



Observations

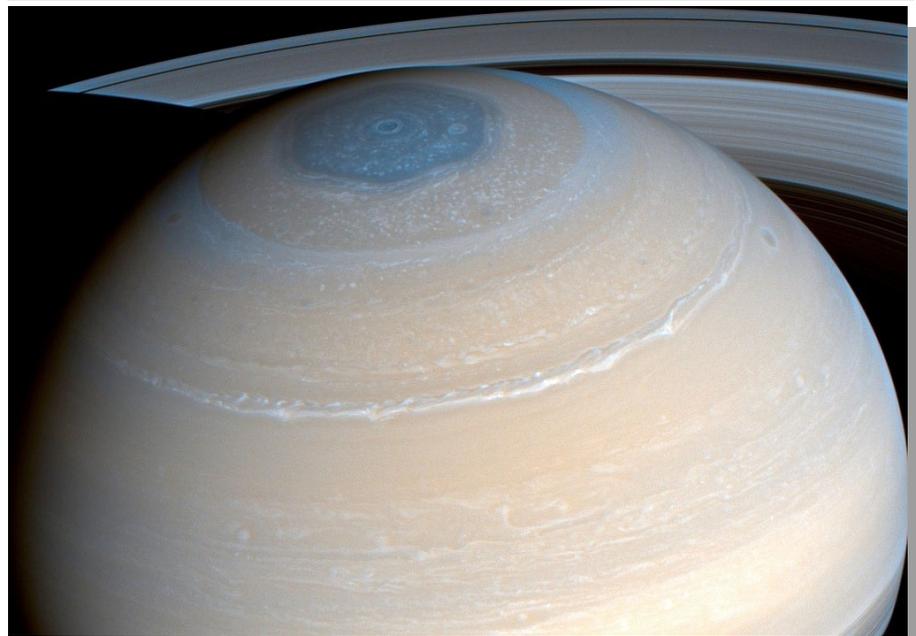
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 25, No. 5 **Three-Time Winner of the Astronomical League's Mabel Sterns Award** ☼ 2006, 2009 & 2016 May 2017

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Saturn in Infrared from Cassini



Many details of Saturn appear clearly in infrared light. Bands of clouds show great structure, including long stretching storms. Also quite striking in infrared is the unusual hexagonal cloud pattern surrounding Saturn's North Pole. Each side of the dark hexagon spans roughly the width of our Earth. The hexagon's existence was not predicted, and its origin and likely stability remains a topic of research. Image Credit: NASA, JPL-Caltech, SSI; Processing: Maksim Kakitsev.

Membership Renewals Due

05/2017	Cunningham Deis, R. Deis, M. Klapholz LaFrance O'Hara
06/2017	Hanspal Hebding Mazziotta/Calobrisi McCausland
07/2017	Hockenberry/Miller Hunsinger Johnston

May 2017 Dates

- 2nd** • First quarter Moon, 10:46 p.m. EDT
- 5th** • Eta Aquariid meteor shower peaks.
- 10th** • Full Moon, the Full Flower Moon, 5:42 p.m. EDT
- 18th** • Last quarter Moon, 8:32 p.m. EDT
- 18th** • Two moon shadows on Jupiter, 11:53 p.m. EDT
- 25th** • New Moon, 3:44 p.m. EDT



CCAS Upcoming Nights Out

CCAS has several special "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, May 13, 2017** - CCAS Special Observing Session, at Anson Nixon Park, Kennett Square, PA. This event is open to the public.
- ☼ **Saturday, May 20, 2017** - CCAS Special Observing Session at Bucktoe Creek Preserve, Avondale, PA, from 8:30 to 10:00 p.m. The event is open to be public but registration for non-CCAS members is required through [The Land Conservancy for Southern Chester County](http://TheLandConservancy.org) website. A small fee is required by The Land Conservancy of Southern Chester County to attend this event.
- ☼ **Friday, July 14, 2017** - Friday Night Lights with the Natural Lands Trust - this is a fund raiser for the Natural Lands Trust where music is provided. Last year 600 people attended and it will be bigger this year! Several local astronomy clubs set up telescopes during the event. If you want to help with this event let me know so I can tell the organizers. You must bring a telescope or mounted astronomical binoculars to this event if you want to attend.

Spring/Summer 2017 Society Events

May 2017

3rd • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. For more information and directions, visit the [PA Outdoor Lighting Council](#) website.

4th-5th • The von Kármán Lecture Series: [Going out in a Blaze of Glory: Cassini Science Highlights and Grand Finale](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

9th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. Meet & Greet over coffee and refreshments for members and non-members alike from 7:00 to 7:30 p.m. The meeting starts immediately after at 7:30 p.m. CCAS Guest Speaker: Ed Guinan, PhD, from Villanova University will present “Proxima Centauri B – Is Anybody Home at our Closest Star?”

13th • CCAS Special Observing Session, Anson Nixon Park, Kennett Square, starting at 8:00 p.m.

19th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

20th • Open call for articles and photographs for the June 2017 edition of [Observations](#).

20th • CCAS Special Observing Session at Bucktoe Creek Preserve, Avondale, PA, from 8:30 to 10:00 p.m. The event is open to be public but registration for non-CCAS members is required through [The Land Conservancy for Southern Chester County](#) website. A small fee is required by The Land Conservancy of Southern Chester County to attend this event.

22nd • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

26th • Deadline for newsletter submissions for the June 2017 edition of [Observations](#).

June 2017

1st • The von Kármán Lecture Series: [The Golden Age of Exploration](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

7th • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. For more information and directions, visit the [PA Outdoor Lighting Council](#) website.

20th • Open call for articles and photographs for the July 2017 edition of [Observations](#).

21st • Summer Solstice, 12:24 am EDT. First day of summer.

23rd • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

26th • Deadline for newsletter submissions for the July 2017 edition of [Observations](#).

Minutes from the April 11, 2017, CCAS Meeting

by Ann Miller, CCAS Secretary

- President Roger Taylor welcomed 20 guests and visitors to the April meeting of CCAS. Roger reminded the group that there are many interesting astronomical events coming up in the next few months. Mercury should be visible in the evening sky in April near to Venus. He directed us to an article about Mercury on the National Geographic website.
- Roger introduced Dawn to our club members. Roger and Dawn randomly met in a parking lot when she inquired about his license plate, DeepSky. Welcome to CCAS!
- Don Knabb, our observing chair, distributed eclipses glasses, brochures and post cards that he has received from the NASA Night Sky Network. Night sky network.org, FBI.com/night sky network, @nightsskynetwork. There were also handouts on how to safely view the 2017 Solar Eclipse.
- Don shared the night sky for the upcoming month using the Sky Safari Pro App. Highlights include Jupiter at opposition, Comet 41P/TGK, and Mercury at sunset.
- Don also announced our upcoming observing events.
 - Friday, April 21 - BRC observing session with boy scouts attending to earn their Astronomy Badges
 - Friday, April 21 - Longwood Garden Star Party with Derrick Pitts
 - Saturday, April 22 - Bucktoe Creek Preserve Star Party
 - Saturday, April 29 - Nottingham County Park Star Party
 - Saturday, May 13 - Anson Nixon Park Star Party
 - Friday, May 19 - BRC Observing session
- Bruce Ruggeri invited CCAS members to join him and his wife at

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May 2017 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on May 9, 2017, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Our guest speaker is Ed Guinan, PhD, from Villanova University will present “Proxima Centauri B – Is Anybody Home at Our Closest Star?” Also, prior to Dr. Guinan’s presentation, author science fiction author Jack McDevitt will speak.

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

As for future meetings, we are looking for presenters for our Fall 2017 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

Science Fiction Author to Visit May 2017 Meeting

by Don Knabb

[Editor's Note: I revised & updated Don Knabb's article from last October announcing Jack McDevitt's visit. Due to inclement weather down south, he was unable to attend that month's meeting.]

Last year I wrote a review of *Cryptic*, a collection of wonderful science fiction short stories by award winning author Jack McDevitt. When I contacted Jack for permission to use the image of the cover of *Cryptic* in my article he expressed interest in our astronomy club. He and his wife planned to be in the Philadelphia area at the same time as our October monthly meeting; however, due to the bad storms that battered the southeastern coast, they were evacuated instead.

Jack will have a short presentation/discussion at our meeting prior to Dr. Ed Guinan's presentation, "Pxiroma Centauri B — Is Anybody Home at Our Closest Star?"

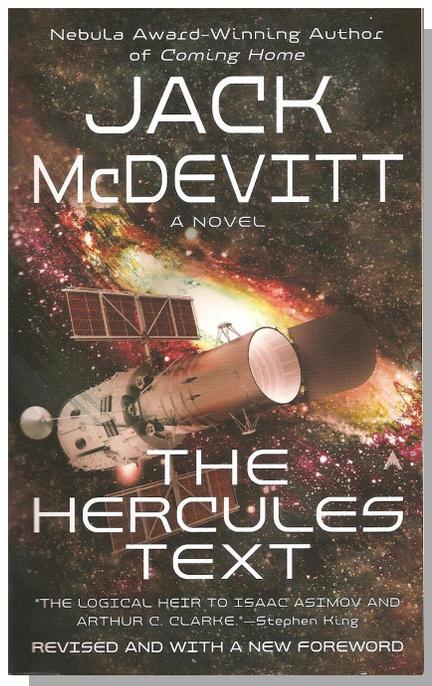
I have read several of Jack's books and am now on a steady diet of them to fulfill my hunger for great science fiction. I highly recommend the short story collection *Cryptic* as a starting point. The e-book version is only \$4.99. New hardcover versions of *Cryptic* are hard to find, and used copies are going for \$35 to over \$100 on the internet! If you want to hear an audio adaption of one of Jack's short stories point your web browser to <http://escapepod.org/2014/03/07/ep438-enjoy-moment/>. This story will bring a smile to your face, as do many of Jack's stories.

Jack McDevitt is an American science fiction author who has



Image Credit: Lionheart Film Works

written 22 novels and over 80 short stories. His writings frequently deal with attempts to make contact with alien races or investigating the traces they have left behind. Jack is a former English teacher, naval officer,



Images from NASA: A Journey through Space

Philadelphia taxi driver, customs officer and motivational trainer.

Stephen King has called Jack "The logical heir to Isaac Asimov and Arthur C. Clark."

The novel *Seeker* won the 2006 Nebula Award for Best Novel, given by the Science Fiction and Fantasy Writers of America. He has been nominated for the Nebula Award sixteen times. His two main series are the Alex Benedict series and the Priscilla Hutchins series.

McDevitt's first published story was "The Emerson Effect" in *The Twilight Zone Magazine* in 1981. Five years later, he published his first novel, *The Hercules Text*, about the discovery of an intelligently conceived signal whose repercussions threaten human civilization. This novel set the tone for many of McDevitt's following novels, which focused on making first contact. Frequently this theme is mixed with both trepidations before the unknown and a sense of wonder at the universe.

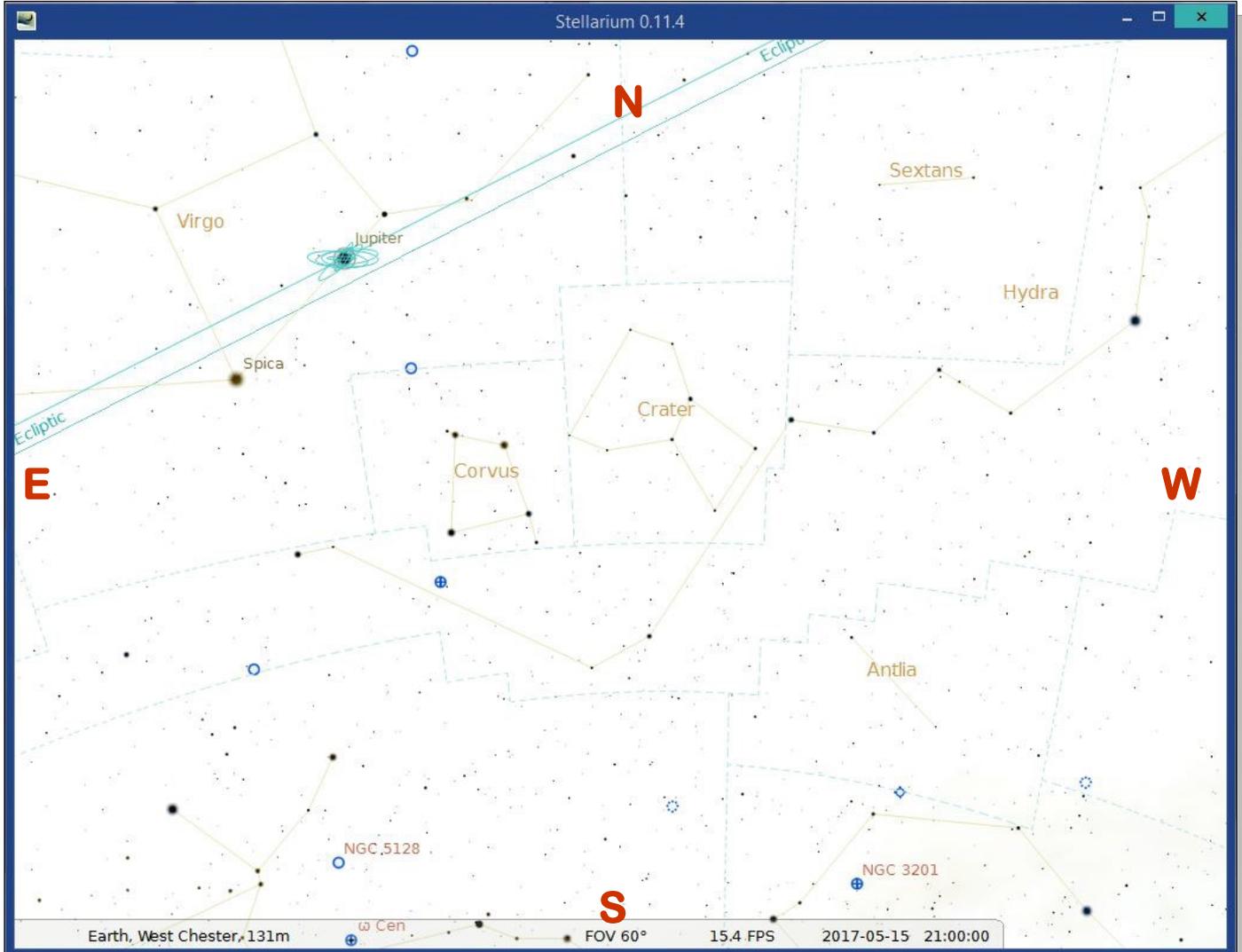
With *The Engines of God* (1994), McDevitt introduced the idea of a universe that was once teeming with intelligent life, but contains only their abandoned artifacts by the time humans arrive on the scene. McDevitt's novels frequently raise questions which he does not attempt to answer. He prefers to leave ambiguities to puzzle and intrigue his readers: "Some things are best left to the reader's very able imagination."

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The Sky Over Chester County

May 15, 2017 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
5/01/2017	5:31 a.m. EDT	6:00 a.m. EDT	7:55 p.m. EDT	8:24 p.m. EDT	13h 54m 59s
5/15/2017	5:14 a.m. EDT	5:45 a.m. EDT	8:09 p.m. EDT	8:39 p.m. EDT	14h 23m 52s
5/31/2017	5:02 a.m. EDT	5:34 a.m. EDT	8:22 p.m. EDT	8:54 p.m. EDT	14h 48m 19s

Moon Phases					
First Quarter	5/02/2017	10:46 p.m. EDT	Full Moon	5/10/2017	5:42 p.m. EDT
Last Quarter	5/18/2017	8:32 p.m. EDT	New Moon	5/25/2017	3:44 p.m. EDT

May 2017 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

2	First Quarter Moon, 10:46 p.m. EDT
4	The Lunar Straight Wall (Rupes Recta) is visible
5	Eta Aquariid meteor shower
7	The Moon is near Jupiter
11	Two moon shadows on Jupiter, 10:00 p.m.
10	Full Moon, the Full Flower Moon, 5:42 p.m. EDT
18	Last Quarter Moon, 8:32 p.m. EDT
18	Two moon shadows on Jupiter, 11:53 p.m. EDT
25	New Moon, 3:44 p.m. EDT
29	The waxing crescent Moon is near the Beehive Cluster

The best sights this month: Jupiter rules the evening sky and we can see the shadows of two of its moons passing across the planet on May 11th at 10:00 p.m. and May 18th at 11:53 p.m. This is a wonderful sight, so look for them if you can.

Also during May, we have a chance to see a comet with binoculars or a telescope. Comet 41P will be in the area of the sky between Lyra and Hercules, so it will be visible during evening hours and there are plenty of nearby stars for star hopping to the comet. A sky map is available in the May issue of Astronomy magazine or use your favorite astronomy app to find this visitor from the depths of the solar system.

Mercury: Mercury is lost in the glare of the sunrise all month.

Venus: The “morning star” shines like a beacon in the pre-dawn glow.

Mars: The red planet is falling into the sunset soon, so take a look low in the west when the sky is nearly dark to say goodbye to Mars until it appears in the pre-dawn sky in a few months.

Jupiter: May is a great month to see the king of the planets. Jupiter will be visible nearly all night, and on two nights we are treated to seeing the shadows of two of Jupiter’s moons cross the planet. The shows begin on May 11 at 10:00 and on May 18 at 11:53.

Saturn: By the end of May we can find Saturn rising around 9:3 p.m. and high in the sky at 2:00 a.m. The rings are tilted to 26 degrees so we will have a great view of this amazing planet.

Uranus and Neptune: Uranus and Neptune are not well placed for observing during May.

The Moon: Full Moon is on May 10th. Native Americans called this the Full Flower Moon. In most areas, flowers are abundant everywhere during this time, thus, the name of this Moon. Other names include the Full Corn Planting Moon, or the Milk Moon. Native Canadians called this the Birds Lay Eggs Moon.

Constellations: Spring is here, and with it the Big Dipper is high overhead. Follow the arc to bright Arcturus and find Boötes. Just to its left is the Northern Crown, Corona Borealis. Leo is easy to find just after sunset looking due south. And bright Vega in Lyra is rising as the night gets a bit later. Stay out later still and watch Cygnus the Swan fly above the eastern horizon.

Messier/deep sky: Would you like to see 500,000 stars at one time? Look nearly overhead during May, to the northwest and not far from Arcturus and find M3, the third object cataloged by Charles Messier. This globular cluster is one of the largest and brightest. Then look about twice as far the other direction from Arcturus and find M5, another fine globular cluster. Under extremely good conditions it is said that both these clusters can be detected with the naked eye. Unfortunately, that will not be possible in the skies of Chester County.

Comets: We have a good chance to see a comet during evening viewing hours during May. Look for Comet 41P/Tuttle-Giacobini-Kresak in the area of sky between Lyra and Hercules. If predictions hold true, Comet 41P could reach 6th magnitude which

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Looking Up: The Three Leaps of the Gazelle
by Don Knabb, CCAS Treasurer & Observing Chair



The Three Leaps of the Gazelle made with Stellarium, a free planetarium software

This month we'll step away from the eyepiece of our telescope and do a little naked eye stargazing. We'll head outside just as it has become fully dark and find one of the lesser known asterisms in the spring sky. An asterism is not an official constellation but is a group of stars that make a distinctive shape. Two of the most famous asterisms in the sky are The Big Dipper and the Sickle, which is more commonly called the Backwards Question Mark.

Step outside when all of the light from the sunset has faded and look to the south and then

lean back and look straight overhead. This is best done in a lounge chair to avoid a stiff neck. Overhead you'll see the Big Dipper, which is part of the constellation Ursa Major, the Big Bear.

Now look down from the zenith, the point in the sky that is directly overhead, and a little to the right and you will find The Sickle, or the Backwards Question Mark. This is the head of Leo the Lion. For young readers, a sickle is a hand tool that was used to harvest wheat, or in my case it is what I used as a child to trim weeds before the

invention of the modern miracle, the gas powered line trimmer.

Between the top of the Sickle and the bottom of the bowl of the Big Dipper you will find three pairs of stars widely spaced from one another. The pairs are about the same distance apart from each other and the stars are around the same magnitude of brightness.

These pairs of stars form the asterism known as The Three Leaps of the Gazelle. According to the legend, when the ga-

(Continued on page 7)

Looking Up (Cont'd)

(Continued from page 6)

zelle ran from Leo the Lion it leapt across the sky from east to west (left to right), leaving impressions in the mud like deer hooves. The three star pairs are all within the constellation Ursa Major the Big Bear.

Here is a diagram of The Three Leaps of the Gazelle I made using Stellarium, a free planetarium software package.

Ancient Arabic star lore relates that the gazelle was startled by the lash of the lion's tail when it sprang from "the Pond," what we know as the Coma Star Cluster in the constellation Coma Berenices. The Pond can be seen with the naked eye from a dark site. It looks like a large, fuzzy patch just off Leo's tail. I wrote an article about the Coma Cluster in the May 2013 issue of Observations.

So step outside on a warm May night and look at the zoo in the sky and the prints left by The Three Leaps of the Gazelle!

Information credits:

<http://whassupinthemilky-way.blogspot.com/2009/05/three-leaps-of-gazelle.html>
<http://my.execpc.com/60/B3/culp/astronomy/Winter/Bears.html>
<http://www.theskyscrapers.org/content2097.html>
<https://astro-bob.areavoices.com/2010/04/08/how-to-track-a-frightened-gazelle/>

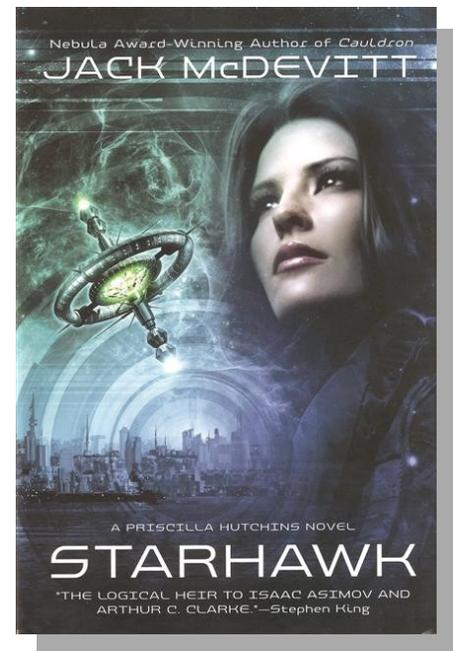
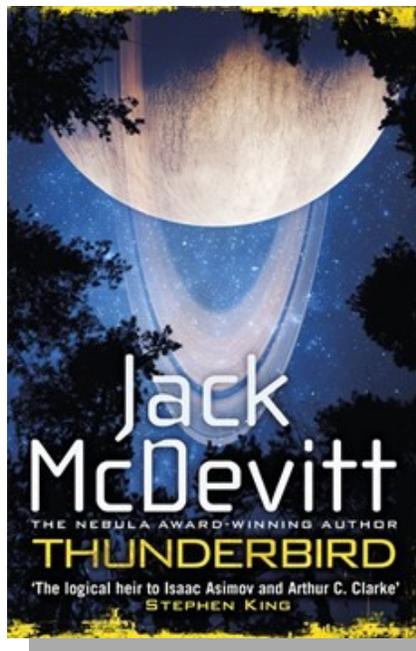
Observing Cont'd

(Continued from page 5)

will make for easy viewing in binoculars or a telescope. A sky map is in the May issue of Astronomy Magazine or use your favorite astronomy app to find this visitor from the depths of the solar system.

Meteor showers: The Eta Aquariid meteor shower peaks on the night of May 5/6. This is not expected to be a good show for Northern Hemisphere observers, but unexpected outbursts can happen with any meteor shower, so why not take a look? These meteors are dust left behind by Halley's Comet!

McDevitt (Cont'd)



Other McDevitt Titles

(Continued from page 3)

McDevitt went to La Salle University, where a short story of his won the annual Freshman Short Story Contest and was published in the school's literary magazine, *Four Quarters*. As McDevitt explained in an interview, "I was on my way. Then I read David Copperfield and realized I could never write at that level, and therefore I should find something else to do. I joined the Navy, drove a cab, became an English teacher, took a customs inspector's job on the

northern border, and didn't write another word for a quarter-century." McDevitt received a master's degree in literature from Wesleyan University in 1971. He returned to writing when his wife, Maureen, encouraged him to try his hand at it in 1980.

As of 2007, McDevitt lives near Brunswick, Georgia.

You can find out more about Jack McDevitt at his website: <http://www.jackmcdevitt.com/>

NOAA's Joint Polar Satellite System (JPSS) to Monitor Earth as Never Before

by Ethan Siegel

Later this year, an ambitious new Earth-monitoring satellite will launch into a polar orbit around our planet. The new satellite—called JPSS-1—is a collaboration between NASA and NOAA. It is part of a mission called the Joint Polar Satellite System, or JPSS.

At a destination altitude of only 824 km, it will complete an orbit around Earth in just 101 minutes, collecting extraordinarily high-resolution imagery of our surface, oceans and atmosphere. It will obtain full-planet coverage every 12 hours using five separate, independent instruments. This approach enables near-continuous monitoring of a huge variety of weather and climate phenomena.

JPSS-1 will improve the prediction of severe weather events and will help advance early warning systems. It will also be indispensable for long-term climate monitoring, as it will track global rainfall, drought conditions and ocean properties.

The five independent instruments on board are the main assets of this mission:

- The Cross-track Infrared Sounder (CrIS) will detail the atmosphere's 3D structure, measuring water vapor and temperature in over 1,000 infrared spectral channels. It will enable accurate weather forecasting up to seven days in advance of any major weather events.
- The Advanced Technology Microwave Sounder (ATMS) adds 22 microwave



channels to CrIS's measurements, improving temperature and moisture readings.

- Taking visible and infrared images of Earth's surface at 750 meter resolution, the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument will enable monitoring of weather patterns, fires, sea temperatures, light pollution, and ocean color observations at unprecedented resolutions.
- The Ozone Mapping and

Profiler Suite (OMPS) will measure how ozone concentration varies with altitude and in time over every location on Earth's surface. This can help us understand how UV light penetrates the various layers of Earth's atmosphere.

- The Clouds and the Earth's Radiant System (CERES) instrument will quantify the effect of clouds on Earth's energy balance, measuring solar reflectance and Earth's radiance. It will greatly reduce one of the largest sources of uncertainty in climate modeling.

The information from this satellite will be important for emergency responders, airline pilots, cargo ships, farmers and coastal residents, and many others. Long and short term weather monitoring will be greatly en-

(Continued on page 9)



*Caption: Ball and Raytheon technicians integrate the VIIRS Optical and Electrical Modules onto the JPSS-1 spacecraft in 2015. The spacecraft will be ready for launch later this year.
Image Credit: Ball Aerospace & Technologies Corp.*

Space Place (Cont'd)

(Continued from page 8)

hanced by JPSS-1 and the rest of the upcoming satellites in the JPSS system.

Want to teach kids about polar and geostationary orbits? Go to the NASA Space Place: <https://spaceplace.nasa.gov/geo-orbits/>

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

Minutes (Cont'd)

(Continued from page 2)

the March for Science in Philadelphia on Saturday, April 22 (Earth Day). Bruce is attending as a representative/member of the Planetary Society. This is a peaceful march to highlight the importance of science and technology in the US and around the world. Many participants will also stress the importance of evidence based science in governmental policy and decision making. Make America Smart Again.

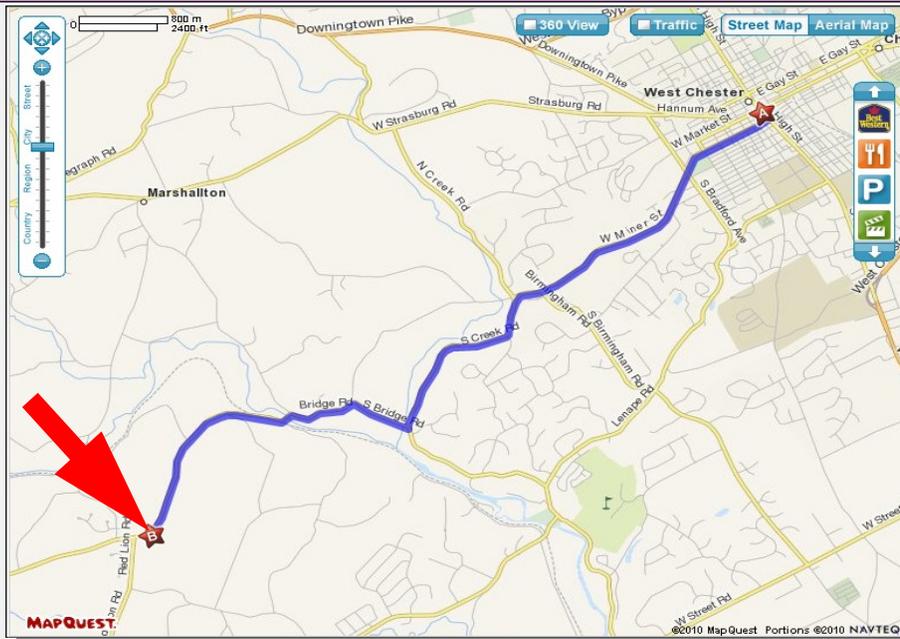
- David Hockenberry, program chair, announced that Dr. Gordon Richards has graciously agreed to reschedule to speak to our group at the September 2017 meeting due to the March snow cancellation. David then introduced our

evening's speaker, Dennis O'Leary.

- Dennis, one of our NASA Solar System Ambassadors, spoke first on "New Horizon Mission Update." This successful mission has revealed the surface and composition of the dwarf planet and its 5 moons. New Horizons was granted an extended mission to the Kuiper Belt. The spacecraft is underway to the target MU69 with an expected arrival on January 1, 2019. For more New Horizons information, go to https://www.nasa.gov/mission_pages/newhorizons/main/index.html. The Science Channel series "How the Universe Works" had an episode in Season 5 that aired on

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CCAS Directions



Brandywine Red Clay Alliance

1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090

<http://brandywinewatershed.org/>

BRC 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 Red Clay Alliance

The monthly observing sessions (held February through November) are held at the Myrick Conservation Center of the Brandywine Red Clay Alliance.

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 BRC 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 112 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).



Minutes (Cont'd)

(Continued from page 9)

- 1/3/17 called "Secret History of Pluto."
- Dennis next presented Solar Eclipses. Safety was emphasized to prevent injury to our eyes.
 - Pete Kellerman is planning the annual club star party at Blue Mountain Vista in New Ringold, PA. DVAA has proposed that we join them for a joint event. Pete will get back to the club with proposed dates.
 - Don reminded our club members that writer Jack McDevitt will speak at our next meeting.

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

April 2017 Financial Summary

Beginning Balance	\$1,491
Deposits	\$90
Disbursements	\$40
Ending Balance	\$1,541

New Member Welcome!

Welcome new CCAS member Leonard Ostanek from West Chester, PA. We're glad you decided to rejoin us under the stars! Clear skies to you!

Membership Renewals

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

Don Knabb
988 Meadowview Lane
West Chester PA 19382

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

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>

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"!

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!



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>



Lighthouse Outdoor Lighting is a dedicated lifetime corporate member of the [International Dark-Sky Association](#). Lighthouse's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

Phone: 484-291-1084

<https://www.lighthouse-lights.com/landscape-lighting-design/pa-west-chester/>

Local Astronomy-Related Stores

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



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

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<http://www.spectrum-scientifics.com>

CCAS Information Directory

CCAS Lending Telescopes

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

CCAS Lending Library

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

Contributing to *Observations*

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

Or mail the contribution, typed or handwritten, to:

John Hepler
21103 Stripper Run
Rock Hall, MD 21661

CCAS Newsletters via E-mail

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

CCAS Website

John Hepler is the Society's Webmaster. You can check out our Website at: <http://www.ccas.us>

John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work—no copyrighted material! Give your contributions to John Hepler at (410) 639-4329 or e-mail to webmaster@ccas.us

CCAS Purpose

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

CCAS Executive Committee

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

President:	Roger Taylor 610-430-7768
Vice President:	Liz Smith 610-842-1719
ALCor, Observing, and Treasurer:	Don Knabb 610-436-5702
Secretary:	Ann Miller 610-558-4248
Librarian:	Barb Knabb 610-436-5702
Program:	Dave Hockenberry 610-558-4248
Education:	Kathy Buczynski 610-436-0821
Webmaster and Newsletter:	John Hepler 410-639-4329
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

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

Membership Renewals

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

Don Knabb
988 Meadowview Lane
West Chester PA 19382-2178

Phone: 610-436-5702

e-mail: treasurer@ccas.us

Sky & Telescope Magazine Group Rates

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

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

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

Astronomy Magazine Group Rates

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

