Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 19, No. 4 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ¤ 2006 & 2009* *April 2011*

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04/2011	Baker Bower Imburgia Mulligan & Family Popovich & Family Richter
05/2011	Fletcher Kutta Long, Jr.
06/2011	Hebding Kovacs Siskind

Full Moon over Whitby, North Yorkshire, England

Photo courtesy of John Pratt

Important April 2011 Dates

3rd • New Moon 10:32 a.m.

11th • First Quarter Moon 8:05 a.m.

17th • Full Moon 10:44 p.m.

22nd-23rd • Lyrid Meteor Shower peaks.

24th • Last Quarter Moon 10:47 p.m.

30th • Four Planets Near Crescent Moon before Sunrise

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, April 1, 2011** - CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date April 2nd).

¤ **Saturday, April 9, 2011** - Anson Nixon Park, Kennett Square, PA.

¤ **Friday, May 17, 2011** - Hoopes Park, West Chester, PA. Cohosted with the West Chester Recreation Department.

Spring 2011 Society Events

April 2011

1st • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date April 2nd). The observing session starts at sunset.

6th • PA Outdoor Lighting Council monthly meeting starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the PA Outdoor Lighting Council website.

8th • West Chester University Planetarium Show: "Fire In the Sky", Schmucker Science Building, The show starts at 7 p.m. and run approximately one hour in length. For more information and reservations, please contact Dr. Karen Vanlandingham, Planetarium Director, via e-mail or visit the planetarium's webpage.

12th • DVD Lecture Series: "The Afterglow of the Big Bang", half-hour video presentation of a lecture by Professor Alex Filippenko, UC Berkeley. Room 113, Merion Science Center (former Boucher Building), West Chester University. The presentation immediately precedes the monthly meeting and starts at 7:00 p.m.

12th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts at 7:30 p.m. Guest Speaker: Jerry Lodriguss: "Secrets of DSLR Astrophotography."

20th • Open call for articles and photographs for the May 2011 edition of Observations.

22nd • Earth Day.

22nd • Reservations start for the May 13th 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.

26th • Deadline for newsletter submissions for the May 2011 edition of *Observations*.

May 2011

4th • PA Outdoor Lighting Council monthly meeting starting at 7:30 p.m. Meetings are open to the public. For more information and directions, visit the PA Outdoor Lighting Council website.

7th • National Astronomy Day.

7th • CCAS Monthly Observing Session, Night Out at Hoopes Park, West Chester. The free public event is co-hosted with the West Chester Recreation Department. The observing session starts at sunset.

7th • West Chester University Planetarium Show: "Venus: The Evening Star", Schmucker Science Building, Show starts at 7 p.m. and run approximately one hour in length. For more information and reservations, please contact Dr. Karen Vanlandingham, Planetarium Director, via e-mail or visit the planetarium's webpage.

10th • DVD Lecture Series: "Ripples in the Cosmic Background Radiation", half-hour video presentation of a lecture by Professor Alex Filippenko, UC Berkeley. Room 113, Merion Science Center (former Boucher Building), West Chester University. The presentation immediately precedes the monthly meeting and starts at 7:00 p.m.

10th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts at 7:30 p.m. Meeting Theme: "Members' Night." CCAS Members are encouraged to prepare a 15-20 minute presentation on their observations, research, or any topic related to astronomy. Contact Dave Hockenberry to sign up.

20th • Open call for articles and photographs for the June 2011 edition of Observations.

26th • Deadline for newsletter submissions for the June 2011 edition of *Observations*.

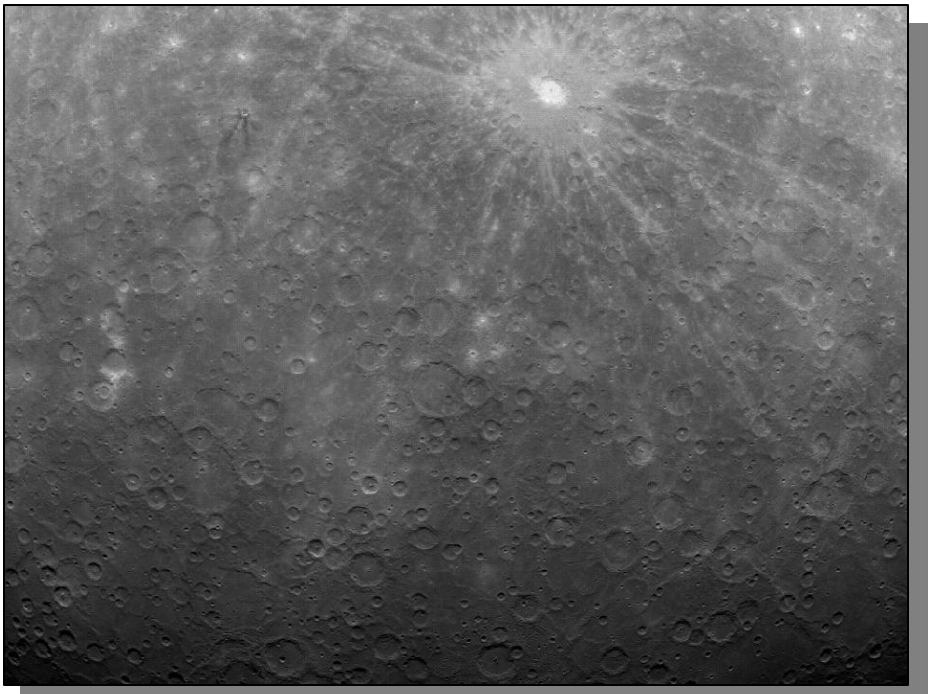
Minutes from the March 2011 CCAS Monthly Meeting

by Don Knabb, CCAS Secretary and Observing Chair

- Approximately 14 members were in attendance.
- DVD presentation: *Einstein's Greatest Blunder* was shown.
- Program – Dr. John Gizis, Associate Professor at the University of Delaware, presented *"Brown Dwarf Stars"*.
- Upcoming star parties were reviewed but unfortunately the Greenwood Elementary Star Party was cancelled due to cloudy conditions.

First Image Ever Obtained from Mercury Orbit

by NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington



At 5:20 am EDT on Mar. 29, 2011, MESSENGER captured this historic image of Mercury. This image is the first ever obtained from a spacecraft in orbit about the Solar System's innermost planet. Over the subsequent six hours, MESSENGER acquired an additional 363 images before downlinking some of the data to Earth. The MESSENGER team is currently looking over the newly returned data, which are still continuing to come down.

Image Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington

Equipment Review – Modified Vixen Custom Alt-Azimuth Mount

by Vic Long, Jr.

I needed a sturdy, lightweight mount for my Christmas present: a 90mm refractor used for viewing star fields and birding.

The Vixen Custom alt-azimuth mount is a well-made, vintage Japanese mount with slow motions on both axes. An unbalanced design, its main drawback is a tendency to slip in altitude when viewing objects near the zenith unless the altitude axis tension nut is very tight. The more expensive Vixen Custom-D alt-azimuth mount solved this problem by adding a counterbalance weight. Unfortunately, used Vixen Custom-D's are pretty rare.

I chose to add a counterweight to a used Vixen Custom mount as shown in the figure below. I made a bracket from a heavy steel corner brace to allow the attachment of a counterweight taken from an EQ-1 equatorial mount. This bracket is bent at an angle that ensures the counterweight clears the telescope legs in all positions. A hole drilled through the mount allows attachment of the bracket. I drilled and tapped two 6 mm holes into a standard dovetail so that they line up with the holes in the Vixen Custom mount saddle. The telescope tube is attached to the dovetail with a bolt. The dovetail is then attached to the mount using 6mm bolts and wing nuts.

So how does it work? With the counterweight, the 90mm telescope is handled with ease; the mount does not slip in altitude even with a heavy eyepiece and diagonal. Vibrations damp out very quickly. Motions are smooth (I thoroughly cleaned and re-greased the mount bearing surfaces and slow motion screws with synthetic grease). Just release the azimuth lock and manually move the telescope tube to find the object, then tighten the azimuth lock and use the slow-motion cables to re-position as needed. The Vixen slow motion cables are of high quality and impart little vibration.

Photo courtesy of Vic Long, Jr.

April 2011 Guest Speaker

by Dave Hockenberry, CCAS Program Chair

Our April 2011 guest speaker is Jerry Lodriguss. His presentation is entitled "Secrets of DSLR Astrophotography."

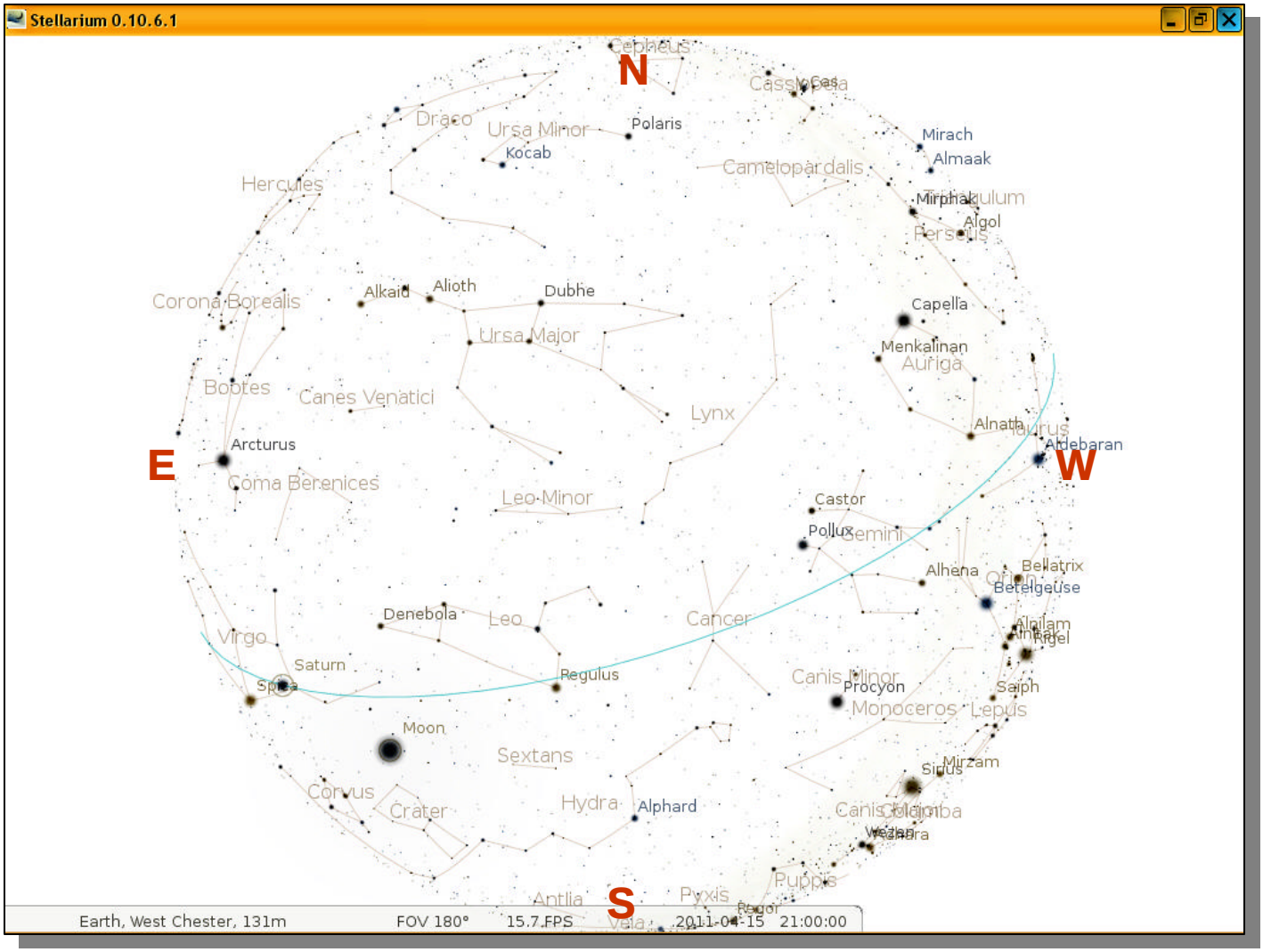
Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a change to the program, CCAS members will be notified via e-mail with as much advance notice as possible.

We are looking for presenters for our fall 2011 season. If you are interested in presenting or know someone who would be an interesting guest speaker, please contact Dave Hockenberry.

The Sky Over Chester County

April 15, 2011 at 9:00 p.m. ET

Note: This screen capture is taken from Stellarium, the free planetarium software available for download at www.stellarium.org.



Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
4/01/2011	6:18 a.m. EDT	6:45 a.m. EST	7:25 p.m. EST	7:52p.m. EDT	12h 39m 31s
4/15/2011	5:55 a.m. EDT	6:23 a.m. EDT	7:39 p.m. EDT	8:07 p.m. EDT	13h 15m 34s
4/30/2011	5:33 a.m. EDT	6:02 a.m. EST	7:54 p.m. EST	8:23 p.m. EDT	13h 51m 44s

Moon Phases					
First Quarter	4/11/2011	8:06 a.m. EDT	Last Quarter	4/24/2011	10:47 p.m. EDT
Full Moon	4/17/2011	10:44 p.m. EDT	New Moon	4/03/2011	10:32 a.m. EDT

April 2011 Observing Highlights

by Don Knabb, CCAS Secretary & Observing Chair

April 3	New Moon, 10:32 a.m.
April 3-4	Saturn is at opposition
April 6	The crescent Moon is below the Pleiades
April 9	Star cluster M35 is just to the upper right of the Moon, use binoculars
April 11	First-quarter Moon, 8:05 a.m.
April 16	The nearly full Moon is to the lower right of Saturn
April 17	Full Moon, 10:44 p.m.
April 22-23	The Lyrid meteor shower peaks
April 24	Last Quarter Moon, 10:47 p.m.
April 30	Four planets are near the thin crescent Moon shortly before sunrise

The Best Sights This Month: Saturn is at opposition on April 4th. It doesn't get any better than that!

Mercury: After Mercury's great show during March it will be more difficult to observe during April. But give it a try on April 30th when Mercury will be joined by Venus, Mars, Jupiter and a thin crescent Moon about a half hour before sunrise in the east.

Venus: Our sister planet is still very bright in the pre-dawn sky, shining at magnitude -3.9!

Mars: Mars is dim and low in the east as the sky brightens with the glow of the rising Sun. Seeing the red planet is quite a challenge this month.

Jupiter: Jupiter passes behind the Sun on April 6th and becomes just barely visible in the pre-dawn sky at the end of the month.

Saturn: The ringed planet takes center stage during April as it goes through opposition on the night of April 3-4. Opposition is the point at which a planet lies opposite the Sun in our sky and therefore is visible all night. Saturn will be highest in the sky around midnight, but it will be in good viewing position a few hours after sunset. Take a good look at Saturn's rings and try to identify the two brightest rings. The outermost ring is ring A, next we can see the dark Cassini Division, then ring B.

Uranus and Neptune: Both gas giants are in poor position for viewing during April.

The Moon: For a nice sight take a look on April 6th when the Pleiades are just above the thin crescent Moon. Or if you are an early riser with a good eastern horizon grab your binoculars and look for the thin crescent Moon on April 30th with Mercury, Venus, Mars and Jupiter nearby.

Full Moon is on April 17th. Native Americans called this the Full Pink Moon. This name came from the herb moss pink, or wild ground phlox, which is one of the earliest flowers of the spring. Other names for this full Moon are the Full Sprouting Grass Moon and among coastal tribes the Full Fish Moon because this was the time that the shad swam upstream to spawn.

Constellations: We say goodbye to wonderful Orion as April progresses, but handsome Hercules is rising not too far into the night. Brilliant Arcturus can be seen in the constellation Boötes, the Herdsman, and to its right in the southeast is the springtime star Spica in Virgo.

Messier/Deep Sky: April is galaxy hunting month! Look for M64 in Coma Berenices, M51, M81 and M82 in Ursa Major and M104 near bright Spica in Virgo. Plan your hunting expedition for a night when the bright Moon is absent from the sky, since bright moonlight will wash out the light from faint galaxies.

Comets: There are no comets visible during April.

Meteor Showers: The Lyrid meteor show peaks in the early morning hours of April 23rd. You should be able to see 10 to 20 bright, fast meteors at the peak of the shower. The best observing will be around midnight.

Exploding Stars and Stripes in Tycho's Supernova Remnant

by Rutgers University

The discovery of a pattern of X-ray "stripes" in the remains of an exploded star may provide the first direct evidence that a cosmic event can accelerate particles to energies a hundred times higher than achieved by the most powerful particle accelerator on Earth.

This result comes from a long observation of the Tycho Supernova Remnant with NASA's Chandra X-ray Observatory in Cambridge, Massachusetts. It could explain how some of the extremely energetic particles bombarding Earth, called cosmic rays, are produced.

"We've seen lots of intriguing structures in supernova remnants, but we've never seen stripes before," said Kristoffer Eriksen, from Rutgers University in New Brunswick, New Jersey. "This made us think very hard about what's happening in the blast wave of this powerful explosion." This latest study from Chandra provides support for a theory about how magnetic fields can be dramatically amplified in such blast waves.

In this theory, the magnetic fields become highly tangled and the motions of the particles very turbulent near the expanding supernova shock wave at the front edge of the supernova remnant. High-energy charged particles can bounce back and forth across the shock wave repeatedly, gaining energy with each crossing.

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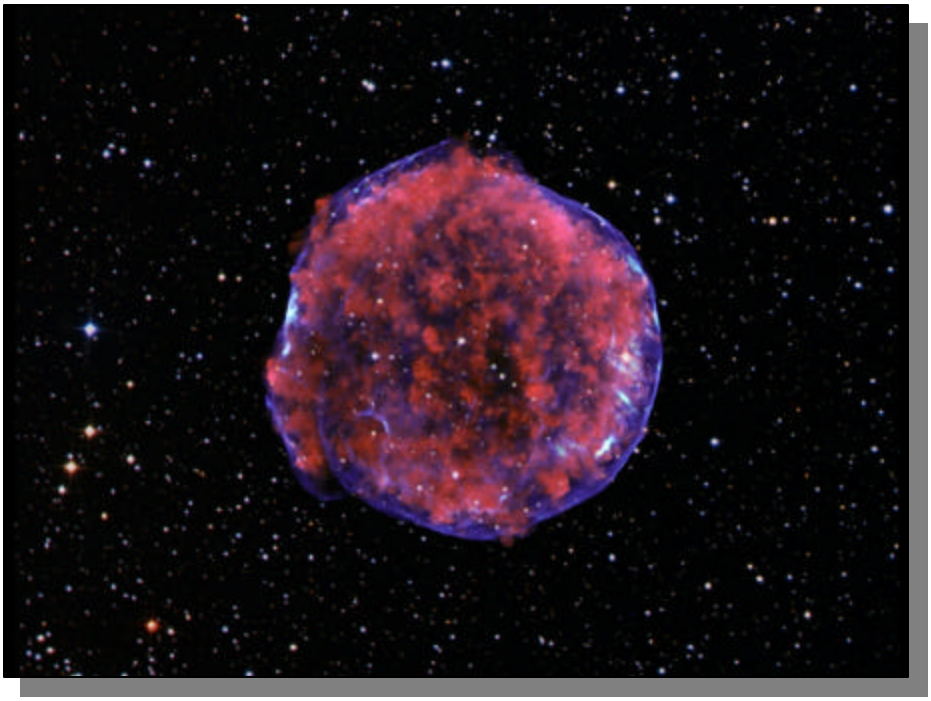
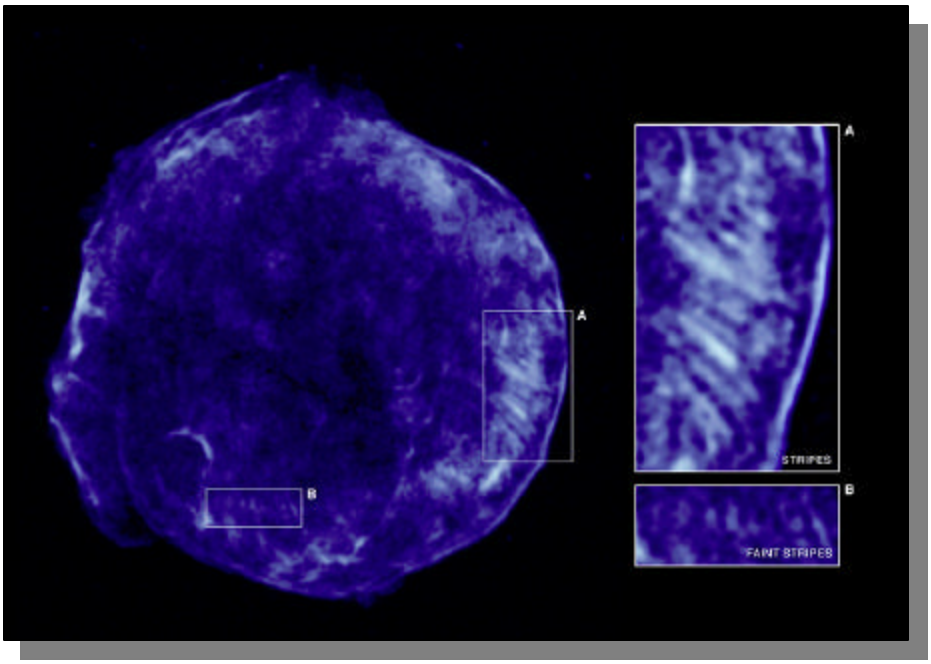
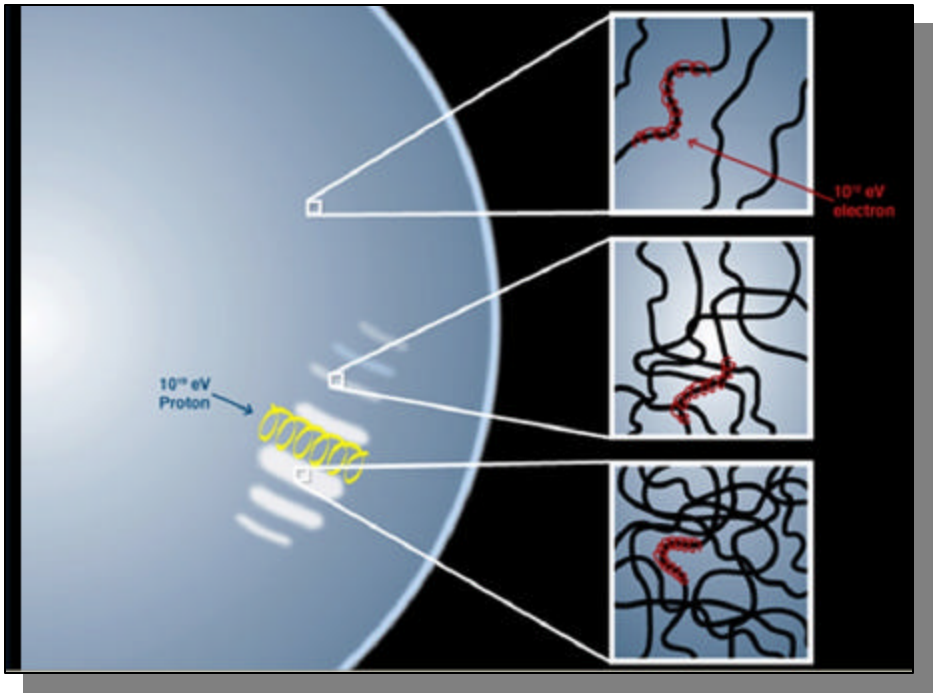


A long Chandra observation of Tycho has revealed a pattern of X-ray "stripes" never seen before in a supernova remnant. The stripes are seen in the high-energy X-rays (blue) that also show the blast wave, a shell of extremely energetic electrons. Low-energy X-rays (red) show expanding debris from the supernova explosion. The stripes may provide the first direct evidence that a cosmic event can accelerate particles to energies a hundred times higher than achieved by the most powerful particle accelerator on Earth. Photo by NASA/CXC/Rutgers/K.Eriksen et al.; Optical: DSS



This Chandra image shows the higher energy X-rays detected from the Tycho Supernova Remnant. These X-rays show the expanding blast wave from the supernova, a shell of extremely energetic electrons. Close-ups of two different regions are shown, region A containing the brightest stripes and region B with fainter stripes. Photo by X-ray: NASA/CXC/Rutgers/K.Eriksen, et al.

Supernova Remnant (Cont'd)



This illustration explains what scientists believe is occurring in the stripes in the Tycho supernova remnant. The blue, circular region on the left is a schematic representation of the outer shell making up the blast wave of the supernova remnant, with the lighter colored regions being the stripes. The upper panel shows a close-up of a region away from the stripes, where the black lines show tangled magnetic field lines and the red line shows an electron spiraling around one of these lines. Electrons with energies of a trillion electron volts (10^12 eV), corresponding to energies about 7 times lower than the maximum energy reached by the Large Hadron Collider (LHC), are responsible for the X-ray emission seen by Chandra. The middle panel shows a close-up of a faint stripe. Here, the magnetic fields are much more tangled and the particle motions are much more turbulent, producing higher energy X-ray emission. In the bright stripe the tangling of the magnetic fields and the turbulence is even higher. The spacing between the stripes corresponds to the radius of the spiraling motion of a proton with an energy over a hundred times larger than the LHC. The path of such a proton is shown in yellow. Very energetic particles like this do not radiate efficiently and cannot be detected with Chandra but are believed to be the origin of the most energetic cosmic rays in our galaxy. NASA/CXC/M.Weiss

(Continued from page 6)

Theoretical models of the motion of the most energetic particles, which are mostly protons, are predicted to leave a messy network of holes and dense walls corresponding to weak and strong regions of magnetic fields, respectively.

The X-ray stripes discovered by the Chandra researchers are thought to be regions where the turbulence is greater and the magnetic fields more tangled than surrounding areas and may be the walls predicted by the theory. Electrons become trapped in these regions and emit X-rays as they spiral around the magnetic field lines.

However, the regular and almost periodic pattern of the X-ray stripes was not predicted by the theory.

"It was a big surprise to find such a neatly arranged set of stripes," said Jack Hughes from Rutgers in New Brunswick, New Jersey. "We were not expecting so much order to appear in so much chaos. It could mean that the theory is incomplete, or that there's something else we don't understand."

Assuming that the spacing between the X-ray stripes corresponds to the radius of the spiraling motion of the highest-energy protons in the supernova remnant, the spacing corresponds to energies about 100 times higher than reached in the Large Hadron Collider. It is thought that these energies equal the highest energies of cosmic rays produced in our galaxy.

Because cosmic rays are composed of charged particles, like protons and electrons, their direction of motion changes when they encounter magnetic fields throughout the galaxy. So, the origin of individual cosmic rays detected on Earth cannot be determined.

Supernova remnants have long been considered a good candidate for producing the most energetic cosmic rays in our galaxy. The protons can reach energies that are hundreds of times higher than the highest-energy electrons, but since they do not

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Through the Eyepiece: M63 the Sunflower Galaxy in Canes Venetici

by Don Knabb, CCAS Secretary & Observing Chair

Spring has sprung and it is galaxy time! And what better galaxy to go looking for then one named after a flower: M63, the Sunflower Galaxy.

Messier 63, also known as NGC 5055, is a spiral galaxy in the constellation Canes Venetici. This constellation is a fairly small northern constellation that was created by Johannes Hevelius in the 17th century. Its name is Latin, and refers to the hunting dogs of Boötes the Herdsman, a neighboring constellation. Canes Venetici is easy to find by looking "under" the arc of the handle of the Big Dipper.

To the right is a chart of Canes Venetici with the location of the Sunflower Galaxy, M63 marked.

The Sunflower Galaxy is one of the easiest of the Messier objects to find. It's located almost precisely between Cor Caroli in Canes Venetici and Alkaid, the last star of the handle of the Big Dipper.

While this spiral galaxy has a nice overall brightness, it's going to be very faint for binoculars, only showing as the tiniest contrast change in smaller binoculars. However, even a modest telescope will easily see a faint oval shape with a concentrated nucleus. The larger your telescope, the more details you will see. As size approaches 8? and larger, expect to see spiral structure!

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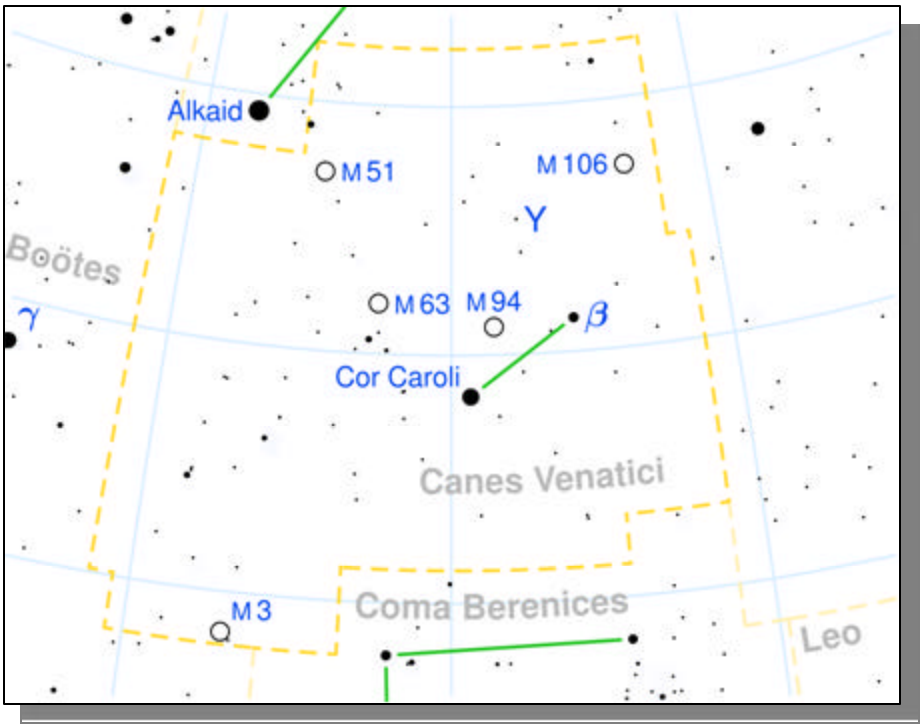

Star Chart: Canes Venetici

Photo credit: M63 Sunflower Galaxy by CCAS member Dave Hockenberry. Shot 3/13/2011 with QSI583 wsg camera through Astrotech AT8RC scope on Losmandy G11 mount. Autoguided with SX Lodestar camera off-axis, using Maxim DL4. Image acquisition with Maxim DL4, stacked/calibrated and de-convolved with CCDStack. Finish processing with Photoshop CS3. 90 minutes Luminance, 30 minutes Red/Green/Blue with AstroDon filters. FITS liberator coutesy of ESA.

Through the Eyepiece (Cont'd)

(Continued from page 8)

M63 is a spiral galaxy, consisting of a central disc surrounded by many short spiral arm segments. Drifting along in space some 37,000 light years from our own galaxy, we known it interacts gravitationally with M51 (the Whirlpool Galaxy) and we also know that its outer regions are rotating so quickly that if it weren't for dark matter it would rip itself apart.

Messier Object 63 was the very first discovery by Charles Messier's friend and assistant Pierre Mechain, who observed it on June 14, 1779. On the same day, Charles Messier included it in his catalog.

Canes Venatici will be high in the sky during April, not far from the zenith, which positions it well for long stares with a telescope. Or lie on your back and for a challenge find the Sunflower with your binoculars.

Information credits:

http://www.universetoday.com/37581/messier-63/
http://seds.org/messier/m/m063.html
http://en.wikipedia.org/wiki/Canes_Venatici

Supernova Remnant (Cont'd)

(Continued from page 7)

radiate efficiently like the electrons, direct evidence for the acceleration of cosmic-ray protons in supernova remnants has been lacking.

These results also support the prediction that magnetic fields in interstellar space are greatly amplified in supernova remnants, but the difference between the observed and predicted structures means that other interpretations cannot be ruled out.

"We were excited to discover these stripes because they might allow us to directly track, for the first time, the origin of the most energetic particles produced in our galaxy," said Eriksen. "But we're not claiming victory yet."

The Tycho Supernova Remnant is named for the famous Danish astronomer Tycho Brahe, who reported observing the supernova in 1572. Scientists think the explosion occurred when a white dwarf star grew in mass and exceeded its weight limit, forming a so-called type Ia supernova. The Tycho remnant is located in the Milky Way about 13,000 light-years from Earth.

"Supernova remnants are our best cosmic laboratories for understanding how nature accelerates the highest-energy cosmic rays," said Roger Blandford of Stanford University in Palo Alto, California. "These careful measurements provide a strong clue as to what actually happens at these giant shock fronts."

Saturn and Its Rings Now on Full Display

by Bill Andrews, Astronomy Magazine

The ringed planet puts on quite a show in April. Often considered the most beautiful world, Saturn reaches opposition — the point in its orbit when it lies opposite the Sun, and thus brightest in our skies — on the night of April 3/4. It will rise in the east at sunset, reach its highest point above the southern horizon at local midnight, and set at sunrise.

As April begins, Saturn will be the only planet visible before midnight. The best views occur later in the evening as it climbs southeast, with prime viewing happening at its maximum altitude, due south and about halfway to the zenith from mid-northern latitudes. "It's always a lovely sight, but Saturn will look particularly stunning this month," says Astronomy Senior Editor Richard Talcott.

The planet lies closer to Earth during opposition (about 800 million miles, or 1.3 billion kilometers) than at any other time this year, so it'll appear bigger and more detailed through a telescope. And Saturn's main attraction, its fabulous ring system, will tip 9° to our line of sight, giving a wonderful view of its various features all month. The planet's rings will roughly double its diameter, and Saturn's equator will be 12 percent greater than its polar diameter. (The flattening is due to its gase-

(Continued on page 12)

GOES-R, Zombie Fighter

by Dr. Tony Phillips

On April 5, 2010, something eerie happened to the Galaxy 15 telecommunications satellite: It turned into a zombie.

The day began as usual, with industry-owned Galaxy 15 relaying TV signals to millions of viewers in North America, when suddenly the geosynchronous satellite stopped taking commands from Earth. It was brain dead! Like any good zombie, however, its body continued to function. Within days, Galaxy 15 began to meander among other satellites in geosynchronous orbit, transmitting its own signal on top of the others'. Satellite operators scrambled to deal with the interference, all the while wondering *what happened?*

NASA Space Place

In horror movies, zombies are usually produced by viruses. "In this case, the culprit was probably the sun," says Bill Denig of the National Geophysical Data Center in Boulder, Colorado. He and colleague Janet Green of NOAA's Space Weather Prediction Center recently led a study of the Galaxy 15 anomaly, and here are their conclusions:

On April 3d, a relatively minor solar flare launched a cloud of plasma toward Earth. Galaxy 15 had experienced many such events before, but this time there was a difference.

The Galaxy 15 communication satellite was "brainless" for several months in 2010 after being exposed to a geomagnetic storm. The new GOES-R satellite will warn of such dangers.

"Galaxy 15 was just emerging from the shadow of Earth when the cloud arrived and triggered a geomagnetic storm," explains Denig. Suddenly exposed to sunlight and the ongoing storm, "the spacecraft began to heat up and charge [up]."

Electrons swirling around Galaxy 15 stuck to and penetrated the spacecraft's surface. As more and more charged particles accumulated, voltages began to rise, and—zap!—an electrostatic discharge occurred. A zombie was born.

"At least, this is what we suspect happened based on data collected by GOES satellites in the vicinity," he says. "We'll be able to diagnose events like this much better, however, after GOES-R is launched by NASA in 2015."

GOES-R is NOAA's next-generation Geostationary Operational Environmental Satellite. One of the instruments it will carry, a low-energy electron counter, is crucial to "zombie fighting." Low energy-electrons are the ones most likely to stick to a spacecraft's surface and cause brain-frying discharges. By monitoring these particles in Earth orbit, GOES-R will provide better post-mortems for future zombie outbreaks. This could help satellite designers

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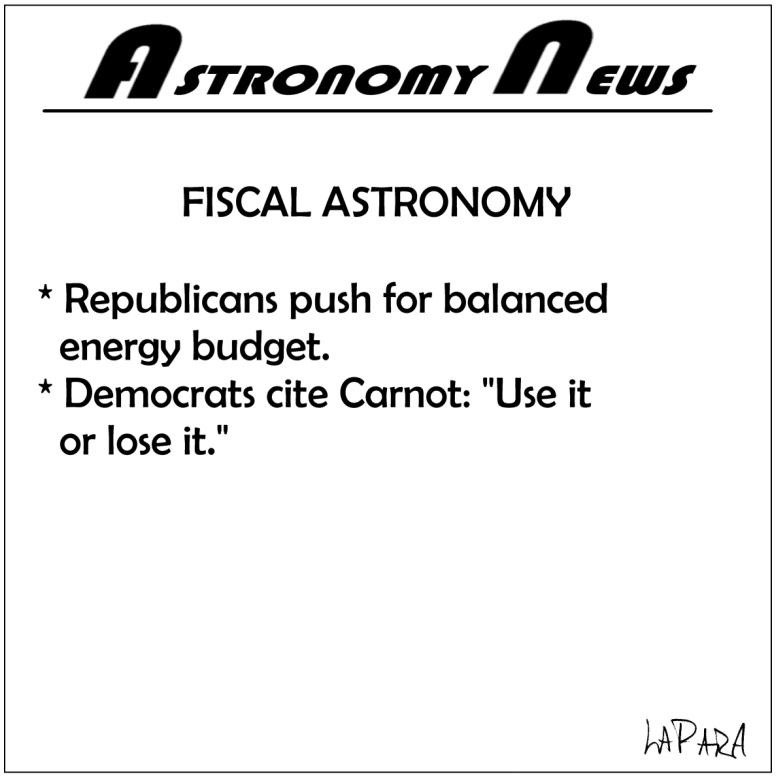
Nicholas's Humor Corner
by Nicholas La Para



Space Place (Cont'd)

(Continued from page 10)

figure out how to build spacecraft less susceptible to discharges. Also, GOES-R will be able to issue alerts when dangerous electrons appear. Satellite operators could then take protective action—for example, putting their birds in "safe mode"—to keep the zombie population at bay.

Meanwhile, Galaxy 15 is a zombie no more. In late December 2010, after 9 months of terrorizing nearby spacecraft, the comsat was re-booted, and began responding to commands from Earth again.

All's well that ends well? True

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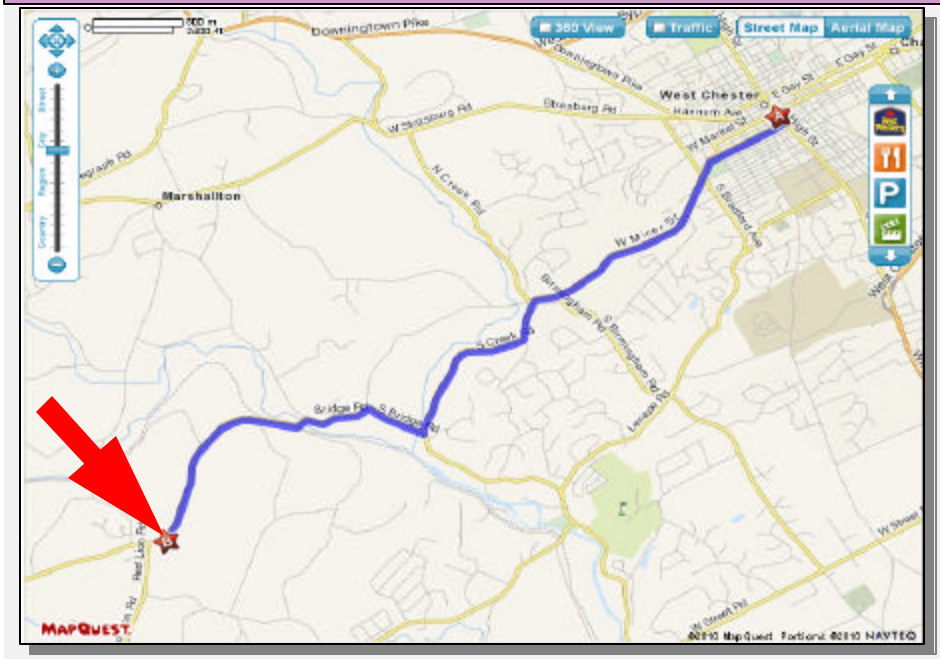
CCAS Directions



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.

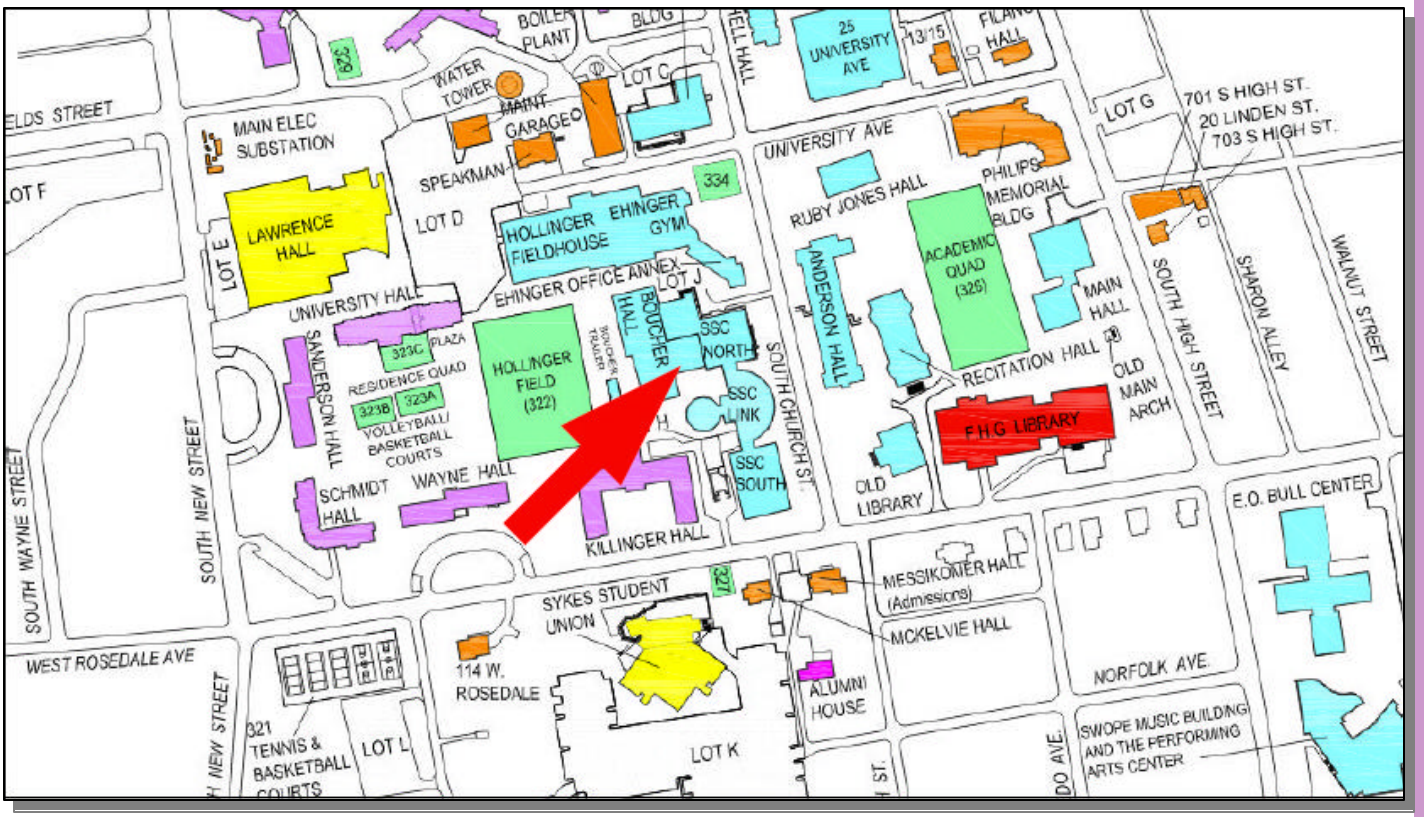
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route 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).



Saturn (cont'd)

(Continued from page 9)

ous atmosphere and quick rotation.)

Saturn's opposition also affords observers a great opportunity to become familiar with the largest of its many satellites — Titan, Tethys, Dione, and Rhea. Each should be relatively easy to spot through small scopes. "All in all, it's a great time to admire the sixth planet and its surroundings," says Talcott. "Whether you're interested in its rings, moons, or Saturn itself, this is the time to look up."

CCAS Membership Information and Society Financials

Treasurer's Report
by Bob Popovich

Feb. 2011 Financial Summary

Beginning Balance	$1,744
Deposits	$105
Disbursements	$380
Ending Balance	$1,469

Space Place (cont'd)

(Continued from page 11)

zombie fighters know better than to relax. Says Denig, "we're looking forward to GOES-R." You and the kids in your life can learn about space weather at http://scijinks.gov/space-weather-and-us.

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

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

★ ★ ★ ★ ★

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

★ ★ ★ ★ ★

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

Contributing to *Observations*

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

Or mail the contribution, typed or handwritten, to:

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

CCAS Newsletters via E-mail

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

CCAS Website

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

http://www.ccas.us

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

CCAS Purpose

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

CCAS Executive Committee

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

President:	Roger Taylor 610-430-7768
Vice 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 724-801-8789
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

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

Membership Renewals

Check the 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 **484-467-5562.**

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.**