Observations

A Monthly Publication Of The CHESTER COUNTY ASTRONOMICAL SOCIETY

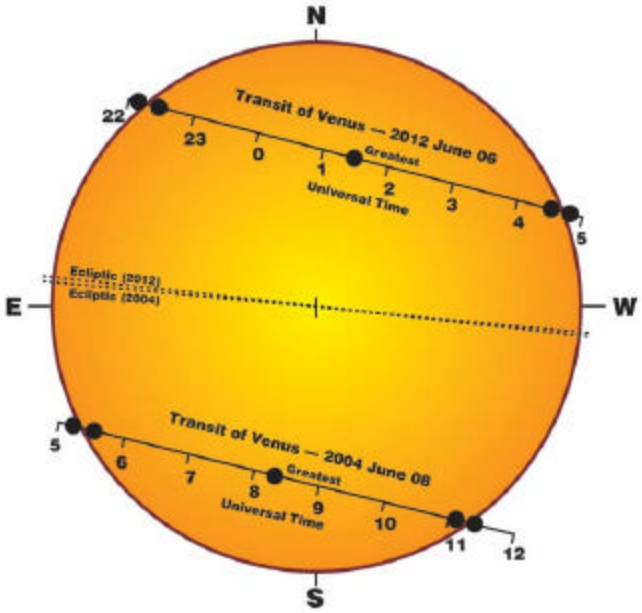
Vol. 20, No. 6 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ¤ 2006 & 2009* *June 2012*

In This Issue

Membership Renewals Due

06/2012	Aylam Hebding Kovacs Mazziotta & Family Siskind
07/2012	Calobrisi & Family Hockenberry-Miller

Transit of Venus!



Are you ready for the last transit of Venus we'll see in our lifetime? Will Mother Nature cooperate and give us clear skies? See pp. 6-8 for more information.

Important June 2012 Dates

4th • Full Moon, 7:12 p.m.

5th • Transit of Venus.

11th • Last Quarter Moon, 6:41 a.m.

19th • New Moon, 11:02 p.m.

20th • Summer Solstice, 7:09 p.m.

26th • First Quarter Moon, 11:30 p.m.

CCAS Upcoming Nights Out

CCAS has several "nights out" scheduled over the next few months. Members are encouraged to help out during these events any way they can. See below for more information.

¤ **Friday, August 24th** at the Delaware Museum of Natural History. As part of the exhibit called Earth from Space, we will host a Star Party to show visitors Earth from space as well as a "space from Earth" perspective.

¤ **Friday, September 14th** at Longwood Gardens. As part of the Family Light Night series, from 5 to 9 p.m., we'll do some solar observing early in the program.

Spring/Summer 2012 Society Events

June 2012

6th • 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.

18th-20th • The Great Andromeda Galaxy: A Workshop to Celebrate Martin Schwarzschild's Centennial, Princeton, New Jersey.

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

22nd • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date June 23rd). The observing session starts at sunset.

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

July 2012

11th • 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.

14th • CCAS Summer Party at Barb & Don Knabb's home in West Chester, PA. The party is for CCAS members and their families starting at 6:00 p.m. See the July 2012 edition of *Observations* for more details about the party and for directions to Barb & Don's home.

17th-19th • Conference: X-ray Binaries - Celebrating 50 years since the Discovery of Sco X-1, Boston, Massachusetts.

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

20th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date July 21st). The observing session starts at sunset.

Minutes from the May 8, 2012 CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- 16 people were in attendance.
- Roger Taylor welcomed everyone to the final meeting of the year before "Summer Break."
- Roger announced that for our first meeting in September of the 2012-2013 year our speaker will be Derrick Pitts, Chief Astronomer of the Franklin Institute.
- Barb Knabb brought several CCAS library selections for sign out over the Summer. She will continue to do this during the Fall meetings.
- Don Knabb, CCAS Observing chair, announced that BVA Observing sessions for May 18 and June 22 (Summer Solstice).
- Don also mentioned that Longwood Gardens has asked CCAS to host a Star Party during a special event 9/14/2012. This is a large crowd event and may have as many as 1000 participants for their "Display of Lights" event. Don asked any and all members to bring regular AND Solar Telescopes for this event, which will be from 5 to 9:00 PM, sunset at 6:30 PM.
- Don also announced tentative plans to observe the upcoming Transit of Venus 6/5/2012. Plan to meet on the South Campus of West Chester University.

(Continued on page 13)

Nicholas's Humor Corner

by Nicholas La Para

September 2012 Guest Speaker

by Dave Hockenberry, CCAS Program Chair

CCAS Guest Speaker Derrick Pitts

Our next meeting will be held on September 11, 2012, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Our guest speaker will be Derrick Pitts, PhD, chief astronomer at the Franklin Institute. More information is forthcoming in later *Observations*.

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

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

New Telescope Donation Program for Teachers and Schools

submitted by Douglas Arion, President, Galileoscope LLC

Astrosphere New Media has initiated a telescope donation program for education, in a partnership with Galileoscope LLC.

Through the organization Telescopes4Teachers, individuals or organizations can make tax-deductible donations and designate the school or teacher to whom Galileoscopes will be donated. We are very excited about this program, and hope that Astrosphere can exceed its goal of putting 5000 telescopes into classrooms by the time school starts in the fall.

2-inch refractor from Galileoscope LLC

The donation site is www.telescopes4teachers.org.

The Galileoscope is a high-quality, low-cost telescope kit developed by a team of leading astronomers, optical engineers, and science educators. No matter where you live, with this easy-to-assemble, 50-mm (2-inch) diameter, 25- to 50-power

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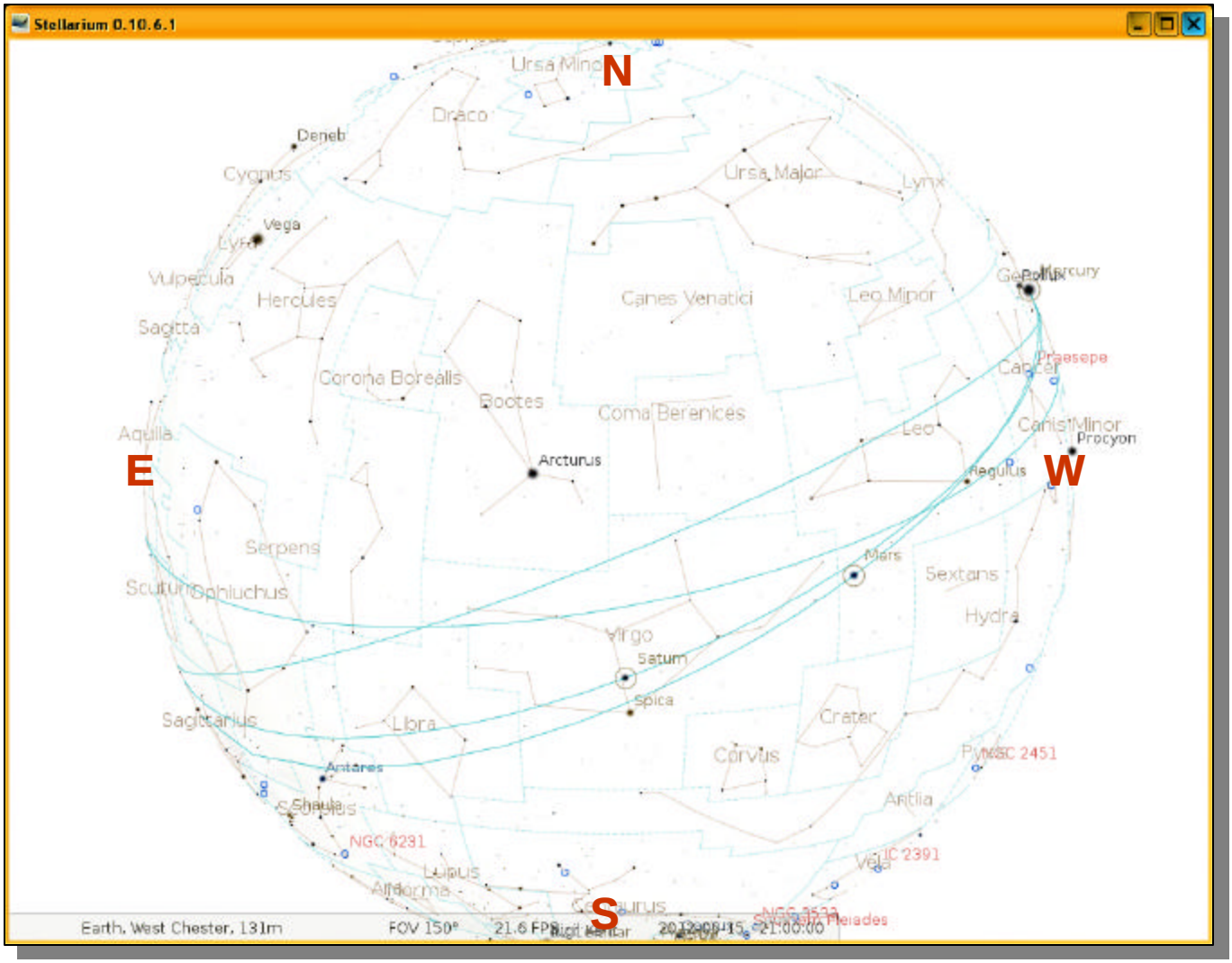
The Sky Over Chester County

June 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
06/01/2012	5:02 a.m. EDT	5:34 a.m. EDT	8:24 p.m. EDT	8:56 p.m. EDT	14h 49m 46s
06/15/2012	4:59 a.m. EDT	5:31 a.m. EDT	8:31 p.m. EDT	9:04 p.m. EDT	14h 59m 50s
06/30/2012	5:03 a.m. EDT	5:35 a.m. EDT	8:33 p.m. EDT	9:06 p.m. EDT	14h 57m 49s

Moon Phases					
First Quarter	06/26/2012	11:30 p.m. EDT	Last Quarter	06/11/2012	6:41 a.m. EDT
Full Moon	06/04/2012	7:12 a.m. EDT	New Moon	06/19/2012	11:02 p.m. EDT

June 2012 Observing Highlights
by Don Knabb, CCAS Treasurer & Observing Chair

June 1	The Moon is near Saturn
June 4	Full Moon, 7:12 a.m.
June 5	The transit of Venus!
June 11	Last Quarter Moon, 6:41 a.m.
June 19	New Moon, 11:02 p.m.
June 20	Summer solstice, 7:09 p.m.
June 26	First-quarter Moon, 11:30 p.m.
June 26	The Moon is near Mars
June 28	The Moon is near Saturn

The best sights this month: On June 5th, Venus transits the Sun for the last time this century. This is one of the rarest solar system events; only seven have happened since Galileo's time!

There is also a partial lunar eclipse the day before, but as it turns out the Moon will have already set for us before the eclipse begins. It will still be fun to watch on the Internet.

And although we need to stay up late to see anything in the sky because the Sun sets so late during June, Mars and Saturn continue to provide a nice show all month.

Mercury: June provides an excellent opportunity to view the planet closest to the Sun. During the second half of June, Mercury sets about an hour and a half after the Sun. Find a place with a low western horizon and about 45 minutes after the Sun has set look into the fading glow for a reasonably bright "star" and you will find this elusive planet.

Venus: As mentioned above, one of the astronomical highlights of the century occurs on June 5th. If you have a solar telescope or a sun filter for a conventional telescope you can view this event from a location with a low western horizon. First contact begins at 6:05 p.m. when Venus contacts the Sun's northeastern edge. By the end of June, Venus is rising about 2 hours before the Sun and shines brightly in the eastern sky.

Mars: The red planet is easy to find beneath the tail of Leo during June. On June 20th Mars crosses the boundary into the constellation Virgo's territory. Mars is falling behind us in our orbit around the Sun and is getting smaller by the day and at this point it is too small to see any details in a typical amateur telescope.

Jupiter: The king of the planets is now an inhabitant of the morning sky, rising about two hours before the Sun at the end of the month. If you are an early riser there is a nice grouping on June 29th when you can see The Pleiades, Jupiter, Venus and Aldebaran about 45 minutes before sunrise.

Saturn: Saturn continues to hang out with Spica in the southern sky making it easy to find as soon as the sky darkens. Almost any size telescope will allow you to see the beautiful ring structure, although the tilt of the rings has reduced to 12 degrees from edgewise.

Uranus and Neptune: These faint green and blue dots in the sky are reasonably high at dawn and can be found using the charts at skypub.com, the website of Sky and Telescope magazine. I'll be waiting until the late summer and fall to see these planets when they can be observed at a reasonable hour.

The Moon: Full Moon is on June 4th. As mentioned above there is a partial lunar eclipse that is not viewable from our location. The June full Moon hangs low in the sky and lights up the leaves of the trees so that they almost seem to glow in the dark. Native Americans called this the Full Strawberry Moon because the relatively short season for harvesting strawberries comes each year during the month of June.

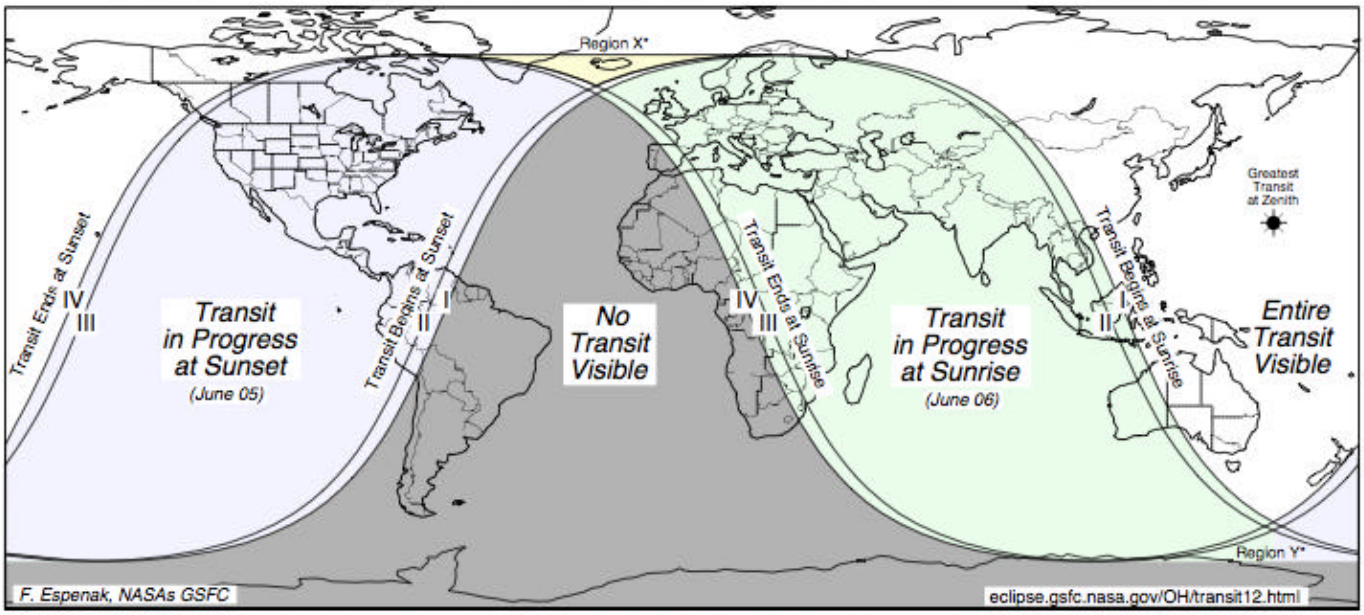
Constellations: During June we need to stay up late just to see the stars come out. But when they do they are a great sight! Bright Arcturus in Boötes is shining in the south with the beautiful Corona Bore-

(Continued on page 11)

Transit of Venus
courtesy of Fred Espenak, NASA / Goddard Space Flight Center

FIGURE 1

Global Visibility of the Transit of Venus of 2012 June 05/06



* Region X - Beginning and end of Transit are visible, but the Sun sets for a short period around maximum transit.
* Region Y - Beginning and end of Transit are NOT visible, but the Sun rises for a short period around maximum transit.

The transit or passage of a planet across the face of the Sun is a relatively rare occurrence. As seen from Earth, only transits of Mercury and Venus are possible. On average, there are 13 transits of Mercury each century. In contrast, transits of Venus occur in pairs with more than a century separating each pair.

The last Venus transit was in 2004 so the second event of the pair will occur on Wednesday, June 6 (Tuesday, June 5 from the Western Hemisphere). The entire event will be widely visible from the western Pacific, eastern Asia and eastern Australia as shown in Figure 1. Most of North and Central America, and northern South America will witness the beginning of the transit (on June 5) but the Sun will set before the event ends. Similarly, observers in Europe, western and central Asia, eastern Africa and western Australia will see the end of the event since the transit will already be in progress at sunrise from those locations.

During the 2012 transit, Venus's minimum separation from the Sun is 554 arc-seconds (During the 2004 transit, the minimum separation was 627 arc-seconds). The position angle is defined as the direction of Venus with respect to the center of the Sun's disk, measured counterclockwise from the celestial north point on the Sun. Figure 2 shows the path of Venus across the Sun's disk and the scale gives the Universal Time of Venus's position at any point during the transit. The celestial coordinates of the Sun and Venus are provided at greatest transit as well as the times of the major contacts.

Since the apparent diameter of Venus is nearly 1 arc-minute, it is just possible to see without optical magnification (but using solar filter protection) as it crosses the Sun. Nevertheless, the planet appears to be only 1/32 of the Sun's apparent diameter so a pair of binoculars or a small telescope at modest power will offer a much more satisfying view. **All binoculars and telescopes must be suitably equipped with adequate filtration to ensure safe solar viewing.** The visual and photographic requirements for observing a transit are identical to those

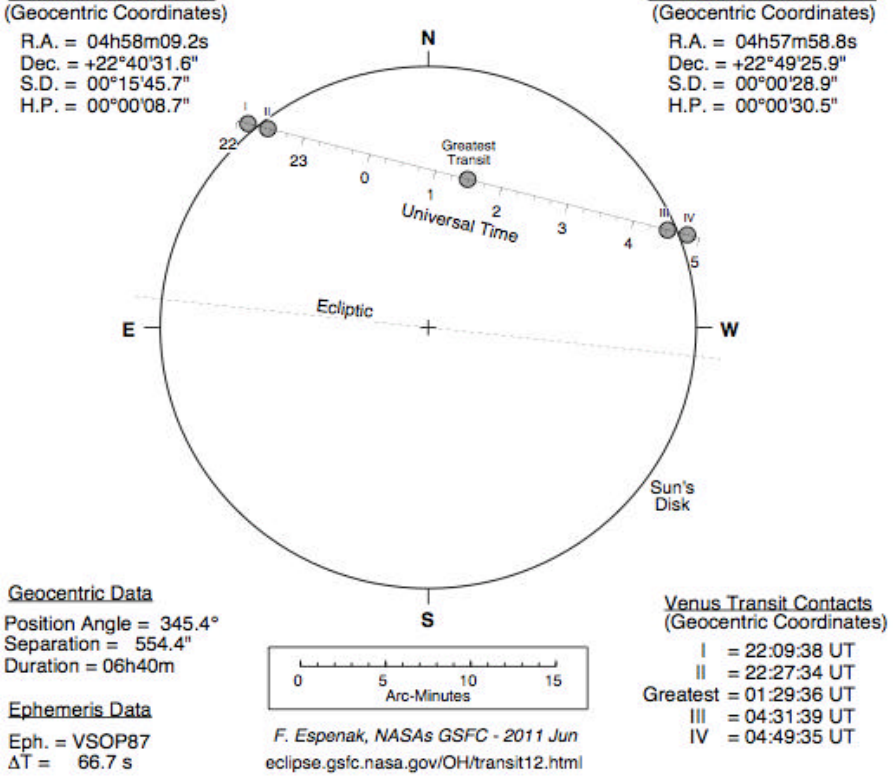
(Continued on page 7)

Transit of Venus (Cont'd)

FIGURE 2

Transit of Venus of 2012 June 05/06

Greatest Transit = 01:29:36.3 UT J.D. = 2456084.562225



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for solar viewing. Amateurs can make a scientific contribution by timing the four contacts at ingress and egress. Observing techniques and equipment are similar to those used for lunar occultations. Poor seeing often increases the uncertainty in contact timings, so an estimate of the possible error associated with each timing should be included. Transit timings and geographic coordinates of the observing site (measured with a topographic map or GPS receiver) should be sent to: ALPO Transit Section, c/o Dr. John E Westfall, P.O. Box 2447, Antioch, CA 94531-2447, USA.

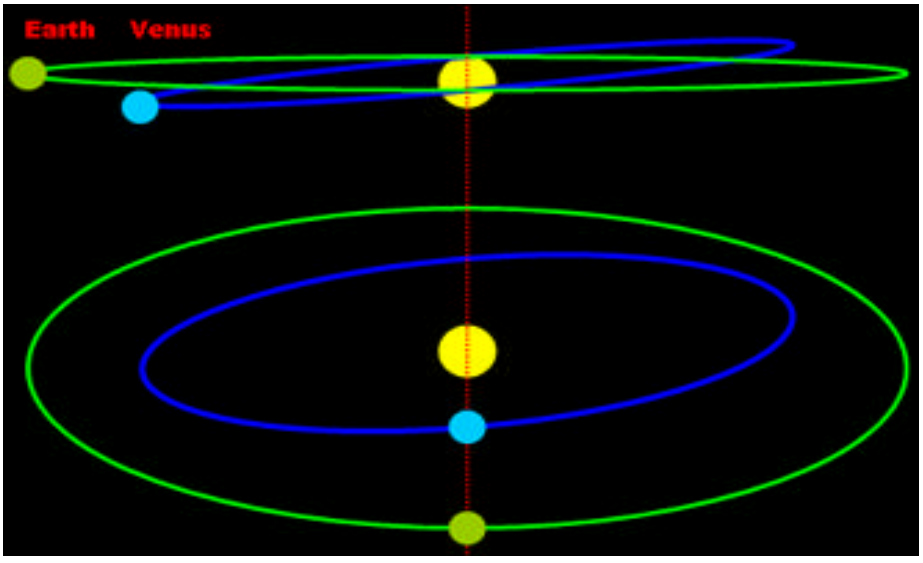

Fig. 3: Orbits of Venus and Earth showing their difference in inclination

Why aren't transits of Venus more common? The orbit of Venus is inclined 3.4° with respect to Earth's orbit. It intersects the ecliptic at two points or nodes that cross the Sun each year during early June and December. If Venus happens to pass through inferior conjunction at that time, a transit will occur. Although Venus's orbital period is only 224.7 days, its synodic period (conjunction to conjunction) is 583.9 days. Due to its inclination, most inferior conjunctions of Venus do not result in a transit because the planet passes too far above or below the ecliptic and does not cross the face of the Sun (See Fig. 3).

Venus transits currently recur at intervals of 8, 105.5, 8 and 121.5 years. Since the invention of the telescope (1610), there have only been seven transits. The 2004 and 2012 transits form a contemporary pair separated by 8 years. More than a century will elapse before the next pair of transits in 2117 and 2125.

CCAS Transit of Venus Viewing Plans

by Don Knabb

Last week I checked out the parking area across from the tennis courts at the West Chester University South Campus on South New Street. (Note that these are not the tennis courts on Rosedale Avenue, but are the ones that are just a bit north of the football stadium and field house.) The view is not clear all the way to the horizon, but it is good enough that we'll be able to watch a good bit of the transit as the sun gets lower in the sky.

The transit begins around 6:05 p.m. on Tuesday June 5th. I plan to arrive around 5:30 to set up. I'll be bringing a 5 inch refractor with a solar filter. If you'd like to see this rare event please join us. If you have a solar telescope or a filter that you can fit to your regular telescope, or a projecting screen for your telescope, bring it along.

CCAS Summer Picnic

by Barb & Don Knabb

Save the date! We'll have a CCAS picnic this summer on Saturday, July 14th at 6:00 p.m. at our house. Planning is in the early stages, but mark your calendars now so you can join in the festivities. We ask everyone to bring a contribution of food and/or drink and a lawn chair if you have one that is easy to carry. More details and driving directions will be sent by a "members" e-mail as the day approaches. And if the sky is clear please bring a telescope, of course!

Safe Solar Viewing

courtesy of NASA

People using solar viewing glasses to safely view the Sun.

The transit of Venus is a rare and striking phenomenon you won't want to miss— but you must carefully follow safety procedures. Don't let the requisite warnings scare you away from witnessing this singular spectacle! You can experience the transit of Venus safely, but it is vital that you protect your eyes at all times with the proper solar filters. No matter what recommended technique you use, do not stare continuously at the Sun. Take breaks and give your eyes a rest! Do not use sunglasses: they don't offer your eyes sufficient protection.

Viewing with Protection -- Experts suggests that one widely available filter for safe solar viewing is number 14 welder's glass. It is imperative that the welding hood houses a #14 or darker filter. Do not view through any welding glass if you do not know or cannot discern its shade number. Be advised that arc welders typically use glass with a shade much less than the necessary #14. A welding glass that permits you to see the landscape is not safe. Inexpensive Eclipse Shades have special safety filters that appear similar to sunglasses, but these filters permits safe viewing.

Telescopes with Solar Filters – The transit of Venus is best viewed directly when magnified, which demands a telescope with a solar filter. Never look through a telescope without a solar filter on the large end of the scope. And never use small solar filters that attach to the eyepiece (as found in some older, cheaper telescopes.)

Pinhole Projectors -- These are a safe, indirect viewing technique for observing an image of the Sun. While popular for viewing solar eclipses, pinhole projectors suffer from the same shortcomings as unmagnified views when Venus approaches the edges of the Sun. Small features like the halo around Venus will not likely be discernible.

Another viewing technique is to project an image of the Sun onto a white surface with a projecting telescope.

NASA Coverage of Transit of Venus

by John Hepler

In the event that weather conditions do not permit us to participate in this historic event, NASA is broadcasting live coverage via the Internet from numerous sites around the world. Main coverage is from Mauna Kea, Hawaii. To learn more, visit the official website:

http://http://sunearthday.gsfc.nasa.gov/transitofvenus/

Photos from Monthly Observing Session at BVA

by Don Knabb

A big, starry Thank You to everyone who came to BVA the evening of May 18th to gaze into the night sky! We enjoyed the company of new members, young members, returning members and guests. I counted between 15 and 20 star gazers who enjoyed looking through 5 telescopes of various types. We saw the Sun, with several sunspots, on Dave Macaleer's projection screen fitted to his refractor, stars, planets, galaxies, nebulas and clusters even though the viewing conditions were below average. The jaw dropper of the night for me was seeing Saturn through a binoviewer fitted to Dave Hockenberry's Questar. By 11:00 Barb and I were approaching zombie status so I greatly appreciated Dave Hockenberry and Dave Macaleer staying to lock the gate after the rest of us headed home.

Barb Knabb (with Liz Smith) sporting one of the new CCAS hoodies.

Dave & Dave polar aligning.

The next generation looking into the big telescope.

Liz setting up her equipment.

Dave & Dave waiting for it to get dark.

Through the Eyepiece: M51, the Whirlpool Galaxy

by Don Knabb, CCAS Treasurer & Observing Chair

During the spring the handle of the Big Dipper is high in the sky and one of the few galaxies whose spiral structure can be glimpsed in a backyard telescope is also in good viewing position. M51, the Whirlpool Galaxy, can be seen in June high in the western sky as soon as it is fully dark. As seen in the sky map below, M51 is under Alkaid, the star at the end of the handle of the Big Dipper, the asterism that makes up part of the constellation Ursa Major.

To see the spiral structure of M51 you need a fairly large telescope, preferably 8 inches or larger. But the true magnificence of M51 only shows up in long exposure photographs such as the one taken by CCAS Program Chair Dave Hockenberry (lower right).

No, you won't see anything that looks remotely like the photograph above, but knowing that the photons being perceived by your eye left the Whirlpool Galaxy 27 million years ago makes whatever you see amazing.

Wait for a night when the Moon is not visible in the sky, or is just a sliver setting in the west. Try different eyepieces until you find the best image. Averted vision is a good tool in our Chester County skies to help you pick out these faint and fuzzy objects since light pollution will make this dim object fade quite a bit.

Take your time and give your

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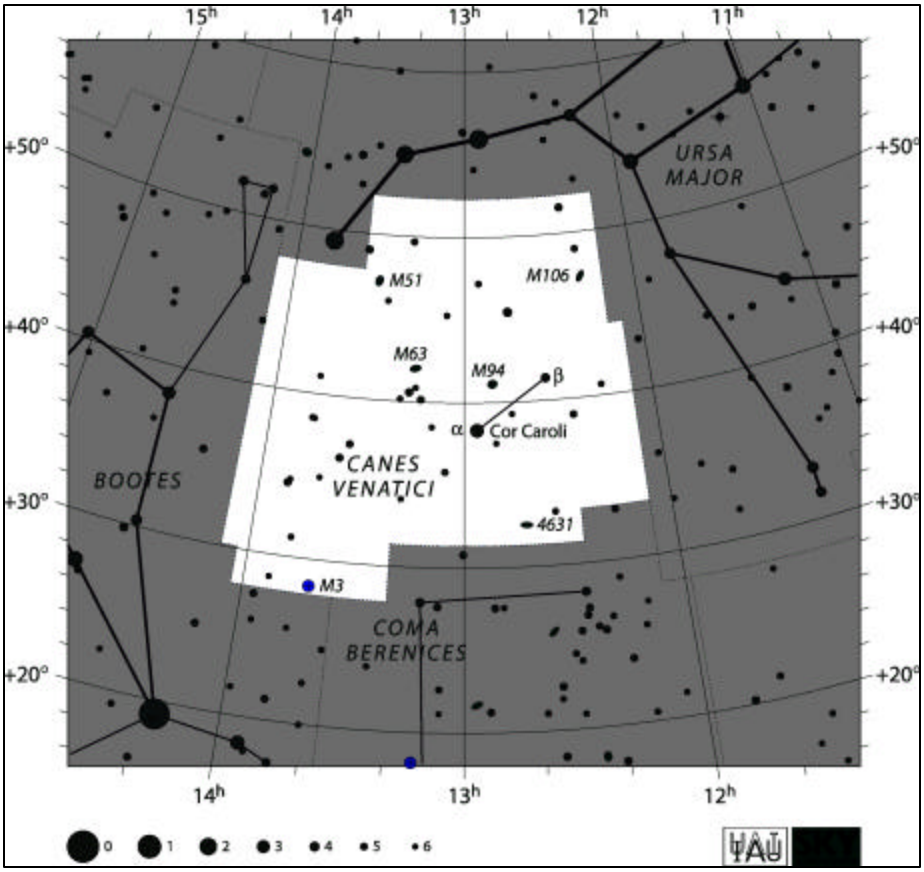

Sky map credit: http://en.wikipedia.org/wiki/Whirlpool_Galaxy

Image credit: David Hockenberry, CCAS Program Chair

Eyepiece (cont'd)

(Continued from page 10)

eyes the chance to adjust to the dark skies.

The Whirlpool Galaxy was discovered by Charles Messier in 1773 when observing a comet, and described it as a "very faint nebula, without stars". Its companion galaxy, NGC 5195, was discovered in 1781 by Pierre Méchain. It was however not until 1845 that the Whirlpool became the first galaxy to be recognized as a spiral. This was achieved by Lord Rosse employing a 72-inch reflecting telescope which he constructed at Birr Castle, Ireland.

Most astronomers feel that the pronounced spiral structure is a result of M51's current encounter with its neighbor, NGC 5195. Due to this interaction, the gas in the galaxy was disturbed and compressed in some regions, resulting in the formation of new young stars.

Information credits:

Dickinson, Terence. 2006. Nightwatch: A practical guide to viewing the universe. Buffalo, NY: Firefly Books.

Hewitt-White, Ken. Night Sky Magazine, The Whirlpool Galaxy

http://www.seds.org/messier/m/m051.html

http://en.wikipedia.org/wiki/Messier_51

Galileoscope (cont'd)

(Continued from page 3)

achromatic refractor, you can see the celestial wonders that Galileo Galilei first glimpsed 400 years ago and that still delight stargazers today. These include lunar craters and mountains, four moons circling Jupiter, the phases of Venus, Saturn's rings, and countless stars invisible to the unaided eye.

Galileoscope was started during the 2009 International Year of Astronomy to develop and distribute a high quality, low cost telescope. The program has been a remarkable success, with over 200,000 delivered to over 100 countries, and over 7000 donated during the IYA to third world nations that could not otherwise afford to get telescopes.

For Additional Information:
www.telescopes4teachers.org

For Astrosphere New Media:
Pamela Gay, PhD, Executive Director
info@astrosphere.org
http://www.astrosphere.org

For Galileoscope LLC:
Douglas Arion, PhD, President
darion@carthage.edu
http://galileoscope.org

Observing (Cont'd)

(Continued from page 5)

alis to its left. Then another red star, Antares in Scorpius is low on the southeastern horizon. And in the east is bright Vega, one star of the summer triangle. If you are at a dark sky site look for the Coma Cluster of stars to the right of Arcturus.

Messier/deep sky: I know there are many nice other globular clusters, but M13 in Hercules is an amazing object if the skies are dark and clear. As astronaut Dave Bowman said as he looked into the monolith in orbit around

Jupiter in the movie *2001, A Space Odyssey*, "Oh my God, it's full of stars!" That's how I feel when I get a good look at M13. Then look low in the south to find M8, the famous Lagoon Nebula and M17, the Omega Nebula, also called the Swan Nebula.

Comets: Comet C/2009 P1 (Garradd) has now faded to the point that observation has become difficult. If you would like a challenge there is a sky chart in the June issue of Sky and Telescope.

Meteor showers: There are no major meteor showers during June. If you do happen to see a very slow meteor late in the month it could be a Boötid meteor, but this shower is so sparse and unpredictable it cannot be called a meteor shower.

Thank Goodness for Magnetism

by Dr. Tony Phillips

Only 93 million miles from Earth, a certain G-type star is beginning to act up.

Every 11 years or so, the solar cycle brings a period of high solar activity. Giant islands of magnetism—"sunspots"—break through the stellar surface in increasing numbers. Sometimes they erupt like a billion atomic bombs going off at once, producing intense flares of X-rays and UV radiation, and hurling massive clouds of plasma toward Earth.

This is happening right now. Only a few years ago the Sun was in a state of deep quiet, but as 2012 unfolds, the pendulum is swinging. Strong flares are becoming commonplace as sunspots once again pepper the solar disk. Fortunately, Earth is defended from solar storms by a strong, global magnetic field.

In March 2012, those defenses were tested.

At the very beginning of the month, a remarkable sunspot appeared on the Sun's eastern limb. AR1429, as experts called it, was an angry-looking region almost as wide as the planet Jupiter. Almost as soon as it appeared, it began to erupt. During the period March 2nd to 15th, it rotated across the solar disk and fired off more than 50 flares. Three of those eruptions were X-class flares, the most powerful kind.

NASA Space Place

As the eruptions continued almost non-stop, Earth's magnetic field was buffeted by coronal mass ejections or "CMEs." One of those clouds hit Earth's magnetosphere so hard, our planet's magnetic field was sharply compressed, leaving geosynchronous satellites on the outside looking in. For a while, the spacecraft were directly exposed to solar wind plasma.

Charged particles propelled by the blasts swirled around Earth, producing the strongest radiation storm in almost 10 years. When those particles rained down on the upper atmosphere, they dumped enough energy in three days alone (March 7-10) to power every residence in New York City for two years. Bright auroras circled both poles, and Northern Lights spilled across the Canadian border into the lower 48 states. Luminous sheets of red and green were sighted as far south as Nebraska.

When all was said and done, the defenses held—no harm done.

This wasn't the strongest solar storm in recorded history—not by a long shot. That distinction goes to the Carrington Event of

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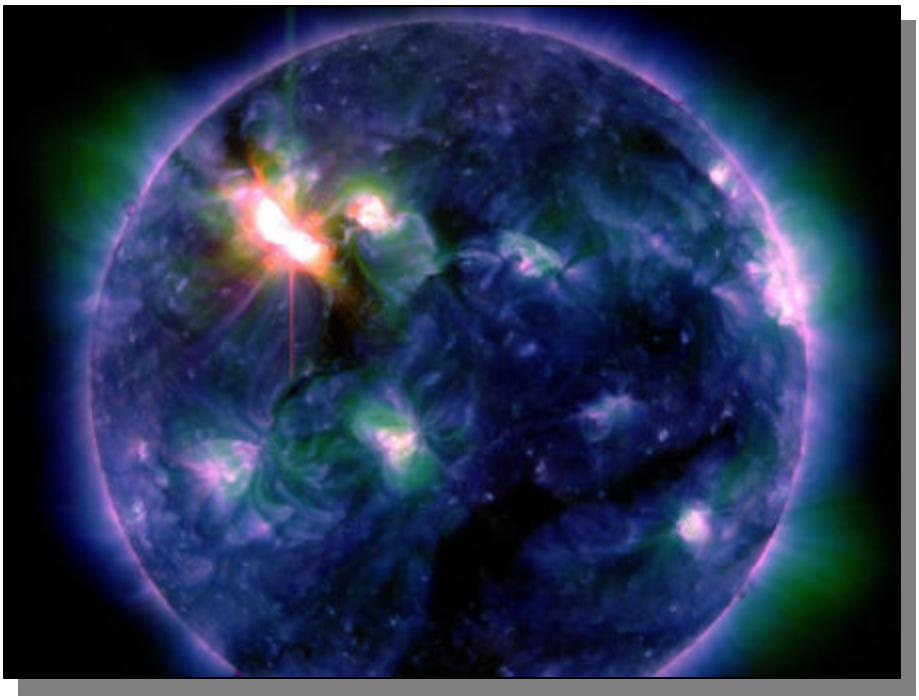

Multiple-wavelength view of X5.4 solar flare on March 6, captured by the Solar Dynamics Observatory (SDO) in multiple wavelengths (94, 193, 335 angstroms). Credit: NASA/SDO/AIA

Space Place (Cont'd)

(Continued from page 12)

September 1859 when geomagnetic activity set telegraph offices on fire and sparked auroras over Mexico, Florida, and Tahiti. Even with that in mind, however, March 2012 was remarkable. It makes you wonder, what if? What if Earth didn't have a magnetic field to fend off CMEs and deflect the most energetic particles from the Sun.

The answer might lie on Mars. The red planet has no global magnetic field and as a result its atmosphere has been stripped away over time by CMEs and other gusts of solar wind. At least that's what many researchers believe. Today, Mars is a desiccated and apparently lifeless wasteland.

Only 93 million miles from Earth, a G-type star is acting up. Thank goodness for magnetism. With your inner and outer children, read, watch, and listen in to "Super Star Meets the Plucky Planet," a rhyming and animated conversation between the Sun and Earth, at http://spaceplace.nasa.gov/story-superstar.

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

Meeting Minutes (Cont'd)

(Continued from page 2)

- Don then presented the May Stellarium and demonstrated Celestra, a free astronomy software package. Also reported on NEAF and showed pictures from the largest Astronomy trade show in the U.S.
- The format of the meeting was "Members Night," opening the discussion from CCAS members about projects, interests, and upcoming events.
- Discussed recent and prospective equipment purchases, the TeleVue Delos eyepiece, refractor vs. reflector telescopes, the founding of the club by Ed

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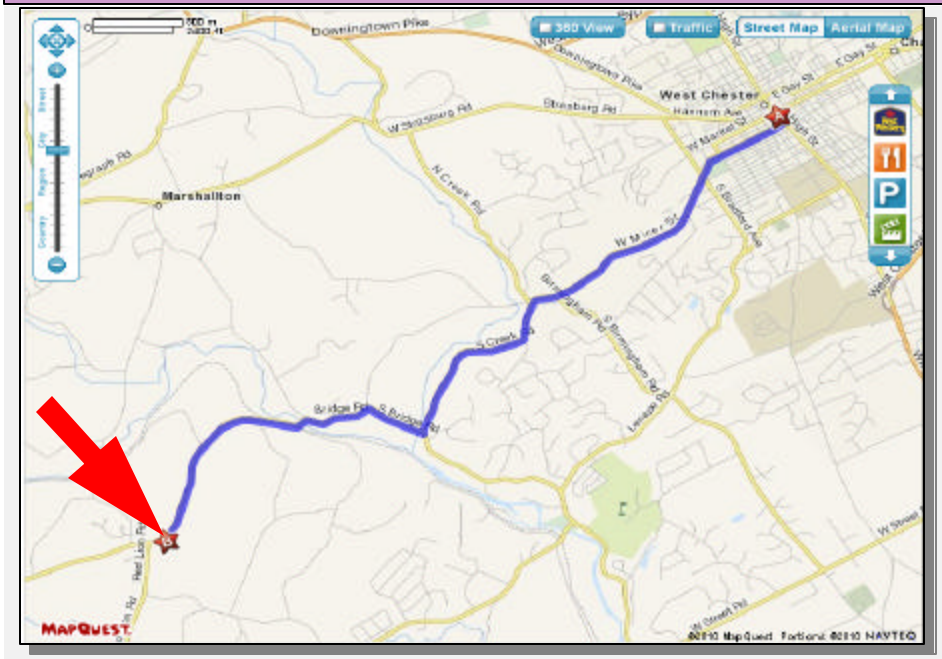
CCAS Directions



Brandywine Valley Association
1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090
http://brandywinewatershed.org/

BVA was founded in 1945 and is committed to promoting and protecting the natural resources of the Brandywine Valley through educational programs and demonstrations for all ages.

Brandywine Valley Association

The monthly observing sessions (held year-round) are held at the Myrick Conservation Center of the Brandywine Valley Association.

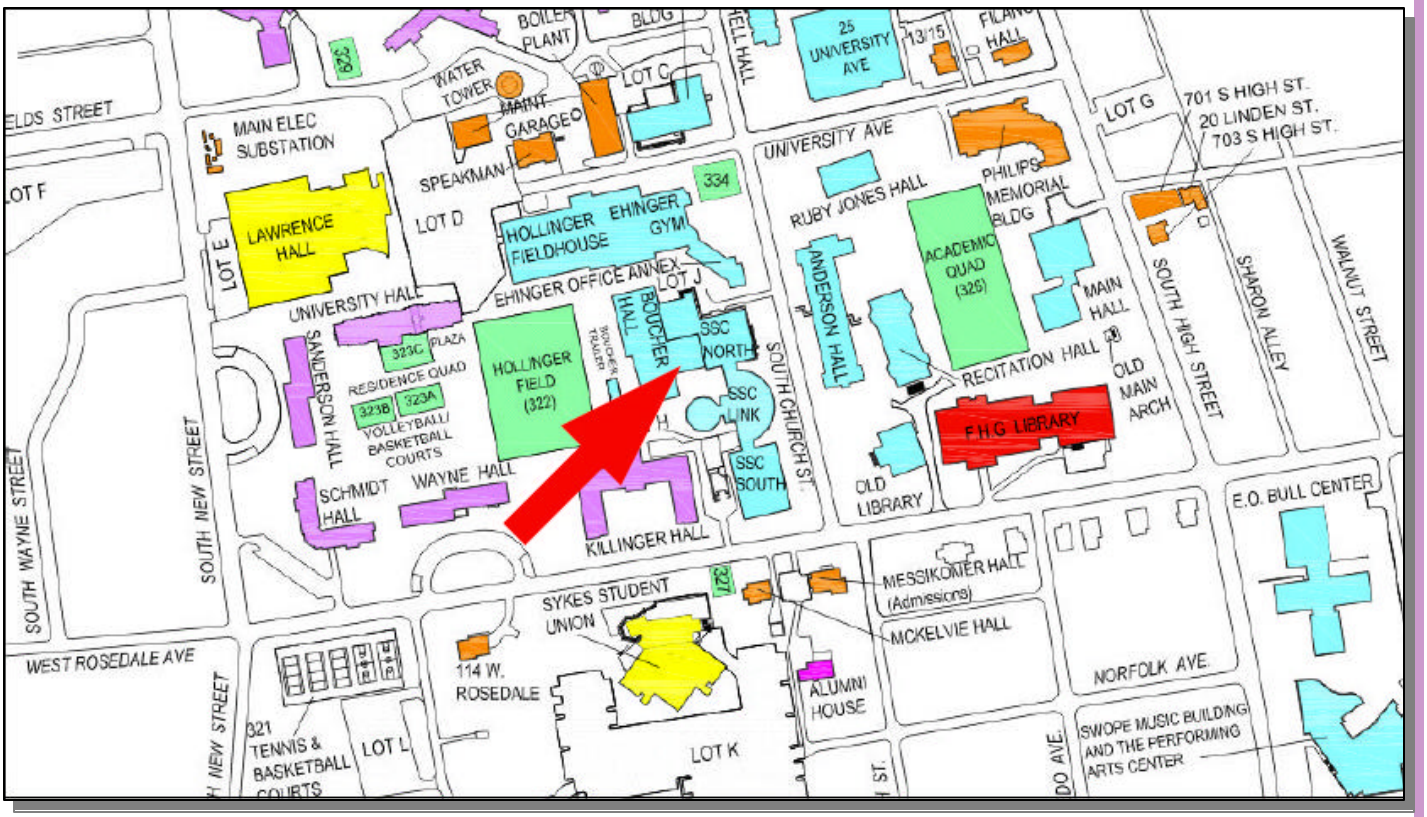
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go left through the gate and drive up the farm lane about 800 feet to the top of the hill. The observing area is on the right.

If you arrive after dark, *please turn off your headlights and just use parking lights* as you come up the hill (so you don't ruin other observers' night vision).

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 113 in Merion Science Center (formerly the Boucher Building), attached to the Schmucker Science Center. The Schmucker Science Center is located at the corner of S. Church St & W. Rosedale Ave. Parking is generally available across Rosedale in the Sykes Student Union parking lot (Lot K).



Meeting Minutes (Cont'd)

(Continued from page 13)

Lurcott, and T.J. Picklo's senior project to incorporate CCAS into the NASA Night Sky Network.

- One of the highlights of the evening was Ed Lurcott's presentation of his hand made double star positioning grid.
- Ed also shared his notes from the last 25 years of double star observations. Exquisite craftsmanship from our Master Observer!

CCAS Membership Information and Society Financials

Treasurer's Report

by Don Knabb

May 2012 Financial Summary

Beginning Balance	$1,513
Deposits	$594
Disbursements	$639
Ending Balance	$1,490

New Member Welcome!

Welcome new CCAS member Karen Cline & family from Rising Sun, MD; and Robert Weiss & family from Wilmington, DE.

We're glad you decided to join us under the stars! Clear skies to you!

Membership Renewals

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

Don Knabb
988 Meadowview Lane
West Chester PA 19382

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

CCAS Information Directory

Join the Fight for Dark Skies!

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

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

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

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

http://www.darksky.org

Note that our CCAS Webmaster John Hepler has a link to the IDA home page set up on our Society's home page at **http://www.ccas.us**.

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

http://www.POLCouncil.org

Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

http://www.LymePA.org

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent"!

CCAS Event Information

We've set up a special phone number you can dial to find out if our monthly observing session and other scheduled events will be held or postponed. Call **610-436-0829** after 5 PM ET to hear a recording to find out the latest news.

Good Outdoor Lighting Websites

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Check out these sites and pass this information on to others. Help reclaim the stars! And save energy at the same time!

Starry Night Lights

Light pollution from poor quality outdoor lighting wastes billions of dollars and vast quantities of valuable natural resources annually. It also robs us of our heritage of star-filled skies. Starry Night Lights is committed to fighting light pollution. The company offers the widest selection of ordinance compliant, night sky friendly and neighbor friendly outdoor lighting for your home or business. Starry Night Lights is located in Park City, Utah.

Phone: **877-604-7377**
Fax: **877-313-2889**

http://www.starrynightlights.com

★ ★ ★ ★ ★

Green Earth Lighting
Formerly
Outdoor Lighting Associates

Green Earth Lighting is a dedicated lifetime corporate member of the International Dark-Sky Association. GEL's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

Green Earth Lighting LLC
620 Onion Creek Ranch Rd
Driftwood, Texas 78619

Phone: **512-944-7354**

http://www.greenearthlighting.com

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our organization. This information is provided as a service to our members and the public only.

Skies UNLIMITED

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

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

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

http://www.skiesunlimited.net

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Spectrum Scientifics
Quality Science Products for All Ages

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

4403 Main Street
Philadelphia, PA 19127

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

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

http://www.spectrum-scientifics.com

CCAS Information Directory

CCAS Lending Telescopes

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

CCAS Lending Library

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

Contributing to *Observations*

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

Or mail the contribution, typed or handwritten, to:

John Hepler
2115 Lazor St.
Apt. 227
Indiana, PA 15701

CCAS Newsletters via E-mail

You can receive the monthly newsletter (in full color!) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to John Hepler, the newsletter editor, at: **newsletter@ccas.us**.

CCAS Website

John Hepler is the Society's Webmaster. You can check out our Website at:

http://www.ccas.us

John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copyrighted material! Give your contributions to John Hepler at (724) 801-8789 or e-mail to webmaster@ccas.us

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "nights out" for school, scout, and other civic groups.

CCAS Executive Committee

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

President:	Roger Taylor 610-430-7768
Vice President:	Liz Smith 610-842-1719
ALCor, Observing, and Treasurer:	Don Knabb 610-436-5702
Secretary:	Ann Miller 610-558-4248
Librarian:	Barb Knabb 610-436-5702
Program:	Dave Hockenberry 610-558-4248
Education:	Kathy Buczynski 610-436-0821
Webmaster and Newsletter:	John Hepler 724-349-5981
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER……$25/year
SENIOR MEMBER…….$10/year
STUDENT MEMBER……..$ 5/year
JUNIOR MEMBER……..$ 5/year
FAMILY MEMBER…….$35/year

Membership Renewals

Check the Membership Renewals on the front of each issue of *Observations* to see if it is time to renew. If you need to renew, you can mail your check, made out to "Chester County Astronomical Society," to:

Don Knabb
988 Meadowview Lane
West Chester PA 19382-2178

Phone: **610-436-5702**
e-mail: **treasurer@ccas.us**

*Sky & Tele*scope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95,** much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

To **start** a **new** subscription, make **sure** you make out the check to the **Chester County Astronomical Society**, note that it's for *Sky & Telescope*, and mail it to Don Knabb.

To **renew** your "club subscription" contact Sky Publishing directly. Their phone number and address are in the magazine and on their renewal reminders. If you have **any** questions call Don first at 610-436-5702.

Astronomy Magazine Group Rates

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