



the Skyscraper

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AMATEUR ASTRONOMICAL SOCIETY OF RHODE ISLAND * 47 PEEPTOAD ROAD * NORTH SCITUATE, RHODE ISLAND 02857 * WWW.THESKYSCRAPERS.ORG

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Astronomy in 3-D Saturday, June 3 at Seagrave Memorial Observatory

In-person and on Zoom (Contact Linda Bergemann (lbergemann@aol.com) for the Zoom link.

6 PM: Socializing
7 PM: Business Meeting & Presentations

TOPIC: Astronomy in 3-D
SPEAKER: Steve Nathan, Eastern Connecticut State University

Steve will share with you another facet of his interest in astronomy: Astronomy in 3-D! For over 150 years, 3-D photography has been a key part of astronomy, both from aesthetic and scientific viewpoints. So, grab your 3-D glasses and we will gaze at the heavens through the third dimension.

Steve Nathan is an Associate Professor

of Energy Geoscience and Chair of the Environmental Earth Science Department at Eastern Connecticut State University. Outside of the day job, Steve shares his life-long interest in amateur astronomy by working as a planetarium lecturer for the Seymour Planetarium in Springfield, Massachusetts. He also created and coordinated for 22 years the Astronomical League's Lunar Observing Program. Steve has taught countless astronomy classes and workshops for many naturalist, school and science groups (e.g., the Appalachian Mountain Club, the Springfield Science Museum, the Tin Mountain Conservation Center).



**Seagrave Memorial
Observatory
Open Nights
Saturdays in June
@ 9pm**

Countdown to AstroAssembly!

by Francine Jackson

AstroAssembly will be here before we know it. For those who are new to Skyscrapers, this two-day celebration consists of talks, night observations, and all-round great companionship. It is also a very important part of Skyscrapers, Inc., as it is our major fundraiser, and therefore we'd love all members and anyone else interested in astronomy to come and be a part of it.

To put AstroAssembly together requires many persons, doing many types of jobs, to make it a success: Finding speakers, setting up, collecting registration forms, taking care of food, parking cars, breaking down, etc. The list is extensive. Although there have been members who volunteer every year for certain positions, we are hoping that others might be able to find the time to be a part of the days' programs. We would especially like newer members to join in.

In addition, two important parts of every AstroAssembly are the raffle and the photography contest. For the raffle, we would like any members that have astronomy related (book, photo, small piece of equipment) objects in good condition they might like to donate for prizes. With the astrophotography contest, we are changing the rules to it a bit this year, which will be announced in the near future, but we would like anyone with a beautiful image to be a part of it.

This year, AstroAssembly will be Friday evening, September 29, and all day Saturday, September 30. If anyone would like to participate in any way to this great weekend, please contact Coordinator Bob Horton, at Robert.Horton@brown.edu

Thanks. See you all at AstroAssembly!

President's Message

by Linda Bergemann

I just glanced over at some decals that I printed earlier today for the Library Telescope Program (LTP) and my subject for this message came to me.

I am certain that most are not aware of the Library Telescope Program. Started in 2008 by the New Hampshire Astronomical Society, this program has spread worldwide (<https://librarytelescope.org>). The LTP places telescopes in local public libraries, instead of just schools, allowing greater general access to the scope since they can be put into circulation just as a book. Skyscrapers became involved in this program in early 2017, when our now 1st Vice President, Russ Chaplis, shared details with us based on his experience with the Aldrich Astronomical Society.

The library telescope lending program uses a variety of telescopes including the Orion StarBlast 4.5-inch Astronomical Telescope, which is used locally. The telescopes are easy to use, robust, and are typi-

cally modified to make them more durable and patron friendly. The telescopes are of manageable size, but have a relatively large optical tube. This means that the Moon and deep sky objects will show far more detail than one could see with the common "beginners" telescopes. They provide a large field of view that allows the object to stay in the eyepiece longer.

Skyscrapers began with donating three telescopes to RI libraries: East Greenwich, North Kingstown and Cross' Mills in Charlestown. We have facilitated the purchase of telescopes and/or modified telescopes for five libraries (Coventry, Newport, Tiverton, Warwick and Westerly). And, we were awarded two telescopes by the Astronomical League which were donated to libraries in North Scituate and Woonsocket. I currently have a second telescope for Newport at my home for modifications. Newport purchased the telescope and Skyscrapers is donating the modifications and enhancements.

The goal of the Library Telescope Program is to foster scientific literacy, stimulate an interest in astronomy, and provide people—who have never looked through a telescope—with the chance to experience

New Members Welcome to Skyscrapers

Marcus & Victoria
Spradlin of Barrington, RI

Anne Nozzolillo &
Henry Nesser of North
Grosvenordale, CT

Bailey Parr of Scituate, RI

Tara Paliotta
of Johnston, RI

Gary Laplante
of Scituate, RI

the excitement that comes from discovery. If your public library does not have a telescope available to borrow, encourage them to add one to their catalog. They can contact me (lbergemann@aol.com) for more information.

Clear skies, Linda



Skyscrapers Presentations on YouTube

Many of our recent monthly presentations on Zoom have been recorded and published, with permission, on the Skyscrapers YouTube channel. Go to the URL below to view recent presentations.

<https://www.youtube.com/c/SeagraveObservatorySkyscrapersInc>



The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are held monthly, usually on the first or second Friday or Saturday of the month. Seagrave Memorial Observatory is open every Saturday night, weather permitting.

Directions

Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions

Submissions to *The Skyscraper* are always welcome. Please submit items for the newsletter no later than **May 15** to Jim Hendrickson at hendrickson.jim@gmail.com.

E-mail subscriptions

To receive *The Skyscraper* by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

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Astronomical League Correspondent (ALCor)

Jeff Padell

Astronomical League Membership

by Jeff Padell

The objective of the Astronomical League is to promote the science of astronomy by fostering astronomical education, by providing incentives for astronomical observation and research, and by assisting communication among amateur astronomical societies.

The Astronomical League is composed of over two hundred and forty local amateur astronomical societies from all across the United States. These organizations, along with Members-at-Large, Patrons, and Supporting members form one of the largest amateur astronomical organizations in the world.

Skyscrapers is an organizational member of the Astronomical League. As a member of Skyscrapers, you can join the Astronomical League (through Skyscrapers) for only \$7.50 annually (individual or

family). Currently, 30 members/families of Skyscrapers are also members of the Astronomical League, myself included.

The first benefit you will see when you join is the next quarterly issue of the Reflector. This will be mailed to each member/family at his/her home address. The Reflector

has articles, cartoons, poetry, book reviews, League business, and information about League services. Unlike commercial magazines, the Reflector is amateurs talking to other amateurs about their activities. Other benefits include national and regional conventions, the discount Book Service,

Celestial Savings, and more.

The Astronomical League also provides many different Observing Programs. These Observing Programs are designed to provide a direction for your observations and to provide a goal. The Observing Programs

have certificates and pins to recognize the observers' accomplishments and for demonstrating their observing skills with a variety of instruments and objects.

Check out the Astronomical League website: <https://www.astroleague.org>

Skyscrapers will be submitting our annual roster of Astronomical League members on June 15. If you are a current member and have not paid your dues for 2023 (eight people), you will be invoiced through PayPal. If you are not currently a member of the Astronomical League and would like to join, please remit the \$7.50 annual dues payment before the June 15 deadline.

Dues may be paid by debit or credit card through our PayPal account using this link: https://www.paypal.com/cgi-bin/webscr?cmd=s-xclick&hosted_button_id=L5M-KT5GB57DBY.

If you have any questions, contact me or our Astronomical League Correspondent (AlCor) Jeff Padell at jeffpadell@gmail.com.



BIENVENUE EN LOUISIANE! (WELCOME TO LOUISIANA!)

Join us for this unique and exciting amateur astronomy gathering!



July 26–29, 2023

Hilton Baton Rouge
Capitol Center Hotel
201 Lafayette Street
Baton Rouge, LA 70801

ALCON 2023



KEYNOTE SPEAKERS

- ★ David Eicher—writer, editor-in-chief of *Astronomy Magazine*
- ★ Fred Espenak—co-author of *Totality: The Great American Eclipses of 2017 and 2024*
- ★ David Levy—author, comet hunter

FIELD TRIPS

- ★ Irene Pennington Planetarium
- ★ LIGO (Laser Interferometer Gravitational-Wave Observatory) Livingston*
- ★ Louisiana State University Physics & Astronomy
- ★ Highland Road Park Observatory

*Spaces are limited for this trip!

SPEAKERS ★ Pranvera Hyseni ★ Guy Consolmagno ★ Dan Davis ★ And many more!

Brought to Baton Rouge by the **Baton Rouge Astronomical Society**

★★ Registration is now open! Check alcon2023.org ★★



Skylights: June 2023

by Jim Hendrickson

The shortest nights are upon us in June, with the solstice occurring at 10:57am EDT on the 21st. The earliest sunrise of the year occurs at 5:10am EDT on the 14th, and the latest sunset occurs at 8:25pm EDT on the 27th. The nights in between offer less than four hours and thirty minutes of astronomical darkness.

June begins with our two evening planets, Venus and Mars, in notable positions. First, brilliant Venus lies in a line with Castor and Pollux, in Gemini, as it leaves the winter stars behind. And Mars, which has been in our evening sky for the past 10 months, moves through the Beehive Cluster, M44, in Cancer, from the 1st through the 3rd.

The Full Strawberry Moon occurs late on June 3. Moonrise is at 8:14pm, one minute before sunset. Note the Moon's position just 2.2° east of Antares in Scorpius. Moonset occurs at 5:09am on the 4th, about 3 minutes before sunrise.

The Moon is last quarter on the 10, new on the 17th, and first quarter on the 26th. On the 27th, it is 2.3° east of Spica, in Virgo.


Venus is the planet to watch in June's evening sky. As the month progresses, it will appear to approach Mars, though it will never quite catch up to the Red Planet this time, coming to within 3.5° west of it on the 30th.

On the 3rd, Venus will be 50% illuminated, appearing as a "half-moon" phase, 23 arcseconds across. From now through conjunction in August, it will appear as a crescent.


Venus reaches its greatest elongation of 45° east of the Sun on the 6th, and passes through the northern portion of the Beehive Cluster, M44, in Cancer, on the 13th.

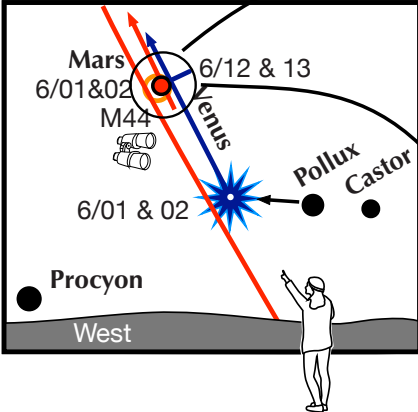
By the end of June, Venus will be just 0.5 AU from Earth, and will show a large, 34-arcsecond, 32% illuminated crescent in a telescope.

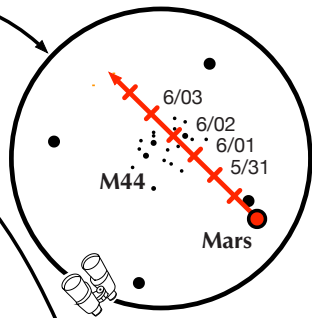
Mars is just over 2 AU from Earth at the beginning of June. Its tiny globe, just over 4 arcseconds across, is barely larger than Uranus appears when it is near opposition. Although Mars is now quite distant, it still shines brighter than the stars of the Big Dipper. After passing through the Beehive Cluster at the beginning of the month, it moves into Leo on the 20th, and, along



A must see celestial planetary play: Two planets visit the Beehive



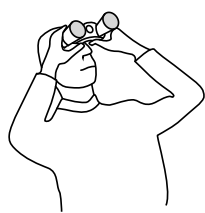




View through
10x50 binoculars

Beginning on June 1, look to the west-northwest 90 minutes after sunset.

- The twin stars of Gemini, Castor and Pollux, will be found forming a horizontal bar low above the horizon.
- Brilliant Venus shines to their left effectively forming the very bright third member of a set of triplets!
- On the same evening and the next, red Mars slides in front of M44, aka the Beehive Star cluster, positioned above Venus. Use binoculars to find Mars sitting amid the many stellar bees.
- Ten nights later, it is Venus' turn to stay at the Beehive for two consecutive nights. The planet travels along the outskirts, farther from Beehive central than Mars moved. Again, bring out the binoculars. How does the glare of brilliant Venus affect the scene?



with Venus, is joined by the crescent Moon over the following two nights. On the 21st, the waxing crescent Moon, Venus and Mars will lie within a 6° circle. This will be a fine view in binoculars.

June is the last month to observe Mars in a dark evening sky, as it will soon be slipping into the twilight glow.

Ceres continues its southeasterly motion through Virgo during June, moving approximately along the line connecting Denebola (beta Leonis) and Spica (alpha Virginis). The dwarf planet fades from magnitude 8.2 to 8.6 as its distance increases from 2.1 to 2.5 AU from Earth over the course of the month.

Saturn, in Aquarius, rises just before 1:30am EDT at the beginning of June, and becomes an evening planet later in the month, as it begins rising before midnight during the final week of June. On the 18th,

Saturn is stationary.

Jupiter lies in Aries, and rises at 3:30am EDT at the beginning of June, and just before 2:00am on the last morning of the month. On the 14th, the 25.8-day crescent Moon lies just 1° to its northeast.

Uranus, in Aries, is too low for observation until later in the month. It is located 2.8° north of Mercury on the 4th, and a close pairing with the 26.8-day crescent Moon occurs on the 15th, with the Moon's Earthshined globe passing just 0.8° north of the ice giant.

Neptune is in Pisces, rising just after 2:00am on June 1, and just after midnight on June 30. The distant ice giant is located just over 1° east-northeast of 5th magnitude 20 Piscium, which itself is located 4.8° south of lambda Pisces, the southeasternmost star of the Cirlet asterism. On the 11th, the wide crescent, 22.7-day Moon is

2.7° south of Neptune. Neptune reaches western quadrature on the 18th.

Dwarf planet Pluto rises around midnight, and can be found, with a large telescope, 1.3° SE of globular cluster M75 in Sagittarius.

This month's morning apparition of Mercury is one of the year's least favorable, as the fleeting innermost planet remains low during its entire western elongation, which began in late May, and ends with its superior conjunction on July 1. It is at its best position during the first week of June, when it rises about an hour before sunrise.

On the 16th, the very old 27.8-day crescent Moon lies between Mercury and the Pleiades.

Turning to the stars overhead, we find the Big Dipper high in the north during early evenings. This placement is fortunate, as there is a new supernova located in one of the northern sky's better known galaxies, Messier 101. M101 is a face-on spiral galaxy, not too different from the Milky Way. It is located 21 million light years away, just off the handle of the Big Dipper.

21 million years ago, the core of a giant star collapsed when its internal fusion was no longer sufficient to hold it together. The collapsing core resulted in the entire star falling in onto itself, compressing its internal layers to the point where they could no longer hold up, resulting in a catastrophic explosion, shredding the star. The resulting outburst, known as a Type II supernova, outshines the host galaxy, usually for several weeks.

The supernova in M101, known as SN 2023ixf, was discovered on May 19 by amateur astronomer Kōichi Itagaki, who has no

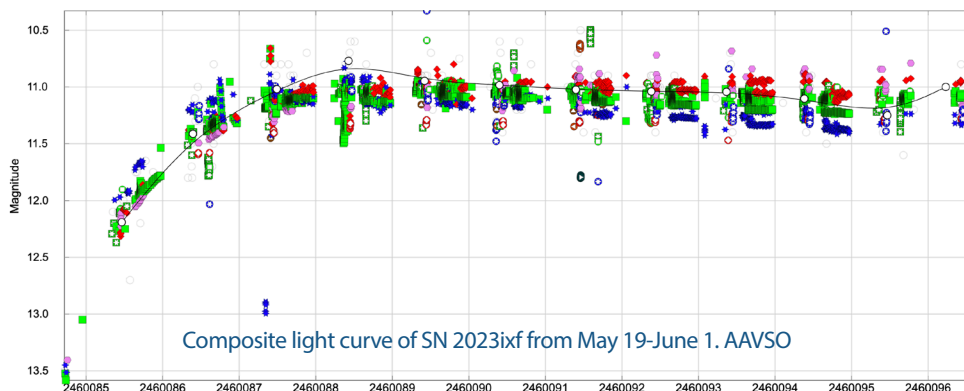
fewer than 170 such discoveries to his name. In the days following its initial appearance, the supernova has brightened to magnitude 11.1, which puts it within view of even small telescopes. As it slowly fades over the coming weeks, it will remain easily visible, especially when the Moon leaves the sky during the second week of June, and its position in Ursa Major remains fairly high in our sky.

To find M101, start at Mizar and Alcor, the famous double star located in the bend of the handle of the Big Dipper. Draw a line from Mizar, through Alcor, and continue about seven times the gap between the two stars. You will land at the end of a flat, four-star zig zag of 5th and 6th magnitude stars that points away from the bowl of the Big Dipper. This is the "Mizar-M101 line." Follow this line to the fourth, and last star, then turn east, away from the handle of the Big Dipper, at the same angle and distance that the beginning of the line is to Mizar. This relatively empty area of sky, when viewed under medium magnification, will reveal the diffuse glow of the face-on galaxy. SN 2023ixf is just east of the nucleus of the galaxy, on the side opposite Mizar.

Events in June

- 02 Mars in M44
- 03 Full Strawberry Moon
- 03 Moon 2.4° E of Antares
- 04 Mercury 2.8° S of Uranus
- 06 Venus Greatest Elongation E45
- 10 Last Quarter Moon
- 11 Moon 2.7° S of Neptune
- 13 Venus 0.5° N of M44
- 13 Equation of Time = 0
- 14 Earliest Sunrise 5:10
- 14 Moon 1.1° NE of Jupiter
- 15 Moon 0.7° NNW of Uranus
- 16 Moon 3.5° E of M45
- 18 New Moon (1243)
- 18 Saturn Stationary
- 18 Neptune Quadrature W90
- 19 Moon 4.8° W of Pollux
- 21 Solstice (10:57am EDT)
- 21 Moon, Venus, Mars in 6° Circle
- 26 First Quarter Moon
- 27 Latest Sunset 8:25pm
- 27 Moon 2.3° E of Spica
- 30 Venus 3.5° W of Mars

Ephemeris times are in EDT (UTC-4) for Seagrave Observatory (41.845N, 71.590W)



Supernova 2023ixf in M101 Discovered by Amateur Astronomer Koichi Itagaki

by Francine Jackson

By now, we've all heard of the supernova that was discovered recently in the galaxy M101, often referred to as the Pinwheel Galaxy, by amateur astronomer extraordinaire Koichi Itagaki. Its designation is SN2023ixf. As M101 is only 21 million light years from us, this is the closest supernova discovered in the past five years, the second closest in the past ten years (M82 in 2014), and the second one discovered in M101 in the past 15 years. If you haven't seen it yet, the [May](#)

[22, 2023 APOD](#) – Astronomy Picture of the Day – has the galaxy both with and without the new supernova.

One important part of this discovery is the fact that it was discovered by an amateur astronomer, although it was confirmed on automated images taken by the Zwicky Transit Facility two days previously.

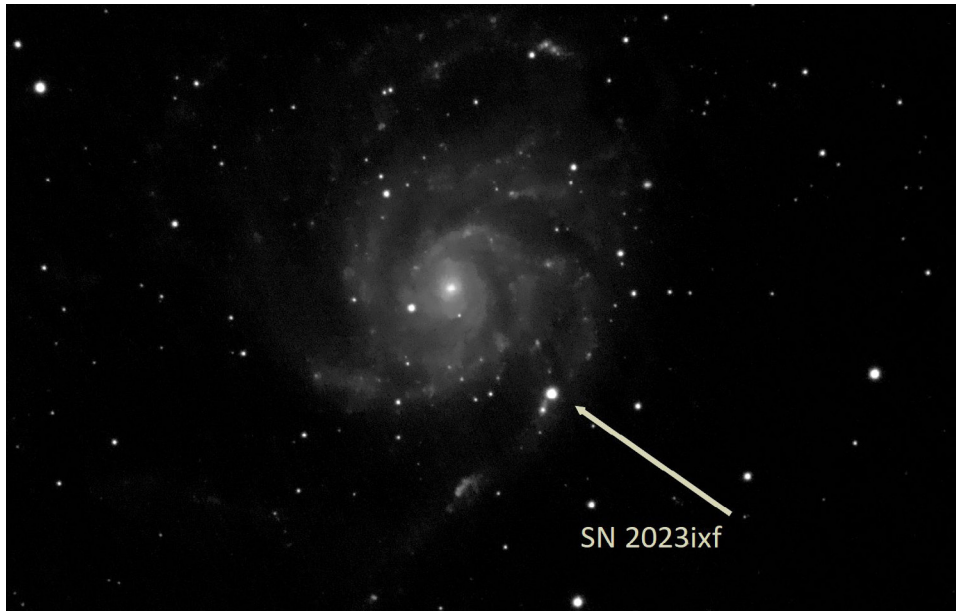
Itagaki is no stranger to discoveries; in 2018, with already over 80 to his credit, he noticed what appeared to be a brightening

star within the constellation Puppis. What he realized he was seeing was the birth of a supernova, designated SN2018gv, allowing astronomers to “watch” a supernova reach its peak.

When Itagaki discovered the new supernova in M101, its magnitude was over 14, but it does appear to be brightening, to the point that some astronomers believe it could become visible, if it isn't already, in telescopes as small as 4.5 inches.

For many people, a “hobby” is just a hobby, something to do when not working; however, we are all aware that amateur astronomers through the ages have made, and continue to make, very valuable discoveries. In fact, it has sometimes been said that amateur astronomers make most of the findings in the sky, then leave them up to the professionals to continue to study them. Regardless, we must take time to congratulate Mr. Itagaki for his incredible find.

SN 2023ixf, a Type II supernova in galaxy M101 in Ursa Major taken on May 29 by Conrad Cardano: Telescope used: WO 71mm f/5.9 Apo; Camera: ASI 294 mono; Processing software: Astro Art; 120 frames of 15 seconds each were taken, stacked and processed.



Observer's Challenge: NGC 4088: Galaxy in Ursa Major

by Glenn Chaple

Magnitude 11.2, Size 5.8' X 2.2'

On the evening of March 9, 1788, William Herschel came across a nebulous object which he described as “Bright, considerably large, extended 55 degrees, little brighter in the middle.” He entered it in his Catalogue of Nebulae and Clusters of Stars as H I-206 (H2061), his 206th Class I (Bright Nebulae)

object. Its modern-day New General Catalog designation is NGC 4088.

Categorized as a grand design spiral galaxy, NGC 4088 is located at the 2000.0 coordinates 12h5m34.2s RA and +50o32'21" dec. It's a 3½o star-hop from Phecda (gamma [γ] Ursae Majoris), as shown in the accompanying finder charts. Despite this relatively

star-poor journey, I had little trouble locating NGC 4088 with a 10-inch f/5 reflector. At 80X, the galaxy was readily seen. A magnitude 5 limiting magnitude made it difficult to detect any detail, although I sensed a mottled appearance.

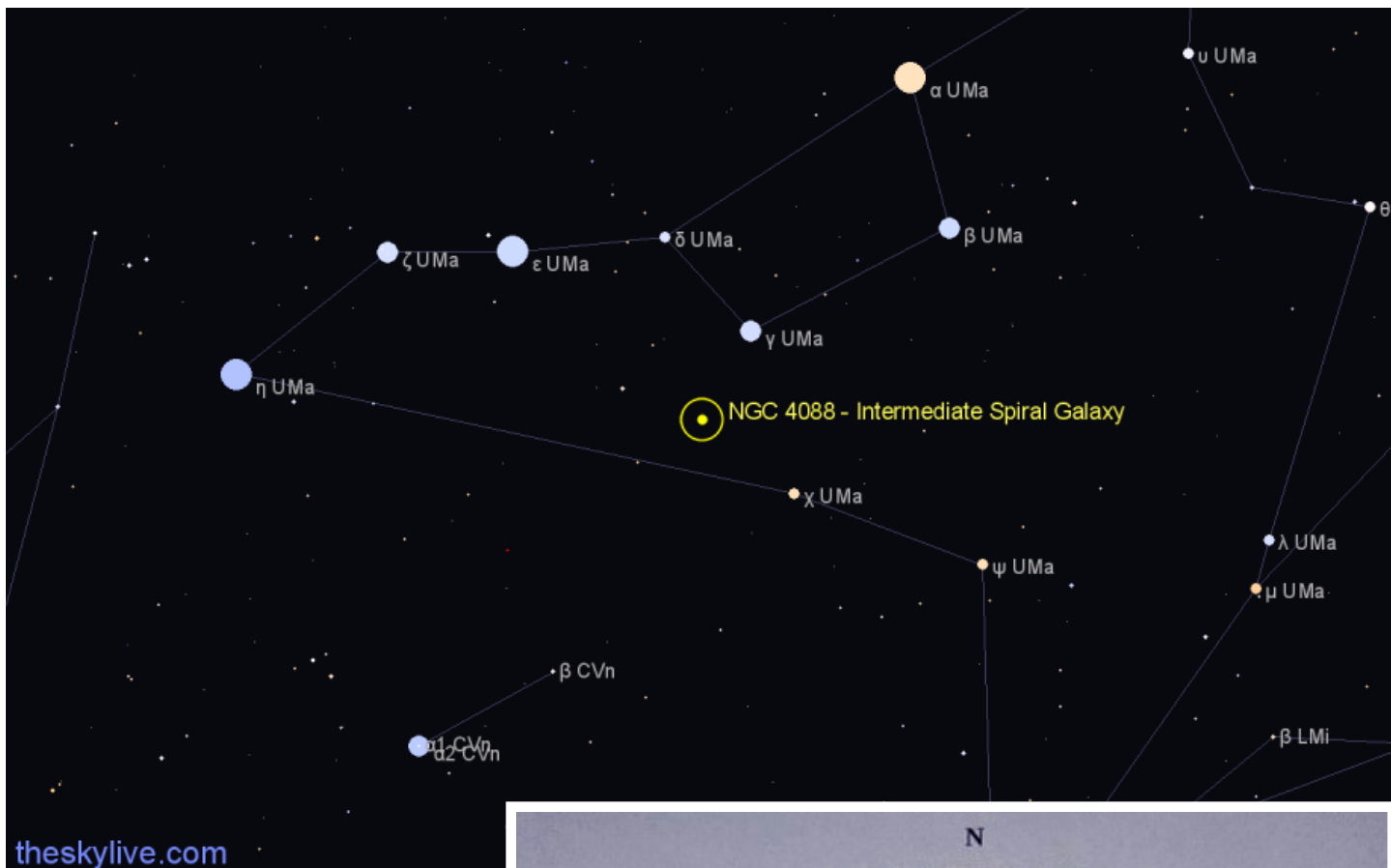
I was unable to spot NGC 4085, a 12th magnitude nearly edge-on spiral 12 arc-minutes south of NGC 4088. Herschel missed it on the night he discovered NGC 4088, but picked it up during another sweep the next year. Though it's fainter and smaller than NGC 4088, he still categorized it as a Class I object, giving it the designation H I-224. The two galaxies apparently form a physical pair and are part of a galaxy group that includes Messier 109.

Distance calculations to NGC 4088 range between 37 and 55 million light years. Assuming a middle value, the Universe Guide website calculates that NGC 4088 would have a true diameter of some 74.3 million light years – about ¾ the size of the Milky Way. If we were to freeze the expansion of space, the Universe Guide figures that a non-stop 4 mile per hour stroll to NGC 4088 would take some 7.6 quadrillion years!

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to anyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'd be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge, log on to rogerivester.com/category/observers-challenge-reports-complete.



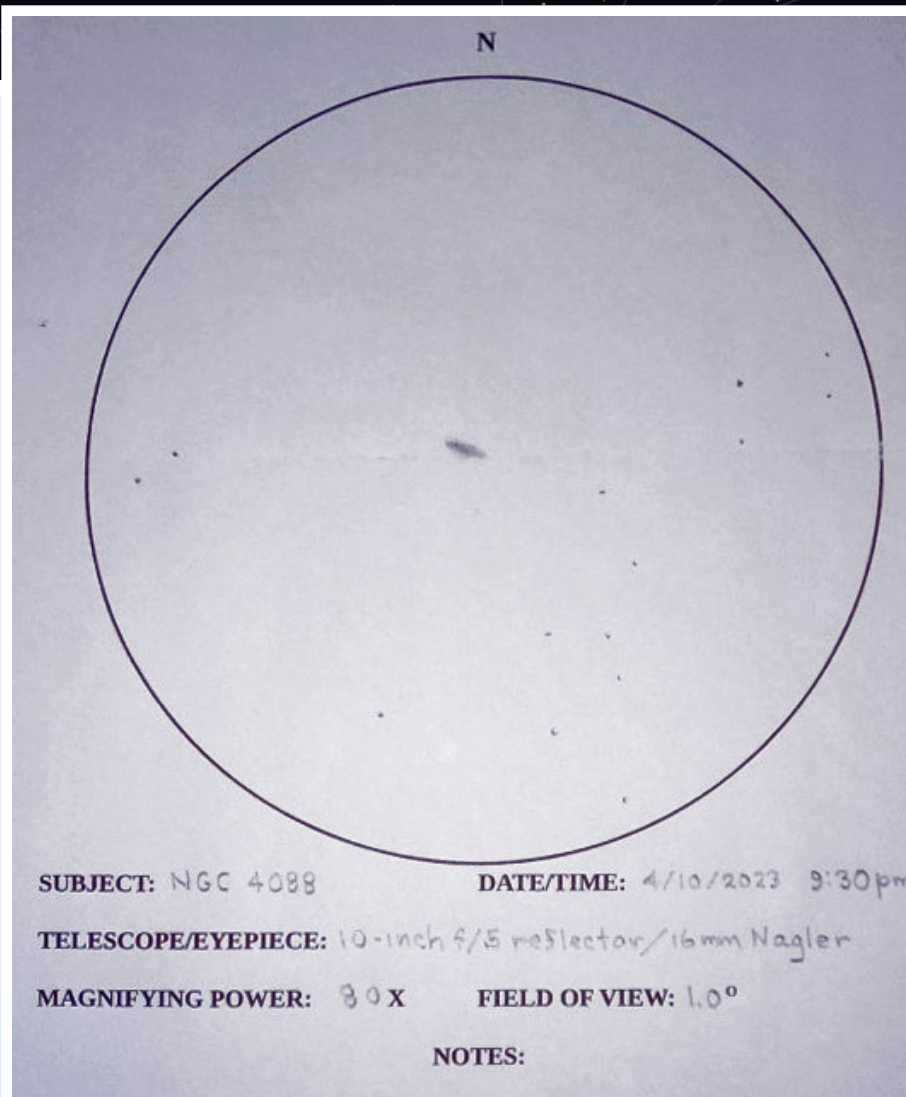
NGC4088, a galaxy about 51 MLY away, may be a barred spiral tilted to our line of sight. It took 2 nights to collect the subs due to intermittent clouds. I used RGB (1.5 hours), and LUM filters (75 minutes), then added Ha (30 minutes) as well for Ha nebulae regions. All taken with my 32 inch F6.5 telescope from Gloucester MA, and with ZWO-ASI 6200 camera. Processed in Pixinsight. Photo by Mario Motta



A personal note: One of the people I sent these articles to in the past was my high school friend **Ray Gerbi**. On an August evening in 1963, we went outside in his back yard with Ray's telescope - A 2½-inch 80X Gilbert reflecting telescope. Ray began by showing me the major stars and constellations of the late summer sky. Arcturus was the first star I ever learned to recognize. We then turned his scope towards Saturn (my first view of its rings) and then M13 and M31 - fuzzy blobs in the little scope. But the highlight to me wasn't Saturn. It was the double star Mizar. I was absolutely smitten by the sight of those gleaming white stars so close together.

And thus began a lifelong love of amateur astronomy. Everything I've done since - 4 years as an astronomy major at UMass, a 2-year stint at a local planetarium, countless outdoor observing sessions, astronomy conventions all over New England, public star parties, talks given to astronomy clubs, my own 40-year membership in the Amateur Telescope Makers of Boston including 3 years as its president, and a 20-year run as a columnist for Astronomy, - resulted from that one evening 60 years ago. I owe it all to Ray.

Sadly, Ray passed away on April 23. I'm still processing everything, but one thing is certain. On the next clear night, I'll go outside with my own 80X Gilbert reflector (it's now a collector's item, especially for old-timers who purchased it as their first scope back in the late 1950s and 1960s), turn it on Mizar, and reflect back on the night that started it all.



Look Up in the Sky - It's a Bird

by Theresa Summer

Bird constellations abound in the night sky, including **Cygnus**, the majestic swan. Easy to find with its dazzling stars, it is one of the few constellations that look like its namesake and it is full of treasures. Visible in the Northern Hemisphere all summer long, there's so much to see and even some things that can't be seen. To locate Cygnus, start with the brightest star, **Deneb**, also the northeastern most and dimmest star of the Summer Triangle. The Summer Triangle is made up of three bright stars from three different constellations – read more about it in the September 2022 issue of Night Sky Notes. “Deneb” is an Arabic word meaning the tail. Then travel into the triangle until you see the star **Albireo**, sometimes called

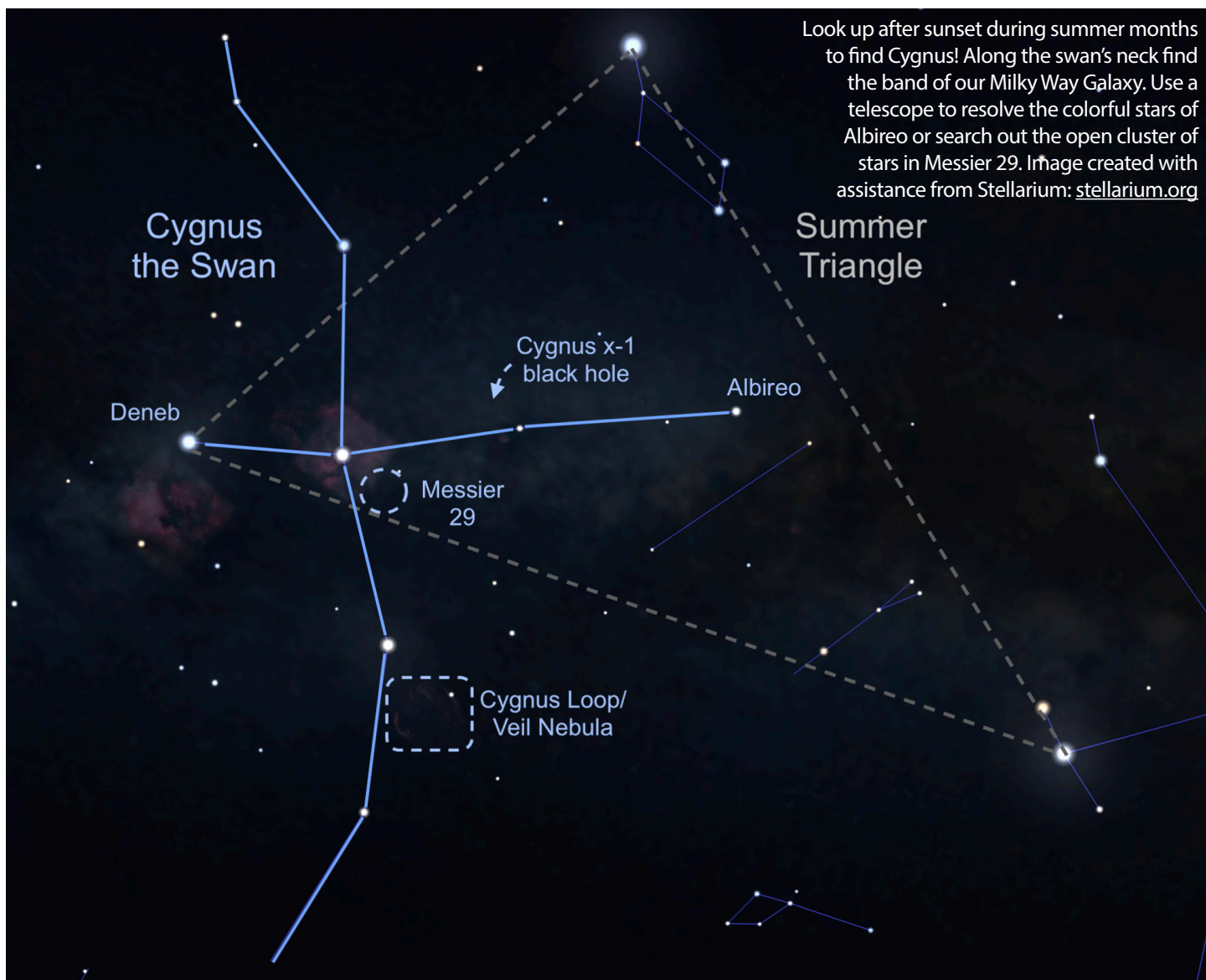
the “beak star” in the center of the summer triangle. Stretching out perpendicular from this line are two stars that mark the crossbar, or the wings, and there are also faint stars that extend the swan's wings.

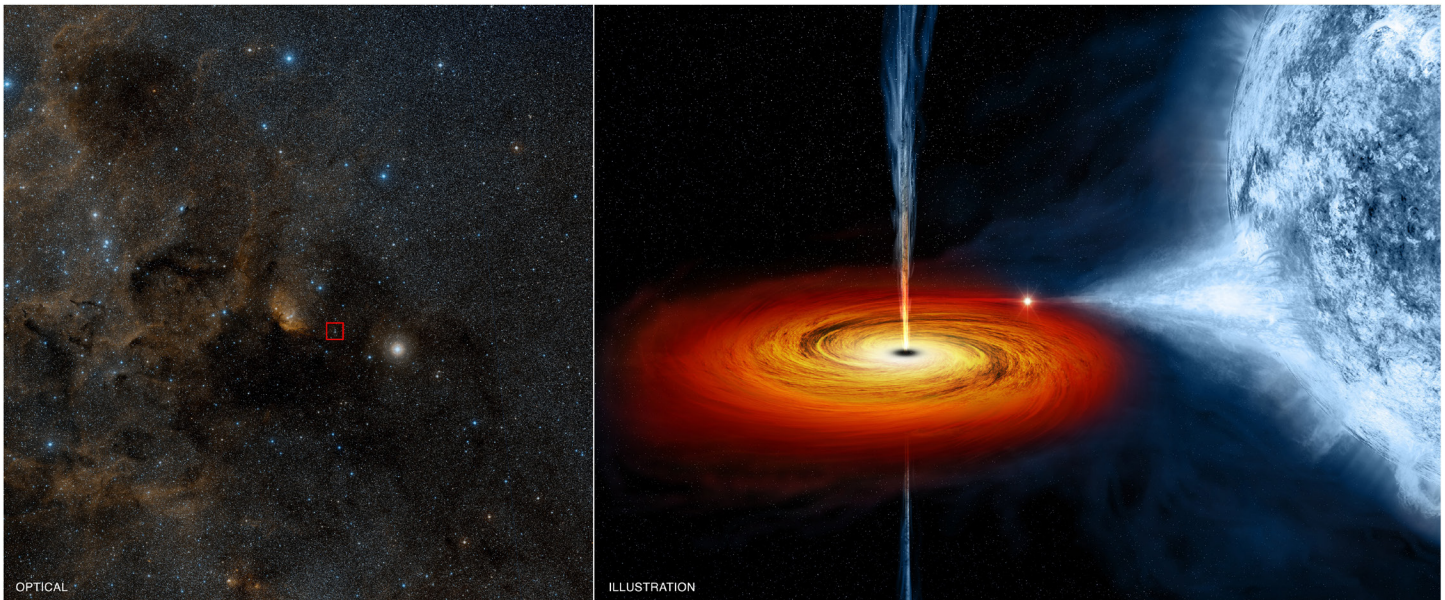
From light-polluted skies, you may only see the brightest stars, sometimes called the Northern Cross. In a darker sky, the line of stars marking the neck of the swan travels along the band of the **Milky Way**. A pair of binoculars will resolve many stars along that path, including a sparkling open cluster of stars designated **Messier 29**, found just south of the swan's torso star. This grouping of young stars may appear to have a reddish hue due to nearby excited gas.

Let's go deeper. While the bright beak

star **Albireo** is easy to pick out, a telescope will let its true beauty shine! Like a jewel box in the sky, magnification shows a beautiful visual double star, with a vivid gold star and a brilliant blue star in the same field of view. There's another marvel to be seen with a telescope or strong binoculars – the **Cygnus Loop**. Sometimes known as the **Veil Nebula**, you can find this supernova remnant (the gassy leftovers blown off of a large dying star) directly above the final two stars of the swan's eastern wing. It will look like a faint ring of illuminated gas about three degrees across (six times the diameter of the Moon).

Speaking of long-dead stars, astronomers have detected a high-energy X-ray source in Cygnus that we can't see with our





While the black hole Cygnus x-1 is invisible with even the most powerful Optical telescope, in X-ray, it shines brightly. On the left is the optical view of that region with the location of Cygnus x-1 shown in the red box as taken by the Digitized Sky Survey. On the right is an artist's conception of the black hole pulling material from its massive blue companion star. (Credit: NASA/CXC chandra.harvard.edu/photo/2011/cyngx1/)

eyes or backyard telescopes, but that is detectable by NASA's Chandra X-ray Observatory. Discovered in 1971 during a rocket flight, Cygnus x-1 is the first X-ray source to be widely accepted as a black hole. This black hole is the final stage of a giant star's life, with a mass of about 20 Suns. Cygnus x-1 is spinning at a phenomenal rate – more than 800 times a second – while devouring

a nearby star. Astronomically speaking, this black hole is in our neighborhood, 6,070 light years away. But it poses no threat to us, just offers a new way to study the universe.

Check out the beautiful bird in your sky this evening, and you will be delighted to add Cygnus to your go-to summer viewing list. Find out NASA's latest methods for studying black holes at www.nasa.gov/

[black-holes.](#)



This article is distributed by NASA Night Sky Network. The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Star Party Reports

River Bend, Uxbridge Friday, May 5, 2023 by Francine Jackson

The May 5th observing night at River Bend was upstaged for a while by a beautiful blue heron that stayed by the water, regardless of the people, including Jim, who went to take pictures of him. However, when darkness came, Bob Janus, Jim Hendrickson and Francine Jackson set up their telescopes at the top of the hill. Although several objects were seen, including M44, Venus, Mars, and Algieba, the night had been chosen to observe the Full Moon. Francine set up her Astroscan on the picnic table, and we watched the Moon as it rose behind the trees.

The Park Service had given us a volunteer, Mark, who was fascinated with the night, and promised to return at further nights.

Although the number of guests was rather small, about ten, Mike, who last time

had brought his binoculars and tripod on his bicycle, returned, this time drove, and just came to enjoy the night with us. He also promised to return next time.

We broke down about 10:00, and will be back here in Uxbridge Friday, June 30. Hope you can join us then!



Lunatic's Corner

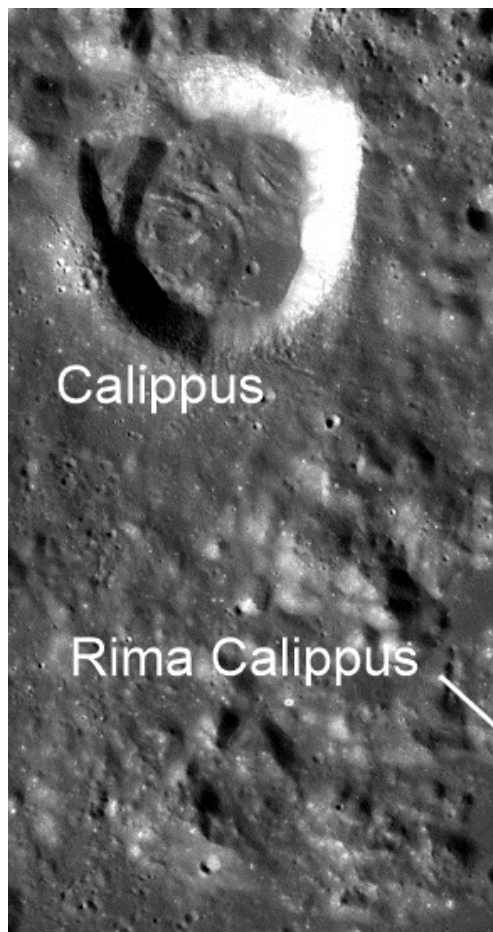
Crater and Rima Calippus

by Michael Corvese

Calippus was a Greek mathematician and astronomer who is believed to have lived about 370-310 BC. He was a student of the School of Eudoxus and the foremost mathematician of his time. Though originally from the city of Cyzicus (modern Turkey), he is known to have been working with Aristotle in Athens by around 330 BC.

One of his greatest accomplishments was the development of the Calippic Period that has been used by astronomers ever since. The Calippic Period is a 76-year, 940-month cycle that brought the solar and lunar years into alignment and introduced the 365.25-day year. The Calippic Period became a standard for correlating observations over many centuries and therefore has contributed to the precision of later astronomical theories.

He also refined and improved the accuracy of Eudoxus's theory of explaining the motion of celestial bodies using spheres. Calippus added six additional spheres to the system. By adding two more spheres to the Sun, Calippus was able to account for the inequality of the seasons owing to the Sun's variation in velocity during the year (what we now know as the Earth's variation in velocity according to Kepler's Laws of Planetary Motion).



Crater Calippus can be found in the northeast quadrant of the Moon, on the eastern edge of Montes Caucasus (Caucasus Mountains). The Montes Caucasus themselves are located on the northwest rim of Mare Serenitatis (Sea of Serenity) and the eastern rim of Mare Imbrium (Sea of Showers), close to the center line of the Moon.

Just to the southwest of the crater, on the floor of Mare Serenitatis, is Rima Calippus, a sinuous rille that travels for about 40km from southwest to northeast. Sinuous rilles are thought to be the result of lava flows either flowing on the surface or from collapsed lava tubes.

As a small, simple crater, one would expect the 20-mile wide Calippus to have a bowl shape with a smooth floor. However, Calippus has some very irregular features. It is shaped somewhat like a polygon, with a protrusion and slumping material on the western wall. The walls are steep and surround a very rough floor, but it does not contain the central peaks and terraced floor characteristic of larger, complex craters. The irregular features may be attributed to its impact location on the eastern slopes of the mountains and not on a flat plain.

Both features are visible around Lunar day 5 and Lunar day 19. This is an interesting part of the Moon's surface where mare meets montes and many interesting features are observable even with small telescopes. Put crater and rima Calippus on your list of lunar targets and you won't regret it.

Michael Corvese is a confirmed lunatic of many years regardless of his recent interest in lunar observing.



Cosmic Coffeehouse

*Informal astronomy chat room
meets on the 15th of each month at 7:00pm*

- interactive ZOOM format
- current news
- featured speakers
- equipment reviews
- observing notes
- fun 'n games

To receive your invite, send request to Astro-Geek@comcast.net



May 10 Solar Flare by Conrad Cardano

A still frame from a video Conrad took this video on May 10 using a Lunt 60mm H-alpha scope with a color camera. The two second video is the result of 2.5 hours of time lapse video.

<http://www.thesky-scrapers.org/solar-activity-may-10-2023>



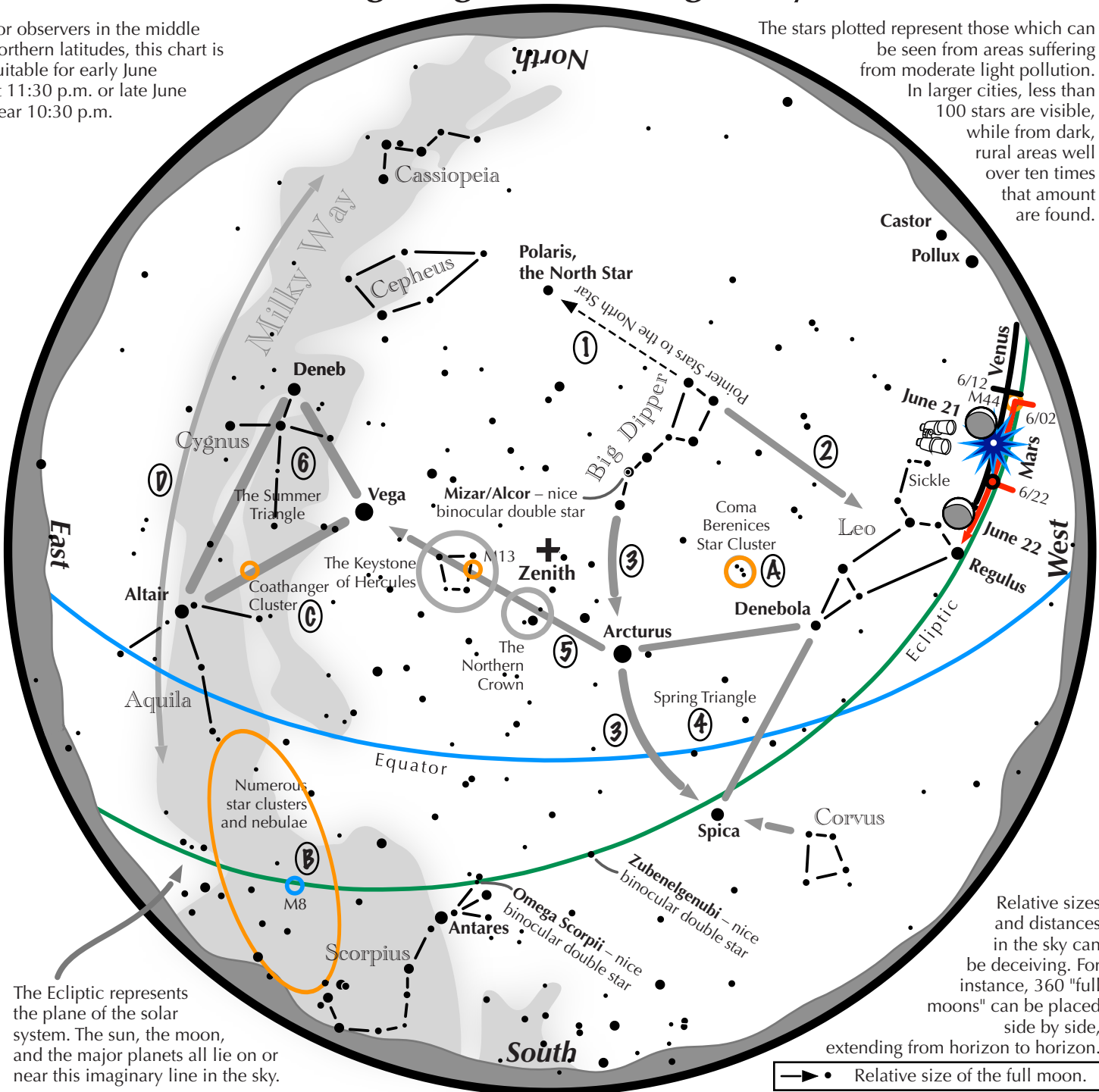
Observing Venus by Jim Hendrickson

During Seagrave Observatory open night on Saturday, May 13, the Alvan Clark telescope was able to be aimed at the Evening Star for a few minutes before dipping behind the trees to the west.

Navigating the June Night Sky

For observers in the middle northern latitudes, this chart is suitable for early June at 11:30 p.m. or late June near 10:30 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

Navigating the June 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 Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
- 3 Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
- 4 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 5 To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 6 High in the east are the three bright stars of the Summer Triangle: 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 of Antares and Altair, hides an area containing many star clusters and nebulae.
- C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D: Sweep along the Milky Way for an astounding number of faint glows and dark bays.



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

The Sun, Moon & Planets in June

This table contains the ephemeris of the objects in the Solar System for each Saturday night in June 2023. Times in Eastern Daylight Time (UTC-4). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	3	4 42.8	22 15.1	Tau	-26.8	1892.5	-	-	-	1.014	05:12	12:44	20:16
	10	5 11.7	22 58.3	Tau	-26.8	1890.7	-	-	-	1.015	05:10	12:45	20:21
	17	5 40.7	23 21.8	Tau	-26.8	1889.2	-	-	-	1.016	05:10	12:47	20:24
	24	6 09.9	23 25.0	Gem	-26.8	1888.3	-	-	-	1.016	05:11	12:48	20:25
Moon	3	15 39.7	-22 16.2	Lib	-12.7	1920.9	165° E	98	-	-	20:15	00:45	05:10
	10	22 47.1	-12 53.4	Aqr	-12.2	1915.9	101° W	59	-	-	01:11	06:41	12:22
	17	4 36.6	24 39.1	Tau	-8.1	1823.3	14° W	2	-	-	04:19	12:20	20:27
	24	10 38.0	12 29.1	Leo	-11.2	1794.1	64° E	29	-	-	11:08	17:54	00:29
Mercury	3	3 06.4	14 07.8	Ari	0.2	7.5	24° W	48	0.417	0.904	04:12	11:08	18:05
	10	3 44.1	17 21.4	Tau	-0.3	6.5	21° W	62	0.379	1.038	04:09	11:19	18:30
	17	4 32.6	20 45.0	Tau	-0.8	5.8	16° W	78	0.340	1.169	04:16	11:41	19:07
	24	5 31.9	23 26.4	Tau	-1.6	5.3	9° W	93	0.312	1.276	04:37	12:14	19:52
Venus	3	8 00.6	23 12.2	Gem	-4.2	23.5	45° E	51	0.722	0.721	08:28	16:02	23:35
	10	8 28.2	21 28.1	Cnc	-4.3	25.5	45° E	47	0.723	0.665	08:36	16:01	23:26
	17	8 53.1	19 27.6	Cnc	-4.3	27.8	45° E	42	0.724	0.608	08:42	15:58	23:14
	24	9 15.0	17 16.0	Cnc	-4.4	30.6	44° E	37	0.725	0.553	08:45	15:52	22:59
Mars	3	8 42.0	19 45.0	Cnc	1.6	4.6	56° E	93	1.666	2.015	09:24	16:42	23:59
	10	8 58.6	18 35.3	Cnc	1.6	4.5	53° E	94	1.665	2.068	09:18	16:31	23:43
	17	9 15.1	17 20.0	Cnc	1.7	4.4	50° E	94	1.664	2.118	09:12	16:20	23:27
	24	9 31.6	15 59.4	Leo	1.7	4.3	48° E	95	1.663	2.165	09:07	16:09	23:10
1 Ceres	3	12 04.4	11 48.7	Vir	8.2	0.6	104° E	96	2.612	2.177	13:17	20:02	02:47
	10	12 08.0	10 45.7	Vir	8.3	0.5	98° E	96	2.616	2.266	12:57	19:38	02:19
	17	12 12.5	9 39.0	Vir	8.4	0.5	93° E	96	2.620	2.356	12:38	19:15	01:52
	24	12 17.8	8 29.4	Vir	8.5	0.5	88° E	96	2.624	2.447	12:21	18:53	01:25
Jupiter	3	2 07.8	11 46.1	Ari	-2.0	34.4	38° W	100	4.956	5.711	03:22	10:07	16:53
	10	2 13.5	12 14.9	Ari	-2.0	34.9	44° W	99	4.957	5.642	02:58	09:45	16:33
	17	2 18.9	12 42.0	Ari	-2.0	35.3	49° W	99	4.957	5.566	02:34	09:23	16:12
	24	2 24.1	13 07.3	Ari	-2.0	35.9	54° W	99	4.958	5.483	02:10	09:01	15:51
Saturn	3	22 37.3	-10 20.8	Aqr	0.9	17.2	95° W	100	9.796	9.653	01:12	06:37	12:01
	10	22 37.8	-10 19.4	Aqr	0.9	17.4	102° W	100	9.794	9.537	00:45	06:10	11:34
	17	22 38.1	-10 19.7	Aqr	0.9	17.6	108° W	100	9.792	9.425	00:18	05:42	11:07
	24	22 38.0	-10 21.9	Aqr	0.8	17.8	115° W	100	9.790	9.316	23:50	05:15	10:39
Uranus	3	3 11.8	17 31.4	Ari	5.8	3.4	22° W	100	19.647	20.584	04:03	11:11	18:19
	10	3 13.3	17 37.4	Ari	5.8	3.4	28° W	100	19.646	20.534	03:36	10:45	17:53
	17	3 14.8	17 43.1	Ari	5.8	3.4	35° W	100	19.645	20.473	03:10	10:18	17:27
	24	3 16.2	17 48.4	Ari	5.8	3.5	41° W	100	19.643	20.401	02:43	09:52	17:01
Neptune	3	23 52.7	-2 06.7	Psc	7.9	2.3	75° W	100	29.909	30.160	01:57	07:52	13:46
	10	23 53.0	-2 04.8	Psc	7.9	2.3	81° W	100	29.909	30.045	01:30	07:25	13:19
	17	23 53.3	-2 03.6	Psc	7.9	2.3	88° W	100	29.909	29.928	01:03	06:57	12:52
	24	23 53.4	-2 02.9	Psc	7.9	2.3	95° W	100	29.908	29.810	00:35	06:30	12:25
Pluto	3	20 11.6	-22 38.9	Cap	14.4	0.2	132° W	100	34.781	34.094	23:36	04:11	08:46
	10	20 11.2	-22 41.2	Cap	14.4	0.2	139° W	100	34.785	34.015	23:09	03:43	08:18
	17	20 10.7	-22 43.8	Cap	14.4	0.2	146° W	100	34.790	33.947	22:41	03:15	07:50
	24	20 10.1	-22 46.4	Cap	14.4	0.2	152° W	100	34.795	33.891	22:13	02:47	07:22

STARRY SCOOP

Editor: Kaitlynn Goulette



WHAT'S UP

The June Solstice occurs on the 21st of this month and marks the first day of summer for those of us in the Northern Hemisphere. In the Southern Hemisphere, winter is just beginning. On this day, the sun reaches its most northern position in our sky and we experience the longest period of daylight.

Venus and Mars can be found in the western sky, appearing much like stars, shortly after the sun sets. Venus lies within Earth's orbit, which results in this planet going through phases, much like the moon. By month's end, Venus will be a well-defined crescent shape that can easily be seen through a backyard telescope. From June 1st to the 3rd, Mars can be found passing through the Beehive cluster, located in the constellation Cancer. Later in the month, Venus passes through this open cluster from June 12th to the 14th.

After sunset, Scorpius, which represents a scorpion in the sky, can be seen low in the south. The star Antares shines a brilliant orange-red and marks the Scorpion's heart. The full moon visits this region on June 3rd, passing only about two degrees from Antares. The Scorpion's tail curves downward, making a "J" shape that is easily recognizable in the sky. To the east is the constellation Sagittarius the archer, which resembles a teapot. Sagittarius is home to the galactic center, which is our galaxy's "downtown district" with many celestial treats to observe.

Sixty years ago on June 16th, Valentina Tereshkova became the first woman in space. She was picked from a pool of 400 potential

cosmonauts and flew solo aboard Vostok 6. She became the first civilian cosmonaut and remains the youngest women ever to fly in space. Sally Ride, the first American woman astronaut, blasted off into space on June 18th, 1983. Ride was mission specialist of NASA Astronaut Group 8 and rode on the Space Shuttle Challenger (STS-7). She tallied two trips and 343 hours in space by the end of her career.

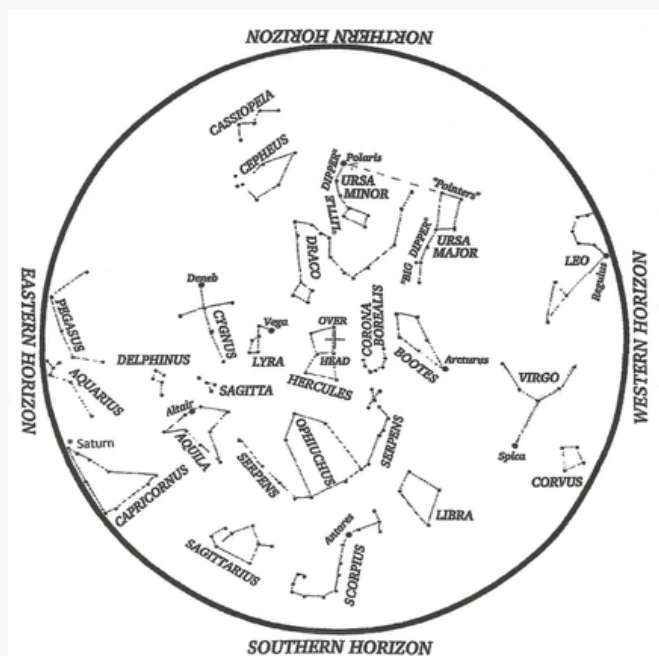
JUNE'S SKY

4: Full Moon

4: Venus at Greatest Eastern Elongation

18: New Moon

21: June Solstice



Credit: Roger B. Culver

Hold star map above your head and align with compass points.

OBSERVATIONS

For the first time in about ten years, the Arunah Hill Natural Science Center hosted a training session called Starwatch, which taught members how to operate the club's observatories and telescopes. My friend and fellow high school Space and Astronomy Club member Lani Ching joined me.

The activities spanned two days and included learning how to put together and operate a 17-inch Dobsonian telescope. We also learned how to use the 19th-century Gaertner refracting telescope, which uses an old-fashioned wind-up clock drive. During twilight, we practiced aiming it at both the moon and Venus. After darkness set in, I gave attendees a tour of the night sky using a green laser pointer.

Lani brought her new 8-inch Dobsonian telescope to Arunah Hill and enjoyed views of countless celestial treasures. Her observations included M10, M12, M14, and M107, which are globular clusters in the Ophiuchus region. She also viewed the Ring Nebula (M57), the Great Globular Cluster in Hercules (M13), and especially enjoyed observing Albireo. Lani shared views through her telescope with many of the visitors passing by throughout the evening.

Along with joining Lani at the eyepiece of her telescope, I took pictures of a few constellations, including Scorpius, Cygnus, Lyra, and Ursa Major. I also photographed star trails, which are captured using extended exposures of the sky.



The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact starryscoop@gmail.com. The Starry Scoop is now on Facebook. Clear skies!

OBJECT OF THE MONTH

The featured object this month is Messier 4 (M4), located in the constellation Scorpius. This object is a globular cluster, a gravitationally bound group of older stars, and spans 75 light-years. Messier 4 is located 7,200 light-years away, which makes it one of the nearest globular clusters to Earth.

Messier 4 is located just over one degree west of the bright star Antares, which marks the heart of the Scorpion. Its size is similar to that of the full moon and is easily visible in a small telescope. Under very dark skies, the unaided eye can resolve it.



Messier 4
Photo Credit: NASA



Starwatch attendees learn how to use the 19th-century Gaertner telescope.
Photo Credit: Don Goulette

Directions to Seagrave Memorial Observatory

From the Providence area:

Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:

Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:

Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:

Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:

- Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
- or • Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:

Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.



47 Peeptoad Road
North Scituate, Rhode Island 02857