Observations

A Monthly Publication Of The CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 19, No. 3 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ¤ 2006 & 2009* *March 2011*

In This Issue

Orion Nebula M42

Photo courtesy of Brent Crabb

Membership Renewals Due

03/2011	Cini LaFrance DiSands Pearson & Family
04/2011	Baker Bower Imburgia Popovich & Family Mulligan & Family Richter
05/2011	Fletcher Kutta Long, Jr.

Important March 2011 Dates

4th • New Moon 3:46 p.m.

12th • First Quarter Moon 6:45 p.m.

13th • Daylight Saving Time begins at 2:00 a.m.

19th • Full Moon 2:10 p.m.

26th • Last Quarter Moon 8:07 a.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, March 11, 2011** - Greenwood Elementary School, near Longwood Gardens, PA.

¤ **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.

Winter/Spring 2011 Society Events

March 2011

2nd • 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.

4th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date March 5th). The observing session starts at sunset.

8th • DVD Lecture Series: "Einstein's Biggest Blunder?", 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.

8th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. Guest Speaker, Dr. John Gizis: "Brown Dwarf Stars."

18th • West Chester University Planetarium Show: "From Whence Stars," 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'swebpage.

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

25th • Reservations start for the March 18th planetarium show at the WCU Planetarium. For more information, please contact Dr. Karen Vanlandingham, Planetarium Director, via e-mail or visit the planetarium'swebpage.

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

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*.

Minutes from the February 2011 CCAS Monthly Meeting

by Don Knabb, CCAS Secretary and Observing Chair

- Approximately 10 members were in attendance.
- DVD presentation: *Mass Density of the Universe* was shown.
- Program – Chuck Zarcone of the Delaware Valley Amateur Astronomers presented "Solar Sights and Sounds"
- Constellation of the Month: Dave Hockenberry presented Aries. We need volunteers to present constellations for the next few meetings.

CCAS Original Astrophotography

by Dave Hockenberry

The Flaming Star nebula in Auriga. This is an interesting subject beause the bright star seen here is on a trajectory that leads back from the area in Orion's belt! The current theory is that this star was blasted away from Orion by a companion star that exploded. The pressure wave and energy from the star is lighting up and "pushing" the cloud of hydrogen seen here, reflecting in blue and ionizing in red. Called Flaming Star because of the appearance of the nebula like fire and rising smoke the nebula exhibits. The nebula lies at a distance of about 1500 light years from Earth, in our own galactic "back yard." Shot 1/23/11 and 2/4/11 with QSI 583 wsg camera through AT8RC telescope, Losmandy G11 mount autoguided with SX Lodestar/MaxIm DL4. Calibrated and stacked in CCDStack, all other adjustments and LRGB merge in Photoshop Cs3. 10 10-minute iterations of Luminance, 6 5-minute iterations each of RGB color frames through Astrodon Filters. FITS Liberator courtesy of ESA.

March 2011 Guest Speaker

by Dave Hockenberry, CCAS Program Chair

Caption: Artist's view (to scale) of the Sun, a very-low-mass M dwarf star, an L brown dwarf, a T brown dwarf, and Jupiter. Image Credit:Robert Hurt

Our March 2011 guest speaker is Dr. John Gizis, Associate Professor at University of Delaware: His presentation is entitled "Brown Dwarf Stars."

"My research work is focused on improving our understanding of cool stars and brown dwarfs. I make use of both ground-based and space-based telescopes to characterize these faint, cool objects. Most of my attention is on 2MASSW 1207334-393254. This young brown dwarf, is only 2.5% the mass of the Sun, but it is surrounded by a disk of gas and dust. It has a companion which is only 0.3-0.8% the mass of the Sun, making it a "planetary mass brown dwarf."

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.

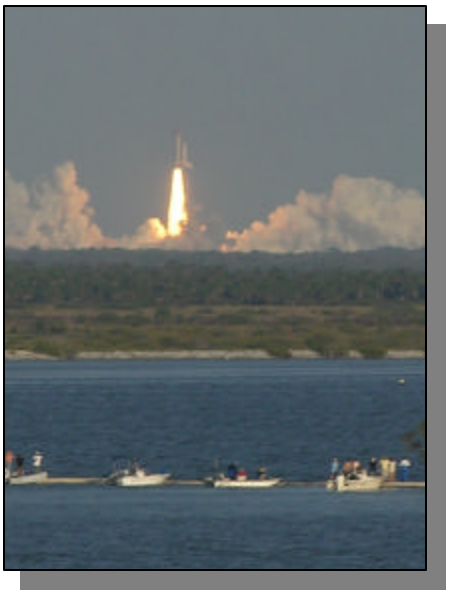
Last Launch of the Space Shuttle Discovery

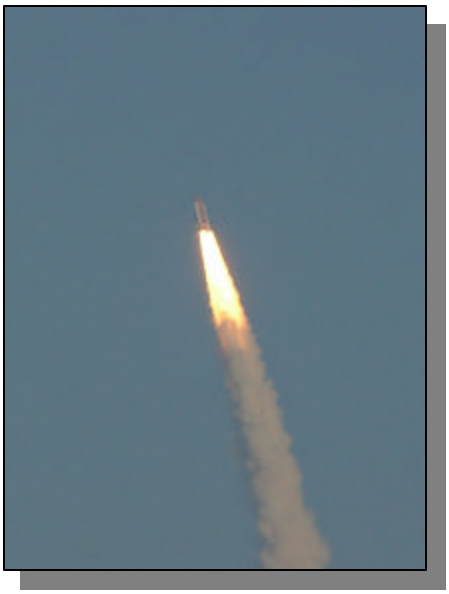
by CCAS Vice President Kathy Buczynski

Feb 24, 2011, Titusville, FL

The day was a little humid but the skies were clear and NASA was finally ready to launch the shuttle Discovery for its final flight. This mission was originally scheduled for November 1, 2010 and had many delays since. On this day, it would happen.

At 4:52, just two minutes past the scheduled lift off time, the steam from the cooling pools appear and a second later -- there it is! You can see Discovery lift off the pad with an orange glow behind it. My friend, Peg, and I were about 13 miles away in Titusville, FL but had a good view of the launch pad from a bridge over the Intercoastal Waterway. The crowd around us started to cheer and about 30 seconds after Discovery cleared the tower and





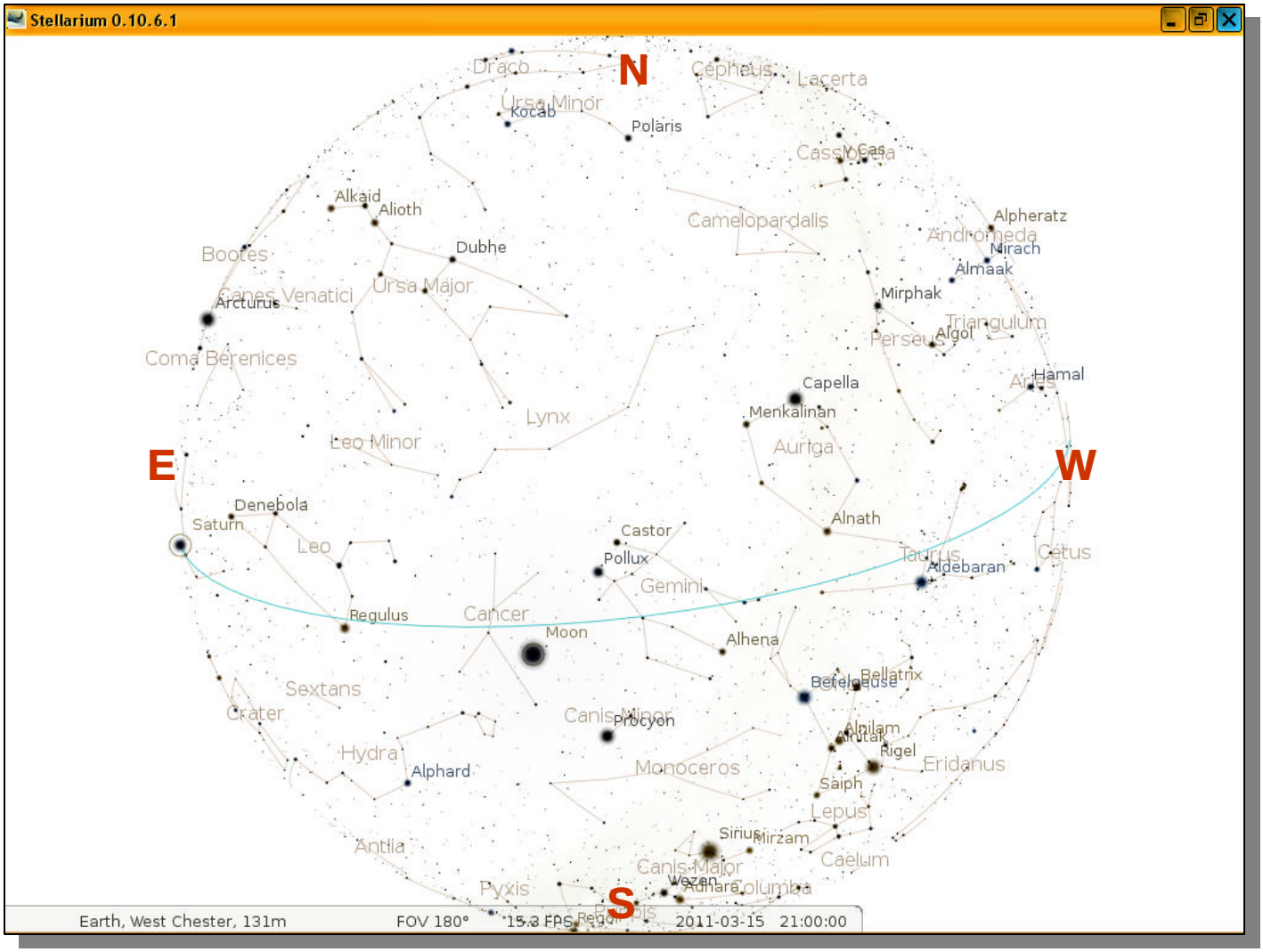
well on its way to orbit, the sound came over us. The rumble from the engines hit us. It was remarkable.

(Continued on page 11)

The Sky Over Chester County

March 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
3/01/2011	6:07 a.m. EST	6:34 a.m. EST	5:52 p.m. EST	6:19 p.m. EST	11h 17m 46s
3/15/2011	6:46 a.m. EDT	7:13 a.m. EDT	7:07 p.m. EDT	7:34 p.m. EDT	11h 54m 35s
3/31/2011	6:19 a.m. EDT	6:47 a.m. EST	7:24 p.m. EST	7:51 p.m. EDT	12h 36m 54s

Moon Phases					
First Quarter	3/12/2011	6:45 p.m. EST	Last Quarter	3/26/2011	8:07 a.m. EDT
Full Moon	3/192011	2:10 p.m. EDT	New Moon	3/04/2011	3:46 p.m. EST

March 2011 Observing Highlights

by Don Knabb, CCAS Secretary & Observing Chair

March 4	New Moon, 3:46 p.m.
March 5	Look for Mercury by the thin crescent Moon
March 6	Jupiter is left of the crescent Moon
March 12	First Quarter Moon, 6:45 p.m.
March 13	Daylight Saving Time begins at 2:00 a.m.
March 13-16	Mercury, just to the right of Jupiter, is in its most favorable viewing position of 2011
March 19	Full Moon, 2:10 p.m.
March 20	Spring begins at 7:21 p.m.
March 26	Last Quarter Moon, 8:07 a.m.

The best sights this month: We say good-bye to Jupiter during March, but the king of the planets helps us find Mercury during the middle of the month. Saturn now takes over as the highlight of the night sky.

Mercury: March is the best month of 2011 to see elusive Mercury. Use Jupiter during March 13 – 16 as a guide to find the planet nearest the Sun.

Venus: The "morning star" is getting lower in the east-southeast as the sky brightens with the dawn. Late in the month Venus and Neptune are close in the sky. Venus is much brighter. How much brighter you might ask? About 60,000 times brighter!

Mars: The red planet is unobservable this month due to its proximity to the Sun.

Jupiter: Jupiter is setting just two hours after the Sun early in the month and in late March it becomes lost in the glow of the sunset, so take a good look at this beautiful planet before it goes on spring vacation.

Saturn: At the beginning of March Saturn is rising about 2 hours after sunset and by month's end it is rising just about when the Sun is setting. It will reach maximum brightness at the end of this month and be at opposition in early April, so this is excellent viewing conditions for Saturn. Wait until late in the evening when Saturn is high in the sky for the best views.

Uranus and Neptune: Uranus is lost in the glow of the Sun during March. Neptune, however, has come out from behind the Sun and is not far from Venus. If you are awake enough to put together your telescope before dawn you can find Neptune, but you'll need to print charts from a planetarium software program such as Stellarium. The finder charts on the Sky and Telescope website are out of date.

The Moon: A highlight of March is on the 5th when a dim planet Mercury is not far from the very thin crescent Moon. Then the next two nights the crescent has grown and the Moon gets close to Jupiter. Full moon is on March 19th. According to Native Americans this is the Full Worm Moon. As the temperature begins to warm and the ground begins to thaw, earthworm casts (poops…..hey, it is a great fertilizer!) appear. The more northern tribes knew this Moon as the Full Crow Moon, when the cawing of crows signaled the end of winter; or the Full Crust Moon, because the snow cover becomes crusted from thawing by day and freezing at night.

Constellations: Early in the evening the "big guy" Orion dominates the sky in the southwest, with bright Capella in Auriga nearly overhead. Leo the Lion is in the southeast and as the night progresses you can see some spring constellations rising such as Boötes, Corona Borealis and Hercules.

Messier/deep sky: There are many wonderful deep sky sights as winter turns to spring. The star clusters in Auriga are heading toward the western horizon but are still well positioned for viewing through the minimum amount of atmosphere early in the evening. Later in the night look overhead to find the galaxies M81 and M82 in Ursa Major. And use your binoculars to look for M35 in Gemini, an open star cluster containing several hundred stars in an area the size of the full Moon.

Comets: There are no comets visible during March.

Meteor showers: There are no meteor showers during March.

Anniversary of the Discovery of Jupiter's Ring System

courtesy NASA/JPL

On March 4, 1979, Jupiter's ring was discovered by Voyager 1 in a single image that was targeted specifically to search for a faint ring system. Subsequently, Voyager 2 was reprogrammed to take a more complete set of images. The ring is now known to be composed of three major components. The "Main" ring is about 7,000 km wide and has an abrupt outer boundary 129,130 km from the center of the planet.

The main ring encompasses the orbits of two small moons, Adrastea and Metis, which may act as the source for the dust that makes up most of the ring. At its inner edge the main ring merges gradually into the "Halo." The halo is a broad, faint torus of material about 20,000 km thick and extending halfway from the main ring down to the planet's cloud tops.

Just outside the main ring is the broad and exceedingly faint "Gossamer" ring, which extends out beyond the orbit of the moon Amalthea. It is probably composed of dust particles less than 10 microns in diameter -- about the size of cigarette smoke particles. It extends to an outer edge of about 129,000 km (80,161 miles) from the center of the planet and inward to about 30,000 km (18,642 miles). The origin of the ring is probably from micrometeorite bombardment of the tiny moons orbiting within the ring.

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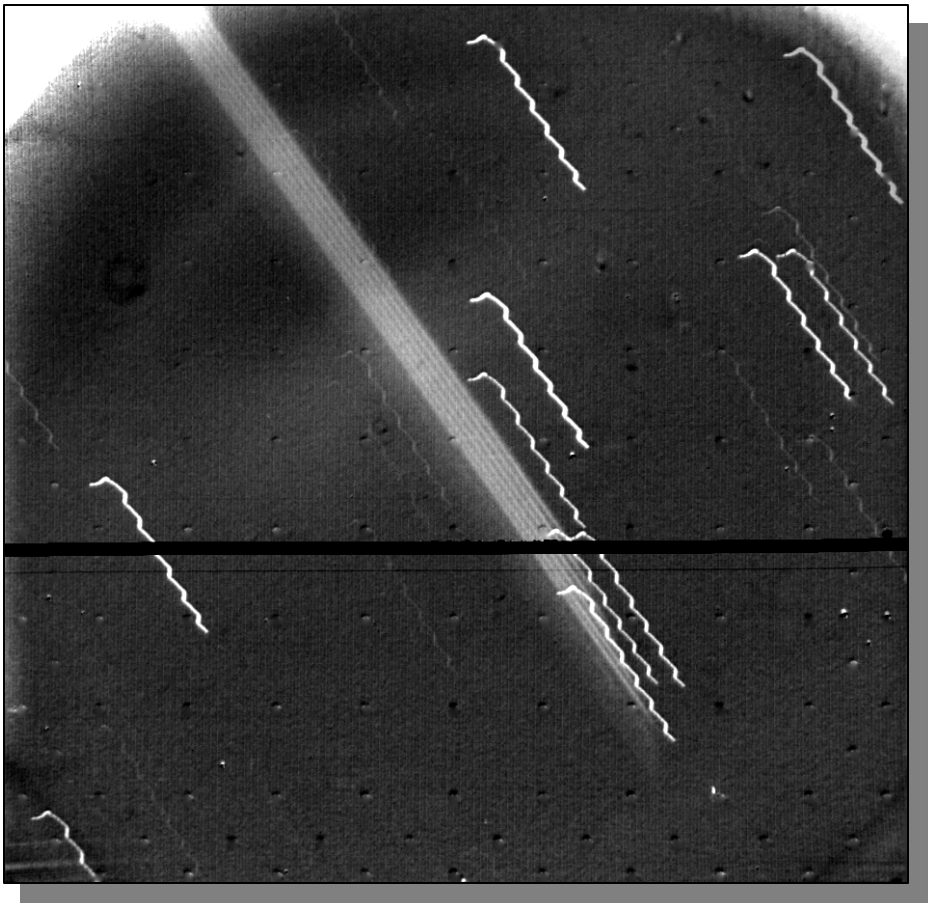
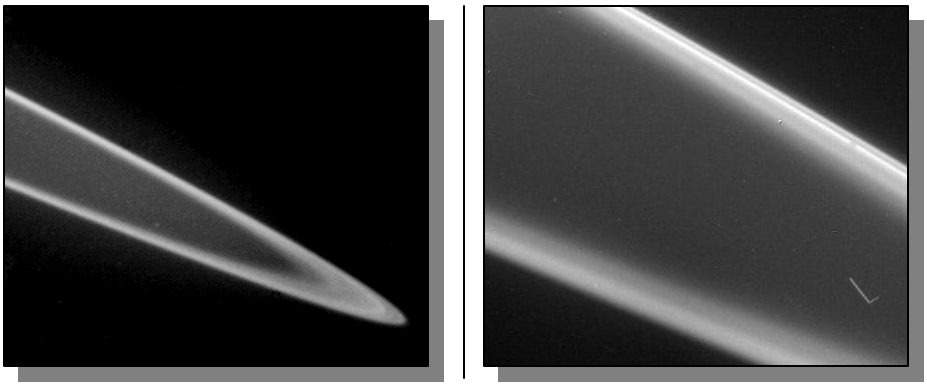


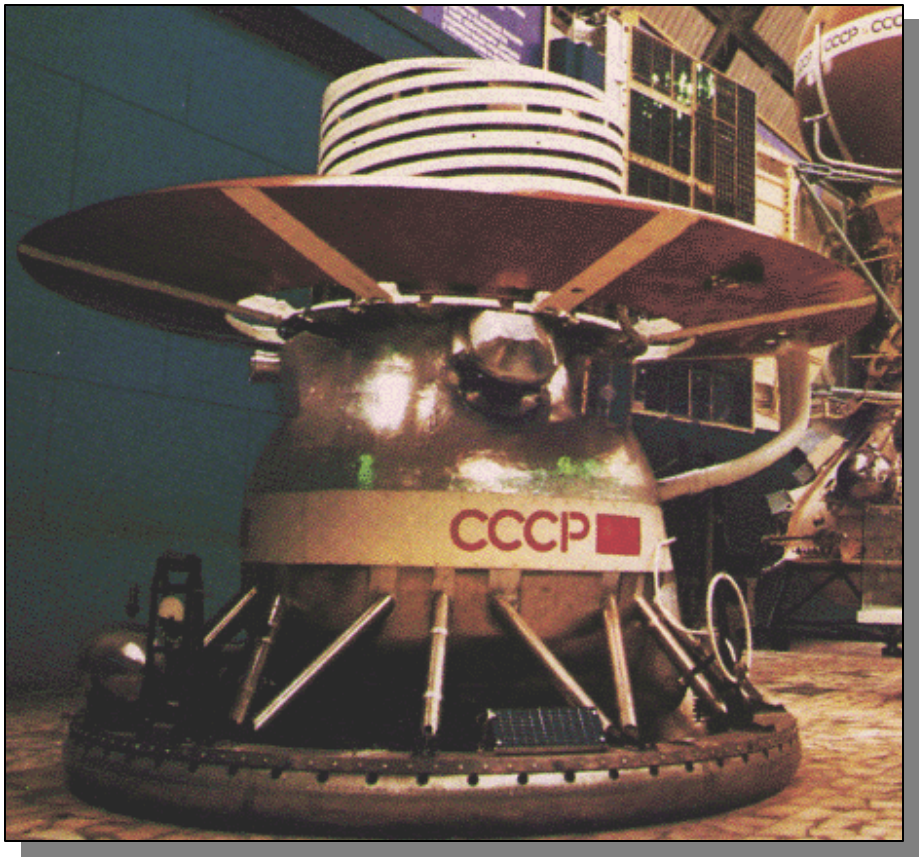
First evidence of a ring around the planet Jupiter is seen in this photograph taken by Voyager 1 on March 4, 1979. The multiple exposure of the extremely thin faint ring appears as a broad light band crossing the center of the picture. The edge of the ring is 1,212,000 km from the spacecraft and 57,000 km from the visible cloud deck of Jupiter. The background stars look like broken hair pins because of spacecraft motion during the 11 minute 12 second exposure. The wavy motion of the star trails is due to the ultra-slow natural oscillation of the spacecraft (with a period of 78 seconds). The black dots are geometric calibration points in the camera. The ring thickness is estimated to be 30 km or less. The photograph was part of a sequence planned to search for such rings in Jupiter's equatorial plane. The ring has been invisible from Earth because of its thinness and its transparency when viewed at any angle except straight on. JPL manages and controls the Voyager Project for NASA's Office of Space Science.



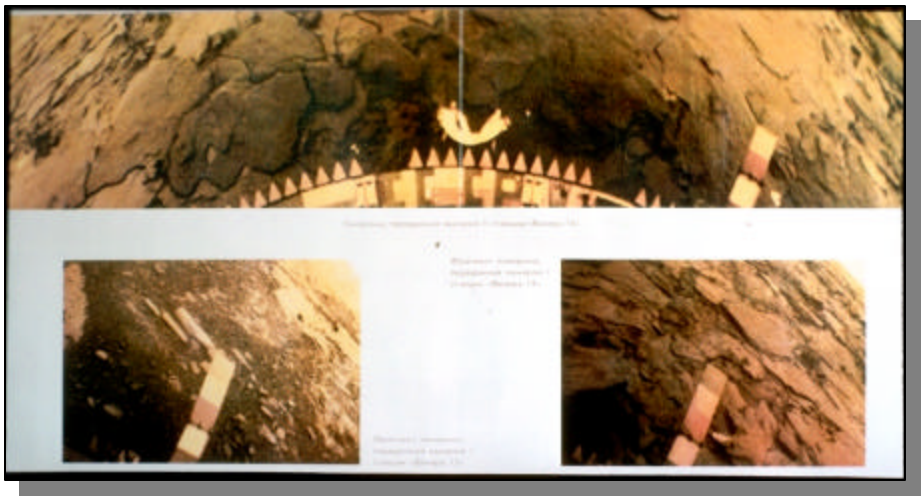
The rings of Jupiter proved to be unexpectedly bright when seen with the Sun nearly behind them. Strong forward scattering of sunlight is characteristic of small particles. This view was obtained by Voyager 2 on July 10 from a perspective inside the shadow of Jupiter. The distance of the spacecraft from the rings was about 1.5 million kilometers. Although the resolution has been degraded by camera motion during the time exposures, these images reveal the rings have some radial structure.

Anniversary of First Color Images of the Surface of Venus

courtesy of NASA/NSSDC



Venera 13 Lander (Photo courtesy of NASA/NSSDC)



Color Images Taken by Venera 13 (Photos courtesy of Donald Davis)

March 1st marks the anniversaries of man's investigation of our sister planet, Venus. The Soviet probe Venera 3, crash-landed on Venus on March 1, 1966. The Soviets also returned the first color images of the surface of Venus on March 1, 1982, with Venera 13.

After launch and a four month cruise to Venus the descent vehicle separated from the bus and plunged into the Venusian atmosphere on March 1, 1982. After entering the atmosphere a parachute was deployed. At an altitude of about 50 km the parachute was released and simple airbraking was used the rest of the way to the surface.

Venera 13 landed at 7°30'S 303° 00'E / 7.5°S 303°E / -7.5; 303, about 950 km northeast of Venera 14, just east of the eastern extension of an elevated region known as Phoebe Regio.

The lander had cameras to take pictures of the ground and spring-loaded arms to measure the compressibility of the soil. The area was composed of bedrock outcrops surrounded by dark, fine-grained soil. The composition of the sample determined by the X-ray fluorescence spectrometer put it in the class of weakly differentiated melanocratic alkaline gabbroids.

The lander survived for 127 minutes (the planned design life was 32 minutes) in an environment with a temperature of 457 °C (855 °F) and a pressure of 89 Earth atmospheres (9.0 MPa). The descent vehicle transmitted data to the bus, which acted as a data relay as it flew by Venus. It is probable that the probe or its remains have been severely degraded by the high surface temperature and pressure and the presence of corrosive supercritical carbon dioxide in the Venusian atmosphere.

Through the Eyepiece: NGC 2403, a spiral galaxy in Camelopardalis, the Giraffe

by Don Knabb, CCAS Secretary & Observing Chair

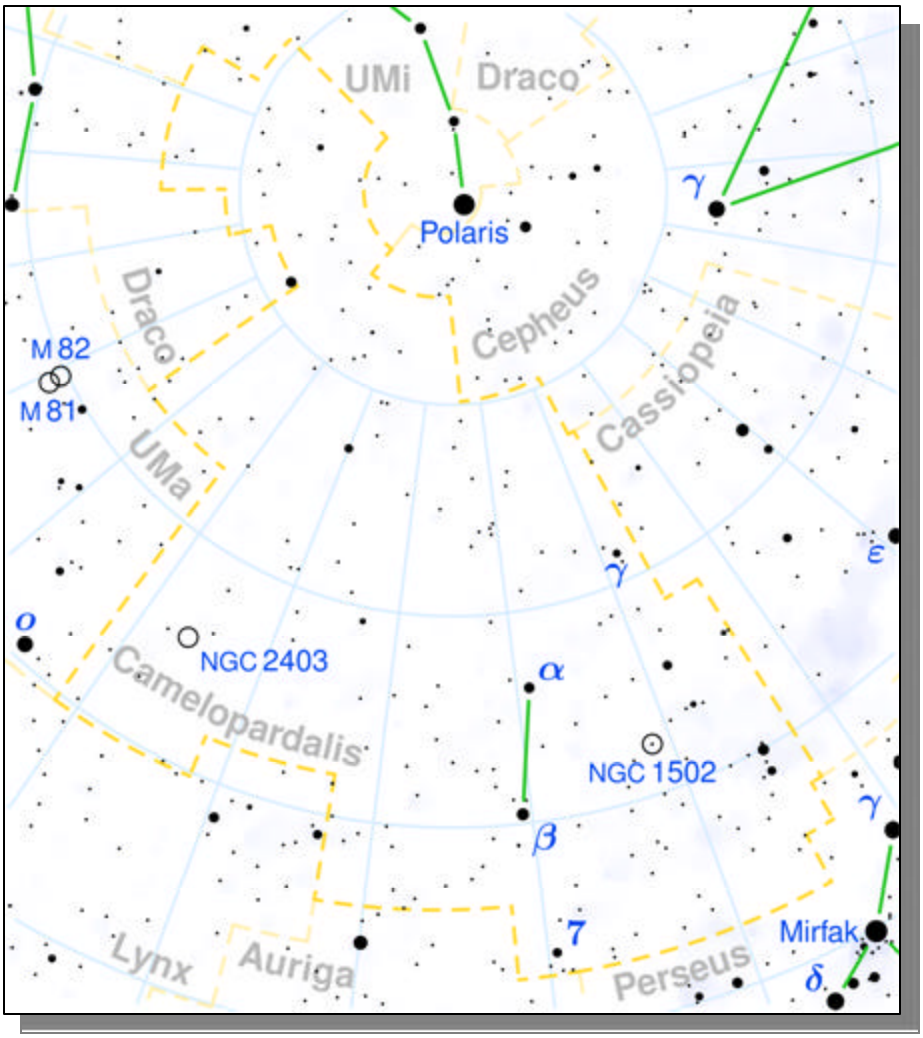
High overhead during March is the constellation Camelopardalis. You might think this is The Camel constellation, but instead it is The Giraffe. Well, that is easily explained if we consider the etymology, i.e. the origin or history, of the word Giraffe. It turns out that Camelopardalis is Latin for camel and leopard, describing an animal that has a long neck like a camel and spots like a leopard. That describes a giraffe fairly well.

Camelopardalis is a large (the 18th largest in fact) but faint constellation, with stars only as bright as the 4th magnitude. In the star chart below NGC 2403 is noted in the eastern portion of Camelopardalis, not terribly far from the galaxies M81 and M82 in Ursa Major.

NGC 2403 is a face-on spiral galaxy. It is relatively close at approximately 12 million light years and has a small, dim nucleus and open spiral arms. It is similar in form and in stellar content to Messier 33. The galaxy is a part of the Messier 81/Messier 82 group. NGC 2403 was the first galaxy beyond the Local Group in which Cepheid variables were found.

NGC 2403 is among the more conspicuous northern sky objects which Charles Messier missed when compiling his catalog. Thus its discovery was left to William Herschel in 1788.

A spiral galaxy is a certain kind



Star Chart: Camelopardalis

of galaxy originally described by Edwin Hubble in his 1936 work The Realm of the Nebulae. Spiral galaxies consist of a flat, rotating disk containing stars, gas and dust, and a central concentration of stars known as the bulge. These are surrounded by a much fainter halo of stars, many of which reside in globular clusters.

Spiral galaxies are named for the spiral structures that extend from the center into the disk. The spiral arms are sites of ongoing star formation and are brighter than the surrounding disk because of the young, hot stars that inhabit them. Roughly half of all spirals are observed to have an additional component in the form of a bar-like structure, extending from the central bulge, at the ends of which the spiral arms begin. Our own Milky Way has recently been confirmed to be a barred spiral, although the bar itself is difficult to observe from our position within the galactic disk. The most convincing evidence for its existence comes from a recent

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Through the Eyepiece (Cont'd)

(Continued from page 8)

survey, performed by the Spitzer Space Telescope.

In the picture at right from Dave Hockenberry we can clearly see the spiral arms extending from the central core of the galaxy. For those who are new to the hobby (or lifestyle) of astronomy, note that the stars you see in the photograph are local stars of the Milky Way, our home galaxy, that we are looking through as we gaze toward NGC 2403.

So as the weather warms during March, wait for a night when the Moon is absent from the sky and lay on your back with your binoculars and look for this deep sky gem in Camelopardalis.

Information credits:
http://www.noao.edu/outreach/aop/observers/n2403.html

Photo credit: David Hockenberry. NGC2403, in Camelopardalis. Shot on 2/4, 2/11, 2/12/2011 with QSI 583 wsg, through AstroTech AT8RC 'scope at 1625 mm FL, Losmandy G11 mount autoguided with Starlight Xpress Lodestar camera/MaxIm DL. Stack of 120 minutes Luminance, 35 minutes each Red, Green, and Blue Astrodon filters. Calibrated and stacked/deconvolved in CCDStack, all other processing in Photoshop CS3. FITS Liberator courtesy of ESA.

http://www.kopernik.org/images/archive/n2403.htm
http://seds.org/messier/xtra/ngc/n2403.html
http://www.robgendlerastropics.com/NGC2403text.html
http://en.wikipedia.org/wiki/Spiral_galaxy

Jupiter Rings (Cont'd)

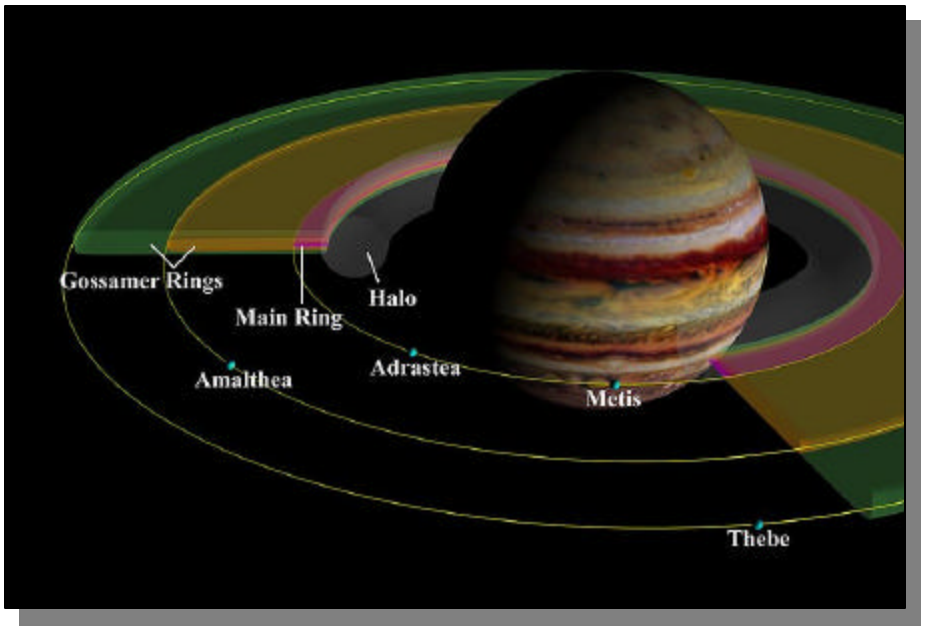


Diagram of the Jovian Ring Structure & Inner Moons

(Continued from page 6)

Jupiter's rings and moons exist within an intense radiation belt of electrons and ions trapped in the planet's magnetic field. These particles and fields comprise the Jovian magnetosphere or magnetic environment, which extends 3 to 7 million km (1.9 to 4.3 million miles) toward the sun, and stretches in a windsock shape at least as far as Saturn's orbit -- a distance of 750 million km (466 million miles).

Thank Goodness the Sun is Single

by Trudy E. Bell

It's a good thing the Sun is single. According to new research, Sun-like stars in close double-star systems "can be okay for a few billion years—but then they go bad," says Jeremy Drake of the Harvard-Smithsonian Astrophysical Observatory in Cambridge, Mass.

How bad? According to data from NASA's Spitzer Space Telescope, close binary stars can destroy their planets along with any life. Drake and four colleagues reported the results in the September 10, 2010, issue of *The Astrophysical Journal Letters.*

Our Sun, about 864,000 miles across, rotates on its axis once in 24.5 days. "Three billion years ago, roughly when bacteria evolved on Earth, the Sun rotated in only 5 days," explains Drake. Its rotation rate has been gradually slowing because the solar wind gets tangled up in the solar magnetic field, and acts as a brake.

But some sun-like stars occur in close pairs only a few million miles apart. That's only about five times the diameter of each star—so close the stars are gravitationally distorted. They are actually elongated toward each other. They also interact tidally, keeping just one face toward the other, as the Moon does toward Earth.

Planetary collisions such as shown in this artist's rendering could be quite common in binary star systems where the stars are very close.

Such a close binary is "a built-in time bomb," Drake declares. The continuous loss of mass from the two stars via solar wind carries away some of the double-star system's angular momentum, causing the two stars to spiral inward toward each other, orbiting faster and faster as the distance shrinks. When each star's rotation period on its axis is the same as its orbital period around the other, the pair effectively rotates as a single body in just 3 or 4 days.

Then, watch out! Such fast spinning intensifies the magnetic dynamo inside each star. The stars "generate bigger, stronger 'star spots' 5 to 10 percent the size of the star—so big they can be detected from Earth," Drake says. "The stars also interact magnetically very violently, shooting out monster flares."

Worst of all, the decreasing distance between the two stars "changes the gravitational resonances of the planetary system," Drake continued, destabilizing the orbits of any planets circling the pair. Planets may so strongly perturbed they are sent into collision paths. As they repeatedly slam into each other, they shatter into red-hot asteroid-sized bodies, killing any life. In as short as a century, the repeated collisions pulverize the planets into a ring of warm dust.

(Continued on page 12)

Nicholas's Humor Corner
by Nicholas La Para

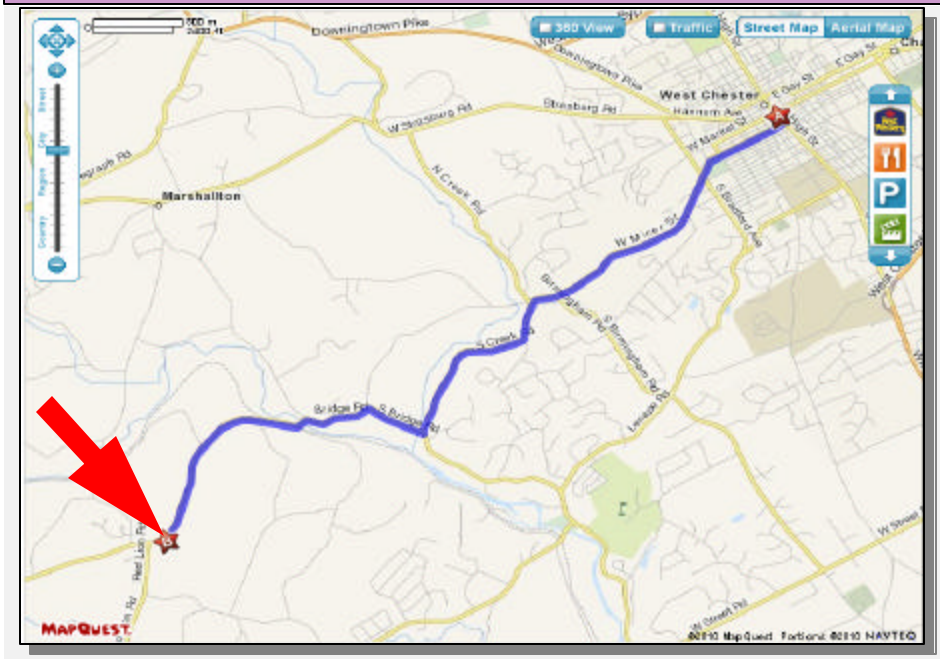
Discovery (Cont'd)

(Continued from page 3)

We watched as the orbiter and the fuel tanks went higher and higher and actually saw the external fuel tanks fall away. The space craft was now reaching 17,500 mph in order to escape Earth's gravity.

This is my second launch and had a much better view than the first. If possible, I will be there for the next and last two as NASA sadly shuts down the Space Shuttle program.

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.

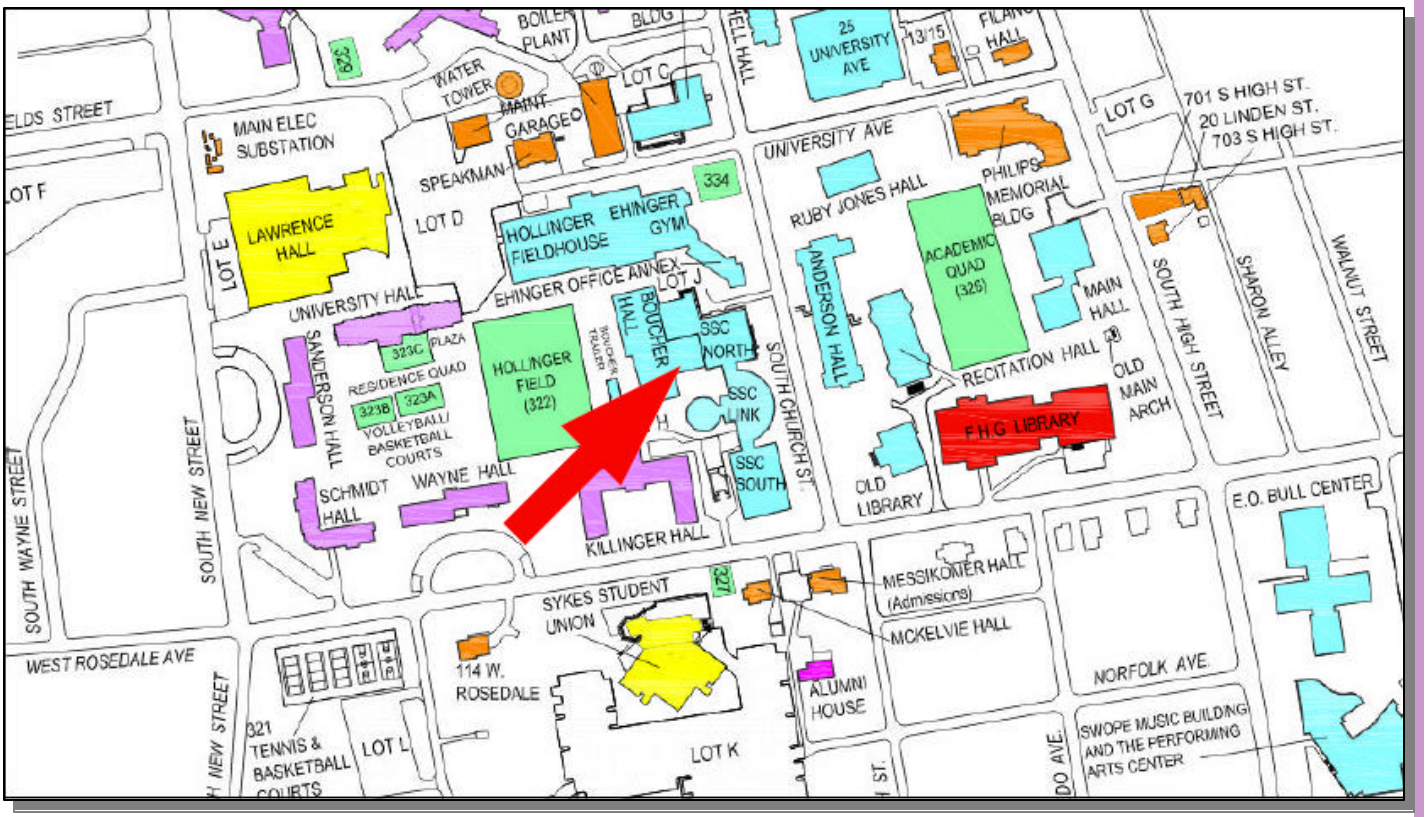
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route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



Space Place (cont'd)

(Continued from page 10)

The infrared glow from this pulverized debris is what Spitzer has seen in some self-destructing star systems. Drake and his colleagues now want to examine a much bigger sample of binaries to see just how bad double star systems really are.

They're already sure of one thing: "We're glad the Sun is single!"

Read more about these findings at the NASA Spitzer site at www.spitzer.caltech.edu/news/1182-ssc2010-07-Pulverized-Planet-Dust-May-Lie-Around-Double-Stars . For kids, the Spitzer Concentration game shows a big collection of memorable (if you're good at the game) images from the Spitzer Space Telescope. Visit spaceplace.nasa.gov/en/kids/spitzer/concentration/.

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

CCAS Membership Information and Society Financials

Treasurer's Report
by Bob Popovich

Jan. 2011 Financial Summary

Beginning Balance	$1,744
Deposits	$0
Disbursements	$0
Ending Balance	$1,744

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.**