a still night and take your telescope to high power and just stare for a while to see how much detail you can pick up on the bands of color on the gas giant.

**Saturn:** We bid goodbye to Saturn until it reappears in the dawn twilight in a few weeks. Thanks for the great show this spring!

**Uranus & Neptune:** The outer gas giants are well placed for observing late at night. Uranus can be found relatively easily with binoculars. Finder charts are in the July issue of *Sky and Telescope*.

**Pluto:** Pluto, the ex-planet, is 7.6° northeast of the Trifid Nebula, M20. You will need a fairly large telescope and dark skies to find this 14th magnitude speck.

Note: the constellation stick figures used on the chart above were adapted from the book *The Stars: A New Way to See Them*, by H. A. Rey. This excellent guide to learning the constellations can be purchased at many area book stores, or from online booksellers.

## August Observing Highlights

by Don Knabb, CCAS Observing Chair

**Lunar Eclipse:** On August 28 many people in the U.S. will enjoy a total lunar eclipse. Unfortunately for us the Moon will be quite low in the dawn sky just as the show is getting interesting. The Moon will be setting just as the Sun is rising around 6:30 a.m.

**Planets:** During August Saturn is gone from the evening sky and we say goodbye to Venus. But don't worry we can enjoy Jupiter all month and if we stay up late we can say hello to Mars! And with binoculars or a telescope you can add Uranus and Neptune to your list of planets that you have seen.

**Constellations:** The Summer Triangle rules the night sky overhead after you stare at Jupiter and Antares in the southern sky. Find a driveway, put down a sleeping bag and feel the heat of the sun come back out of the driveway, warming your back as you stare upward at Cygnus as it flies down the Milky Way. It's easy to hold binoculars straight up if you are lying on your back. Scan between Aquila and Lyra with your binoculars to find the Coat Hanger Cluster. Then just drink in the stars of our home galaxy.

**Deep sky:** M13 and M92, bright globular clusters in Hercules are nearly overhead so they are in a great position for viewing with binoculars or a telescope. Don't miss the southern Messier objects in Scorpius and Sagittarius while we have the chance to see them. That part of the sky is filled with incredible objects that are visible for only a short time from Chester County.

**Comets:** There are no bright comets in the sky at this time but if you want a challenge look for Comet C/2006 VZ13(LINEAR). It is passing through Virgo this month. If conditions are good you might even see a faint tai. The July issue of *Sky and Telescope* has a finder chart for the comet.

**Meteor shower:** This is the highlight of August for me! The Perseid meteor shower should be excellent this year if we have clear skies because the Moon will not interfere with the show as it has in recent years. The shower peaks at 1:00 am on Monday August 13<sup>th</sup>, but we can also see some great shooting stars for a few days before and after the peak. Don't miss this one!

- |                |  |
|----------------|--|
| <b>Aug. 5</b>  | Last quarter Moon, 5:30 p.m. EDT   |
| <b>Aug. 12</b> | New Moon, 7:03 p.m. EDT  |
| <b>Aug. 13</b> | Perseid Meteor Shower peaks at about 1:00 a.m. EDT.  |
| <b>Aug. 20</b> | First quarter Moon, 7:54 p.m. EDT  |
| <b>Aug. 28</b> | Full Moon, 6:35 a.m. EDT, The Full Sturgeon Moon, and total lunar eclipse. Also called the Full Red Moon, the Green Corn Moon or the Grain Moon. |

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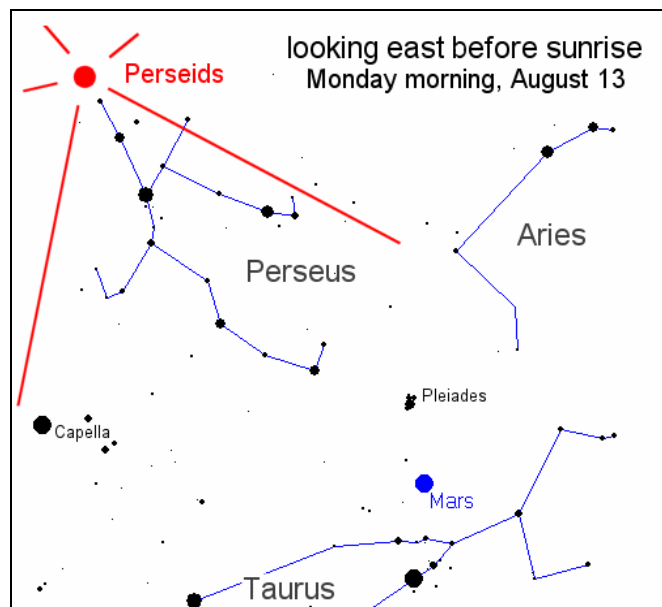
## Looking Up: The Perseid Meteor Shower

by Don Knabb, CCAS Observing Chair

One event I always look forward to in the summer is the Perseid Meteor shower. Nothing in the sky compares with seeing a Perseid fireball travel most of the way across the sky on a warm August night. Yes, seeing Saturn or Jupiter gets "ooohs" and "aaaaahs" from the stargazers, but a good Perseid fireball gets a yell! You feel like you have really seen something special, especially if it is a shared experience.

This year we should have a great show if the weather cooperates. That's because the Moon is new on August 12<sup>th</sup>, so we'll have dark skies. At the peak of the shower on Monday morning, August 13 one could see one or two Perseids a minute.

You won't have any trouble seeing the "shooting stars," but the chart below shows the point in the sky from which the meteors will radiate. That point is in the constellation Perseus, therefore we call this the Perseid Meteor Shower.



Skymap credit:

NASA's Marshall Space Flight Center and Science@NASA  
[http://science.nasa.gov/headlines/y2007/11jul\\_greatperseids.htm](http://science.nasa.gov/headlines/y2007/11jul_greatperseids.htm)

The source of the shower is Comet Swift-Tuttle. Although the comet is nowhere near Earth, the comet's tail does intersect Earth's orbit. We glide through it every year in August. Tiny bits of comet dust hit Earth's atmosphere traveling at 132,000 mph. At that speed, even a smidgen of dust makes a vivid streak of light—a meteor—when it disintegrates.

It's hard to believe, but each day the Earth sweeps up at least 400 tons of meteoric debris. Most of it is microscopic dust that just floats to the ground months or years later. But some of the bits of debris are large enough to flash as visible meteors. Rarely, a meteor is big enough to travel all the way to the ground and we then call it a meteorite.

The Perseid shower has already begun and it will grow in intensity as we approach August 13. Personally, I'll go out late on Saturday night August 11<sup>th</sup> to look for early Perseids since I don't need to get up for work the next day. If the weather is clear I might even get up at 4:00 a.m.!

Find a place where you can lie down on a warm driveway or use a lounge chair, but do your best to get horizontal. That way you will be looking straight up and you can see most of the sky. And you get the added bonus that if you fall asleep you are already lying down! Don't worry about where you look, just keep your eyes open and you will see the fireworks.

The real show begins between 9:00 and 10:00 pm on Sunday, August 12th, when Perseus rises in the northeast. This is the time to look for Perseid earth grazers—meteors that approach from the horizon and skim the atmosphere overhead like a stone skipping the surface of a pond. These will be fewer in number, but when you see one you will never forget it!

As the night unfolds, Perseus climbs higher and the meteor rate will increase. Near dawn you could see more than a meteor every minute.

The famous Perseid meteor shower has been observed for about 2000 years, with the first known information on these meteors coming from the Far East. In early Europe, the Perseids came to be known as the "tears of St. Lawrence."

Don't miss this one! Mark your calendar now!



Above: A Perseid fireball photographed August 12, 2006, by Pierre Martin of Arnprior, Ontario, Canada.

Source: NASA's Marshall Space Flight Center and Science@NASA,  
[http://science.nasa.gov/headlines/y2007/11jul\\_greatperseids.htm](http://science.nasa.gov/headlines/y2007/11jul_greatperseids.htm)

Information sources:

<http://stardate.org/nightsky/meteors/>  
NASA's Marshall Space Flight Center and Science@NASA,  
[http://science.nasa.gov/headlines/y2007/11jul\\_greatperseids.htm](http://science.nasa.gov/headlines/y2007/11jul_greatperseids.htm)

[http://en.wikipedia.org/wiki/Meteor\\_shower](http://en.wikipedia.org/wiki/Meteor_shower)  
Pasachoff, Jay M. 2000. *A Field Guide to the Stars and Planets*. New York, NY. Houghton Mifflin.  
Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books

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## CCAS Observing Session August 17/18, 2007

**Note:** in June, July and August the CCAS does not hold a regular meeting. The monthly Observing Sessions are the only Society activities in the summer months, although we have special summer events from time to time.

CCAS Observing Sessions are held at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 14) on Fridays starting at sunset; or earlier, if you can get there earlier. If it's too cloudy on Friday, then the Observing Session will be on the next day, Saturday. At the observing sessions, there will be help available to set up and use your telescopes. If you're having trouble using your telescope, or finding your way around the sky, come on out and get some assistance. Telescope owners are always glad to share the view through their telescope. **CCAS Observing Sessions are free of charge and open to the public.**

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### New This Fall: Cosmology Series!

The CCAS Executive Committee has decided to try something new for our monthly meetings, starting with the September meeting on Tuesday September 11, 2007.

The Society recently purchased a set of DVDs from The Teaching Company. We got the series entitled *Understanding the Universe: An Introduction to Astronomy, Second Edition*. This series of lectures (96 in all) is taught by Dr. Alex Filippenko, from the University of California at Berkeley. Dr. Filippenko earned his Ph.D. at the California Institute of Technology, and has received numerous teaching awards in his career.

The Executive Committee decided that each month we will show one of the thirty-minute lectures **starting at 7:00 p.m.** The regular meeting will then start at 7:30, when the video ends. We picked a series of eight lectures on cosmology to show this year. Many of our members have expressed an interest in cosmology, and this is a way to provide an excellent educational experience of this exciting topic.

These videos will not replace our regular program of live speakers, nor will it replace the Constellation of the Month series. It supplements our program, providing information on an often-requested topic by an excellent instructor, and by starting it at 7:00 the meeting can still end by about 9:00 p.m. The Executive Committee members are quite excited about starting this series, and we hope that many of our members will attend! **The videos will start promptly at 7:00 p.m.!**

- Sept. 11: Cosmology—The Really Big Picture
- Oct. 9: Expansion of the Universe and the Big Bang
- Nov. 13: Searching for Distant Galaxies
- Jan. 8: The Evolution of Galaxies
- Feb. 12: Active Galaxies and Quasars
- Mar. 11: Cosmic Powerhouses of the Distant Past
- Apr. 8: Supermassive Black Holes
- May 13: Feeding the Monster

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## CCAS has an Urgent Need

The Society's collection of lending telescopes, including the 20-inch Dob, needs a new home. For many years, CCAS Founder and Past President Ed Lurcott has generously housed the telescopes in his garage. Ed and his wife Evelyn, however, will soon be retiring to smaller living quarters. There will no longer be room to store the telescopes.

Within about two months we need to find someplace to keep the Society's telescopes. Anyone providing storage for the telescopes is of course welcome to use them whenever they are not out on loan. If you can provide storage space, please contact CCAS President Kathy Buczynski ASAP at **610-436-0821**.



## CCAS Bus Trip to NYC: Update

**Date:** Saturday October 20, 2007

**Destination:** Museum of Natural History in New York City.

**Contact:** Linda Lurcott-Fragale at

**Cost:** \$60.00 per person

Checks should be made payable to "Chester County Astronomical Society"

**Payment Deadline:** September 17, 2007

Cost includes bus fare, tip for driver, and Museum entrance ticket. Friends and family members of CCAS members are very welcome to travel with us, but we will not accept any unaccompanied minors (under the age of 18).

We have reserved a 54 passenger bus for Saturday, October 20, 2007 to go to New York City. Our morning event will be visiting the Museum of Natural History for the special program called *Beyond*. See the flyer on page for more details. You can make copies of the flyer to give to friends and family.

The afternoon will be "on your own." The new Hayden Planetarium is also part of the Museum of Natural History complex (in case you're wondering). You can leave the museum complex if you like. We will meet back at the Museum for the ride home.

Need to see an enticing preview of *Beyond*? Visit [http://www.amnh.org/exhibitions/photo/beyond/?src=e\\_h](http://www.amnh.org/exhibitions/photo/beyond/?src=e_h)

**Departure:** 7:00 a.m.—Meet the bus in the parking lot of the Goshen Shopping Center on Paoli Pike outside West Chester, near the Chester County Book Company.

**Return:** 5:00 p.m.—Bus leaves the Museum complex in NYC at 5:00 sharp! Miss the bus and you're on your own!



## 2007 CCAS Lunar X Party and Picnic

by Don Knabb, CCAS Observing Chair

On July 21st we held the CCAS Lunar X party. Members, spouses, and neighbors gathered at the Knabb observing circle and enjoyed the beautiful clouds, sunset and the night sky.

Five telescopes and several pairs of binoculars were set up and everyone took turns looking into the eyepieces.



Here we are setting up the telescopes.



Here is the nearly first quarter Moon in the beautiful evening sky.

This year we were successful! We were able to see the elusive Lunar X feature on the moon just before it ducked behind the neighbor's trees! So yes, it does exist and with planning and a bit of luck it can be seen from Chester County skies.



Here are some of the happy Lunar X seekers. Yes, Pat Buczynski did get up to see the Lunar X!

We saw a beautiful crescent Venus and observed Jupiter when it rose above the trees. The moon was the main event and we all watched the play of shadow and light move across the moon as the evening progressed. At first we saw the “Lunar Comma,” then the Lunar “Less Than Sign” (or “Greater Than Sign” depending on your optics). Then the full Lunar X was seen as the last event of the night!



As the sun set we zoomed in on the Moon and started the search for the Lunar X.



And here is Barb Knabb viewing the Lunar X through Bob Richter’s telescope as Marlene Richter waits for her turn.

Thanks to everyone for your contributions of food, drink and excellent companionship. Now we need to come up with a quest for next summer!

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### Cub Scout Star Party: Telescopes Needed

by Don Knabb

Cub Scout Pack 32 from the Pickering Valley Elementary School near Chester Springs has requested we host a star observing night and help the scouts earn their Astronomy belt loop and pin. We will have the star party at the Pack Leader’s house on Thursday, August 16th at 8:00 pm. Please e-mail Don Knabb at [observing@ccas.us](mailto:observing@ccas.us) if you can help out with the scouts. Hope to see you there!

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### Treasurer’s Report

by Bob Popovich

#### June 2007 Financial Summary

Beginning Balance	\$1,681
Deposits	75
Disbursements	<u>330</u>
Ending Balance	\$1,426

#### Membership Renewals Due

08/2007	Fragale Knabb
09/2007:	Bogucki Holenstein Lurcott
10/2007:	Anderson End Morgan

### Membership Renewals

You can renew your CCAS membership by writing a check payable to “Chester County Astronomical Society” and sending it to our Treasurer:

**Bob Popovich**  
416 Fairfax Drive  
Exton, PA 19341-1814

The current dues amounts are listed in the *CCAS Information Directory* on page 11 in this newsletter.

### Important Notice Regarding Sky & Telescope Subscriptions

For members who have current subscriptions through the Society at the special club discount:

**You may now renew directly with the publisher**—there is no longer a need to send anything to our Treasurer! You can **renew via mail or telephone** (1-800-253-0245). Sky Publishing will confirm your CCAS membership with Bob.

If you wish to **start** a subscription through the Society, you must still send the check to Bob first. This is only for new subscriptions at the special club rate of \$32.95 per year. As in the past, this initial check should be made out to Chester County Astronomical Society. Bob will then forward the needed information and payment on to Sky Publishing. But once you are started, you too can renew directly with Sky Publishing in subsequent years.

If you have **any questions** about this **call Bob** at 610-363-8242.

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### Welcome!

This month we welcome two new family-members to the Society: Dave Hockenberry & Family of Glen Mills, and Kristen Stevens & Family of Exton. We’re glad you decided to join us under the stars! Clear Skies to all!

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## Report on Space Adventure Week

by Don Knabb

Space Adventure Week was a childrens' program provided by the West Chester Department of Parks and Recreation. It was held June 25-29, 2007. The Department contacted the CCAS to help out with our knowledge and equipment. It was a daytime event.

Accordingly, on Wednesday June 27 several CCAS members hosted an astronomy demonstration for the Space Adventure Week. The event was held in Everhart Park in West Chester. Approximately 75 children from the local area participated in this event. Fortunately the sky was clear and we were able to observe the sun and provide several demonstrations.



Here's Kathy talking about telescopes while Nicholas stands by his solar telescope.



The results of the "shadow tracing" demonstration.



Here's Ed and Wayne showing the solar system model.



I guess one of the kids stumped Ed. I didn't think that could happen.

We extend a big "thank you" to the members who helped make this event both educational and fun for the young participants.



## Astronomus

“Dark Sky Note”

By Bob Popovich

I walked slowly along the Danube quay, turning onto the dirt road leading back to the cottage. Across the river, to the east, the shadows were lengthening on the Romanian foothills of the Carpathian Mountains. Just the sort of shadows, I thought, that give the lunar surface the sort of crisp definition that makes observing so appealing. But on this night the last thing I wanted to see was the moon. The sky over eastern Serbia was a flawless azure and the thought of a truly dark sky was whetting my appetite even more than the evening’s supper.

We were here. Belgrade is two hours away by car.



A truly dark sky.<sup>1</sup> What would it be like? We were near a village with scarcely 200 people and no streetlights. The handful of businesses along the quay sprayed little light into the night sky and would present no problem. Belgrade, the closest light pollution source, was two hours away. By my reckoning, I was in a sweet spot. “Sweet” was to be an understatement of astronomical proportions.

My mind continued to race as minutes dragged on. I alternately watched the sun set in the west and the foothills melt into the growing darkness of the east. “This is going to be really dark,” I thought. “The can’t-see-my-hand-in-front-of-my-face dark.”

Delighting in an excellent supper (doesn’t food taste better when you’re out in country air?), I reviewed my binocular Messier Star charts, further raising my expectation of what was to come. As my Exton, PA observing site doesn’t allow viewing to the south (a combination of Whiteland Town Center, Main Street and mature trees), I decided that it was time to head south.

Nestling into my lounge chair I waited for astronomical twilight. As my eyes adapted to the enveloping darkness I began to raise my 7x50 Nikons. But I stopped midstream and set them back down. The sky was beyond description. A sea of luminescent diamonds set on a black velvet field. And just for good measure, a broad, irregular band of light stretching across that velvety background. A gentle band of light actually punctuated by dark patches (opaque dusk). It was a Hubble view. But the Hubble wasn’t needed. It was set before me to enjoy with unaided eye.



I needed extra time to identify the familiar constellations of summer—the astounding number of stars made the sky appear a jumble at first. Ursa Minor actually had stars other than Polaris and Kochab! The stars around Deneb? Far too many to count. Scorpius and Sagittarius were crisp, well defined and set amongst a field of nebulosity. Nebulosity that was an easy target with my binoculars barely 10° above the horizon.

While I felt the need to restore some semblance of order to the mass of stars set before me, I simultaneously felt compelled to hop all over the celestial sphere in fear that this beautiful sight would somehow be taken from me. I wanted to drink it all in knowing full well that it would make me tipsy. But recalling the task at hand (Binocular Messier list), I had to proceed in an orderly fashion. I began to slow down and regain focus on the night's targets.

From this point on it was a pure joy ride—point, observe, enjoy, record, smile, move on. I could say it was too easy but that would minimize the genuine awe I felt at viewing the night sky as it was meant to be for all of us. On that one night I acquired nearly one-quarter of the binocular Messier requirements. Thoroughly satiated with *formal* observing I settled back for a leisurely cruise among the stars, astounded at how rich and beautiful the night sky could be.

Writing this article back in Exton, I realize the peril of what I had uncovered in Serbia. Knowing how dark the night sky can be, it may be tough to step outside my back door to observe. It just won't be the same. But when all's said and done, I think you'll agree, the lure of observing is just too much—even if the skies are less than stellar.

My sincerest wish for each of you is that you have the opportunity to record your own dark sky notes.

Next Time: IYA2009.

(1) The scale shows levels of light pollution as represented by the Bortle Scale. On this scale, I was privileged to observe a "Zone 1 sky." The Bortle Scale: 1 = Excellent Dark Sky, 2 = Typical truly dark sky, 3 = Dark rural sky, 4 = Rural sky, 4.5 = Rural/suburban transition sky, 5 = Suburban sky, 6 = Bright suburban sky, 7 = Suburban/urban transition sky, 8 = City sky, 9 = Inner City Sky.

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## Tones From the Deep

By Patrick Barry and Tony Phillips

Now is an exciting time for space enthusiasts. In the history of the Space Age, there have never been so many missions "out there" at once. NASA has, e.g., robots on Mars, satellites orbiting Mars, a spacecraft circling Saturn, probes en-route to Pluto and Mercury—and four spacecraft, the Voyagers and Pioneers, are exiting the solar system altogether.

It's wonderful, but it is also creating a challenge.

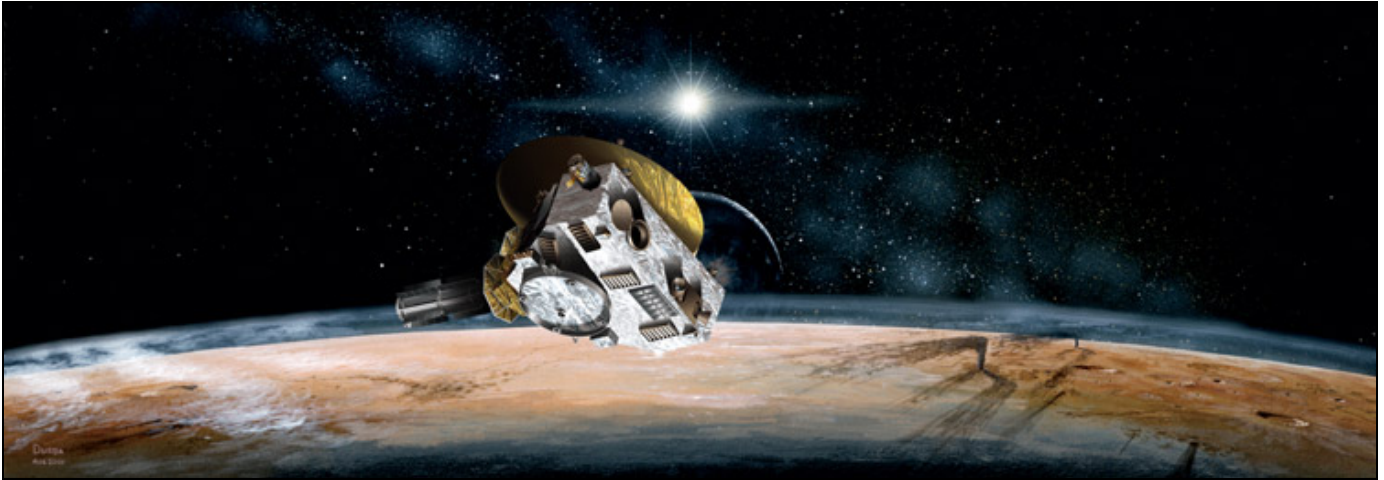
The Deep Space Network that NASA uses to communicate with distant probes is becoming overtaxed. Status reports and data transmissions are coming in from all over the solar system—and there's only so much time to listen. Expanding the network would be expensive, so it would be nice if these probes could learn to communicate with greater brevity. But how?

Solving problems like this is why NASA created the New Millennium Program (NMP). The goal of NMP is to flight-test experimental hardware and software for future space missions. In 1998, for instance, NMP launched an experimental spacecraft called *Deep Space 1* that carried a suite of new technologies, including a new kind of communication system known as Beacon Monitor.

The system leverages the fact that for most of a probe's long voyage to a distant planet or asteroid or comet, it's not doing very much. There's little to report. During that time, mission scientists usually only need to know whether the spacecraft is in good health.

"If you don't need to transmit a full data stream, if you only need some basic state information, then you can use a much simpler transmission system," notes Henry Hotz, an engineer at NASA's Jet Propulsion Laboratory who worked on Beacon Monitor for *Deep Space 1*. So instead of beaming back complete data about the spacecraft's operation, Beacon Monitor uses sophisticated software in the probe's onboard computer to boil that data down to a single "diagnosis." It then uses a low-power antenna to transmit that diagnosis as one of four simple radio tones, signifying "all clear," "need some attention whenever you can," "need attention soon," or "I'm in big trouble—need attention right now!"

These simple tones are much easier to detect from Earth than complex data streams, so the mission needs far less of the Deep Space Network's valuable time and bandwidth, Hotz says. After being tested on *Deep Space 1*, Beacon Monitor was approved for the *New Horizons* mission, which is currently on its way to Pluto, beaming back a simple beacon as it goes.



This artist's concept shows the New Horizons spacecraft during its planned encounter with Pluto and its moon, Charon. The spacecraft is currently using the Beacon Monitor system on its way to Pluto.

*Credit: Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute (JHUAPL/SwRI)*

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

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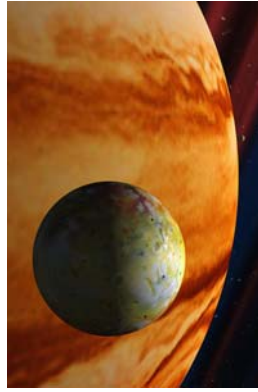


A DAY IN THE LIFE OF AN ASTRONOMER

Cartoon by Nicholas La Para

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**Beyond**



## **A trip through space and time with the Chester County Astronomical Society**

“Beyond” is a spectacular exhibition of painstakingly restored images taken by robotic Solar System explorers. It is the brainchild of Michael Benson, a writer, photographer and filmmaker. Astronomy fuses with fine art in this collection of historic photographs from missions as old as Mariner and as recent as Cassini.

Limited engagement in the IMAX gallery at the American Museum of Natural History in New York City.

**DATE:** Saturday, October 20

**COST:** \$60 per person, includes bus fare and museum admission

**DEPART:** 7:00 a.m. from West Goshen Center (Paoli Pike & RT 202)

**RETURN:** 7:30 p.m. (approximate time)



I oughta be  
in pictures!

**Don't miss out! Make your reservation today with Linda at 610-269-1737.  
Payment due September 17.**

**Need to see an enticing preview?**

Visit [http://www.amnh.org/exhibitions/photo/beyond/?src=e\\_h](http://www.amnh.org/exhibitions/photo/beyond/?src=e_h)

## 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

Telephone: 520-293-3198  
Fax: 520-293-3192  
E-mail: [ida@darksky.org](mailto:ida@darksky.org)

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

[www.darksky.org](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 [www.ccas.us](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:

[www.POLCouncil.org](http://www.POLCouncil.org)



### Good Outdoor Lighting Website

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? Now there is a web site and business intended to address that very problem. At this site you can find information on all kinds of well-designed (that is, star-friendly) outdoor lighting fixtures. This company, Starry Night Lights, intends to make available all star-friendly fixtures they can find, and information on them, in one place. Check it out, and pass this information on to others. Help reclaim the stars! And save energy at the same time!

<http://www.starrynightlights.com/>



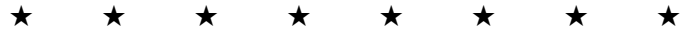
### Local Astronomy Store: Skies Unlimited

There is an astronomy equipment store called *Skies Unlimited* in our area, in Pottstown to be specific, at:

**Suburbia Shopping Center**  
52 Glocker Way  
Pottstown, PA 19465

Telephone: 610-327-3500 or 888-947-2673

<http://www.skiesunlimited.net/>



### 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:

[www.LymePA.org](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 Information Directory

### CCAS Lending Telescopes

Contact Kathy Buczynski 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. Kathy's phone number is 610-436-0821.

### CCAS Lending Library

Contact our Librarian, Linda Lurcott Fragale, 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. Linda's phone number is 610-269-1737.

### 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 [stargazer1956@comcast.net](mailto:stargazer1956@comcast.net)

Or mail the contribution, typed or handwritten, to:

**Jim Anderson**  
1249 West Kings Highway  
Coatesville, PA 19320-1133

### Get 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 Jim Anderson, the newsletter editor, at:

[stargazer1956@comcast.net](mailto:stargazer1956@comcast.net)

### 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 copying copyrighted material! Give your contributions to John Hepler (484-266-0699) or e-mail to [webmaster@ccas.us](mailto: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 "star nights" for school, scout, and other civic groups.

### CCAS Executive Committee

For further information on membership or society activities you may call:

**President:** Kathy Buczynski  
610-436-0821

**Vice Pres:** Jim Anderson  
610-857-4751

**ALCor and Treasurer:** Bob Popovich  
610-363-8242

**Secretary:** Don Knabb  
610-436-5702

**Newsletter:** Jim Anderson  
610-857-4751

**Librarian:** Linda Lurcott Fragale

**Observing:** Don Knabb  
610-436-5702

**Education:** Kathy Buczynski  
610-436-0821

**Webmaster:** John Hepler  
484-266-0699

**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 Treasurer's Report in each issue of *Observations* to see if it is time to renew your membership. If you are due to renew, you can mail in your renewal check made out to "Chester County Astronomical Society." Mail to:

**Bob Popovich**  
416 Fairfax Drive  
Exton, PA 19341-1814

### Sky & Telescope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95** which is much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! To start a subscription, make **sure** you make out the check to the **Chester County Astronomical Society** (do **not** make the check out to Sky Publishing, this messes things up big time), note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. **If you have any questions by all means call Bob first (610-363-8242).** Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

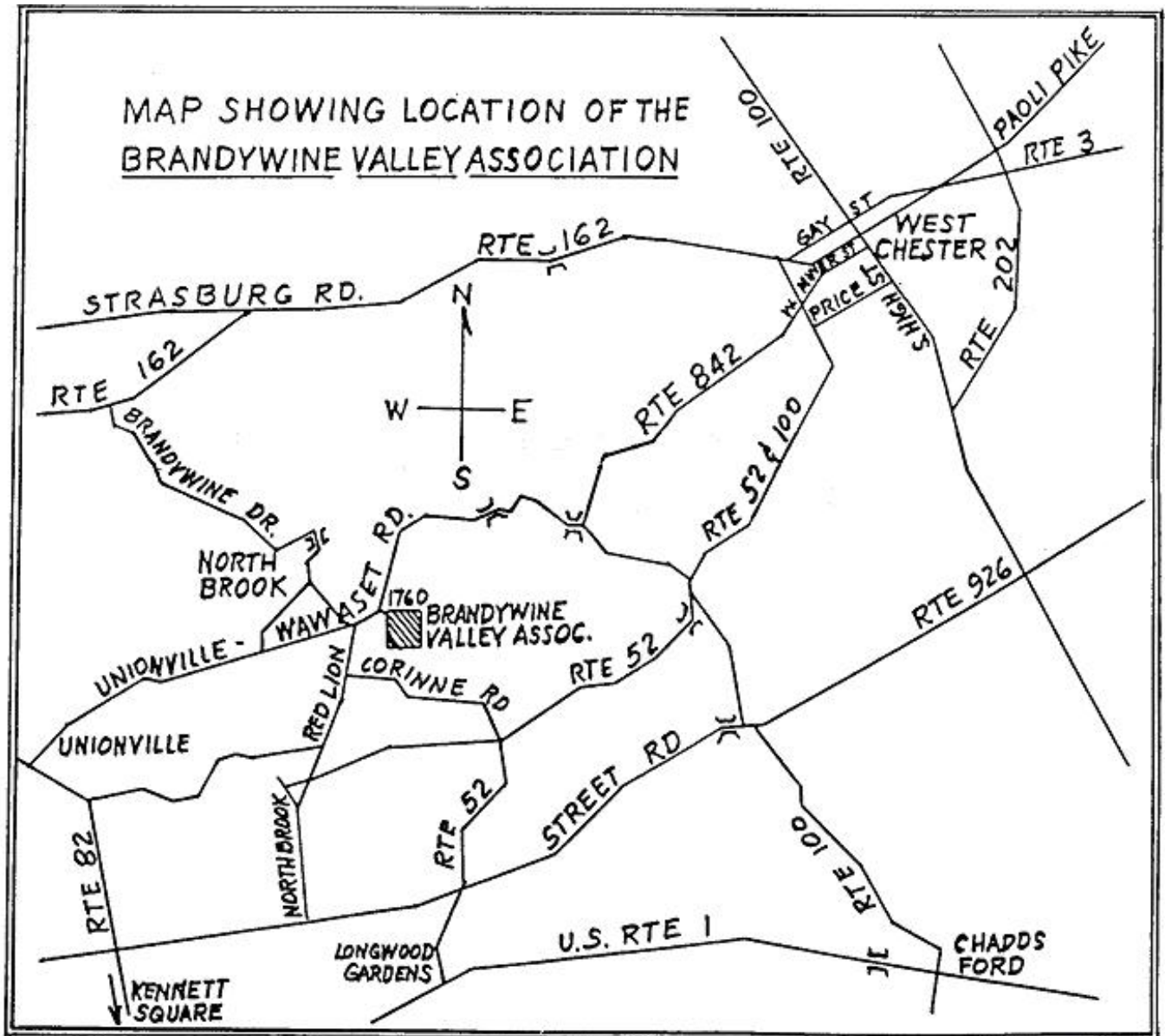
### Astronomy Magazine Group Rates

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 Bob Popovich.**

**Phone: 610-363-8242**

**e-mail: [B2N2@verizon.net](mailto:B2N2@verizon.net)**





The Myrick Conservation Center is located on PA Route 842 approximately six (6) miles west of West Chester and three (3) miles east of Unionville.

**In West Chester** take West Miner Street, which is one block south of Market Street and follow West Miner Street out of town. (West Miner Street is also Route 842). Continuing on Route 842, you will cross two bridges. After the second bridge you will cross railroad tracks: the Center is about 1 mile beyond the tracks. The offices are on the left and the Browning Barn is on the right. If you pass a big red barn (Northbrook Orchards) you've gone a quarter-mile too far, turn around and go back.

**From Kennett Square** take Route 82 going North past route 926 to Unionville. In Unionville turn right (west) on Route 842. The Myrick Conservation Center is 3 miles down the road, just a quarter mile past the big red barn (Northbrook Orchards). The offices are on the right and the Browning Barn is on the left.

**From Coatesville area** take Route 82 South into Unionville. In Unionville turn left (west) on Route 842. The Myrick Conservation Center is 3 miles down the road, just a quarter mile past the big red barn (Northbrook Orchards). The offices are on the right and the Browning Barn is on the left.

**To get to the observing site at the BVA property**, turn 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 up the farm lane to the left; it's about 800 feet or so to the top of the hill. 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).