Observations

A Monthly Publication Of The CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 31, No. 7 ***Three-Time*** *Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016* *July 2023*

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Membership Renewals Due

07/2023	Hunsinger
	McGuigan
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	Piehl
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	Kellar
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	Lurcott, L.
	Manigly
	Schultz
	Tiedemann
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	Zullitti
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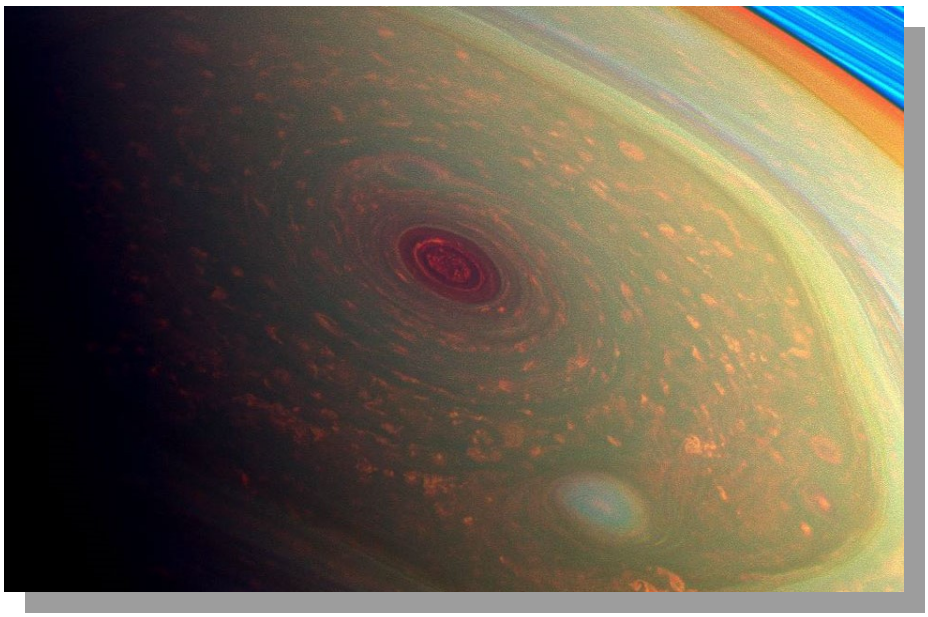
	Holloway
	Reilly
	Squire

Saturn's Northern Hexagon



Having been discovered during the Voyager flybys, the northern hexagon has proven to be astonishingly resilient, with over 20 years between the Voyager & Cassini missions to the ringed planet. This image was captured in late 2012 by Cassini. Image Credit & Copyright: NASA, ESA, JPL, SSI, Cassini Imaging Team

July 2023 Dates

3rd • Full Moon, the Birds Shed Feathers Moon, 7:39 am EDT.

7th • Saturn is 3° above and to the left of the Moon during morning twilight.

9th • Last Quarter Moon, 9:48 pm EDT.

17th • New Moon, 2:32 pm EDT.

19th • Mars, Venus, the Moon and Mercury form a "W" in evening twilight. Regulus is above to the upper left of Venus and Mars.

25th • First Quarter Moon, 6:07 pm EDT.

29th-30th • Southern Delta Aquariids meteor shower peaks overnight.

CCAS Upcoming Nights Out

In addition to our monthly observing sessions at the Myrick Conservancy Center, BRC (see pg. 7), 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, July 14th • Friday Night Lights Star Party, 7:00-10:00 p.m. EDT, ChesLen Preserve, Coatesville, PA.
- ☼ Friday, July 21st • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset
- ☼ Friday, August 11th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset

For more information about future observing opportunities, contact our Observing Chair, Michael Manigly.

Summer Society Events

July 2023

14th • Friday Night Lights Star Party, 7:00-10:00 p.m. EDT, ChesLen Preserve, Coatesville, PA. This is a fundraiser for the Natural Lands Trust where music is provided. Several local astronomy clubs set up telescopes for the concert goers to view the night sky during the event. If you are not a member of CCAS you must purchase tickets from the Natural Lands Trust.

18th-21st • CCAS Special Camping Trip & Observing Session at Cherry Springs State Park, Coudersport, PA. For more information, contact our Observing Chair, Michael Manigly.

20th • The von Kármán Lecture Series: VITAL Work to Benefit all Humankind, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech starting at 10:00 p.m. EDT.

20th • Open call for articles and photographs for the August 2023 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 August 2023 edition of Observations.

August 2023

11th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

15th-18th • CCAS Special Camping Trip & Observing Session at Cherry Springs State Park, coinciding with the Cherry Springs Park Star Party presented by the Astronomical Society of Harrisburg, Harrisburg, PA. Cherry Springs State Park, Coudersport, Pennsylvania.

17th-20th • Stellafane Convention. The 84th Convention of Amateur Telescope Makers on Breezy Hill in Springfield, Vermont. Sponsored by the Springfield Telescope Makers, Inc.

18th-22nd • Almost Heaven Star Party. Sponsored by the Northern Virginia Astronomy Club. Held at The Mountain Institute's Spruce Knob Mountain Center in Circleville, West Virginia.

19th • CCAS Special Observing Session: Battle of the Clouds Park w/Malvern Library, Malvern, PA. For more information, contact our Observing Chair, Michael Manigly. .

20th • Open call for articles and photographs for the September 2023 edition of Observations.

26th • Deadline for newsletter submissions for the September 2023 edition of Observations.

May 2023 Monthly Meeting Minutes

by Bea Mazziotta, CCAS Secretary

- Dave Hockenberry welcomed members and guests to the May 9th meeting, which was held in person at WCU and via Zoom and YouTube.
  - He called Kathy Buczynski to the stage and presented her with a certificate and pin for her community outreach.
- Don Knabb listed the upcoming club events and viewing opportunities. These can also be found on the CCAS website www.ccas.org.
  - Don told attendees about The Three Leaps of the Gazelle, an Asterism now visible on a clear night. It's formed by three pairs of stars that mark the paws of Ursa Major.
- Bruce Ruggeri, Program Chair, introduced the evening's program speaker Dr. Candice Hansen-Koharcheck.
  - She has a PhD from UCLA in Earth and Space Science which she pursued while working at JPL on the Voyager Mission as part of the Imaging Team. She designed imaging sequences for planetary flybys.
  - She also worked on the Cassini Mission, again as part of the imaging team.
  - She has received numerous awards for her exceptional work.
  - Having retiring from JPL she continues her work as a senior scientist at the Planetary Science Institute in Tucson, Arizona.
  - She is a collaborator on the Juno Mission and is responsible for the JunoCam, the first interplanetary outreach camera. The camera produced the first close-up images of Jupiter's polar regions, as well as images of volcanic plumes on Io, a moon of Jupiter.
  - For her work on the JunoCam she received the NASA Outstanding Public Leadership medal.
  - Her presentation focused on Jupiter with amazing revelations about and images of the gas giant made possible by the JunoCam.

September 2023 CCAS Meeting Agenda

by Bruce Ruggeri, CCAS Program Chair

Our next meeting will be held on September 12, 2023, in person at West Chester University's Merion Science Center, Room 112. The Science Center is located at 720 S. Church St., West Chester, PA. September's speaker: John Conrad, NASA Ambassador and CCAS Member, "An in-depth look at NASA's Osiris-Rex Sample Return Mission from asteroid Bennu" (sample return is scheduled for September 24).

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 2023-2024 season and beyond. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

Space in Color–A Science Fair Project

by CCAS Member Avni Dhargalkar

Above: The composite image of the galaxy Centauras A, after colorizing separate layers of low, medium, and high x-ray intensities and compiling them into one image.

For the 2023 Chester County Science and Research Competition, I presented a project in the category of Earth and Space science. This project was called "Space in Color", and its purpose was to demonstrate how x-ray light colorization on images of celestial bodies can help us learn more about them and the Universe in general.

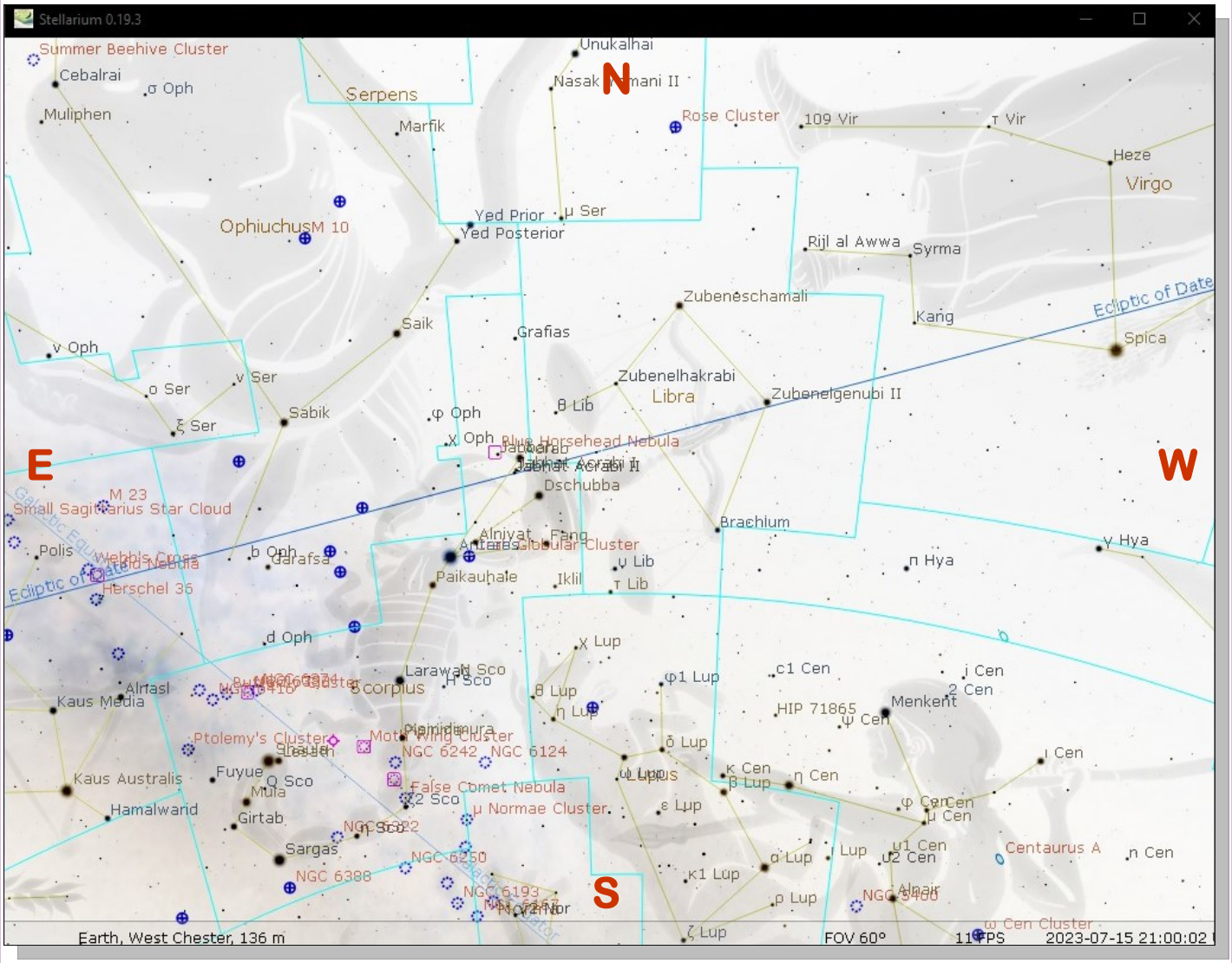
After deciding to do this project, I compiled some background research on x-ray light and electromagnetic radiation. Stars emit visible light, which is only one type of electromagnetic radiation. A type of electromagnetic radiation that has shorter

(Continued on page 7)

The Sky Over Chester County

July 15, 2023 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
07/01/2023	5:04 a.m. EDT	5:37 a.m. EDT	8:35 p.m. EDT	9:07 p.m. EDT	14h 57m 37s
07/15/2023	5:14 a.m. EDT	5:46 a.m. EDT	8:30 p.m. EDT	9:01 p.m. EDT	14h 43m 57s
07/31/2023	5:29 a.m. EDT	5:59 a.m. EDT	8:17 p.m. EDT	8:47 p.m. EDT	14h 17m 22s

Moon Phases					
			Full Moon	07/03/2023	7:38 a.m. EDT
Last Quarter	07/09/2023	9:47 p.m. EDT	New Moon	07/17/2023	2:31 p.m. EDT
First Quarter	07/25/2023	6:06 p.m. EDT			

July 2023 Observing Highlights
by Michael Manigly, CCAS Observing Chair

1	**Antares 1.5° south of the Moon.**
3	**Full Moon, 7:39 am EDT. The Birds Shed Feathers Moon.**
4	**The Moon is at perigee (223,786 miles from Earth) 6:25 pm EDT.**
6	**Earth is at aphelion, its farthest point from the Sun during the year (94.5 million miles from the Sun) at 4:00 pm EDT.**
7	**Saturn is 3° above and to the left of the Moon during morning twilight.**
8	**The Moon passes 1.7° south of Neptune 10 am EDT.**
9	**Last Quarter Moon, 9:48 pm EDT.**
11–12	**Jupiter is located below and left of the Moon at morning twilight.**
13–14	**Aldebaran aligns below/to the right or the lower right of the Moon at first light, respectively.**
17	**New Moon, 2:32 pm EDT.**
19	**Mars, Venus, the Moon and Mercury form a "W" in evening twilight. Regulus is above to the upper left of Venus and Mars.**
20	**The Moon is at apogee (252,456 miles from Earth) 2:57 am EDT. Mars is 3° south of the Moon at Midnight.**
23	**Lunar X near crater Werner is visible from western North America 11 pm EDT.**
25	**First Quarter Moon, 6:07 pm EDT. The Lunar Straight Wall is visible this evening.**
29–30	**Southern Delta Aquariids meteor shower peaks overnight.**

The Best Sights This Month: A thin crescent Venus is still dominant in July. Jupiter and Saturn reappear in the east after midnight with visibility times earlier as the month continues. The Southern Aquariids meteor showers are active starting on the 12th with their peak of 25 per hour on the 30th. Algol is at minimum most of the month. The Moon joins Mercury on the 19th and Mars, Venus, and Regulus on the 20th for nice views. The Summer Triangle, outlined by prominent stars Deneb in Cygnus, Vega in Lyra and Altair in Aquila is a splendid view during the summer months. continues to be the star in the evening sky again during the month of June.

Mercury appears extremely low in the evening twilight and gets harder to observe as the month progresses. It achieves superior conjunction on the 1st while aligning with Mars and Regulus to its upper left and is located 5° northwest of Venus in evening twilight on the 26th. The planet stands above Regulus, quite low in the western sky in the ending twilight on the 28th.

Venus continues to dominate the evening skies in early July with its brightest illumination on the 7th with its crescent shape shining at magnitude -4.7. It appears 8° south of the Moon on the 20th while approaching retrograde on the same day. The bright crescent aligns with Mercury low in the west during evening twilight on the 22nd.

Mars appears low in the western sky after sunset and sets in the WSW before 11 pm EDT. It appears near Venus at the start of July but pulls away as the month continues. It has a close conjunction with Magnitude +1.4 Regulus on the 9th and 10th. The waxing crescent Moon passes nearby on the 20th and 21st.

Jupiter rises after midnight and shines among the stars of Aries at Magnitude -2.3. The waning crescent Moon passes nearby on the 11th. Jupiter is at opposition on the 24th.

Saturn rises with the stars of Aquarius around 11:30 pm EDT on the 1st in the ENE skies and rises a few hours earlier as the month progresses. The planets brightness increases from Magnitude on the 1st 0.7 to Magnitude 0.2 by month's end.

Uranus appears in the morning sky among the background star of Aries during the month. The planet lies east of Jupiter and 9° SW of the Pleiades M45. A crescent Moon joins the icy giant on the morning of the 12th but is a challenge to see with a

(Continued on page 10)

Through the Eyepiece: Messier 7, Ptolemy's Cluster

by Don Knabb, CCAS Treasurer

During the summer months I find myself irresistibly drawn to the southern sky. This part of the sky is visible to us for only a few months, and it is full of incredible objects to gaze upon. One of these objects is the open cluster Messier 7.

Messier 7 or M7, also designated NGC 6475 and sometimes known as Ptolemy's Cluster, is an open cluster of stars in the constellation of Scorpius. From a dark sky site, the cluster is easily detectable with binoculars, close to the "stinger" of Scorpius.

M7 has been known since antiquity. This great open star cluster is most often credited to Ptolemy, who listed it in his 'Almagest' as Object Number 567 in 130 AD. From his notes he describes it as "A nebulous cluster following the sting of Scorpius." Italian astronomer Giovanni Batista Hodierna observed it before 1654 and counted 30 stars in it. In 1764, French astronomer Charles Messier catalogued the cluster as the seventh member in his list of comet-like objects. English astronomer John Herschel described it as "coarsely scattered clusters of stars".

Telescopic observations of the cluster reveal about 80 stars within a field of view of 1.3° across. One of the easiest ways to find "Ptolemy's Cluster" is to recognize the two familiar constellation asterisms of Scorpius and Sagittarius. The bright star that represents the 'stinger' on the tail of the Scorpion is Lambda. Aim your binoculars three finger widths east (left). Under dark skies it will show as a conspicuous patch in the sky, but do not confuse it with its dimmer, northwestern neighbor, M6, The Butterfly Cluster. In binoculars, Messier 7's stars will appear of varied brightness with no particular pattern and will occupy about 1/3 the field of view in average binoculars.

M7 is easily seen in the finder scope of a telescope. Or use

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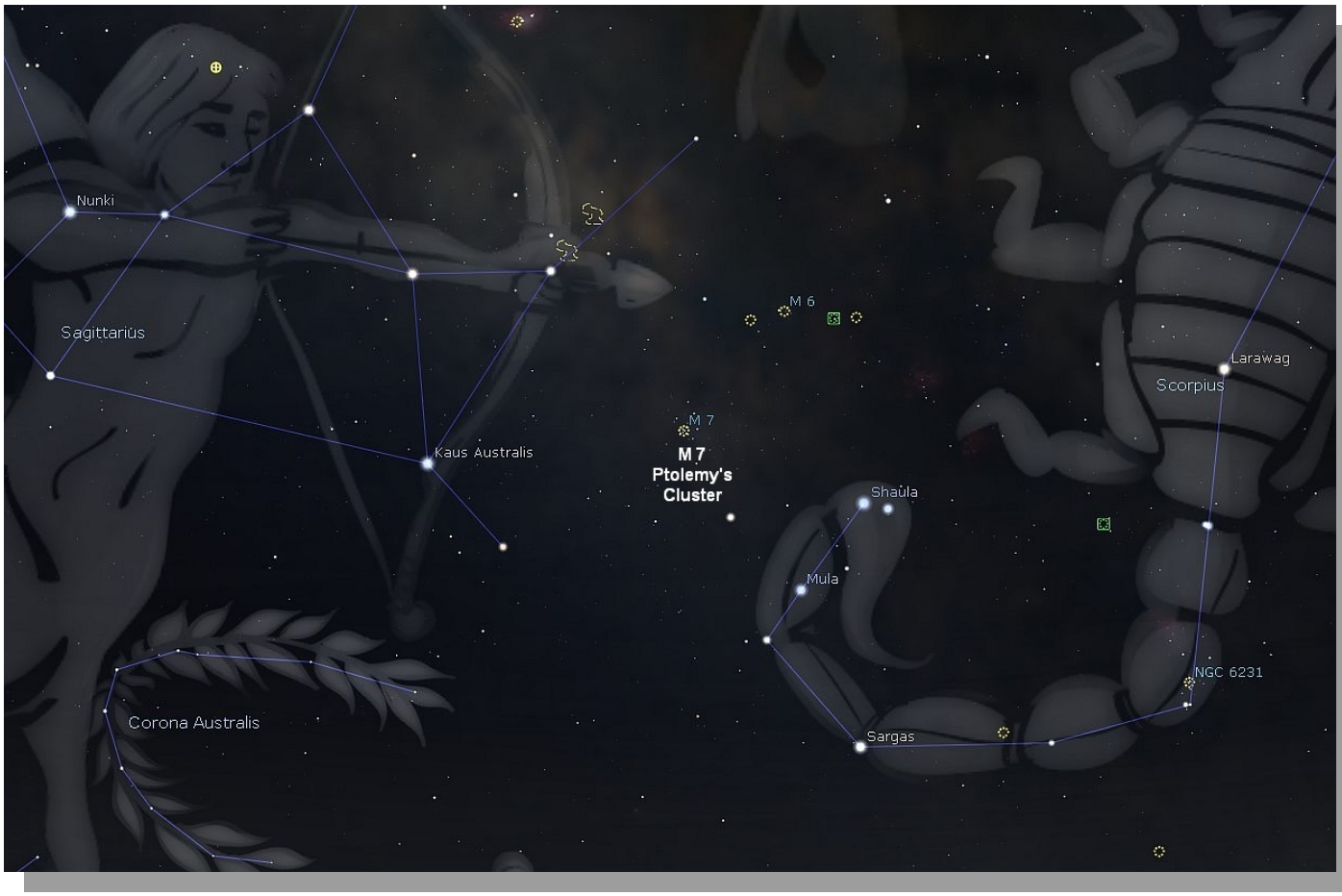


Image credit: The author, using Stellarium, a free planetarium software package

Science Fair Project (Cont'd)

(Continued from page 3)

wavelengths than visible light is x-ray radiation.

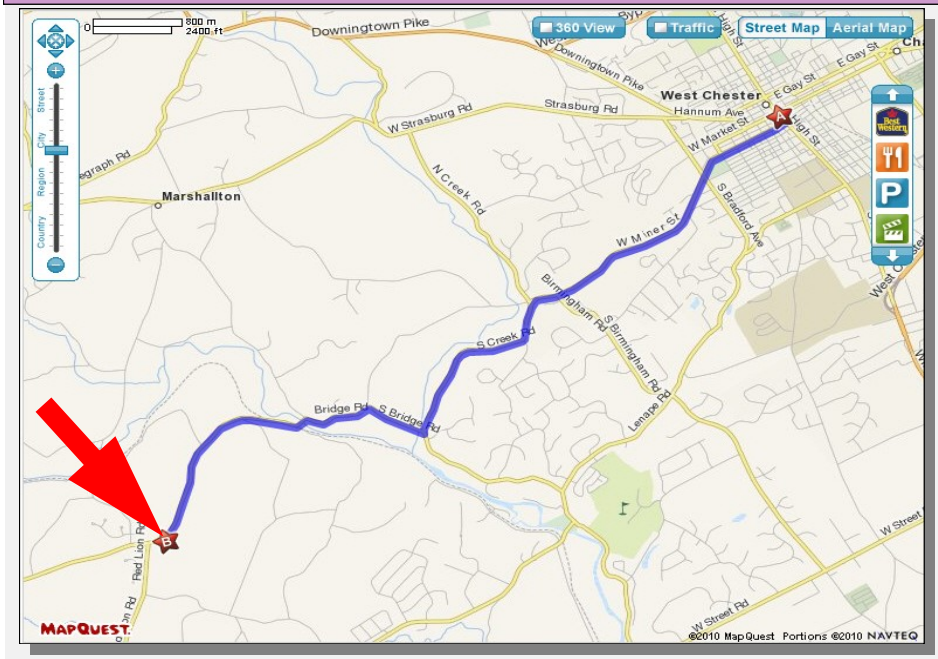
NASA's Chandra X-ray Observatory Telescope is a satellite that is orbiting Earth which takes x-ray images of objects far away in space like supernovas and nebulas. It records x-rays instead of visible light and tracks them as low-, medium-, and high-energy x-rays. Then, scientists use a photo editing program to assign a color to each x-ray energy band to create a false color image. This program is what I used to colorize the images of the celestial bodies I chose to research for this project.

My hypothesis was that, if I colorize each image according to

(Continued on page 8)

Classic La Para
by Nicholas La Para

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).

Science Fair Project (Cont'd)

(Continued from page 7)

the levels of their x-ray intensity (energy), then I will be able to differentiate between different temperatures and structures within each composite image and make predictions as to why those differences are there because, after colorizing, x-ray radiation will be easier to identify.

The procedure I used for this project included choosing three celestial objects to colorize (the galaxy Centaurus A, Tycho's Supernova Remnant, and the remains of a star called E0102) and downloaded non-colorized images with varying levels of x-ray intensity for each of them.

Then, I installed GIMP, which is a photo editing software, and inserted the images for each layer, adjusted the levels of x-ray sensitivity, and colorized them to create images. I assigned each layer to a different frequency/wavelength, with one being a low frequency, one as a medium frequency, and one as a high frequency. The high frequency layer was assigned to the color blue, the medium was assigned to green, and the low was assigned to red.

After adjusting the program's sensitivity and turning on the colors for each layer, I combined all the layers in the program to create one composite image that showed the differing wavelengths/frequencies of x-ray light within that celestial body through light that humans can interpret.

My hypothesis was correct because for each image, I was able to recognize temperatures and structures within them based on the colors that correspond to the x-ray wavelengths. For example, by looking at the colorized image for Centaurus A, I was able to deduce that a black hole lies in the center of the galaxy based on the blue high-energy x-ray radiation seen on the false color image.

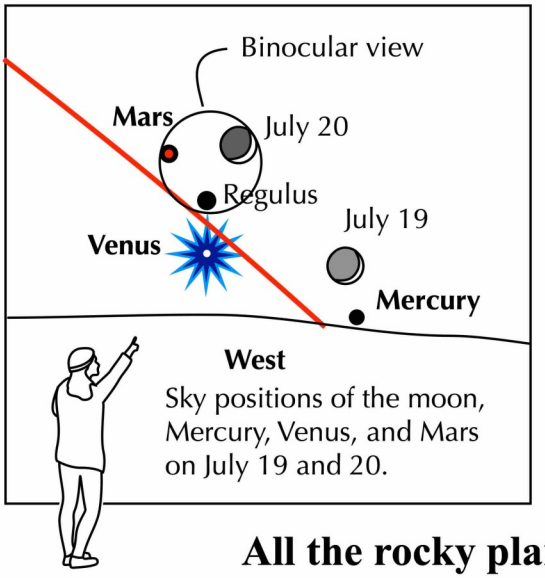
For E0102, I could predict that the matter in the center of this celestial body is cooling faster than the debris surrounding the body based on the false colorized image. Finally, for Tycho's Supernova Remnant, I was able to predict what the outer blue ring, which represents high energy x-ray bands, meant by analyzing it using my background knowledge of the image and from the experiment.

This project won first place in the Earth and Space category in the Chester County Science and Research competition, advancing to the Delaware Valley Regional Science Fair. At that fair, this project earned an honorable mention.

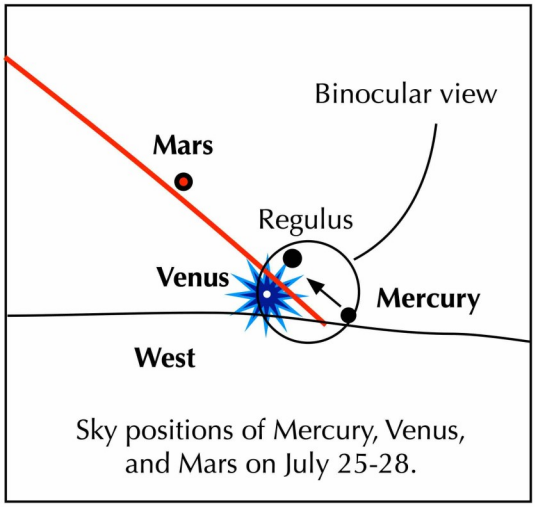
In conclusion, my science fair project this year was on colorizing grayscale x-ray images of celestial bodies to learn more about them, because astronomy is about explaining and learning about things that we can't see. In the future, I may continue manipulating images and I plan to study astronomy. One piece of advice I have for young, aspiring astronomers is to stay curious. Astronomy is all about looking beyond what is already visible to the human eye, and curiosity is what fuels that vision!

All the Rocky Planets, All at Once!
by Astronomical League

If you can see only one celestial show in the evening this July, see this one.



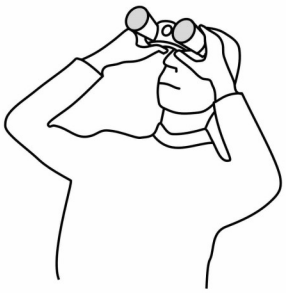
Sky positions of the moon, Mercury, Venus, and Mars on July 19 and 20.



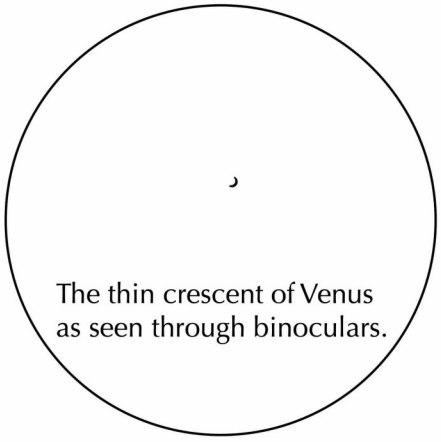
Sky positions of Mercury, Venus, and Mars on July 25-28.

All the rocky planets, all at once!

On the evenings of July 19 and 20, look towards the west 30 minutes after sunset.



- Brilliant Venus will be seen as a tiny crescent in steadily held binoculars.
- On the first evening, the thin crescent moon, full with earthshine, hangs above Mercury. The little planet might be lost in the bright twilight.
- On July 20, the moon forms a triangle with Regulus and Mars. Venus sinks below them. Mars, having lost its splendor from last fall, might be difficult to spot in the bright twilight. Binoculars will help.
- Mercury climbs somewhat higher over the remaining evenings in July. On July 28, it lies directly next to Regulus, which has dropped much closer to the horizon. Venus may lie too close to the horizon to be spotted. Because of their low alittude, very clear skies and a low horizon are needed to see this.


The thin crescent of Venus as seen through binoculars.

Eyepiece (Cont'd)

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lowest magnification when observing with any telescope because of Messier 7's large apparent size. Because it is so bright, this open cluster is a great object on a moonlit night and larger telescopes can fully resolve its members.

This bright collection of about 80 mixed magnitude stars is estimated to be about 800-1000 light years away from Earth. Moving along through space in an area spanning about 18-25 light years across, this group of stars were all born about the same time some 220 million years ago.

Information credits:

- Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe.* Buffalo, NY. Firefly Books
- http://www.universetoday.com/31228/messier-7/

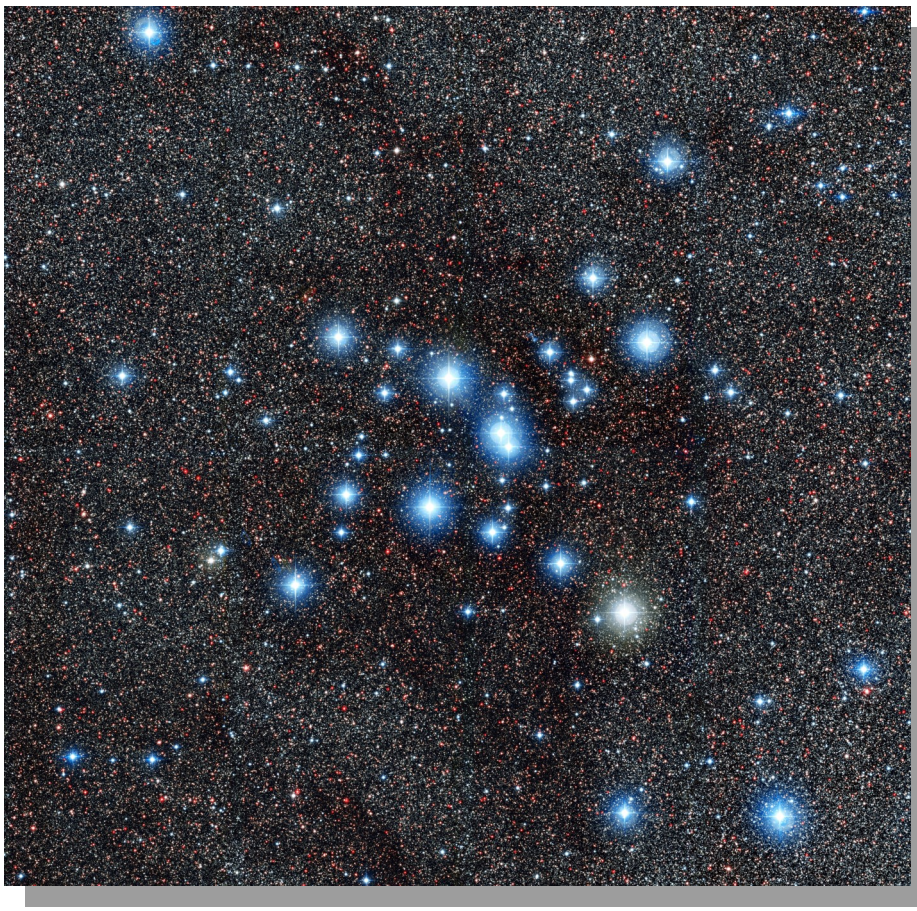

Image Credit: European Southern Observatory https://www.eso.org/public/images/eso1406a/ Creative Commons 4.0

- http://en.wikipedia.org/wiki/Messier_7
- http://www.eso.org/public/images/eso1406a/

Observing (Cont'd)

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telescope due to low altitude turbulence.

Neptune is visible in the overnight and morning sky among the stars of Pisces.

The **Moon** is full on the 3rd. It is called the Birds Shed Feathers Moon, 7:39 am EDT. Other July Moon names include: Buck Moon because deer begin to sprout antlers, the Hay Moon, because of July's hay crop, the Thunder Moon due to frequent summer storms and the Apollo Moon. The Lunar Curtis Straight Wall is visible on the 25th.

Constellations: Enjoy the warm summer nights when bundling up to observers will not be needed. Scorpius and Sagittarius dominate the southern sky with Arcturus in the West with the Summer Triangle asterism nearby. If you scan the Milky Way starting with Scorpius and upward you will observe Aquila, Cygnus and more.

Messier/deep sky: As summer nears it is time to observe globular clusters and nebulas. Look for M6 and M7 low in the southern sky. These are easy targets if you use the tail of Scorpius as a guide. Look for M4 near Antares in Scorpius and M22 in Sagittarius. You may choose to continue North to find the Swan Nebula, M17.

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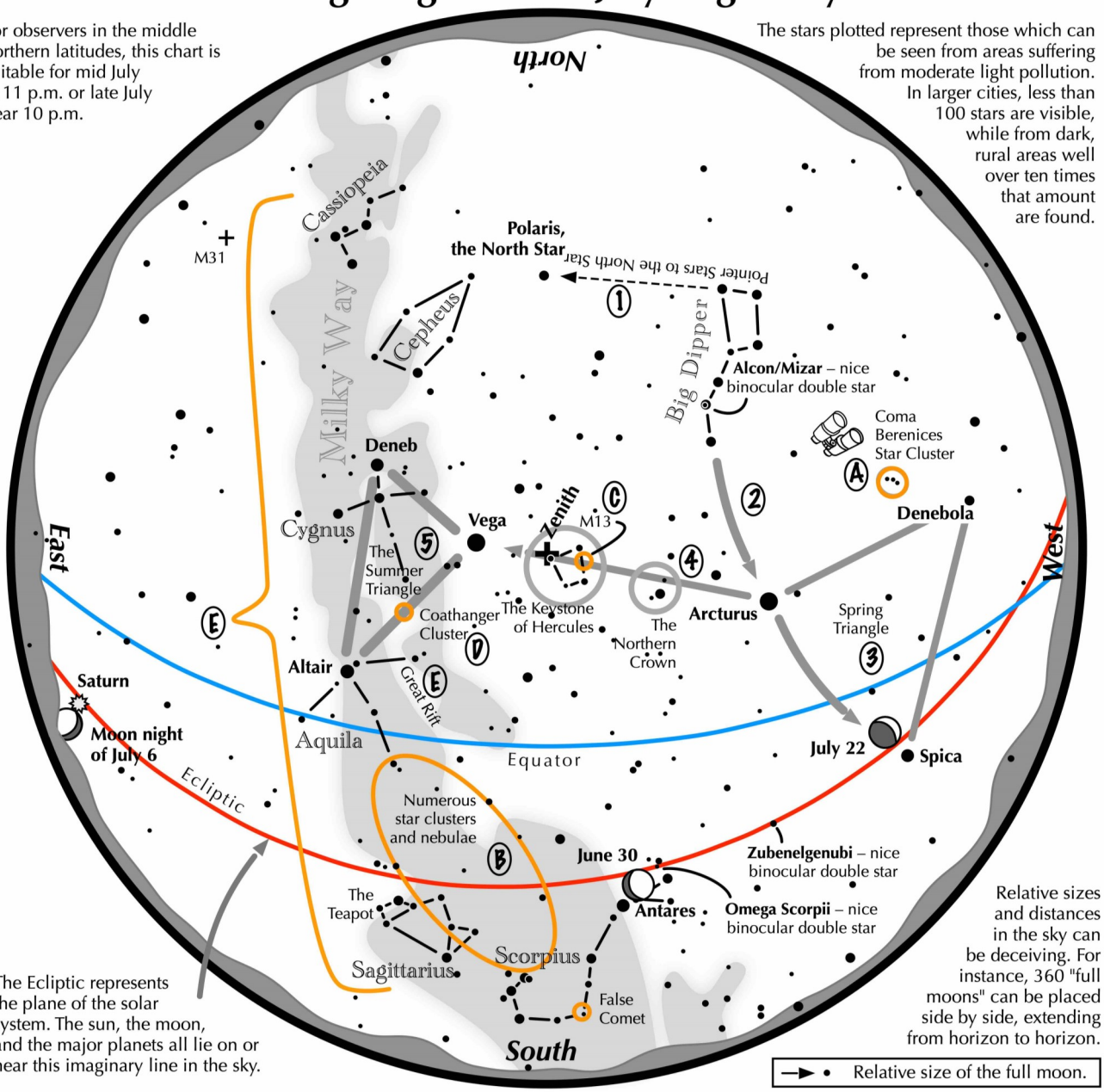
Navigating the July Night Sky
by Astronomical League

Navigating the mid July Night Sky



Navigating the mid July night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
3. To the northeast of Arcturus shines another star of similar brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The
4. Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
5. High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

Astronomical League *www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.*

Night Sky Network: Find a Ball of Stars

by Linda Shore, Ed.D.

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach.

Visit nightsky.jpl.NASA.gov to find local clubs, events, stargazing info and more.

French astronomer Charles Messier cataloged over 100 fuzzy spots in the night sky in the 18th century while searching for comets – smudges that didn't move past the background stars so couldn't be comets. Too faint to be clearly seen using telescopes of the era, these objects were later identified as nebulas, distant galaxies, and star clusters as optics improved. Messier traveled the world to make his observations, assembling the descriptions and locations of all the objects he found in his *Catalog of Nebulae and Star Clusters*. Messier's work was critical to astronomers who came after him who relied on his catalog to study these little mysteries in the night sky, and not mistake them for comets.

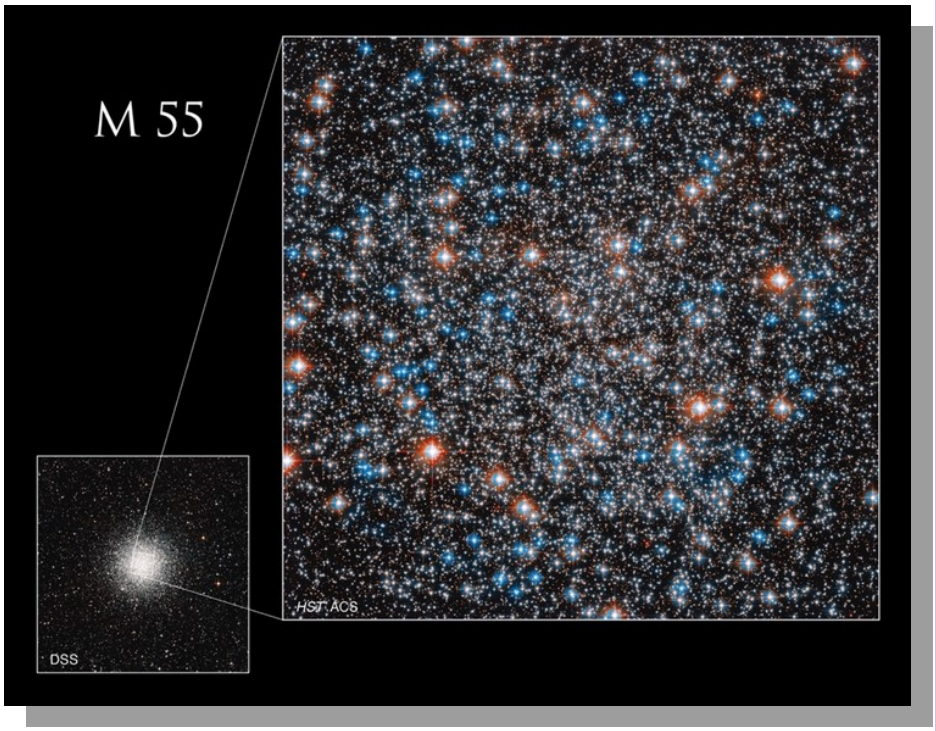
Most easily spotted from the Southern Hemisphere, this "faint fuzzy" was first cataloged by another French astronomer, Nicholas Louis de Lacaille in 1752 from Southern Africa. After searching many years in vain through the atmospheric haze and light pollution of Paris, Charles Messier finally added it to his catalog in July of 1778. Identified as **Messier 55 (M55)**, this large, diffuse object can be hard to distinguish unless it's well above the horizon and viewed far from city lights.

But July is great month for getting your own glimpse of M55 – especially if you live in the southern half of the US (or south of 39°N latitude). Also known as

the "Summer Rose Star," M55 will reach its highest point in northern hemisphere skies in mid-July. Looking towards the south with a pair of binoculars well after sunset, search for a dim (mag 6.3) cluster of stars below the handle of the "teapot" of the constellation Sagittarius. This loose collection of stars appears about 2/3 as large as the full Moon. A small telescope may resolve the individual stars, but M55 lacks the dense core of stars found in most globular clusters. With binoculars, let your eyes wander the "steam" coming from the teapot-shaped Sagittarius (actually the plane of the Milky Way Galaxy) to find many more nebulas and clusters.

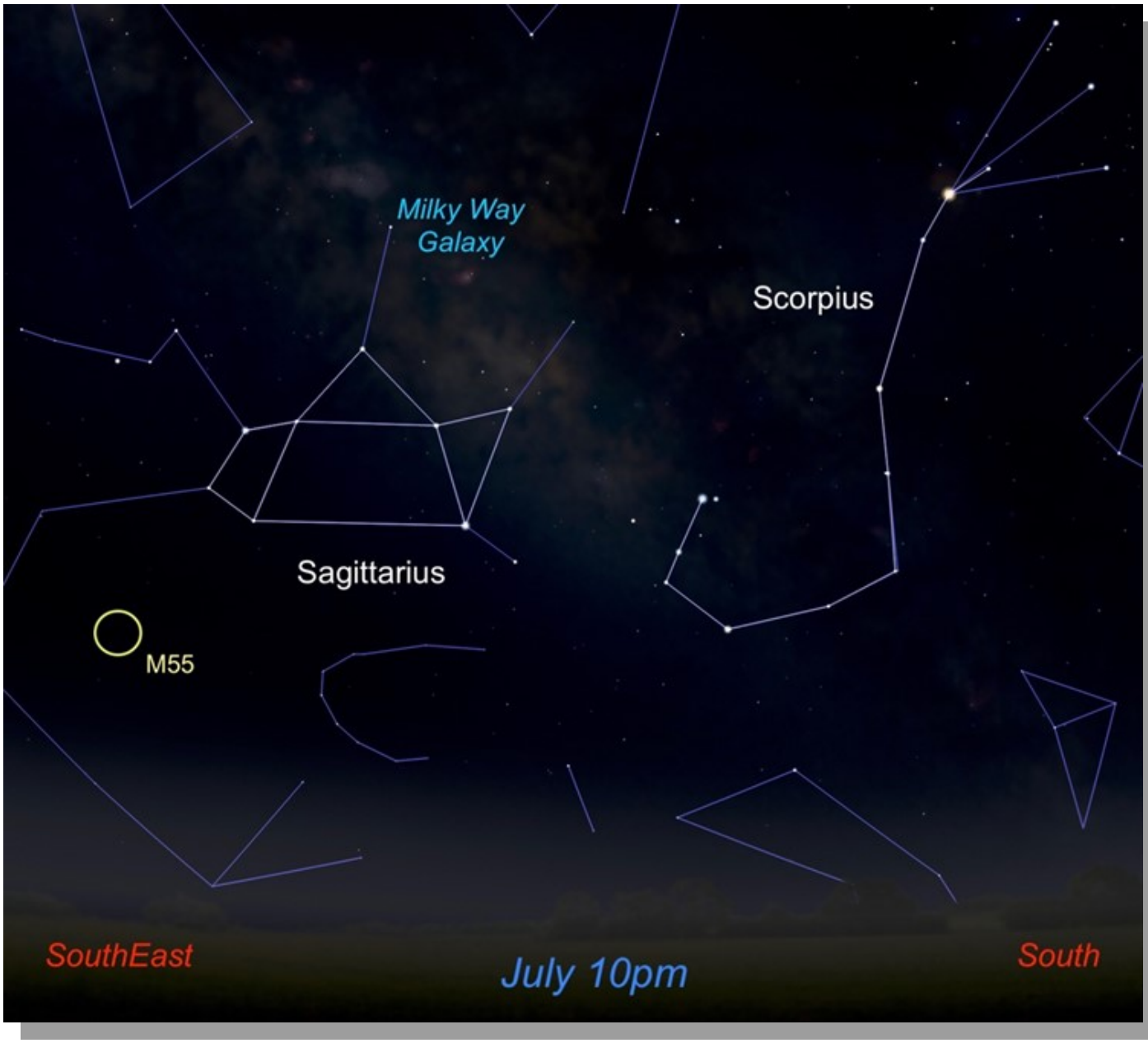
As optics improved, this fuzzy patch was discovered to be a globular cluster of over 100,000 stars that formed more than 12 billion years ago, early in the history of the Universe. Located 20,000 light years from Earth, this ball of ancient stars has a diameter of 100 light years. Recently, NASA released a magnificent image of M55 from the Hubble Space Telescope, reveal-

(Continued on page 13)



The large image shows just the central portion of M55 taken by the Hubble Space Telescope. Above Earth's atmosphere, this magnificent view resolves many individual stars in this cluster. How many can you count through binoculars or a backyard telescope? Original Image and Credits: NASA, ESA, A. Sarajedini (Florida Atlantic University), and M. Libralato (STScI, ESA, JWST); Smaller image: Digital Sky Survey; Image Processing: Gladys Kober

Night Sky Network (Cont'd)



Look to the south in July and August to see the teapot asterism of Sagittarius. Below the handle you'll see a faint smudge of M55 through binoculars. More "faint fuzzies" can be found in the steam of the Milky Way, appearing to rise up from the kettle.
Image created with assistance from Stellarium: stellarium.org

(Continued from page 12)

ing just a small portion of the larger cluster. This is an image that Charles Messier could only dream of and would have marveled at! By observing high above the Earth's atmosphere, Hubble reveals stars inside the cluster impossible to resolve from ground-based telescopes. The spectacular colors in this image correspond to the surface temperatures of the stars; red stars being cooler than the white ones; white stars being cooler than the blue ones. These stars help us learn more about the early Universe. Discover even more: https://www.nasa.gov/feature/goddard/2023/hubble-messier-55

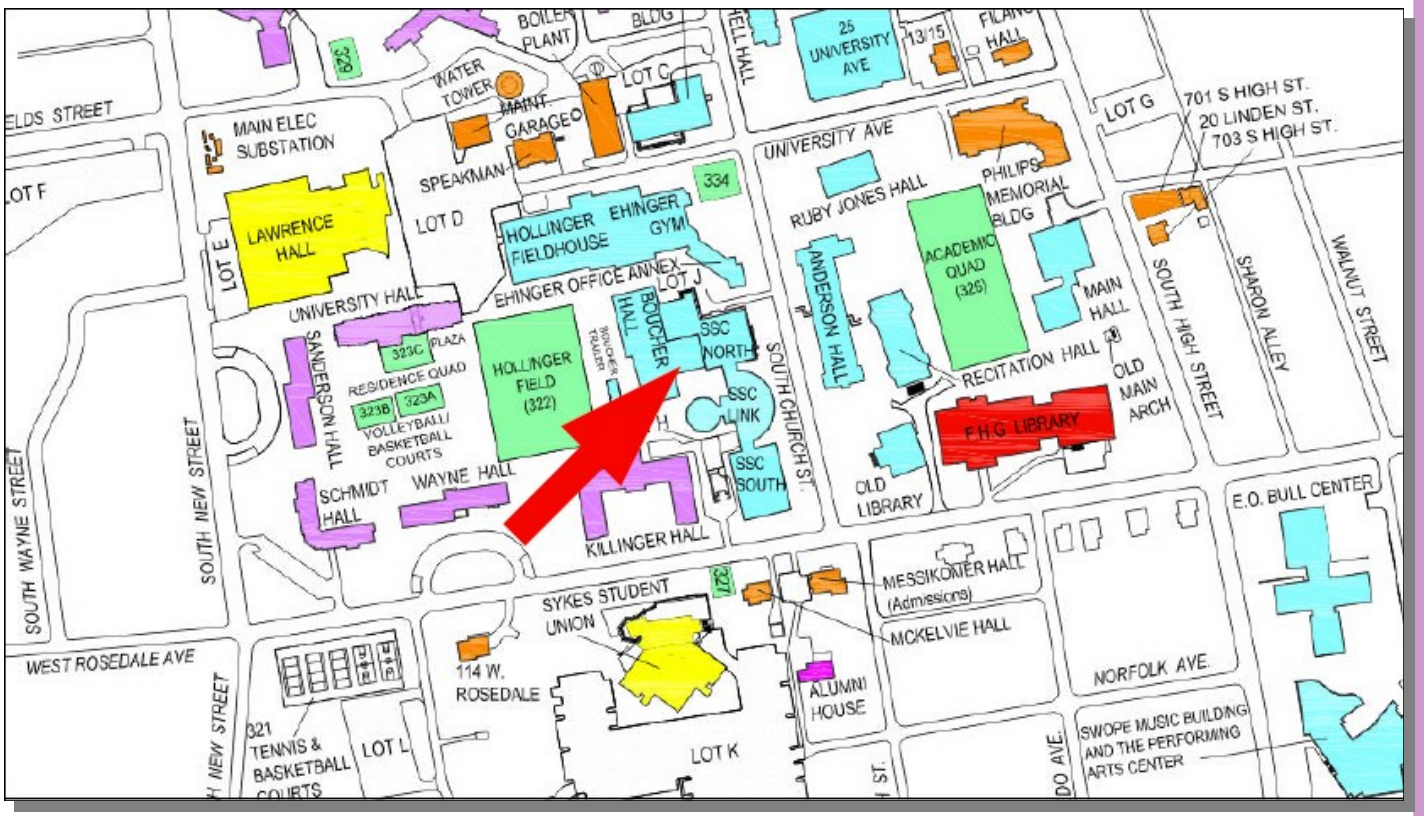
The Hubble Space Telescope has captured magnificent images of most of Messier's objects. Explore them all:

https://www.nasa.gov/content/goddard/hubble-s-messier-catalog/

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 10)

Comets: 237P/LINEAR works its way through Aquila during the month. 126P/IRAS, 180P/NEAT and 185P/Petriew may also be visible under the optimal sky conditions.

Meteor showers: The Southern Delta Aquariids are active starting on the 12th through md-August with their peak on the 30th. The meteors are remnants of comet 96P/Machholz and are known for their speed and illuminance.

CCAS Membership Information and Society Financials

Treasurer's Report
by Don Knabb

June 2023 Financial Summary

Beginning Balance	$1694
Deposits	$60
Disbursements	-$862
Ending Balance	$942

New Member Welcome!

Welcome to our new CCAS member Emily Scott 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
5049 E Broadway Blvd, #105
Tucson, AZ 85711

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.lymebasics.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 Phoenix, Arizona.

Phone: **520-280-3846**

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.

211 North Walnut St.
1st Floor
West Chester, PA 19380

Phone: **484-291-1084** or **800-737-4068**

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**
Email: **info@skiesunlimited.com**

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: **267-297-0423**
Fax: **215-965-1524**

Hours:
Monday thru Friday: 9AM 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:

Dr. John C. Hepler
21 Medinah Drive
Reading, PA 19607

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 Dr. John Hepler, the newsletter editor, at: **newsletter@ccas.us**.

CCAS Website

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

http://www.ccas.us

Dr. Hepler 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 Dr. Hepler at (484) 883-5033 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:	Dave Hockenberry 610-558-4248
Vice President:	Pete Kellerman 610-873-0162
ALCor & Treasurer:	Don Knabb 610-436-5702
Observing:	Michael Manigly 484-631-6197
Secretary:	Beatrice Mazziotta 610-933-2128
Librarian:	Barb Knabb 610-436-5702
Program:	Bruce Ruggeri 610-256-4929
Education:	Don Knabb 610-436-5702
	Dennis O'Leary 610-701-8042
Webmaster & Newsletter:	John Hepler 484-883-0533
Public Relations:	Ann Miller 610-558-4248

CCAS Membership Information

The 2021 membership rates are as follows:

REGULAR MEMBER……$30/year
SENIOR MEMBER…….$15/year
STUDENT MEMBER……..$ 5/year
JUNIOR MEMBER……..$ 5/year
FAMILY MEMBER…….$40/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 & Tel*escope Magazine

The club membership subscription cost for *Sky and Telescope* magazine has increased to **$43.95**. This is still a good saving from the regular rate of **$56.05**.

There is no need to go through the CCAS treasurer for subscriptions or renewals. Just go to the Sky and Telescope website and select "Magazine", then under the FAQs you can subscribe at the club rate.

https://skyandtelescope.org/subscribe/

If you have **any** questions call Don Knabb 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).

There is no need to go through the CCAS treasurer for subscriptions or renewals. Just call customer service at 877-246-4835 and request the club rate for your new subscription or renewal.