Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 26, No. 5 ***Three-Time*** *Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016* *May 2018*

In This Issue

InSight Successfully Launches!

InSight Mars Lander Successfully Launched from Vandenberg at 7:05 EDT on May 5th. First NASA Launch from California. Image Credit: NASA

Membership Renewals Due

05/2018	Cunningham
	Fletcher
	Klapholz
	LaFrance
	O'Hara
	Ostanek
06/2018	Hanspal
	Harris
	Hebding
	Mazziotta & Calobrisi
07/2018	Hockenberry & Miller
	Hunsinger
	Johnston
	Piehl

May 2018 Dates

6th • The Eta Aquariid meteors peak tonight

7th • Last Quarter Moon, 10:08 p.m. EDT

9th • Jupiter is at opposition

15th • New Moon, 7:47 a.m. EDT

21st • First Quarter Moon, 11:49 p.m. EDT

22nd • The Lunar Straight Wall is visible

29th • Full Moon, Full Flower Moon or the Full Frog Croaking Moon, 10:19 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.

☼ **Friday, May 4, 2018** - Greenwood Elementary Star Party in Kennett Square, PA.

☼ **Saturday, May 12, 2018** - CCAS Special Observing Session at Bucktoe Creek Preserve, Avondale, PA.

☼ **Tuesday, May 15, through Friday, May 18, 2018** - CCAS Special Camping & Observing Session at Cherry Springs State Park, Coudersport, PA.

☼ **Saturday, May 19, 2018** - CCAS Special Observing Session at Anson Nixon Park, Kennett Square, PA. The session is scheduled for 8:30-10:00 pm.

Spring/Summer 2018 Society Events

May 2018

2nd • 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 • Greenwood Elementary Star Party in Kennett Square, PA.

8th • CCAS Monthly Meeting starting at 7:30 p.m. in Room 113, Merion Science Center (former Boucher Building), West Chester University. Guest Speaker: Scott Engle, Ph.D., Villanova University.

15th-18th • CCAS Special Camping & Observing Session at Cherry Springs State Park, Coudersport, PA.

17th-18th • The von Kármán Lecture Series: Juno and The New Jupiter: What Have We Learned So Far?, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

18th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

19th • CCAS Special Observing Session at Anson Nixon Park Star Party in Kennett Square, PA.

20th • Open call for articles and photographs for the June 2018 edition of Observations.

26th • Deadline for newsletter submissions for the June 2018 edition of Observations.

June 2018

6th • 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.

8th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

16th • CCAS Special Observing Session at Nottingham Park, Nottingham, PA.

20th • Open call for articles and photographs for the July 2018 edition of Observations.

21st • Summer solstice at 6:07 a.m. First day of summer, northern hemisphere.

26th • Deadline for newsletter submissions for the July 2018 edition of Observations.

Minutes from the April 10, 2018, CCAS Meeting

by Ann Miller, CCAS Secretary

- Roger Taylor, CCAS president, welcomed guests and members to the April 10, 2018 meeting.
- Roger then presented Outreach Awards from the Night Sky Network to Frank Angelini, Bruce Ruggeri, and to our founder, Ned Lurcott.
- Don Knabb, our Observing chair, shared of outreach schedule.
  - April 13-BRC club observing session-Pete Kellerman will open the gate
  - April 14-Bucktoe Preserve Star Party
  - April 18-Oxford Library Star Party at Oxford Recreation Park
  - April 21-Hoopes Park Star Party in West Chester (also Astronomy Day)
  - April 22-Sacred Heart Academy Star Party in Bryn Mawr, PA
  - May 4-Greenwood Elementary
  - May 15-17-New Moon at Cherry Springs
  - May 18-BRC observing joint session for both our club and BRC
  - May 19-Anson Nixon Star Party in Kennett Square, PA
- Chester County Night School Astronomy Class presented by our club members will continue on Monday nights till April 30
- Don then presented the Sky at night using the Starry Nights app and Skymap.com. This is "Messier marathon" month
- Dennis O'Leary, one of our NASA Solar System Ambassadors, presented "Project Insight-Exploring the Birth of Rocky Planets."
- In the window of May 5 to June 8,2018, the Insight Mission is scheduled for launch from Vandenberg Air Force Base in California.
- The landing on Mars is scheduled for November 26, 2018.
- The science goal is "to understand the formation and evolution of terrestrial planets through investigation of the interior structure and processes of Mars."
- The mission will also deploy Mars Cube One which are 2 CubeSats, twin communication relays, that will allow quick transmission about the Insight spacecraft after it lands on Mars.

May 2018 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on May 8, 2018, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Guest Speaker: Scott Engle, Ph.D., Villanova University.

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 2018-2019 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

NASA Night Sky Network Outreach Certificates Awarded

by Roger Taylor, CCAS President

L-to-R: CCAS Founder Ed Lurcott, CCAS President Roger Taylor, Frank Angelini & Bruc Ruggieri

Cherry Springs State Park Camping & Observing Trip

by Don Knabb, CCAS Observing Chair & Treasurer

As mentioned in last month's newsletter, several CCAS members are planning to journey to Cherry Springs State Park for a few nights of camping and stargazing. We will depart on Tuesday, May 15th and return on Friday, May 18th.

Cherry Springs State Park is about a 4 ½ hour drive from West Chester. Barb and I plan to arrive late in the afternoon on Tuesday May 15th. Pete Kellerman has been to Cherry Springs many times and he assures us that during the week we do not need to be concerned with finding room to set up our camping sites on the astronomy field, but the sites are first come, first served.

Note that on the astronomy field the only light allowed after dark is red light unless the sky is 100% cloudy. Light sources in vehicles or computer screens must be blocked or filtered. Green lasers are prohibited. Open fires are prohibited but gas camp stoves are allowed. Electrical power is available for charging up batteries.

You can download a park brochure and map and registration is required for camping. This is done at the registration kiosk near the entrance to the astronomy field. Fee envelopes must be filled out and the fee placed into the envelope and deposited in the fee tube.

If you would like to join us please send an email to Don Knabb. Of course, the trip is weather dependent. If rain is forecast with great certainty we will most likely cancel the trip.

Book Review

by Don Knabb

Being a baby-boomer, I was at a wonderful age when the space race was raging at full speed. I followed all the happenings at NASA and knew the names of all astronauts, the rockets and the space capsules. I've never lost my interest in all things space, so I was pleased to receive a copy of *Apollo 8: The Thrilling Story of the First Mission to the Moon,* by Jeffery Kluger for Christmas.

This is not Kluger's first book about the space race. He and Jim Lovell co-authored *Apollo 13*, their bestselling book about the near calamity of Apollo 13. He also wrote *Journey Beyond Selene: Remarkable Expeditions Past Our Moon and to the Ends of the Solar System* and *Moon Hunters: NASA's Remarkable Expeditions to the Ends of the Solar System.*

Apollo 8: The Thrilling Story of the First Mission to the Moon covers the space race from its beginning through the flight of Apollo 8 in 1968, the first voyage around the Moon.

In August 1968, NASA made the decision to launch humankind's first flight to the moon. In 1967 we all remember that three astronauts had burned to death in their spacecraft, and since then the Apollo program had suffered one setback after another.

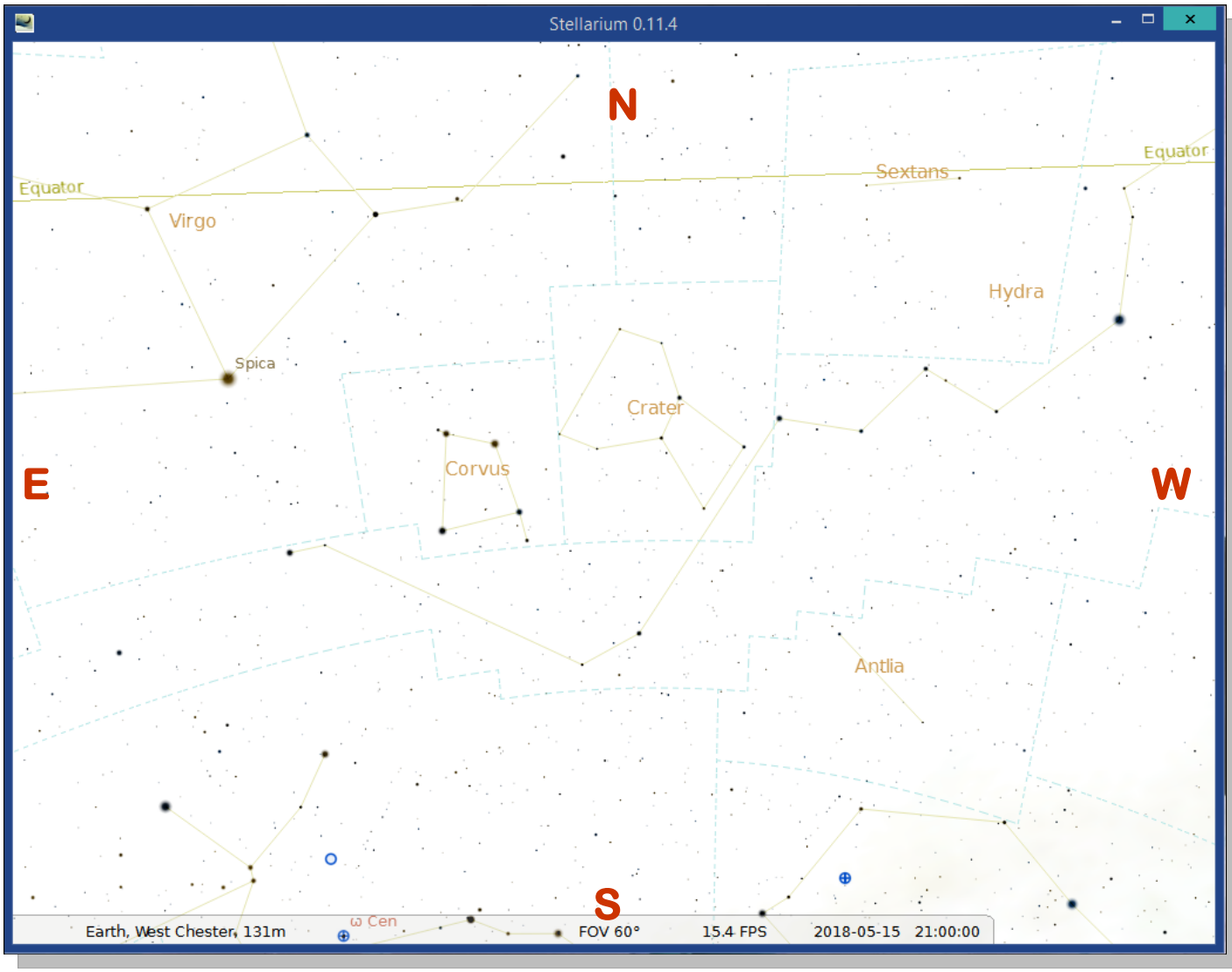
Meanwhile, the Russians were winning the space race, the Cold War was getting hotter by the month, and President Kennedy's promise to put a man on the

(Continued on page 9)

The Sky Over Chester County

May15, 2018 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
05/01/2018	5:33 a.m. EDT	6:02 a.m. EDT	7:57 p.m. EDT	8:26 p.m. EDT	13h 54m 28s
05/15/2018	5:16 a.m. EDT	5:47 a.m. EDT	8:10 p.m. EDT	8:41 p.m. EDT	14h 23m 28s
05/31/2018	5:04 a.m. EDT	5:36 a.m. EDT	8:24 p.m. EDT	8:56 p.m. EDT	14h 48m 05s

Moon Phases					
Last Quarter	05/07/2018	10:08 p.m. EDT	New Moon	05/15/2018	7:47 a.m. EDT
First Quarter	05/21/2018	11:49 p.m. EDT	Full Moon	05/29/2018	10:19 a.m. EDT

May 2018 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

6	**The Eta Aquariid meteors peak tonight**
7	**Last Quarter Moon, 10:08 p.m. EDT**
9	**Jupiter is at opposition**
15	**New Moon, 7:47 a.m. EDT**
17	**A thin crescent Moon is near Venus in the west**
19	**The Moon is near the Beehive Cluster**
20	**Venus is less than 1 degree from the open cluster M35 in Gemini**
21	**The First Quarter Moon is less than 1 degree from Regulus in Leo**
22	**The Lunar Straight Wall is visible**
26	**The Moon, Jupiter and Spica form a triangle**
29	**Full Moon, the Full Flower Moon or the Full Frog Croaking Moon, 10:19 a.m. EDT.**

The best sights this month: Planets rule the sky during May. Early in the evening Venus shines brightly in the west, then an hour or two later Jupiter can be found in rising in the east. If you stay up quite late, you'll find Saturn and Mars rising in the east.

Mercury: Mercury is not visible during May.

Venus: Venus is setting about 2 ½ hours after the Sun so we can enjoy the "evening star" for a long time during the evening. Shining just under -4 magnitude it is impossible to miss in the western sky after sunset. On May 20th Venus is less than 1 degree from the open cluster M35 in Gemini. Sounds like a great photo opportunity!

Mars: We're catching up to Mars in our race around the Sun, but it doesn't rise until the wee small hours. But get ready for the show because in mid-July we'll have the best view of Mars in 15 years!

Jupiter: Jupiter reaches opposition on May 8th, so it will rise at sunset and set at sunrise. Shining at -2.5 magnitude it will be big and bright in the sky. Watch the Galilean satellites as they dance around the planet, moving dramatically from night to night and their movement is also easily visible during an evening of observing.

Saturn: Saturn rises a bit after midnight at the beginning of May and around 10:00 at the end of the month. Saturn is positioned fairly south in the sky this year so wait until it is near the meridian for the best viewing. During May that is around 4 a.m., so I'll wait until mid-summer to see this amazing planet.

Uranus and Neptune: Uranus is not observable during May. Neptune can be observed but only just before morning twilight.

The Moon: The Moon is full on May 29th. 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 Full Frog Croaking Moon.

Constellations: This is a great time of year to look high overhead at the Big Dipper and find the entire constellation Ursa Major, the Big Bear. Leo the Lion is still high in the sky as darkness falls, but he seems to be running away from Hercules as he is rising in the east. And bright Arcturus in Bootes shines like a beacon in the southeast. Bootes and Hercules are well placed for viewing by the time it is completely dark and an hour or two later the summer triangle is rising in the east. And if we have a good dark sky the Milky Way can be seen in Cygnus. Aim your telescope there and gaze into an eyepiece full of stars!

Messier/deep sky: It is once again globular cluster time! M3 is high overhead during May. Look at the glow of 500,000 stars in your eyepiece! And stay up a bit later as M13, the Great Globular Cluster in Hercules rises in the east. M13 contains several hundred thousand stars, perhaps a million!

Comets: From May 1st to May 6th Comet PANSTARRS (C/2016 R2) will be near bright Capella in Auriga. The comet is predicted to glow at a faint

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Through The Eyepiece: The Sombrero Galaxy, M104

by Don Knabb, CCAS Treasurer & Observing Chair

Sky map using Stellarium, the free planetarium software: http://stellarium.org/

May is a good time of year to look for galaxies, and one of the most famous is the Sombrero Galaxy, also known as M104. Just after it gets dark look toward the border of Virgo and Corvus to find this distant galaxy.

The Sombrero galaxy is somewhat low in the sky so you need to find a clear night without the Moon casting light that will wash out this faint object. As with most galaxies, the larger the telescope you use to see the Sombrero Galaxy the better. Below is a picture taken by CCAS Program Chair Dave Hockenberry.

The Sombrero Galaxy is an unbarred spiral galaxy in the constellation Virgo. It has a bright nucleus, an unusually large central bulge, and a prominent dust lane in its inclined disk. The dark dust lane and the bulge give this galaxy the appearance of a sombrero. The galaxy has an apparent magnitude of +8 so it is not visible with the naked eye, but it is easily seen with amateur telescopes. The large bulge, a central supermassive black hole, and the dust lane all attract the attention of professional astronomers.

The Sombrero Galaxy was discovered in March of 1767 by Pierre Méchain. Charles Messier made a hand-written note about this and five other objects (now collectively recognized as M104 - M109) to his personal list of objects now known as the Messier Catalogue, but it was not "officially" included until 1921 when Camille Flammarion

(Continued on page 7)

Eyepiece (Cont'd)

Photo credit: David Hockenberry, astrophotographer

(Continued from page 6)

found Messier's list of these five objects. Since this time, the Sombrero Galaxy has been known as M104.

M104's spectacular dust rings harbor many younger and brighter stars, and show intricate details astronomers don't yet fully understand.

We don't need to understand the details of this galaxy to appreciate its beauty. The long exposure photographs show tremendous details that we cannot perceive with a telescope and the naked eye. Put M104 in your eyepiece, then remember Dave's photo and use your naked eye and your mind's eye to enjoy the Sombrero Galaxy during a May evening under the stars!

Information credits:
http://hubblesite.org/newscenter/archive/releases/2003/28/image/a/
http://chandra.harvard.edu/photo/2007/sombrero/
http://en.wikipedia.org/wiki/Sombrero_Galaxy

CCAS Original Astrophotography
by Dave Hockenberry

M104, the Sombrero Galaxy. Image acquired with QSI 583-wsg camera through a Hyperion 12.5" telescope, on an AP 1200 mount. Autoguiding with SX Lodestar X2 camera and SX Active Optics unit. Image capture and observatory control with MaxIm DL Pro and APCC. Image processing with CCDStack and Photoshop CC. All subexposures 10 minutes. 3.5 hours Luminance, 2 hours each Red, Green, and Blue broadband AstroDon Gen 2 filters. Data collected between 3/16/18 and 4/3/18. M104 is a large and very bright galaxy on the southern edge of the Virgo Supercluster. At magnitude 8 and a distance from Earth at around 28-31 million light-years distance, this is easily visible in a small telescope making it a treat for visual observers and astrophotographers during "Spring Galaxy season."

What's It Like Inside Mars?

by Jessica Stoller-Conrad

*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!

Mars is Earth's neighbor in the solar system. NASA's robotic explorers have visited our neighbor quite a few times. By orbiting, landing and roving on the Red Planet, we've learned so much about Martian canyons, volcanoes, rocks and soil. However, we still don't know exactly what Mars is like on the *inside*. This information could give scientists some really important clues about how Mars and the rest of our solar system formed.

This spring, NASA is launching a new mission to study the inside of Mars. It's called Mars InSight. InSight—short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport—is a lander. When InSight lands on Mars later this year, it won't drive around on the surface of Mars like a rover does. Instead, InSight will land, place instruments on the ground nearby and begin collecting information.

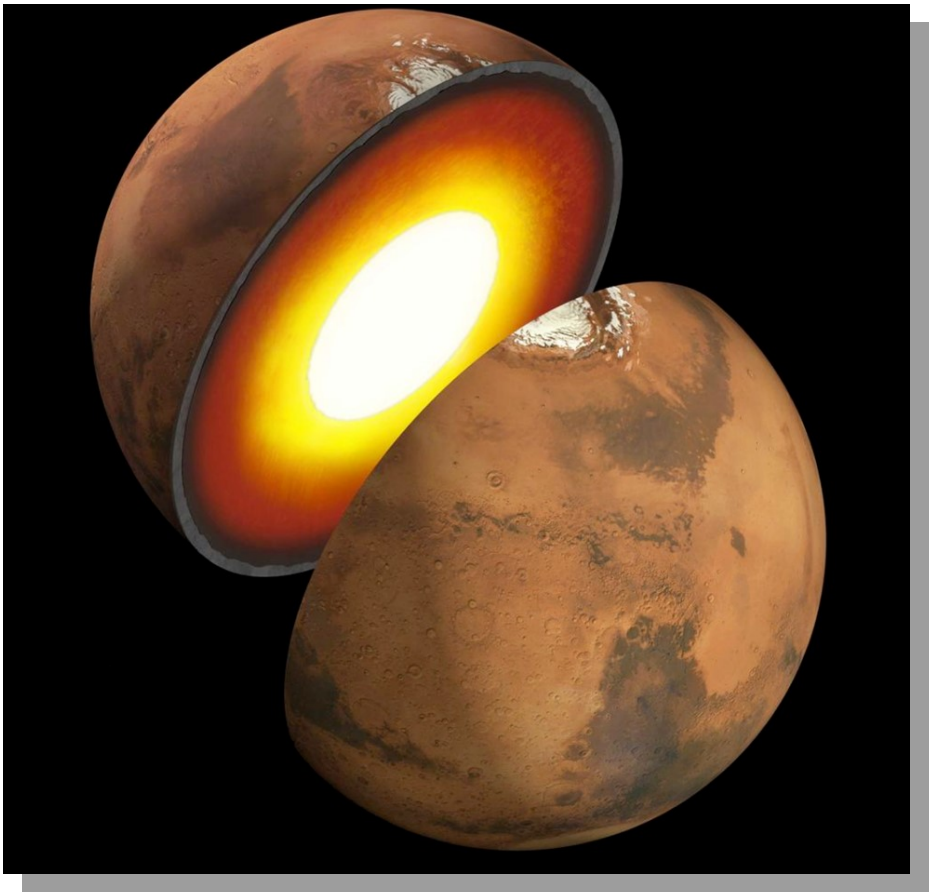
Just like a doctor uses instruments to understand what's going on inside your body, InSight will use three science instruments to figure out what's going on inside Mars.

One of these instruments is called a seismometer. On Earth, scientists use seismometers to study the vibrations that happen during earthquakes. InSight's seismometer will measure the vibrations of earthquakes on Mars—known as marsquakes. We know that on Earth, different materials vibrate in different ways. By studying the vibrations from marsquakes, scientists hope to figure out what materials are found inside Mars.

InSight will also carry a heat probe that will take the temperature on Mars. The heat probe will dig almost 16 feet below Mars' surface. After it burrows into the ground, the heat probe will measure the heat coming from the interior of Mars. These measurements can also help us understand where Mars' heat comes from in the first place. This information will help scientists figure out how Mars formed and if it's made from the same stuff as Earth and the Moon.

Scientists know that the very center of Mars, called the core, is made of iron. But what else is in there? InSight has an instrument called the Rotation and Interior Structure Experiment, or RISE, that will hopefully help us to find out.

(Continued on page 9)



Caption: An artist's illustration showing a possible inner structure of Mars. Image credit: NASA/JPL-Caltech

Space Place (Cont'd)

(Continued from page 8)

Although the InSight lander stays in one spot on Mars, Mars wobbles around as it orbits the Sun. RISE will keep track of InSight's location so that scientists will have a way to measure these wobbles. This information will help determine what materials are in Mars' core and whether the core is liquid or solid.

InSight will collect tons of information about what Mars is like under the surface. One day, these new details from InSight will help us understand more about how planets like Mars—and our home, Earth—came to be.

For more information about earthquakes and marsquakes, visit: https://spaceplace.nasa.gov/earthquakes

Book Review (Cont'd)

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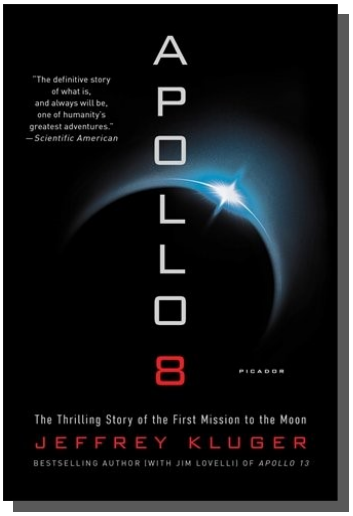
moon by the end of the decade seemed sure to be broken. But when NASA decided to make the bold step to attempt a lunar orbit and return, Frank Borman, Jim Lovell and Bill Anders instantly signed on.



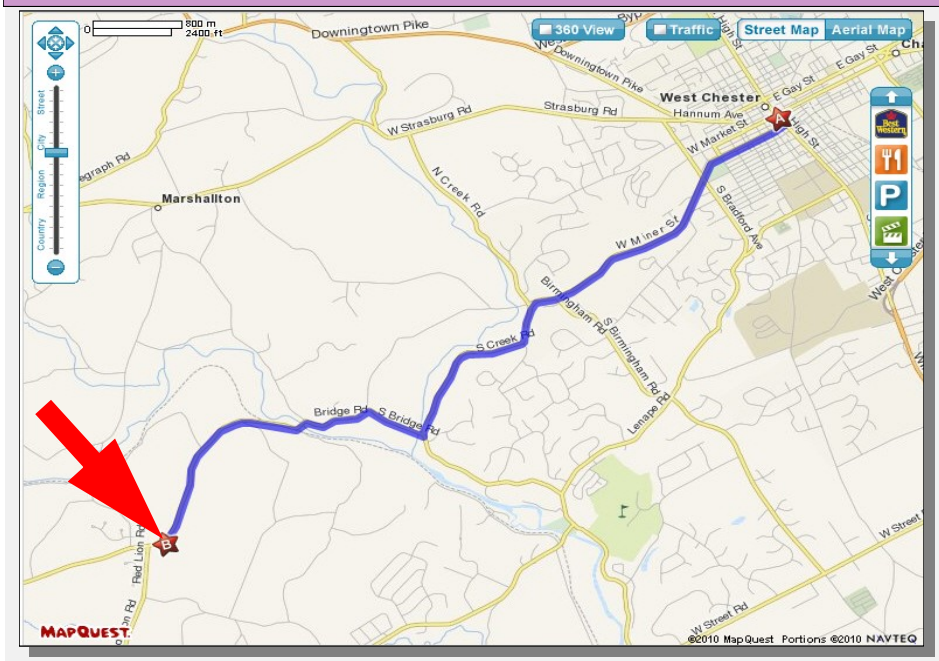
Cover of paperback edition published May 1, 2918.

The Apollo 8 mission was ground breaking. It gave us the first view of the far side of the moon, the first earth-rise, and the first re-entry through the earth's atmosphere following a flight to deep space.

The book covers a good bit of the history of the space race and spends an appropriate amount of time on the Apollo 1 disaster. Kluger introduces us to the astronaut's families, takes us to Mission Control and helps us understand the NASA culture during the space race. He focuses a good bit on Frank Borman, the commander of the mission, but doesn't leave out the rest of the crew.

I thoroughly enjoyed this book. It is a quick read and the pace kept me interested the entire way through the book. If you are a fan of all things NASA I am sure you will enjoy the book.

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.

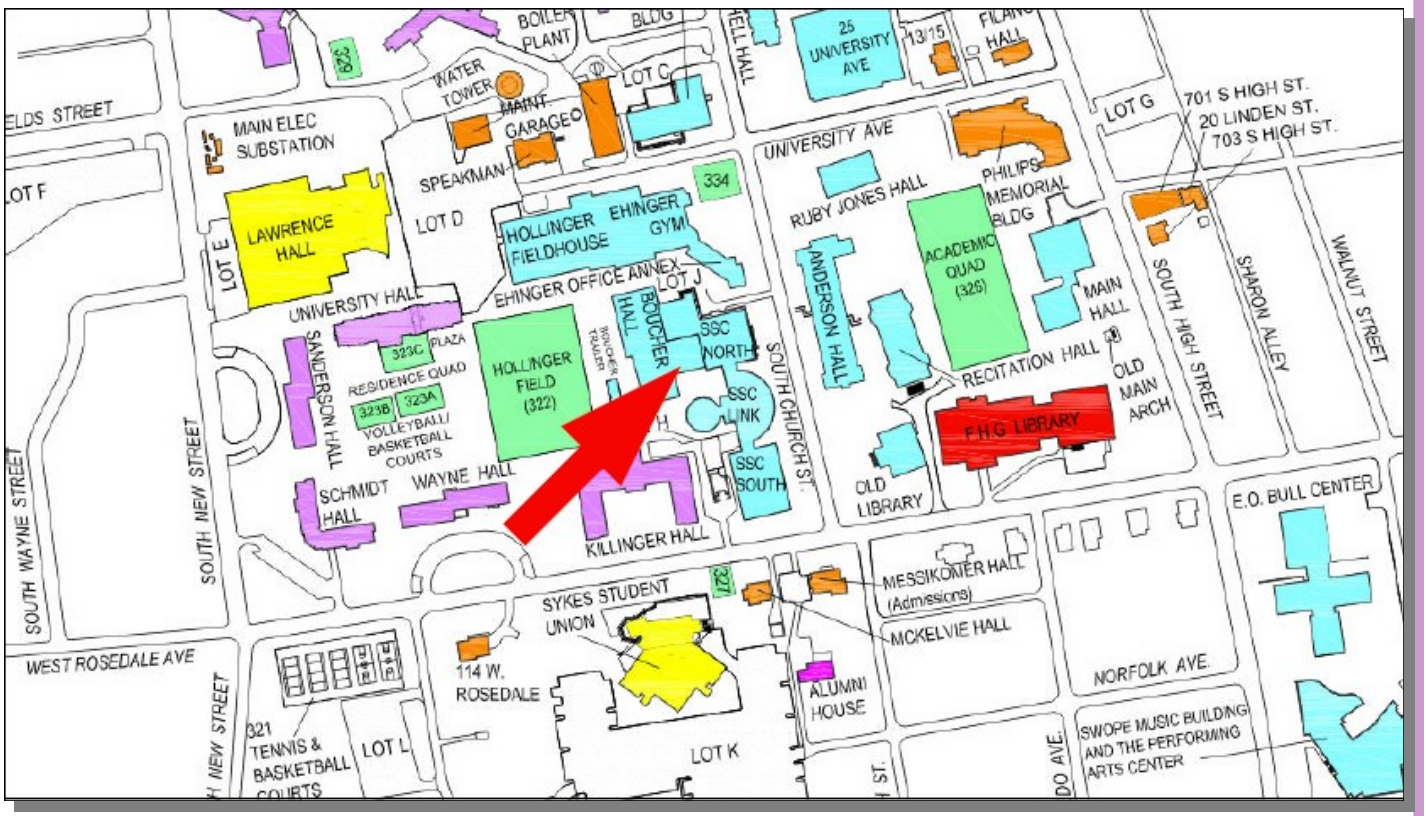
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BRC property, turn left off Route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



Observing (Cont'd)

(Continued from page 5)

magnitude 10 or 11 but should be easy to find with Capella as a navigational aid. You'll need a dark observing site and at least a 4-inch telescope to see this dim visitor from the outer 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 look? These meteors are dust left behind by Halley's Comet!

CCAS Membership Information and Society Financials

Treasurer's Report
by Don Knabb

April 2018 Financial Summary

Beginning Balance	$1,339
Deposits	$125
Disbursements	-$0
Ending Balance	$1,464

New Member Welcome!

Welcome new CCAS member Michelle Hertweck from Parkesburg, PA. We're glad you decided to join us under the stars! Clear skies to you!

Membership Renewals

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

Don Knabb
988 Meadowview Lane
West Chester PA 19382

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

CCAS Information Directory

Join the Fight for Dark Skies!

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

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

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

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

http://www.darksky.org

Dark-Sky Website for PA

PENNSYLVANIA OUTDOOR LIGHTING COUNCIL

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!

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

★ ★ ★ ★ ★

LIGHTHOUSE OUTDOOR LIGHTING

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

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 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 Striper 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 & Tele*scope Magazine Group Rates

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

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

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

Astronomy Magazine Group Rates

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