Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 18, No. 7 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ¤ 2006 & 2009* *July 2010*

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Membership Renewals Due

07/2010	Baci
	Duffy
	Goldader & Family
	Hockenberry & Family
	Joniec
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	Labroli
	Morgan
	Naik
	Smith
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	De Lucia
	Lurcott

CCAS Member Original Astrophotography

by Don Knabb, CCAS Secretary & Observing Chair

The Moon and Venus, taken June 19th, 2010.

Important July 2010 Dates

4th • Last Quarter Moon 10:35 a.m.

11th • New Moon 3:40 p.m.

18th • First Quarter Moon 6:11 a.m.

25th • Full Moon 9:37 p.m.

29th • Mars is close to Saturn.

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, September 18, 2010** - Night Out in Anson Nixon Park, Kennett Square.

¤ **Saturday, October 16, 2010** - Night Out in Hoopes Park, West Chester. The event is cohosted with the West Chester Department of Recreation.

Summer 2010 Society Events

July 2010

7th • PA Outdoor Lighting Council monthly meeting, Bucktown Branch of National Penn Bank, starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the PA Outdoor Lighting Council website (http://www.polcouncil.org/).

9th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather July 10th). The observing session starts at sunset.

17th CCAS Summer Picnic for members and their families. Directions will be sent in a future members e-mail.

20th • Open call for articles and photographs for the August 2010 edition of our *Observations* newsletter.

26th • Deadline for newsletter submissions for the August 2010 edition of *Observations*.

August 2010

4th • PA Outdoor Lighting Council monthly meeting, Bucktown Branch of National Penn Bank, 1111 Ridge Rd, (Rt. 23 just west of Rt. 100) in South Coventry Township, PA, starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the PA Outdoor Lighting Council website (http://www.polcouncil.org/).

6th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date August 7th). The observing session starts at sunset.

20th • Reservations start for the September 10th planetarium show at the WCU Planetarium. For more information, please contact Dr. Karen Vanlandingham, Planetarium Director, via e-mail or visit the planetarium's webpage.

20th • Open call for articles and photographs for the September 2010 edition of our *Observations* newsletter.

26th • Deadline for newsletter submissions for the September 2010 edition of *Observations*.

Minutes from the June 2010 Monthly CCAS Meeting

by Don Knabb, CCAS Secretary & Observing Chair

- The June meeting was held to make up for the February meeting which was cancelled due to snow.
- Approximately 12 members were in attendance.
- The DVD "Birth Cries of Black Holes" was shown.
- Vic Long presented his restoration of a classic refractor telescope.
- Kathy Buczynski made a presentation about the occultation of Antares by the Moon from the summer of 2009.
- There was a discussion about the continued need for a "welcome packet" for new members.
- There was discussion about beginner classes and/or telescope training.

My Future Plans

by John Hepler, CCAS Webmaster & Newsletter Editor

CCAS Webmaster & Newsletter Editor John Hepler (me!) and parents, May 10th, 2010

As most CCAS members know, I have been working on a Master's degree at WCU for the past 3 years. I finished my last two courses (and somehow survived the comprehensive exam) this past Spring semester. The graduation ceremony was held the evening of May 10th, 2010.

This was a very important day for my parents and me: what most of you don't know is that my mother suffered a stroke on April 6th. I was more concerned with her ability to attend than for my own participation in the ceremony.

(Continued on page 3)

2010-2011 Speaker Series

by Dave Hockenberry, CCAS Program Chair

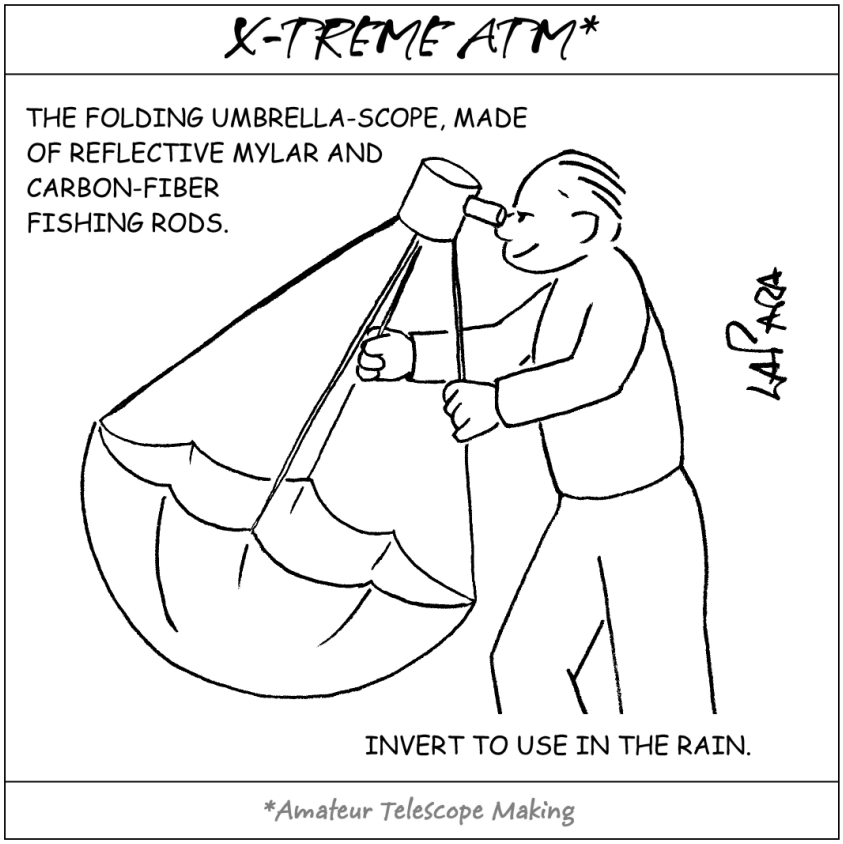
We are looking for main presentation speakers for our 2010-2011 season. Currently Dr. Dave Klassen is scheduled to speak at our September 2010 meeting, and Dr. Beth Willman will join us at our November meeting.

If you have any suggestions for future speakers, or are interested in being a speaker yourself, please contact Dave Hockenberry at programs@ccas.us.

We are also looking for Constellation of the Month (COM) presenters for the 2010-2011 season. COM is a great way to learn the night sky and a useful tool if you are pursuing one of the Astronomical League's observing club awards. Participating is easy! Contact Kathy Buczynski at vp@ccas.us for a COM template to fill out.

Nicholas's Cartoon Corner

by Nicholas La Para



Future Plans (cont'd)

(Continued from page 2)

While I don't normally "toot my own horn," the reason for making this announcement is because I have been accepted for doctoral studies at Indiana University of Pennsylvania (IUP), starting August 30th, 2010.

I will be continuing my studies in English as a 2nd language, with a dual major in college-level English composition. I also plan to focus on teacher training and the use of technology in the classroom.

Since Indiana, PA, is located approximately 4-1/2 hours west of here, I will be relocating mid-August. My plan (for the immediate future) is to remain a member of CCAS and continue to act as the Society's webmaster & newsletter editor.

I am told I can finish my coursework in 2 years, afterwards I will have up to 5 years to complete my dissertation (which I can do anywhere). After finishing the classes, I expect to return to the West Chester area and teach at a local educational facility.

IUP has a Geosciences department and a planetarium (housing a 1966 Spitz projector—sounds familiar, doesn't it?), from there I hope to find a local group of astronomy enthusiasts.

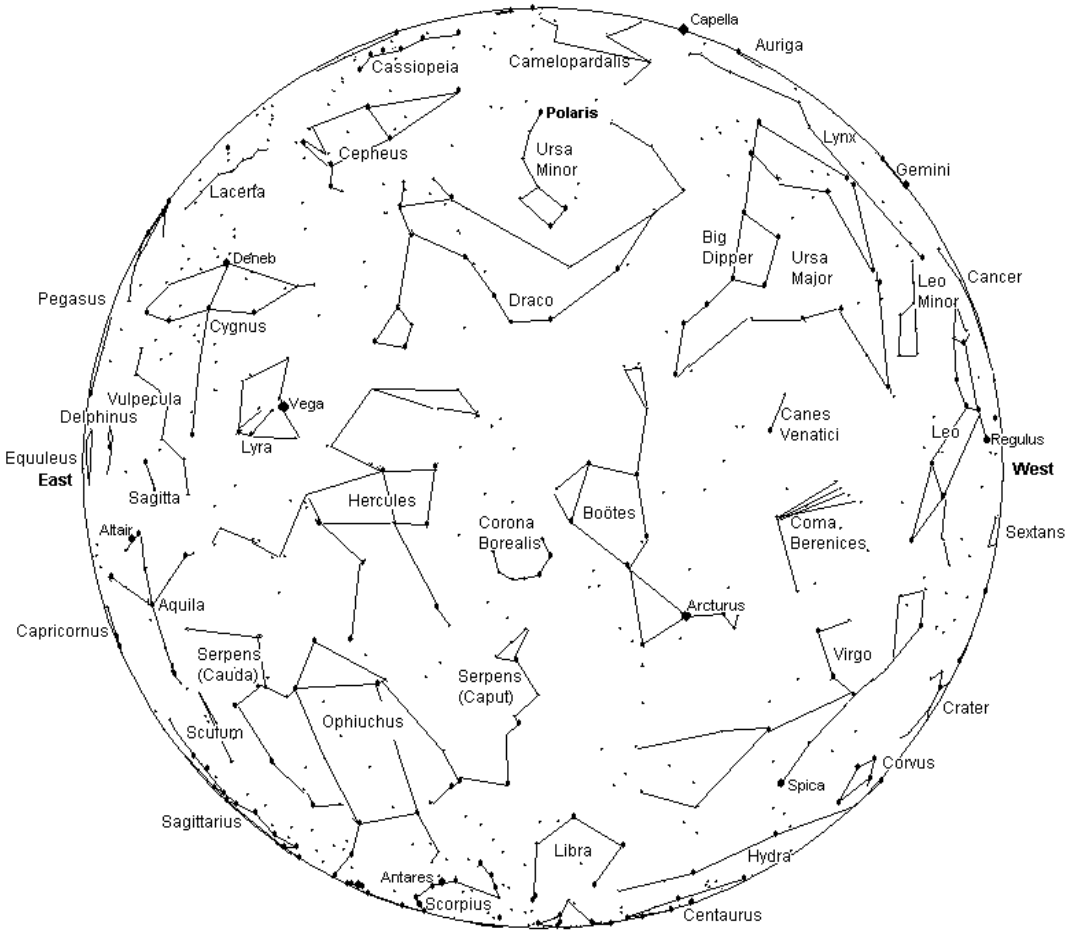
It seems the closest clubs are either in Pittsburgh (an hour west) or Altoona (an hour east). So you don't have to worry too much about me "jumping ship." Who knows? Perhaps I can start a "western chapter" of CCAS, or at least report on the night skies.

I hope to see you all at the Summer Picnic on July 17th; it will be the last time I will be able to participate in a CCAS event for quite some time. *See you there!*

The Sky Over Chester County

July 15, 2010 at 9:00 p.m. EST

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.



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	Moon Phases		
07/01/2010	5:35 a.m. EDT	8:33 p.m. EDT	First Quarter	07/18/2010	6:11 a.m. EDT
07/15/2010	5:44 a.m. EDT	8:28 p.m. EDT	Full Moon	07/25/2010	9:37 p.m. EDT
07/31/2010	5:58 a.m. EDT	8:15 p.m. EDT	Last Quarter	07/04/2010	10:35 a.m. EDT
			New Moon	07/11/2010	3:40 p.m. EDT

July 2010 Observing Highlights

by Don Knabb, CCAS Secretary & Observing Chair

July 4	Last-quarter Moon, 10:35 a.m.
July 9-10	Regulus is close to Venus
July 11	New Moon, 3:40 p.m., and a total solar eclipse in the South Pacific
July 13-16	The Moon, Mercury, Regulus, Venus, Mars and Saturn are visible just after sunset
July 18	First-quarter Moon, 6:11 a.m.
July 21	Antares is close to the waxing gibbous Moon
July 25	Full Moon, 9:37 p.m.
July 27	Mercury is close to Regulus just after sunset
July 29	Mars is close to Saturn
July 30	Jupiter is close to the Moon around 11 p.m.

The best sights this month: How about we blow our lifesavings, rent a jet and fly to the South Pacific for the total solar eclipse on July 11th? No? Well then the next best sight this month is the constantly changing dance of Venus, Mars and Saturn just as the sky darkens enough to see the stars. Mercury, Regulus and the Moon join this dance to provide an entertaining show throughout all of July!

Mercury: July is a good month to add the closest planet to the Sun to your "life list". Mercury rises above the glow of the setting sun around mid-month. It peaks at around 7 degrees above the horizon on July 26th and has a close encounter with Regulus on the 27th.

Venus: Our sister planet continues to shine like a UFO in the west. Throughout July it will get closer to Mars and Saturn.

Mars: The red planet is falling behind us in our race around the Sun, so its brightness is fading. But it is still a beautiful red jewel in the west as it is sandwiched between Venus and Saturn. At the end of the month Mars and Saturn are very close.

Jupiter: Bright Jupiter is still rising late, but by the end of July it will be peeking above the eastern horizon around 10:30 p.m. On July 30th the Moon and Jupiter are very close in the sky around 11 p.m. Hey, it's a Friday night – this is worth staying up to see and is better than a movie.

Saturn: Although Saturn is fading in brightness it is still a wonderful sight to share with friends and family in a telescope. July 31st is a great night to seek out Saturn when it is close to Mars and Venus about 45 minutes after sunset.

Uranus and Neptune: Uranus is not far from Jupiter so if you are out late you should be able to find it with a pair of binoculars. Neptune on the other hand is only visible in the pre-dawn hours. SkyandTelescope.com has finder charts for both gas giants.

The Moon: Full moon occurs on July 25th. Native Americans called this the Full Buck Moon because July is normally the month when the new antlers of buck deer push out of their foreheads with coatings of velvety fur. It was also often called the Full Thunder Moon, since thunderstorms are most frequent during this time of year.

Constellations: Fireflies, warm nights and the hazy stars of summer; this is July! This is one of the few months of the year when you can lay a blanket down on the lawn and not be cold, so enjoy it even if it is hot and humid during the day. Arcturus will be setting in the west with that beautiful string of planets, and the Summer Triangle will be nearly at the zenith. If you sit up for a bit and look to the south you will see the big bug of summer, Scorpius. Then grab your binoculars and scan from Scorpius up the Milky Way through Sagittarius, on to Aquila and Cygnus and beyond!

Messier/Deep Sky: Globular clusters and nebula rule the summer sky for anyone with a telescope or binoculars. Sagittarius is full of Messier objects such as the Trifid and the Lagoon nebula. In Scorpius is M4, a globular cluster that is easy to find using Antares as a guide. If you have a low western horizon look for NGC 6231 where the tail of Scorpius turns to the east. This open cluster is called the Northern Jewel Box.

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Through the Eyepiece: M24, the Sagittarius Star Cloud

by Don Knabb, CCAS Secretary & Observing Chair

During the summer months when I observe the night sky I find myself drawn to the southern sky to enjoy the wonders of the central portion of the Milky Way. There is so much to see in this section of the sky and it only is above the horizon for a few months, so if you are not familiar with this part of the sky try to find time to gaze into the rich star fields of Sagittarius.

A unique object to observe in this area of the sky is M24, the Sagittarius Star Cloud. This Messier object is in a class by itself. It is not a true open star cluster or globular cluster but is a rich star field in one of the spiral arms of our galaxy.

M24 is visible to the naked eye under dark skies. Although it is not marked on the star chart of Sagittarius it is that fuzzy spot just to the lower right of M17 and M18 in the chart to the right.

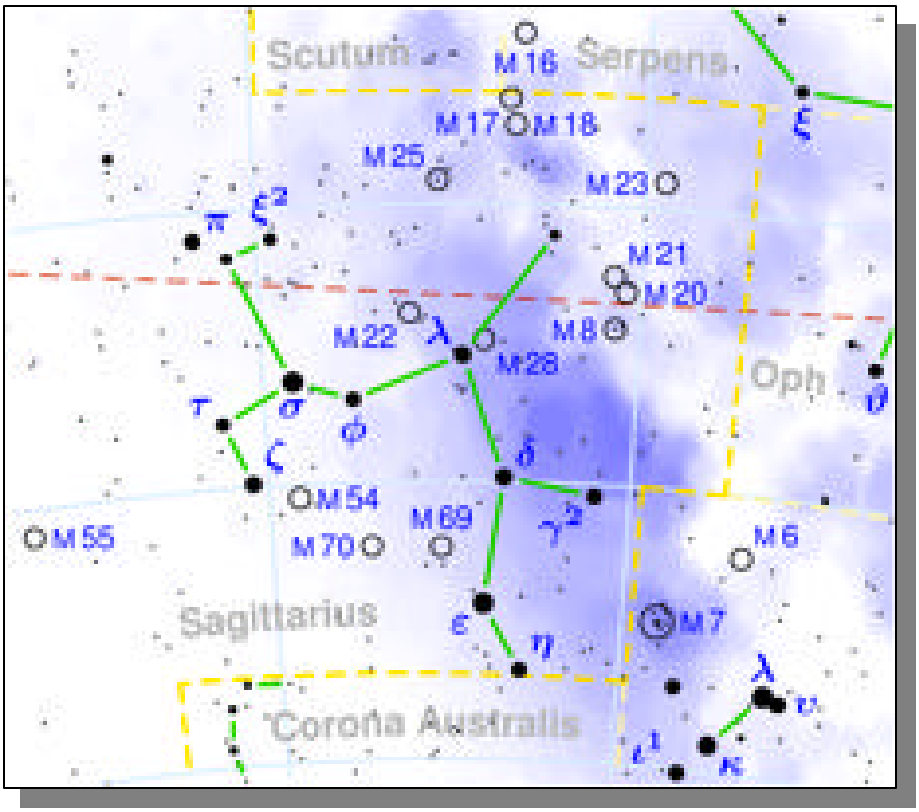
The Sagittarius star cloud is very large, measuring approximately 2 degrees by 1 degree. It is the most intense naked eye knot of light in the band of light that is the Milky Way galaxy.

M24 was discovered by Charles Messier in 1764. Messier described M24 as a "large nebulosity containing many stars" and gave its dimensions as being some 1.5° across, a description that fits the star cloud rather well. This is the densest concentration of individual stars visible using binoculars, with around 1,000 stars visible within a single field of view. If you chose a telescope to see M24 use your lowest magnification eyepiece. Even so, it is not likely you will get the entire star field in your field of view.

Messier 24 is one of the most curious of the entries in Messier's catalog because it really isn't a star cluster. What we are looking at is thousands of stars that belong to the Sagittarius arm of the Milky Way galaxy seen through a chance hole in the gas and dust. It is like looking through a clear "window" in space.

M24 is often referred to as the "Sagittarius Star Cloud", or "Little" or "Small Sagittarius Star Cloud", in contrast to the "Big" or "Large Sagittarius Star Cloud" which lies more to the south and consists of that portion of our Galaxy's central bulge which happens to be not obscured by foreground dust.

As you can see from the star chart of Sagittarius, this region is rich with many deep sky objects in addition to M24. So "go deep", and gaze at thousands of stars through your eyepiece!



Information credits:

Books:

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

Ottewell, Guy 2010. Astronomical Calendar 2010. Raynham, MA. Universal Workshop

Through the Eyepiece (Cont'd)

M24 Sagittarius Star Cloud, photo by J. Popsel and B. Behle of the Capella Observatory on the island of Crete, http://www.capella-observatory.com/. Used with permission.

French, Sue. Celestial Sampler 2006. Cambridge, MA. Sky Publishing

Websites:
http://en.wikipedia.org/wiki/Messier_24

http://www.universetoday.com/tag/delle-caustiche/
http://www.redorbit.com/images/gallery/messier_objects/m_24__sagittarius_star_cloud_delle_caustiche/104/87/index.html

First Superstorm on an Exoplanet Observed

Provided by ESO, Garching, Germany

The Very Large Telescope detects first superstorm on exoplanet. The observations also allow another exciting "first" — measuring the orbital speed of the exoplanet itself.

Astronomers have measured a superstorm for the first time in the atmosphere of an exoplanet, "hot Jupiter" HD209458b. The high-precision observations of carbon monoxide gas show that it is streaming at enormous speed from the extremely hot dayside to the cooler nightside of the planet. The observations also allow another exciting "first" — measuring the orbital speed of the exoplanet itself, providing a direct determination of its mass.

"HD209458b is definitely not a place for the faint-hearted," said Ignas Snellen from Leiden Observatory in The Netherlands. "By studying the poisonous carbon monoxide gas with great accuracy, we found evidence for a super wind blowing at a speed of 3,100 to 6,200 mph (5,000 to 10,000 km/h)."

HD209458b is an exoplanet of about 60 percent the mass of Jupiter orbiting a solar-like star located 150 light-years from Earth toward the constellation Pegasus the Winged Horse. Circling at a distance of only one-twentieth the Sun-Earth distance, the planet is heated intensely by its parent star, and it

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Black Holes No Joke

by Dr. Tony Phillips

Kip Thorne: Why was the black hole hungry?

Stephen Hawking: It had a light breakfast!

Black hole humor—you gotta love it. Unless you're an astronomer, that is. Black holes are among the most mysterious and influential objects in the cosmos, yet astronomers cannot see into them, frustrating their attempts to make progress in fields ranging from extreme gravity to cosmic evolution.

How *do* you observe an object that eats light for breakfast? "Black holes are creatures of gravity," says physicist Marco Cavaglia of the University of Mississippi. "So we have to use gravitational waves to explore them."

Enter LIGO—the NSF-funded Laser Interferometer Gravitational-wave Observatory. According to Einstein's Theory of General Relativity, black holes and other massive objects can emit gravitational waves—ripples in the fabric of space-time that travel through the cosmos. LIGO was founded in the 1990s with stations in Washington state and Louisiana to detect these waves as they pass by Earth.

"The principle is simple," says Cavaglia, a member of the LIGO team. "Each LIGO detector is an L-shaped ultra-high vacuum system with arms four kilometers long. We use lasers to precisely measure changes in the length of the arms, which stretch or contract when a gravitational wave passes by."

Just one problem: Gravitational waves are so weak, they change the length of each detector by just 0.001 times the width of a proton! "It is a difficult measurement," allows Cavaglia.

Seismic activity, thunderstorms, ocean waves, even a truck driving by the observatory can overwhelm the effect of a genuine gravitational wave. Figuring out how to isolate LIGO from so much terrestrial noise has been a major undertaking, but after years of work the LIGO team has done it. Since 2006, LIGO has been ready to detect gravitational waves coming from spinning black holes, supernovas, and colliding neutron stars anywhere within about 30 million light years of Earth.

So far the results are … nil. Researchers working at dozens of collaborating institutions have yet to report a definite detection.

Does this mean Einstein was wrong? Cavaglia doesn't think so. "Einstein was probably right, as usual," he says. "We just need more sensitivity. Right now LIGO can only detect events in our little corner of the Universe. To succeed, LIGO needs to expand its range."

So, later this year LIGO will be shut down so researchers can begin work on Advanced

(Continued on page 9)

Laser Interferometer Gravitational-wave Observatory in Livingston, Louisiana. Each of the two arms is 4 kilometers long. LIGO has another such observatory in Hanford, Washington.

Space Place (cont'd)

(Continued from page 8)

LIGO—a next generation detector 10 times more sensitive than its predecessor. "We'll be monitoring a volume of space a thousand times greater than before," says Cavaglia. "This will transform LIGO into a real observational tool."

When Advanced LIGO is completed in 2014 or so, the inner workings of black holes could finally be revealed. The punch line may yet make astronomers smile.

Find out more about LIGO at http://www.ligo.caltech.edu/. The Space Place has a LIGO explanation for kids (of all ages) at http://spaceplace.nasa.gov/en/kids/ligo, where you can "hear" a star and a black hole colliding!

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

CCAS Summer Picnic

by Don & Barb Knabb

All CCAS members and their families are invited to the CCAS summer picnic on Saturday July 17th from 6 PM to 9 PM at our home near West Chester. A "members" email will be sent with directions to our house. RSVP to observing@ccas.us so we can get an estimate of how many club members and their families will be attending the picnic.

Please bring an appetizer to share. We can all sample appetizers and gaze at the Moon, which will be near first quarter that evening. Although this is a social event, feel free to bring a telescope to set up in or near the Knabb observing circle. We can't get together and not look at the sky!

Project ASTRO at West Chester University

Share your love of astronomy with others and help local teachers open young minds to the beauty of the universe!

Project ASTRO is a National Program that creates long-term partnerships between astronomers and teachers or youth group and community leaders. Project ASTRO pairs K-12 teachers and youth group leaders with visiting volunteer astronomers who have an interest in working with local schools and community organizations.

During a two-day training workshop, teachers and their partner astronomers meet for the first time and are engaged in effective classroom hands-on astronomy activities that meet the PA state science standards. All participants receive a copy of The Universe at Your Fingertips, a collection of over ninety of the very best hands-on activities for teaching many aspects of astronomy. The astronomers commit to making at least four visits to the same one or two classrooms or youth group. During these visits they answer students' questions and lead or assist the teacher with astronomy activities.

We are in desperate need of astronomers! Our next training workshop is scheduled for August 20-21, 2010. For more information and volunteer forms visit our website at http://geology.wcupa.edu/project_astro.

Superstorm (Cont'd)

(Continued from page 7)

has a surface temperature of about 1800° Fahrenheit (1000° Celsius) on the hot side. But as the planet always has the same side to its star, one side is very hot while the other is much cooler. "On Earth, big temperature differences inevitably lead to fierce winds, and as our new measurements reveal, the situation is no different on HD209458b," said Simon Albrecht from the Massachusetts Institute of Technology (MIT) located in Cambridge.

HD209458b was the first exoplanet to be found transiting its sun — every 3.5 days, the planet moves in front of its host star, blocking a small portion of the starlight during a 3-hour period. During such an event, a tiny fraction of the starlight filters through the planet's atmosphere, leaving an imprint.

A team of astronomers from Leiden University, the Netherlands Institute for Space Research (SRON), and MIT in the United States, have used the European Southern Observatory's (ESO) Very Large Telescope (VLT) and its powerful CRIRES spectrograph to detect and analyze these faint fingerprints, observing the planet for about 5 hours as it passed in front of its star.

"CRIRES is the only instrument in the world that can deliver spectra that are sharp enough to determine the position of the carbon monoxide lines at a preci-

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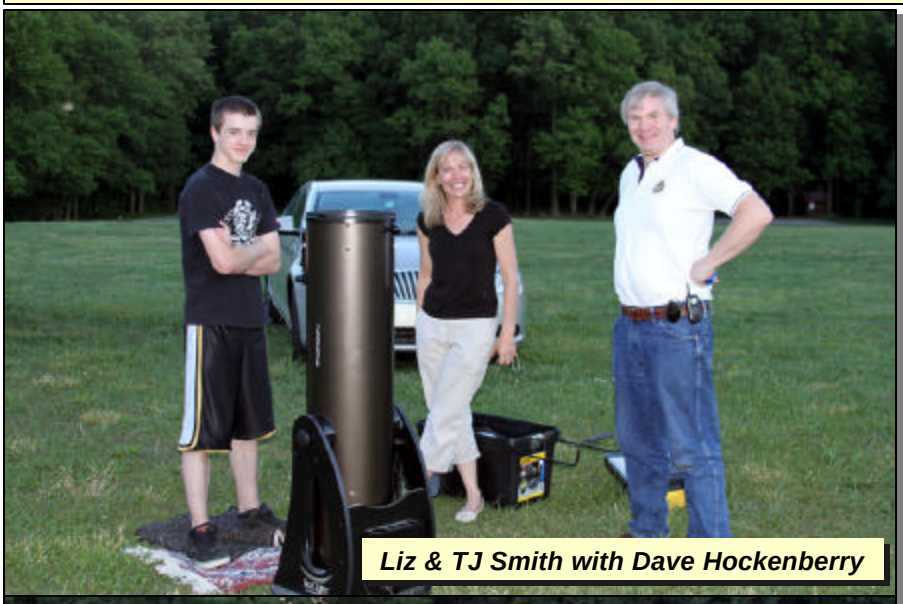
Photos From the Girl Scout Night Out at Hibernia Park

by Don Knabb



Liz & TJ Smith with Dave Hockenberry

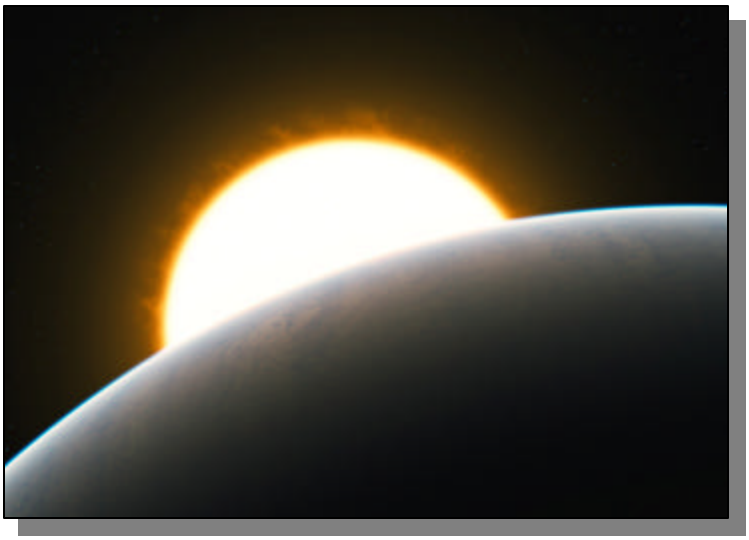
The Kalinowski Family

The Master at Work

Superstorm (Cont'd)

(Continued from page 10)

sion of 1 part in 100,000," said Remco de Kok from SRON in The Netherlands. "This high precision allows us to measure the velocity of the carbon monoxide gas for the first time using the Doppler effect."

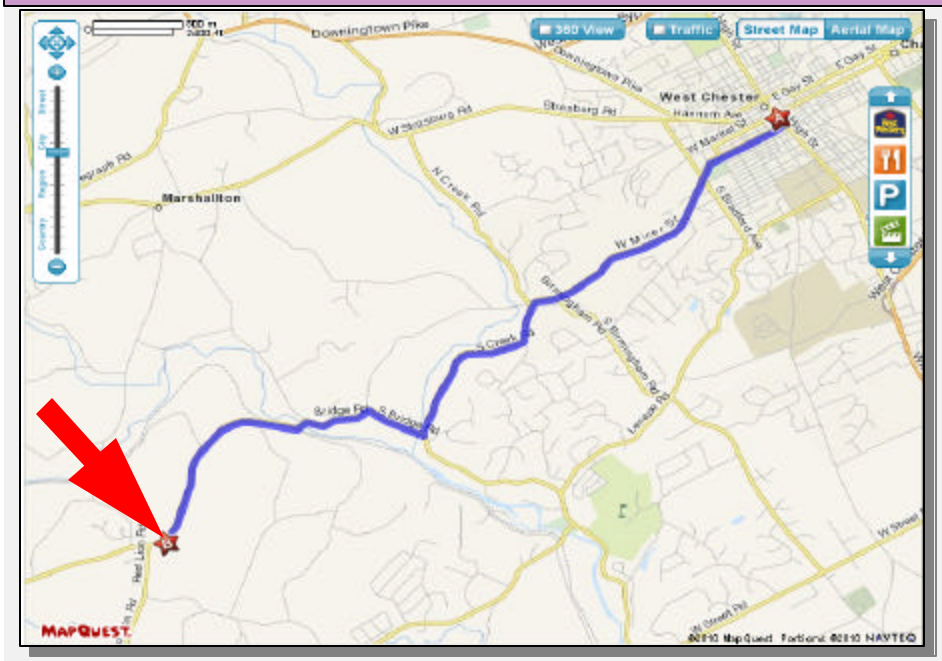


This artist's impression shows the Jupiter-like transiting planet around its solar-like host star. ESO/L. Calçada

The astronomers achieved several other firsts. They directly measured the velocity of the exoplanet as it orbits its home star. "In general, the mass of an exoplanet is determined by measuring the wobble of the star and assuming a mass for the star, according to theory," said Ernst de Mooij from Leiden Observatory in The Netherlands. "Here, we have been able to measure the motion of the planet as well, and thus determine both the mass of the star and of the planet."

Also for the first time, the astronomers measured how much carbon is present in the atmosphere of this planet. "It seems that H209458b is actually as carbon-rich as Jupiter and Saturn," said Snellen. "This could indicate that it was formed in the same way. In the future, astronomers may be able to use this type of observation to study the atmospheres of earth-like planets to determine whether life also exists elsewhere in the universe."

CCAS Directions



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

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

Brandywine Valley Association

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

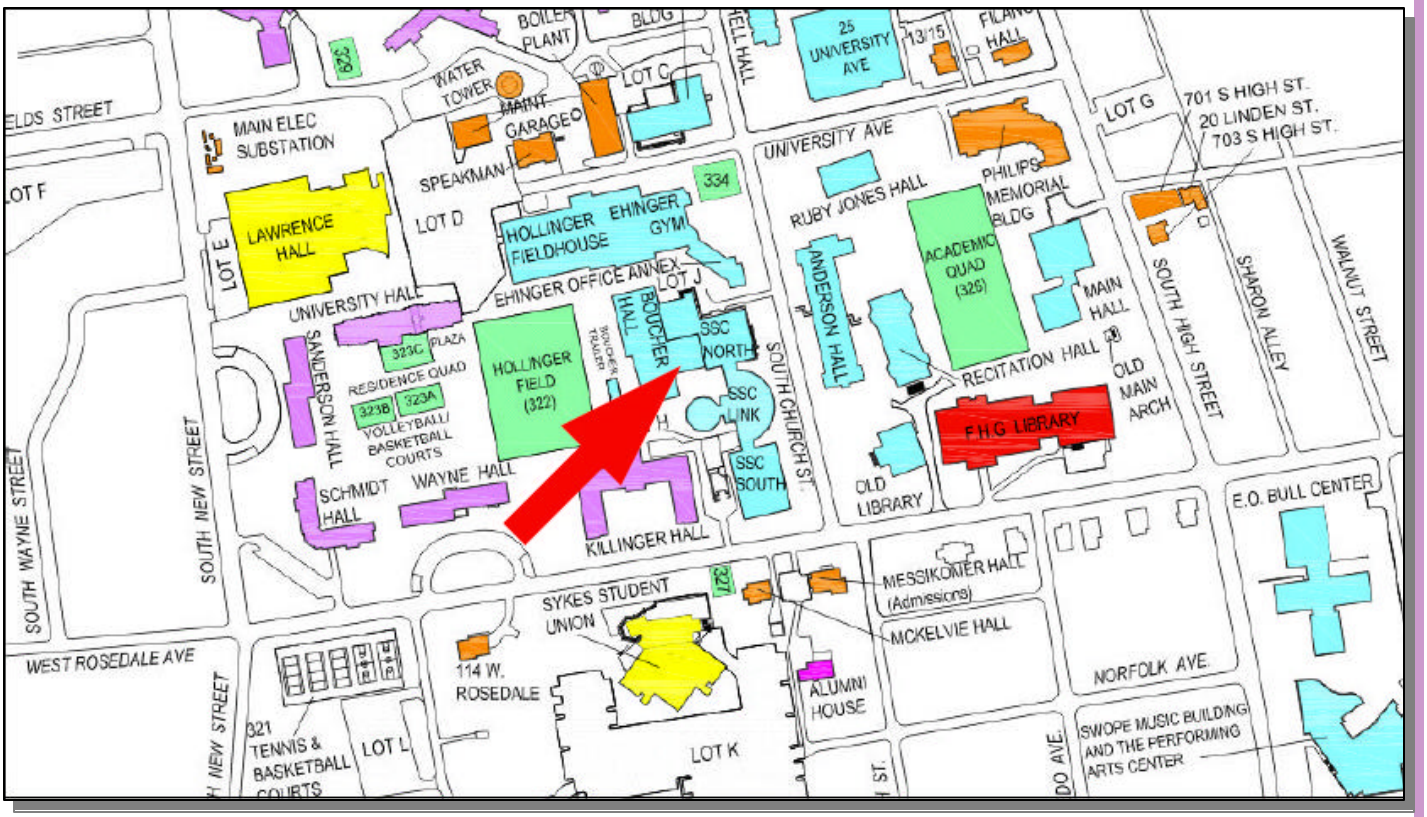
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route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

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

CCAS Directions

West Chester University Campus

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



Observing (Cont'd)

(Continued from page 5)

Comets: There are no bright comets in the sky during July, but if you want to seek one of these faint fuzzies of the solar system you can look for Comet 10P/Tempel using the finder chart in the July issue of Astronomy.com.

Meteor Showers: The Delta Aquarids reach their peak on the night of July 27/28. Unfortunately this shower will be washed out by the bright moon that is only 3 days from being full.

CCAS Membership Information and Society Financials

Treasurer's Report

by Bob Popovich

May 2010 Financial Summary

Beginning Balance	$1,548
Deposits	$118
Disbursements	$411
Ending Balance	$1,254

New Member Welcome!

This month we welcome new CCAS members Beatrice Mazziotta & Family from Phoenixville, 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:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

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

CCAS Information Directory

Join the Fight for Dark Skies!

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

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

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

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

http://www.darksky.org

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

Dark-Sky Website for PA

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

http://www.POLCouncil.org

Find out about Lyme Disease!

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

http://www.LymePA.org

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

CCAS Event Information

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

Good Outdoor Lighting Websites

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

Starry Night Lights

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

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

http://www.starrynightlights.com

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Green Earth Lighting
Formerly
Outdoor Lighting Associates

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

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

Phone: **512-944-7354**

http://www.greenearthlighting.com

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our society. 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 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: **newsletter@ccas.us**

Or mail the contribution, typed or handwritten, to:

John Hepler
500 W. Rosedale Ave.
Apt. A-3 Trinity Bldg.
West Chester, PA 19382

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 (484-266-0699) 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 "star nights" 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 Pres:	Kathy Buczynski 610-436-0821
ALCor and Treasurer:	Bob Popovich 484-467-5562
Secretary and Observing:	Don Knabb 610-436-5702
Librarian:	Barb Knabb 610-436-5702
Program:	Dave Hockenberry 610-558-4248
Education:	Kathy Buczynski 610-436-0821
Webmaster and Newsletter:	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. If you need to renew, you can mail your check, made out to "Chester County Astronomical Society," to:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

Phone: 484-467-5562
e-mail: B2N2@verizon.net

*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 Bob Popovich.

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 Bob first at **610-363-8242.**

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.**