Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 24, No. 9 ***Three-Time*** *Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016* *September 2016*

In This Issue

M92: The Other Hercules Cluster

Image by CCAS Member Dave Hockenberry. For details, see page 9.

Membership Renewals Due

09/2016	Armored Lurcott, E.
10/2016	Caldwell Conrad Kazmi Kurtis Leiden Rosenblatt, Harriet Rosenblatt, Herb Zandler
11/2016	Buczyinski Cavanaugh Holenstein Smith

September 2016 Dates

1st • New Moon, 5:03 a.m. EDT

9th • First Quarter Moon, 7:49 a.m. EDT

16th • Full Moon, 3:05 p.m. EDT

22nd • Fall Equinox, 10:21 a.m. EDT

23rd • Last Quarter Moon, 5:56 a.m. EDT

30th • New Moon, 8:11 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, September 10, 2016** - CCAS Special Observing Session, Anson Nixon Park, Kennett Square, PA.

☼ **Saturday, September 24, 2016** - CCAS Special Observing Session, Bucktoe Creek Preserve in Avondale, PA.

☼ **Saturday, October 8, 2016** - CCAS Special Observing Session, Hoopes Park, West Chester, PA.

Summer / Autumn 2016 Society Events

September 2016

2nd • West Chester University Planetarium Show: "We Are Star Stuff," in the Schmucker Science Building. The show starts at 7 p.m. and runs approximately one hour in length. For more information and reservations, visit the WCU Public Planetarium Shows webpage.

3rd • CCAS Summer Party at Barb & Don Knabb's home in West Chester, PA. The party is for CCAS members and their families starting at 6:00 p.m. See article to the right for more details about the party and for directions to Barb & Don's home.

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.

9th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

10th • CCAS Special Observing Session, Anson Nixon Park, Kennett Square, PA.

13th • 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. Guest Speaker: Dr. Alex Hill, a senior post-doctorate fellow at Haverford College. His research is on interstellar gas mediums.

20th • Open call for articles and photographs for the October 2016 edition of Observations.

22nd • Autumn Equinox, 10:21 a.m., EDT.

24th • CCAS Special Observing Session, Bucktoe Creek Preserve in Avondale, PA.

24th-25th • The von Kármán Lecture Series: Revealing Saturn–Cassini Science Highlights and the Grand Finale, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

26th • Deadline for newsletter submissions for the October 2016 edition of Observations.

October 2016

5th • 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 Special Observing Session, Hoopes Park, West Chester, PA.

11th • 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. Member Speaker: Frank Angelini.

14th • West Chester University Planetarium Show: "Star Clusters, Stellar Siblings," in the Schmucker Science Building. The show starts at 7 p.m. and run approximately one hour in length. For more information and reservations, visit the WCU Public Planetarium Shows webpage.

20th-21st • The von Kármán Lecture Series: Asteroid Anchors, Rock Climbing Robots, Gecko Grippers, and Other Ways to Stick in Space, at the Jet Propulsion Laboratory, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

21st-22nd • Orionid Meteor Shower Peaks. The Orionids is an average shower producing about 20 meteors per hour at their peak. A good show could be experienced on any morning from October 20 - 24. The gibbous moon will be a problem this year, hiding all but the brightest meteors with its glare.

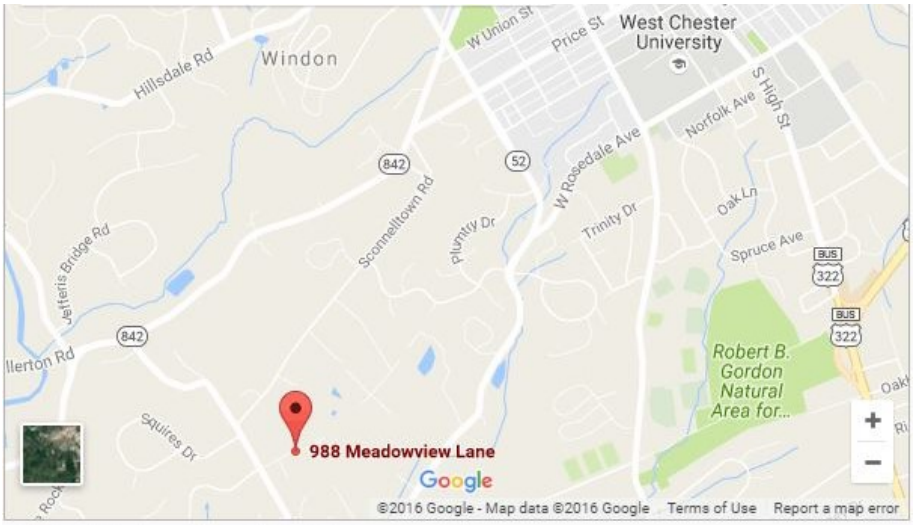
20th • Open call for articles and photographs for the November 2016 edition of Observations.

21st • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

26th • Deadline for newsletter submissions for the November 2016 edition of Observations.

CCAS Summer Party with the Knabbs

by Roger Taylor, CCAS President



By embedding this map, you agree to the terms of service.

Barb and Don Knabb have graciously offered to host the annual CCAS summer party at their home on Saturday, September 3, 2016, at 6:00 p.m. As in previous years, they will have some sandwiches and snacks and beer and some flavored seltzers. Please bring something to share such as an appetizer, salad, side dish or dessert.

If the weather cooperates they'll set up the 20 inch Edwin T. Lurcott reflector.

Barb and Don's phone number is 610-436-5702 and their address is 988 Meadowview Lane. Their home is located southwest of downtown West Chester (see map above for location). A Google Maps search will provide good directions to their house. Their home is at the end of a cul-de-sac and 988 is on the mailbox. They have a long driveway and the house has a garage facing the street.

Please RSVP to dknabb00@comcast.net if you plan to attend so that they know how much food to prepare.

September 2016 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on September 13, 2016, starting at 7:30 p.m. The meeting will be held in Room 112, Merion Science Center (former Boucher Building), West Chester University. Our speaker will be Alex Hill, a senior post-doctorate fellow at Haverford College. His research is on interstellar gas mediums.

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, Frank Angelini will speak at the October meeting, and John Conrad will be presenting in November. We are looking for presenters for future meetings in our spring 2017 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

Photos from the Astronomical League Convention Awards Banquet

by Don Knabb, CCAS Treasurer & Observing Chair

The annual Astronomical League convention was held in Arlington, Virginia, from August 10th through the 13th. To close the convention, the awards banquet was held to honor members of the amateur astronomical community. NASA Administrator Maj. General Charles F. Bolden, Jr. was the guest speaker. This was the third time CCAS has won the Mabel Sterns Newsletter Award. In addition to our award, it was great to see the National Young Astronomer award winners receive recognition for their research.

With Dr. Stella Kafka, Director of AAVSO

National Young Astronomer Award 1st Prize Winners Jayasuriya Senthilvelan & Swagat Bhattacharyya

NASA Administrator Charles F. Bolden, Jr

John with John Goss, Astronomical League President

National Young Astronomer Award 2nd Place Winner Megan Gialluca

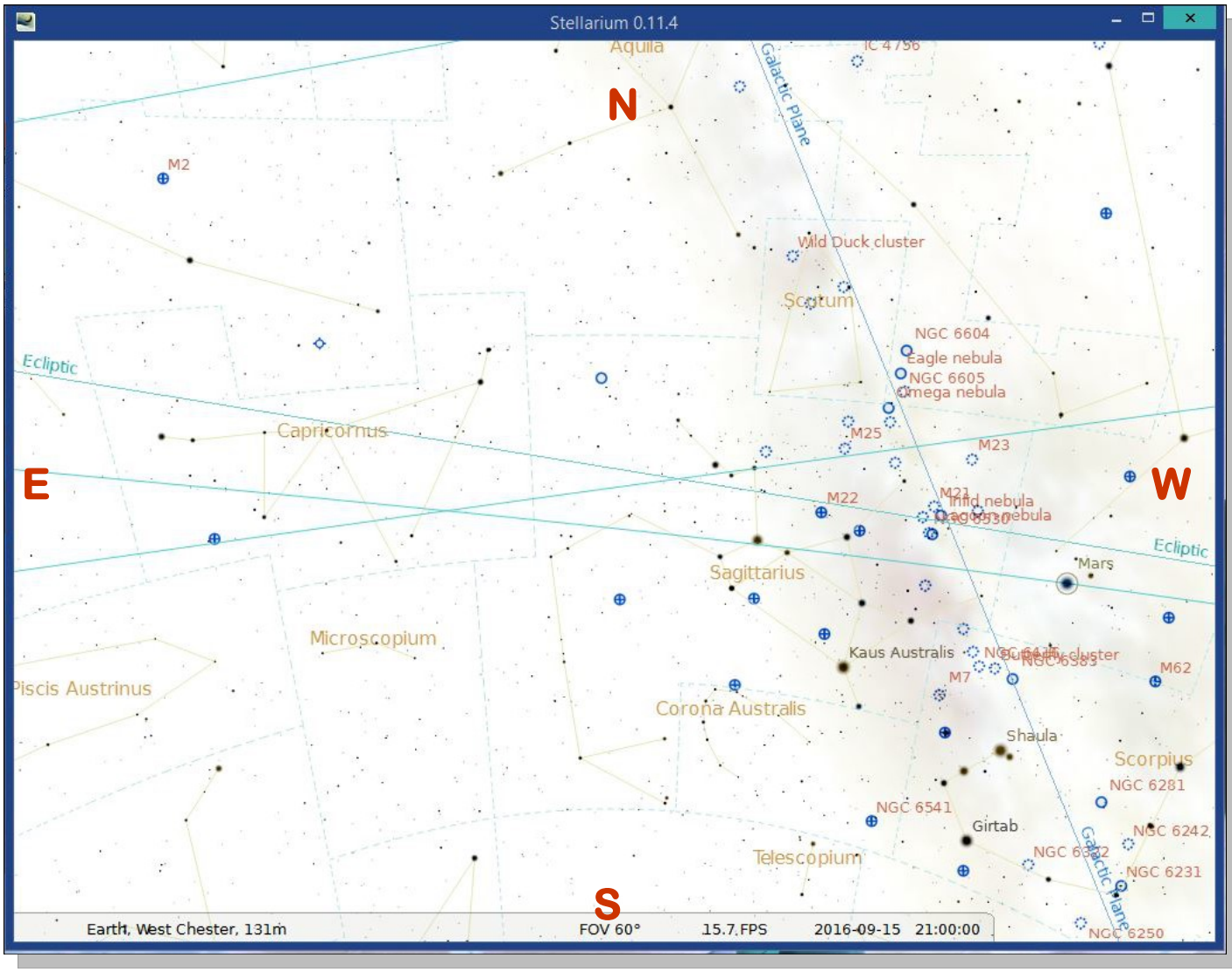
Barb & Don Knabb, John, Roger & Linda Taylor

John and Roger with Ret. Major General Charles F. Bolden, Jr.

The Sky Over Chester County

September 15, 2016 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
9/01/2016	6:01 a.m. EDT	6:29 a.m. EDT	7:31 p.m. EDT	7:59 p.m. EDT	13h 02m 20s
9/15/2016	6:15 a.m. EDT	6:42 a.m. EDT	7:09 p.m. EDT	7:36 p.m. EDT	12h 26m 25s
9/30/2016	6:29 a.m. EDT	6:56 a.m. EDT	6:44 p.m. EDT	7:11 p.m. EDT	11h 47m 22s

Moon Phases					
New Moon	9/01/2016	5:03 a.m. EDT	First Quarter	9/09/2016	7:49 a.m. EDT
Full Moon	9/16/2016	3:05 p.m. EDT	Last Quarter	9/23/2016	5:56 a.m. EDT
New Moon	9/30/2016	8:11 p.m. EDT			

September 2016 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

1	**New Moon, 5:03 a.m. EDT**
2	**Neptune is at opposition**
8	**The Lunar X is visible this evening**
8	**The Moon is near Mars, Saturn and Antares**
9	**First quarter Moon, 7:49 a.m. EDT**
16	**Full Moon, the Harvest Moon, 3:05 p.m. EDT**
22	**Fall Equinox, 10:21 a.m. EDT**
23	**Last Quarter Moon, 5:56 a.m. EDT**
28	**Mercury is as high as it gets for 2016 in the morning sky before dawn**
30	**New Moon, 8:11 p.m. EDT**

The best sights this month: In September we say goodbye to Jupiter, hello to Venus and continue to enjoy Mars and Saturn in the evening sky. On September 8th we have an opportunity to see the rare Lunar X.

Mercury: Mercury goes behind the Sun in mid-September to emerge into the pre-dawn sky at the end of the month, when it will rise about an hour and a half before dawn. On September 28th Mercury will be about 9 degrees high 45 minutes before dawn, which is the best observing opportunity of 2016.

Venus: The "evening star" remains very low in the west throughout September. Look for Venus just as the sky darkens in order to see our sister planet before it follows the Sun below the horizon.

Mars: The red planet continues to shine brightly in the south as darkness falls during September. Mars will pull away from Saturn and Antares and on September 28th it is 1.5 degrees south of M8, the Lagoon Nebula.

Jupiter: The king of the planets starts the month very low in the west and on September 26th it passes through superior conjunction with the Sun, so it disappears from the night sky. Jupiter will emerge in October as a pre-dawn planet.

Saturn: The ringed planet continues to delight us as shines in the evening sky above Antares. By the end of September, it will set around 10 p.m.

Uranus and Neptune: Neptune reaches opposition on September 2nd so it will be visible nearly night, although the best time to seek out this distant gas giant is around midnight. Uranus is also in the late night sky.

The Moon: Full moon occurs on September 16th. This full Moon is the Harvest Moon because it is the full Moon that occurs closest to the autumn equinox. In two years out of three, the Harvest Moon comes in September, but in some years it occurs in October. At the peak of harvest, farmers can work late into the night by the light of this Moon. It is also called the Barley Moon, because it is the time to harvest and thresh the ripened barley, so maybe we can call it the Beer Moon.

Constellations: The September sky is dominated by the constellations of the Summer Triangle; Lyra, Cygnus and Aquila. But stay out a little later and the Great Square of Pegasus is rising and you can find our neighbor galaxy Andromeda with binoculars. Stay up a bit later yet and you will get a preview of the fall and winter constellations with the beautiful Pleiades leading the charge.

Messier/deep sky: September is your last chance of 2016 to catch the Messier objects in the southern constellations of Sagittarius and Scorpius. If you can find a clear view of the southern horizon you can find M4, M6, M7, M17, M8, M22 and more! On the other side of the sky, if you stay out late, you can catch the open star clusters in Auriga: M36, M37 and M38.

Comets: There are no bright comets in the sky during September.

Meteor showers: There are two minor meteor showers during September. First is the Aurigids, which peak in the early morning hours of September 1st. Then on the morning of September 9th the Epsilon Perseids peak. We can expect to see 5 or 6 "shooting stars" per hour from these meteor showers.

Through the Eyepiece: The Coat Hanger Cluster

by Don Knabb, CCAS Treasurer & Observing Chair

Picture credit: Robert J. Hawley, licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License, http://www.almadenobservatory.net/CR399/index.html

One of the most fun shapes in the sky to share with friends and family is the Coat Hanger Cluster, also known as Brocchi's Cluster or Collinder 399. This is a group of stars in the constellation Vulpecula that looks like a coat hanger, thus the name.

Pictures don't really provide the joy of discovery one feels when you find this group of stars, but below is one of the best photos I have seen of the Coat Hanger Cluster.

Brocchi's Cluster was first described by the Persian astronomer Al Sufi in his Book of Fixed Stars in 964 and was independently rediscovered by Giovanni Hodierna in the seventeenth century. In the 1920s, D. F. Brocchi, an amateur astronomer and chart maker for the American Association of Variable Star Observers, created a map of this object for use in calibrating photometers.

The asterism is made up of ten stars ranging from fifth to seventh magnitude which form the conspicuous coat hanger, a straight line of six stars with a "hook" of four stars on the south side. An additional thirty or so fainter stars are sometimes considered to be associated as well.

I often see this cluster under a very dark sky as an unresolved patch of light, but this is not possible in Chester County skies. Unless you have a telescope with a wide field of view, binoculars are the best equipment to use to view this object.

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Coat Hanger (cont'd)

(Continued from page 6)

CR 399 is found by slowly sweeping across the Milky Way along an imaginary line from the bright star Altair toward the even brighter star Vega. About one third of the way toward Vega, the Coat Hanger should be spotted easily against a darker region of the Milky Way. Or you can scan upward from the tail of the arrow constellation, Sagitta, as seen in the screen print from Stellarium below.

Several independent studies since 1998 have determined that this object is not a true cluster at all, but rather just a chance alignment of stars. These recent studies have generally based their findings on improved measurements of parallax and proper motion provided by the Hipparcos satellite.

I have been able to successfully coach several inexperienced observers to find the Coat Hanger Cluster with hand held binoculars. This is a great time of year to look for it with the Summer Triangle high in the sky. When seeing this object for the first time a "Wow!" is usually heard from the person at the binoculars. A more certain method to share this wonder of the sky is to mount your binoculars on a tripod for even children to see.

Information credits:
Dickinson, Terence 2006. Nightwatch: a practical guide to viewing the universe. Buffalo, NY. Firefly Books
http://en.wikipedia.org/wiki/Brocchi%27s_Cluster
http://www.seds.org/messier/xtra/ngc/brocchi.html

Photo credit: Stellarium planetarium software

Is There a Super-Earth in the Solar System Out Beyond Neptune?

by Dr. Ethan Siegel

When the advent of large telescopes brought us the discoveries of Uranus and then Neptune, they also brought the great hope of a Solar System even richer in terms of large, massive worlds. While the asteroid belt and the Kuiper belt were each found to possess a large number of substantial icy-and-rocky worlds, none of them approached even Earth in size or mass, much less the true giant worlds. Meanwhile, all-sky infrared surveys, sensitive to red dwarfs, brown dwarfs and Jupiter-mass gas giants, were unable to detect anything new that was closer than Proxima Centauri. At the same time, Kepler taught us that super-Earths, planets between Earth and Neptune in size, were the galaxy's most common, despite our Solar System having none.

The discovery of Sedna in 2003 turned out to be even more groundbreaking than astronomers realized. Although many Trans-Neptunian Objects (TNOs) were discovered beginning in the 1990s, Sedna had properties all the others didn't. With an extremely eccentric orbit and an aphelion taking it farther from the Sun than any other world known at the time, it represented our first glimpse of the hypothetical Oort cloud: a spherical distribution of bodies ranging from hundreds to tens of thousands of A.U. from the Sun. Since the discovery of Sedna, five other long-period, very eccentric TNOs were found prior to 2016 as well. While you'd expect their orbital parameters to be randomly distributed if they occurred by chance, their orbital orientations with respect to the Sun are clustered extremely narrowly: with less than a 1-in-10,000 chance of such an effect appearing randomly.

Whenever we see a new phenomenon with a surprisingly non-random appearance, our scientific intuition calls out for a

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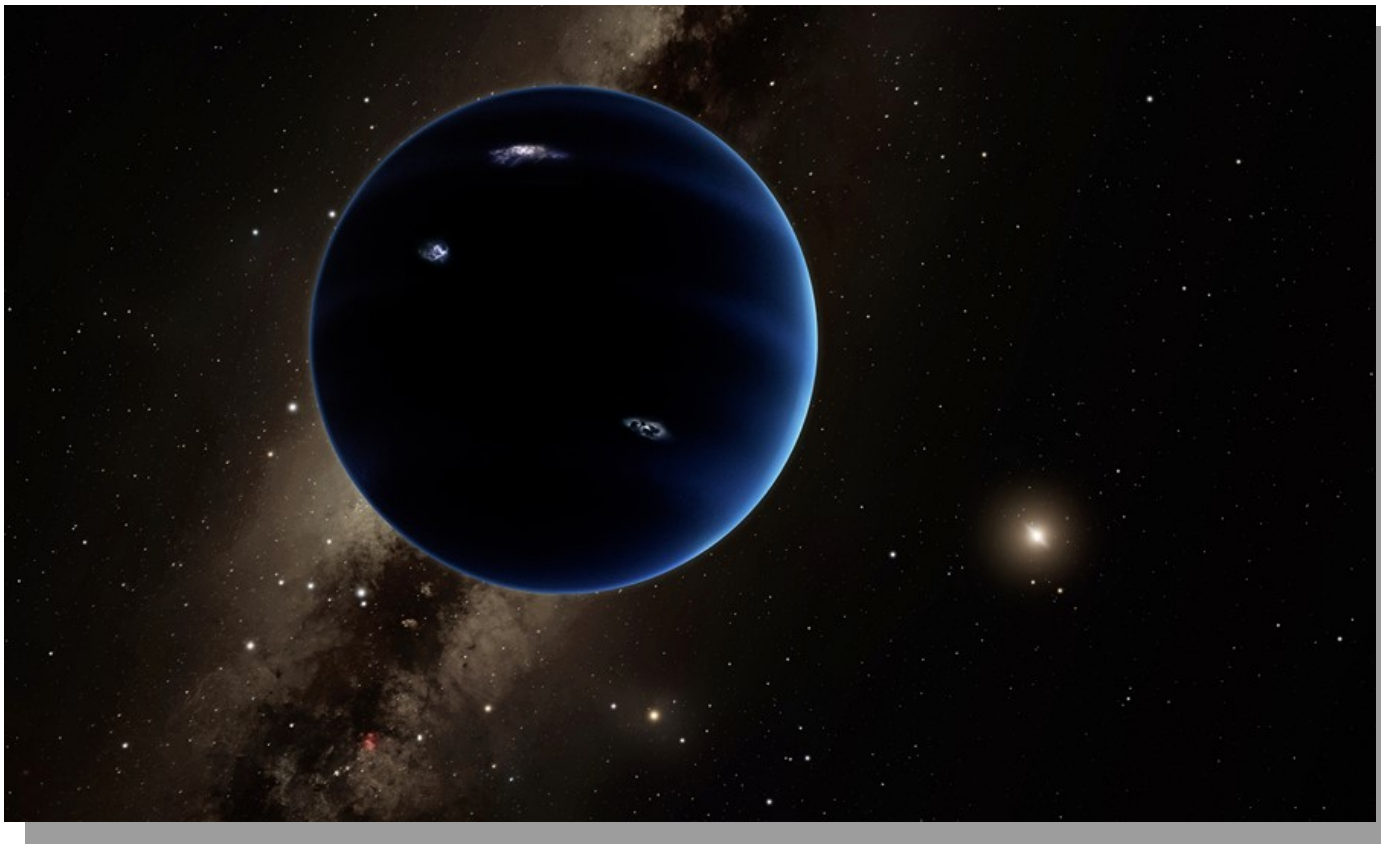


A possible super-Earth/mini-Neptune world hundreds of times more distant than Earth is from the Sun. Image credit: R. Hurt / Caltech (IPAC)

Space Place (Cont'd)

(Continued from page 8)

physical explanation. Astronomers Konstantin Batygin and Mike Brown provided a compelling possibility earlier this year: perhaps a massive perturbing body very distant from the Sun provided the gravitational "kick" to hurl these objects towards the Sun. A single addition to the Solar System would explain the orbits of all of these long-period TNOs, a planet about 10 times the mass of Earth approximately 200 A.U. from the Sun, referred to as **Planet Nine**. More Sedna-like TNOs with similarly aligned orbits are predicted, and since January of 2016, another was found, with its orbit aligning perfectly with these predictions.

Ten meter class telescopes like Keck and Subaru, plus NASA's NEOWISE mission, are currently searching for this hypothetical, massive world. If it exists, it invites the question of its origin: did it form along with our Solar System, or was it captured from another star's vicinity much more recently? Regardless, if Batygin and Brown are right and this object is real, our Solar System may contain a super-Earth after all.

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!

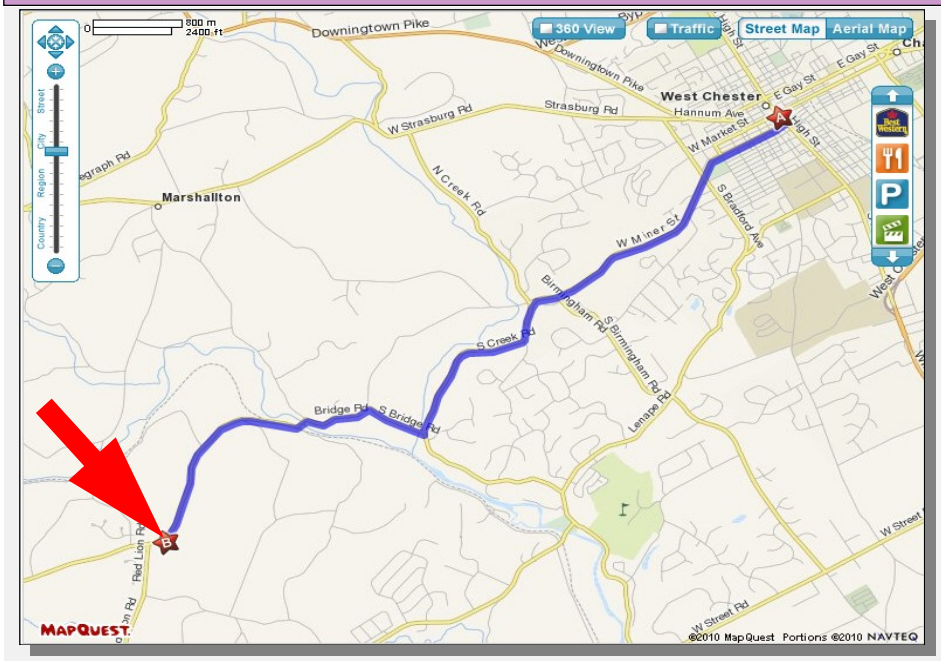
CCAS Original Astrophotography

by Dave Hockenberry

On the cover of this month's edition of Observations: M92, or the "other" Hercules Cluster. Image acquired May 2016 through a Hyperion 12.5" astrograph telescope with a QSI 583wsg camera, on an AP 1200 mount. Guiding with SX Lodestar X2 camera and SXV AOLF active optics unit. Image capture and observatory equipment control with MaxIm DL 6. Images calibrated, stacked and RGB creation in CCDStack. L-RGB merge and further adjustments in Photoshop CS5. Clear, red, green and blue broadband Gen 2 filters by Astrodon. All subexposures 200 seconds, 12 Lum, 10 Red, Green and Blue. M92,

(Continued on page 10)

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.

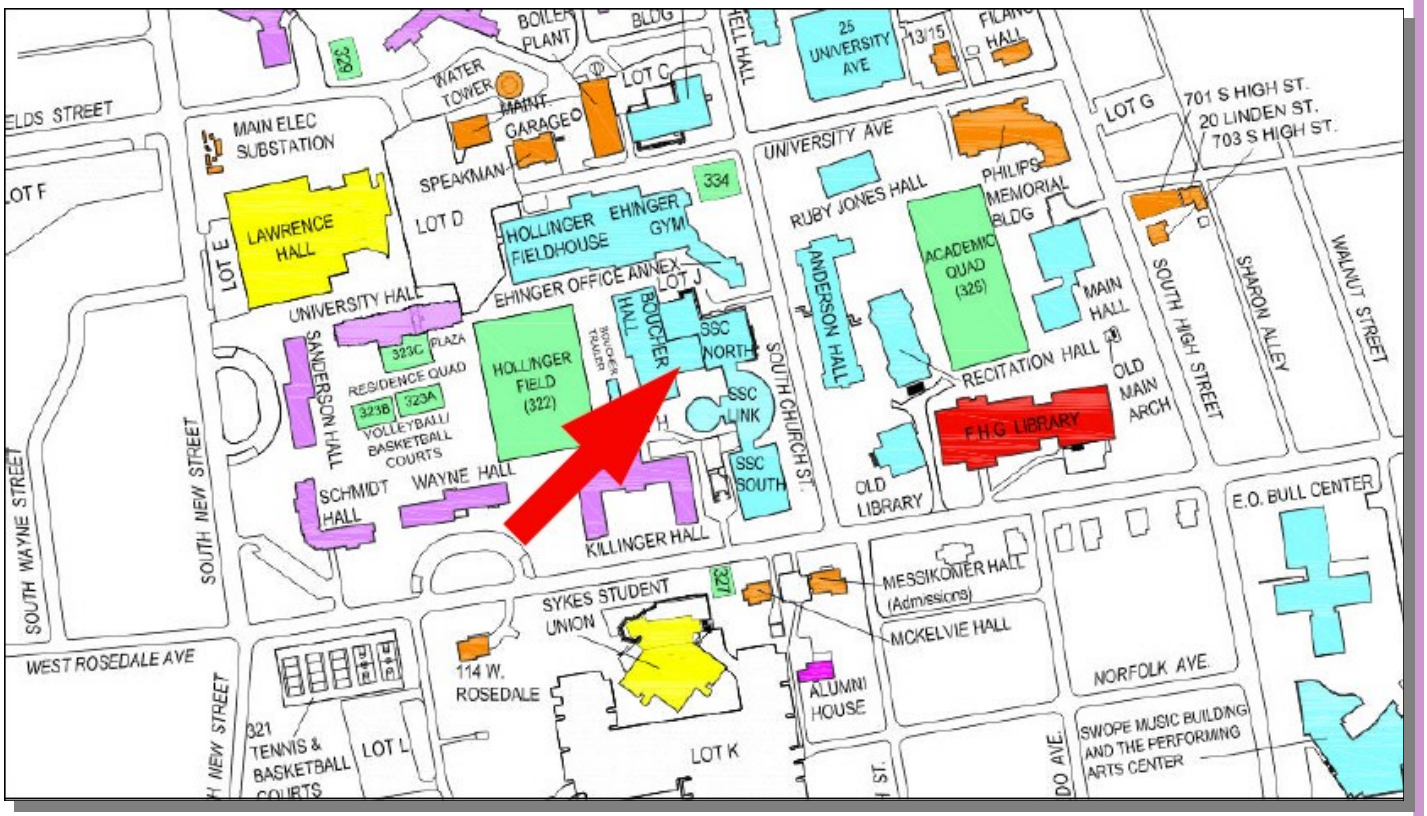
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BRC property, turn left off Route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



Cover Image (Cont'd)

(Continued from page 9)

although not as big and bright as its neighbor M13, is still an eye-popping globular cluster in an eyepiece or a camera. It is in great position during the summer and fall months.

Did You Know?

On the vernal and autumnal equinoxes, night and day are nearly exactly the same length – 12 hours – all over the world. This is the reason it's called an "equinox", derived from Latin, meaning "equal night". However, even if this is widely accepted, it isn't entirely true. In reality equinoxes don't have exactly 12 hours of daylight.

CCAS Membership Information and Society Financials

Treasurer's Report
by Don Knabb

August 2016 Financial Summary

Beginning Balance	$2,848
Deposits	$104
Disbursements	$452
Ending Balance	$2,500

New Member Welcome!

Welcome new CCAS members Bob Lester from Lincoln University and Steve Protko from Downingtown, 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

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**

http://www.skiesunlimited.net

★ ★ ★ ★ ★

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

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