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the Skyscraper

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

In This Issue:

Seagrave Memorial Observatory Open Nights
Saturdays in August
@ 9pm

Grand Diversity of Extrasolar Worlds

Saturday, August 5 at Seagrave Memorial Observatory

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

NOTICE: We will not have a potluck Ham & Bean Supper this month as originally planned. The hot, humid and unpredictable nature of our recent weather has forced us to reconsider an outdoor meal.

Instead, this month, we will have something more predictable, a "Dessert Buffet". If you are able to contribute something, please let Kathy Siok (kathys5@cox.net) know in advance.

6 PM: Socializing

7 PM: Business Meeting & Presentation

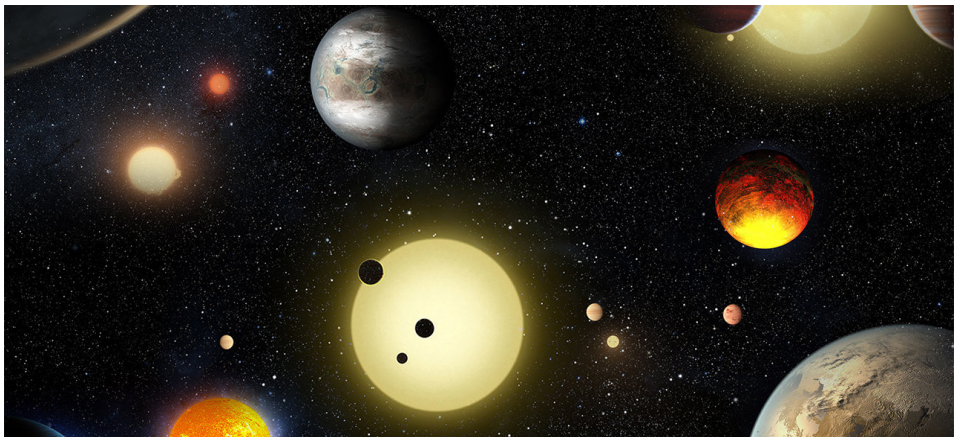
TOPIC: "Grand Diversity of Extrasolar Worlds"

SPEAKER: Sarah Millholland, PhD, Assistant Professor of Physics at MIT

In 341 B.C. the Greek philosopher Epicurus said, “There is an infinite number of worlds, some like this world, others unlike it". In 1995, the first hot Jupiter was found around 51 Pegasi. NASA has now found over five thousand exoplanets. In her talk, Sarah will discuss the four major questions and how exoplanets are found.

ABOUT: I am an Assistant Professor of Physics at the Massachusetts Institute of Technology in the Kavli Institute for Astrophysics and Space Research. As a data-driven dynamicist, I am interested in a broad range of problems in exoplanetary science. In particular, I study the formation and evolution, orbital architectures, and interiors/atmospheres of exoplanets. I address these problems using a synergistic approach involving celestial mechanics theory, numerical simulations, and statistical methods.

Before starting at MIT in July 2022, I was a NASA Sagan Fellow at Princeton University from July 2020-June 2022. I obtained my PhD in Astronomy from Yale University in May 2020, and I was an NSF Graduate Research Fellow from 2017-2020. My thesis was titled "Data-Driven Dynamics of Planetary Systems". I spent my first year of graduate school at the University of California Santa Cruz and subsequently transferred to Yale to keep working with my advisor, Professor Greg Laughlin. Before that, I was an undergraduate student and Goldwater Scholar at the University of St. Thomas in St. Paul, Minnesota, where I obtained bachelor's degrees in physics and applied mathematics in 2015.



President's Message

by Linda Bergemann

It seems impossible that it is AUGUST! I finally got my lawn furniture out, but until the last day or two, it has been too hot and humid to enjoy the outdoors. That same icky weather has clouded out many of our observing events during the past month.

August presents us with more opportunities to observe, weather permitting, of course. Every Saturday night we will be open for members and the public. Please stop by for a visit.

On August 12th, we will hold our second monthly Star Party, focused on our members and getting to know each other better. In spite of annoying clouds, our first star party was a success. We had about thirty in attendance and 8 or more telescopes scattered around the property. We even had a couple come from Pennsylvania just to participate. There was not much observing, but lots of conversation. Let's see if August can top July. Skyscrapers has telescopes available for use by members who don't have one of their own, or want to try something different. You just have to start by setting it up and aligning it before using; with help, if needed. I hope to see you there!

This month we also have two off-site star parties occurring: August 23 at Chase Farm in Lincoln and August 25 at River Bend Farm in Uxbridge. Members are always welcome, with or without a telescope. More information is available on our Night Sky Network calendar and from Jim Hendrickson or Francine Jackson.

With all of these activities planned, I have my fingers crossed that the clouds will cooperate and stay away.

See you there!

Observing Events:

Open Nights

August 5, 9-11 PM
August 19, 9-11 PM
August 26, 9-11 PM

Star Parties

August 12 at Seagrave, 8-11 PM
August 23 at Chase Farm Park, 7:30-9:30 PM
August 25 at River Bend Farm, 8-9:30 PM

Members are welcome and appreciated at all of these events

New Members

Welcome to Skyscrapers

Zara DiCarlo
& Klansee Stevens
of Woonsocket, RI

Dianne & Erik Paul
of Sutton, MA

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 **August 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.

Skyscrapers to Pilot Youth Program

by Michael Corvese

Skyscrapers will be piloting a youth program this fall. We've adopted the Sky Puppy program from the Astronomical League. It is designed for children of 6-10 years and includes a combination of observing, classroom, and research activities. As Aaron Clevenson, Program Coordinator at AL writes, "The purpose of the Sky Puppies Observing Program is to familiarize young observers with the night sky and to whet their appetite to eventually graduate from a Sky Puppy to a knowledgeable observer." Children will be awarded a certificate and pin upon completion.

The program will be piloted in 2-3 communities depending upon the response from the membership. We plan to engage local libraries for space and local public and private schools to drive participation. We are estimating a commitment of once or twice per month (Oct. – Apr) during the early evening for a facilitator to guide the students to program completion.

The program is ideal because it is driven by the students and easily facilitated by an adult. No in-depth knowledge of astronomy is required as you guide the students through the program. All of the materials are self-explanatory and will be provided by Skyscrapers and the Astronomical League.

If you have a passion for astronomy and passing that knowledge onto the next generation of young observers, you are invited to attend an informational Zoom meeting on Tuesday, August 15, 7-8pm. Please send an email to Michael Corvese at corvese-michael@gmail.com if you plan to attend. Links will be sent prior to the meeting. I hope to see you there!

Update on the RadioJOVE Project

by Edward Walsh

As many of you are aware, Skyscrapers will be participating in the RadioJOVE project as a first effort in radioastronomy. This was discussed in a talk by Dr. Chuck Higgins at the June 2022 meeting. From the meeting announcement:

Radio JOVE is a well-known public outreach, education, and citizen science project using radio astronomy and a hands-on radio telescope for science inquiry and education. Radio JOVE2.0 is a new direction using radio spectrographs to provide a path for radio enthusiasts to grow into citizen scientists capable of operating their own radio observatory and providing science-quality data to an archive. Radio JOVE 2.0 uses more capable software defined radios (SDRs) and spectrograph recording software as a low-cost ($300) radio spectrograph that can address more science questions related to heliophysics, planetary and space weather science, and radio wave propagation. I will overview Radio JOVE 2.0 and give a short demonstration of the new radio spectrograph using the SDRplay RSP1A receiver with a dipole antenna and the associated Radio-Sky Spectrograph (RSS) software.

Hardware consists of a software defined receiver (SDR) that connects to a PC running receiver control software, with an overlay provided by the RadioJOVE project that sets the receiver up for detecting radio emissions from Jupiter and the Sun. Also included in the kit are the materials for assembling a double dipole antenna for signal reception. At this point, the antenna assembly is largely complete, and the receiver/software have been tested with a donated PC which will be dedicated to the project. It is planned to locate the computer and receiver in the anteroom of the Clark building. The antennas will be located between the Clark building and the meeting room. Antenna supports are now in place which will support the antenna elements about 15' above the ground. One end of the antennas will be tied to the deck on the Clark building. Antennas will be oriented to receive from the south. The picture shows a mockup of the antenna arrangement done by Bob Janus and I, and the ladders have been since replaced by a more permanent arrangement installed by Bob.

At this stage, the remaining work to be done is to complete the antenna assembly (connector and weatherproofing) and put everything in place to start observations. Additionally, off-line programs for data display and analysis will be explored. Anyone interested in becoming involved can contact me at edward_walsh@brown.edu.

Astrophotography Workshop

September 16, 6pm-10pm

by Conrad Cardano

Skyscrapers is happy to announce a workshop for astrophotography hosted by member Conrad Cardano. Designed for beginners, the program will include a lecture and outdoor, hands-on experience (weather permitting).

Back in the early 1970's, I tried my hand at astrophotography with film, a DLSR camera, and a 6" telescope on a motorized Edmund Scientific equatorial mount. You would have to expose the whole roll of film (a 20 or 36 exposure roll), take it to a "drug" store to be processed, wait a week, and then see the results. Did I say it was frustrating? Oh, yes it was. Many things could go wrong: maybe the mount jiggled and blurred the image, maybe an airplane flew across the image and ruined it, maybe it wasn't in good focus, maybe the drug store lost your roll of film.

Today, astrophotography has never been better; however, there is more to learn than in the 1970's. This presentation "Intro to Astrophotography" is meant for people who have never tried astrophotography but would like to.

Topics to be covered: The Camera Sensor: CMOS and CCD, Sensor size, Pixel size, well depth, and bit depth, Color vs Monochrome, Types of Cameras: DLSR, Smartphones, and Dedicated Astro Cameras

Mounts: Stationary Camera tripods, Motorized mounts, Camera Tracking mounts, Goto, Laptops vs Desktops Computers, Techniques: Focus, How long an exposure, How high the gain, The "dark frame," The "Flat" frame, Capture Software, Processing Software, Free vs $$$, The future?

I hope you will join me for this practical and informative workshop. Anyone interested in attending should send an email to Michael Corvese at corvesemichael@gmail.com. Thanks and I look forward to seeing you there!

Star Party Reports

Seagrave Hosts Scituate Brownie Troops 221 & 53
Sunday, June 35, 2023
by Michael Corvese

On Sunday, June 25th, Skyscrapers hosted the girls of Scituate Brownie Troops 221 & 53 at Seagrave Memorial Observatory in fulfillment of requirements for their Space Science Adventurer badges. The weather forecast was mixed for that evening but since we had planned and canceled this event six previous times over the last 13 months because of weather, I made the call to go ahead. I'm glad we did, because it turned out to be an absolutely clear and pleasant evening!

We commenced the evening at about 7:30pm with the arrival of 10 Brownies accompanied by parents and siblings for a total of 25 people. We began the program in the meeting hall starting with a discussion about the planets. After passing out the planet stickers, which were a big hit, I asked many questions about the planets and these girls had almost all the answers! We talked about the number of planets, sizes, moons, and the order from the sun. From there, we moved onto the Moon and talked about where it came from and why it looks different each night. The girls participated in an activity to demonstrate the phases of the moon where the girls represented the earth, I represented the moon, and a giant flashlight represented the sun. We then distributed a Sky & Telescope brochure that contained a nice map of the moon and spent some time discussing some of the surface features on it.

The Sun was our next topic. We talked about its size relative to the planets, where it came from, why it burns so brightly, and the fact that the sun is actually a star! We had some nice holographic photos along with some solar bookmarks courtesy of NASA. The hologram showed the sun in three distinct types of light as you turned the photo which the kids thought was very cool. Next, we talked about constellations; what they are, what they look like, and how to identify them. To help with this, we all constructed a star finder game that listed all the constellations that are visible during that month. The children had a wonderful time putting them together and playing the game with each other.

After about an hour, we moved outside where member Mark Munkacsy had the dome open with the Alvan Clark in operation to observe the moon. Member Jim Hendrickson had the 12" Meade open as well, providing views of the Epsilon Lyrae (double double) and Arcturus. Both the children and the adults enjoyed observing through the telescopes and lively discussions ensued about the night sky while they waited for their turns at the eyepiece. By 9:30, the children were ready to head home and so we said our goodbyes and closed the site. The most common comment from the group was how they planned to come again during a public observing night. All in all, it was a great night for the children and their families, and I was happy we could provide that for them in the context of astronomy.

Lunatic's Corner

Crater Fracastorius

by Michael Corvese

Girolamo Fracastoro lived from 1478-1553 spending most of time in his hometown of Verona, Italy. He was a typical renaissance man in every sense of the word. He was a poet, physician, mathematician, geographer, philosopher, geologist, and astronomer. He was a contemporary of Nicholas Copernicus, both having attended the University of Padua at the same time. However, Fracastoro did not ascribe to heliocentric theories. In fact, he was a staunch proponent of Eudoxian theory which placed the earth at the center of the universe surrounded by concentric spheres. He wrote a treatise in 1538 (Homocentrica) endorsing this theory, five years before Copernicus wrote his historic text on heliocentric theory.

Noted for his medical skills, he was elected as the physician to the Council of Trent in 1545 under Pope Paul III. He is best known for his innovative theories on contagious diseases. He was the first to postulate that small seeds or spores of disease could spread both directly and indirectly, multiplying rapidly and propagating to cause disease. This was the first comprehensive explanation of early germ theory. He was the first to propose that contagious disease could spread through direct contact with the infected, indirect contact with another medium (clothing, bed linens, furniture, etc.), or through the air over long distances. He extensively studied the modes of infection of syphilis, typhus, and leprosy, developing the first methods of modern epidemiology. Way ahead of his time, Fracastoro's theories on germs would not be universally accepted for over 300 years when Pasteur and Koch provided experimental evidence of germ theory in 1861.

Girolamo Fracastoro died of a stroke in 1553 at the age of 75. A statue was erected in his honor in 1559 in his hometown of Verona and is in the main square of the city.

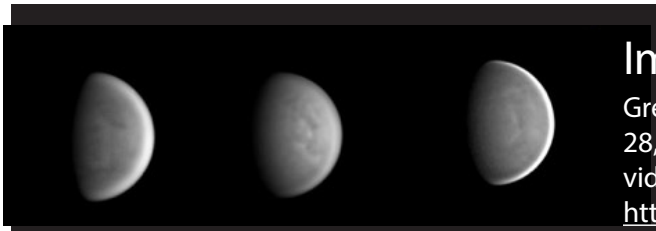
The crater named for Fracastoro, Fracastorius, is an ancient crater located on the southwestern shore of Mare Nectaris. It is about 60 miles in diameter and pre-dates Mare Nectaris, placing it very early in the Moon's evolution (The Pre-Nectarian Period is defined as the period between the formation of the lunar crust and the Mare Nectaris impact basin).

Fracastorius is a complex crater but has been almost completely destroyed by the formation of Mare Nectaris and subsequent lunar events. The northern wall has been virtually obliterated by the Nectaris lava and most of the crater floor is covered in this ancient lava flow. The western rim is pockmarked with craters from later impacts and a curious triangle-shaped formation. The rim that has survived reaches a maximum height of about 1.5 miles.

An arcuate (arc-shaped) rille crosses through the center of the crater and was formed by cooling lava from Nectaris in a process called subsidence. Good optics and excellent seeing conditions may reveal the rille in a small telescope. Many secondary craters are associated with Fracastorius (see photo) given its great age.

Fracastorius can be observed near the terminator on Lunar day 5 (waxing crescent) and Lunar day 19 (waning crescent) and has many interesting features. When observing this crater, think about the man that some have placed in the same category as Leonardo DaVinci, people that stand out in history for their intelligence, innovation, and foresight during the Renaissance.

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



Imaging Venus in a Different Light

Greg Shanos presented at the ALPO Virtual Conference on July 28, 2023 regarding his recent Venus imaging project. Details and video can be found at:
http://www.theskyscrapers.org/seeing-venus-in-a-different-light

Skylights: August 2023

by Jim Hendrickson

August 4 is the last sunset in the 8pm hour. The next 8pm sunset won't occur until May 16, 2024.

After spending 21 days in Cancer, the Sun enters Leo on August 11. On the 23nd, it is located 0.2° south of Regulus. This comes just a few hours after it reaches the midpoint in declination between the Tropic of Cancer and the equator, declination, 11°43.1".

On August 22, the Sun rises after 6am for the first time since April 18.

The Full Sturgeon Moon occurs at 2:31pm on the 1st. The Moon rises in the southeast, in Capricornus, at 8:36pm. This is the first of two Full Moons in August.

Typically, the Harvest Moon follows the August Sturgeon Moon, but this year, the Sturgeon Moon occurs early enough in the month, that the following full Moon occurs more than one-half of a lunar synodic month from the September equinox

The second full Moon of August, a blue Moon, occurs at 9:35pm on August 30. This full Moon occurs in Aquarius, and rises at 7:36pm, about 14 minutes after sunset.

Besides being a blue Moon, this full Moon is notable for occurring within days of the opposition of Saturn, which you may notice hovering just 4° west-northwest of the Moon as it rises that evening.

Following the Sturgeon Moon, follow the waning Moon as it passes 3.7° south of Saturn after midnight on the 3rd, and 4° east of Neptune early on the 4th.

Last quarter occurs on the 8th, and will be placed just 1.7° north of Jupiter. The following morning, the waning crescent Moon will be 2.5° southwest of the Pleiades cluster in Taurus.

On the morning of the 15th, an opportunity exists to observe a very old, 28.7-day, 0.9% illuminated crescent Moon in Cancer, 5° east of the Beehive Cluster, M44.

New Moon occurs on the 16th, marking the start of Brown Lunation Number 1245. The 2-day waxing crescent appears 1.0° north of Mars on the 18th.

One of the most fascinating sights to observe is the Moon occulting, or passing in front of, a bright star. We have a chance to witness such an event just after first quarter, on the 24th, when the dark limb of the Moon occults Antares, in Scorpius, at 10:55pm, about 25 minutes before moonset.

Another opportunity to view a lunar occultation of a star occurs on the morning of August 4, when the waning gibbous Moon passes in front of 4.2 magnitude Psi1 Aquarii. The bright limb of the Moon passes in front of the star at 1:11am, and it re-emerges from the dark limb 1 hour later.

Mercury has an evening apparition in August, though it is not a very favorable one, with the fleeting innermost planet remaining low in the west after sunset. It reaches its greatest elongation, 27° east, on the 9th. Mercury becomes difficult to observe later in the month, as it sets shortly after sunset.

We've seen the end of the Evening Star for this year, as Venus reaches inferior conjunction on the 13th. It begins setting before the Sun on the 5th.

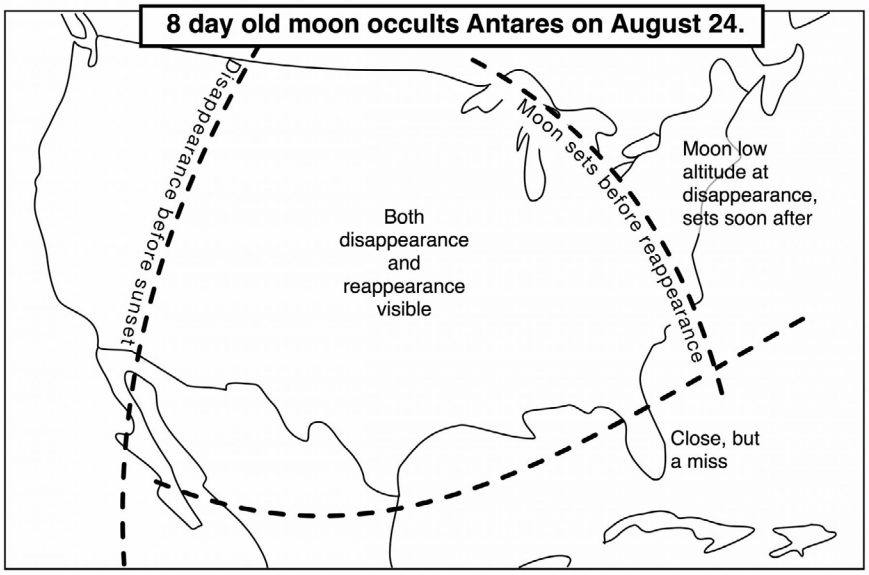
Through the second half of August, Venus quickly re-emerges as the Morning Star, rising at least an hour before sunrise beginning on the 24th. Venus remains close to Earth all month, at under 0.33 AU, and will reveal a large and thin crescent phase with even a small telescope, presuming you have a clear horizon to view it.

Mars continues to hang low in the western sky for a short time after sunset. The Red Planet, which has been in Leo since June 20, moves into Virgo on August 17, and is joined by the 2.2-day waxing crescent Moon the following night. By the end of the month, it sets less than one hour after sunset.

Jupiter is now an evening planet, rising just before midnight in early August, and reaches western quadrature on the 6th.

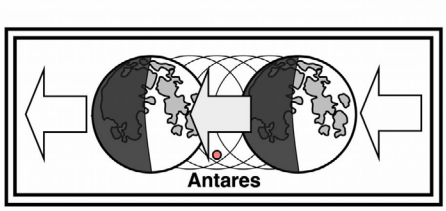
Saturn reaches opposition in Aquarius

If you can see only one celestial event this August, see this one.



The full occultation event on Aug. 24 of Antares by the moon occurs for the central part of the US. Both coasts will not see the complete event. For disappearance and reappearance times in your area, visit the International Occultation Timing Association webpage:
http://lunar-occultations.com/iota/bstar/0824zc2366.htm

Start looking in the southwest shortly after sunset on August 24. Watch the moon slowly approach Antares, then suddenly block it. Binoculars will give better view.



Occultations demonstrate the moon's eastward orbital motion as Earth's rotation causes it to move in a westward arc across the night sky.

Events in August

1 **Full Sturgeon Moon**
3 Moon 3.7° S of Saturn
4 Moon 3.0° E of Neptune
6 Jupiter Quadrature W90°
8 **Last Quarter Moon**
8 Moon 1.7° N of Jupiter
9 Moon 2.5° SW of M45
9 **Mercury Greatest Elongation E27**
12 Mercury 4.7° W of Mars
13 Venus Inferior Conjunction
15 Uranus Quadrature W90
16 **New Moon (1245)**
18 Moon 1.0° N of Mars
21 **Mercury Stationary**
24 First Quarter Moon
24 Moon Occults Antares
26 8 Flora Opposition (mag. 8.5)
27 Saturn Opposition
28 Uranus Stationary
30 **Full Blue Moon**
30 Moon 4.5° E of Saturn

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

on August 27. At 8.76 AU from Earth, the ringed planet is as close and bright as it will appear all year.

Saturn's ring plane angle (and also the orbital planes of its major moons) is more narrow to our perspective than it has been in over a decade. This makes detail in Saturn's rings more difficult to observe, but with a larger-aperture telescope, you may begin to see its moons undergoing transits, occultations, and eclipses.

In early August, Saturn lies at nearly the same right ascension as NGC 7293 (Caldwell 63), the Helix Nebula, a large, but dim, planetary nebula in Aquarius. This makes the elusive nebula relatively easy to find using a telescope on an equatorial mount. On a moonless night, after aiming at Saturn, move the telescope 10° to the south.

Another interesting note with respect to Saturn's position: On August 5, the ringed planet will be in conjunction with Gonggong, a dwarf planet barely the size of Saturn's moon Dione, that lies over 88 AU away from Earth, nearly ten times the distance to Saturn.

Saturn is joined by the full Blue Moon on the 30th.

Uranus is just a few degrees east of Jupiter, in Aries. At magnitude 5.8, it can be found with binoculars just a short distance from the Pleiades.

About halfway between Jupiter and the Pleiades, look for a quadrilateral of 4th and 5th magnitude stars resembling a radio telescope, with the open end of the dish pointed south. The stars are Botein (delta Arietis), zeta, tau1 and tau2 Arietis. Uranus (magnitude 5.8) forms an equilateral triangle with the southern two stars (the wide end of the radio dish).

Uranus is stationary and begins its retrograde motion on the 28th.

Distant Neptune, a blue speck shining at magnitude 7.7, is in Pisces, and rises just before 10:00pm in early August. It can be found 1° east of 20 Piscium, a magnitude 5.5 star located 5° south of the Circlet asterism. On the 5th, the waning gibbous Moon is 3° east of Neptune on the 4th.

Pluto, in Sagittarius, is well-placed for viewing in late evening. At a distance of nearly 34 AU and magnitude 14.4, it is best viewed during mid-month, when bright moonlight is out of view. It can be found 1.4° south-southwest of the globular cluster M75.

Asteroid 4 Vesta continues to move eastward through Taurus in August. It begins the month just over 3 AU away. At the end of August, it will be about 2.7 AU distant, moving to within 2.4° south of Tianguan (Zeta Tauri). At magnitude 8.2, it can be seen with binoculars on a dark night.

Ceres is now in central Virgo. At a distance of about 3 AU, it shines at magnitude 8.8, and is getting more difficult to observe as it gets lower in the sky. At mid-month, Ceres sets around 10:00pm.

The Perseid meteor shower peaks on August 12-13, but the shower remains active through much of August. The meteors originate from northern Perseus, which, although is circumpolar, the best chances of seeing meteors occurs after midnight, when the radiant point is higher in the sky. The meteors are dust grains left behind by periodic comet 109P/Swift–Tuttle. This year's peak activity coincides with a favorable waning crescent Moon.

August Blue Moon

by Francine Jackson

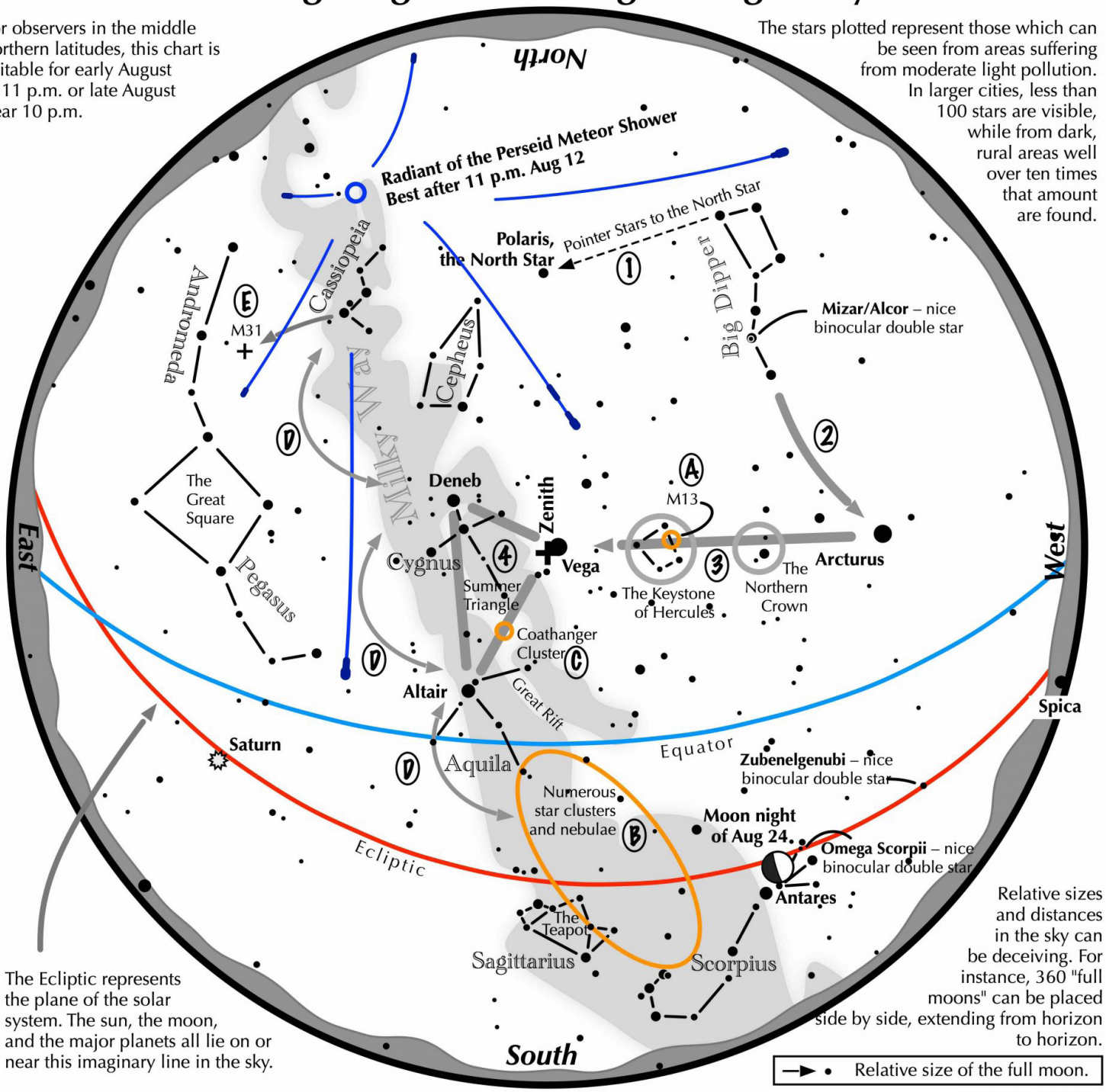
By now, we have all enjoyed the Full Sturgeon Moon of August; however, as it occurred so early in the month, we are having a second Full Moon, on August 30th. But, does it have a name? We can't call it the Harvest Moon, as that's pretty much reserved for September.

Normally, a second Full Moon in a month is referred to as a Blue Moon, the reason for it seemingly lost in obscurity. In fact, there are two definitions for this name, but we'll just keep this one for now. Also, we heard that this past week's Full phase was considered a supermoon, as it was in its close proximity to us, at 222,171 miles, and therefore it should have appeared fairly large. However, the second Full Moon this month will be even closer, at 222,043 miles. Apparently, in addition to being a Blue Moon, we can refer to it as a SUPER-supermoon. Enjoy the closeness of the Moon all this month.

Navigating the mid August Night Sky

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August near 10 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 mid August 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 intersects Arcturus, the brightest star in the June evening sky.
3. 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.
4. High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

A: On the western side of the Keystone glows the Great Hercules Cluster.
B: Between the bright stars 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, including the Great Rift.
E: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.

The Sun, Moon & Planets in August

This table contains the ephemeris of the objects in the Solar System for each Saturday night in August 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	**5**	8 59.3	17 05.6	Cnc	-26.8	1891.8	-	-	-	1.015	05:43	12:52	20:00
Sun	**12**	9 25.9	15 06.4	Leo	-26.8	1893.7	-	-	-	1.014	05:50	12:51	19:51
Sun	**19**	9 52.2	12 55.3	Leo	-26.8	1896.0	-	-	-	1.012	05:58	12:50	19:41
Sun	**26**	10 18.0	10 34.3	Leo	-26.8	1898.8	-	-	-	1.011	06:05	12:48	19:30
Moon	**5**	23 59.3	-3 45.6	Psc	-12.6	1958.3	134° W	85	-	-	22:03	04:05	10:21
Moon	**12**	6 01.5	27 05.8	Gem	-10.6	1788.1	49° W	17	-	-	01:47	09:57	18:07
Moon	**19**	11 40.0	4 15.5	Vir	-9.5	1779.8	28° E	6	-	-	08:54	15:11	21:17
Moon	**26**	17 25.7	-28 22.3	Oph	-12.3	1929.6	110° E	67	-	-	16:42	20:58	01:14
Mercury	**5**	10 41.9	7 25.0	Leo	0.2	7.0	27° E	57	0.462	0.965	08:06	14:35	21:02
Mercury	**12**	11 06.4	3 31.7	Leo	0.4	7.8	27° E	46	0.466	0.863	08:16	14:31	20:44
Mercury	**19**	11 21.1	0 35.8	Leo	0.8	8.8	25° E	33	0.457	0.764	08:13	14:16	20:20
Mercury	**26**	11 22.5	-0 37.6	Leo	1.5	9.9	20° E	19	0.435	0.679	07:49	13:49	19:48
Venus	**5**	9 41.8	7 04.7	Leo	-4.3	56.5	14° E	3	0.728	0.300	07:03	13:30	19:51
Venus	**12**	9 25.3	7 14.3	Leo	-4.2	58.5	8° E	1	0.728	0.289	06:18	12:46	19:14
Venus	**19**	9 08.5	7 59.8	Cnc	-4.2	57.8	12° W	2	0.728	0.293	05:31	12:02	18:33
Venus	**26**	8 56.0	9 03.6	Cnc	-4.3	54.5	20° W	6	0.728	0.310	04:48	11:23	17:58
Mars	**5**	11 08.8	6 26.6	Leo	1.8	3.9	33° E	97	1.645	2.394	08:35	15:00	21:25
Mars	**12**	11 25.0	4 40.2	Leo	1.8	3.9	31° E	97	1.640	2.422	08:30	14:49	21:07
Mars	**19**	11 41.2	2 51.8	Vir	1.8	3.8	29° E	98	1.635	2.448	08:25	14:37	20:49
Mars	**26**	11 57.4	1 01.9	Vir	1.8	3.8	26° E	98	1.629	2.470	08:20	14:26	20:31
1 Ceres	**5**	13 01.6	0 56.1	Vir	8.8	0.4	62° E	97	2.651	2.977	10:47	16:52	22:57
1 Ceres	**12**	13 10.5	-0 21.9	Vir	8.9	0.4	58° E	97	2.656	3.058	10:33	16:33	22:34
1 Ceres	**19**	13 19.6	-1 39.7	Vir	8.9	0.4	53° E	98	2.661	3.136	10:19	16:15	22:11
1 Ceres	**26**	13 29.1	-2 57.2	Vir	8.9	0.4	49° E	98	2.666	3.210	10:06	15:57	21:48
Jupiter	**5**	2 48.0	14 53.4	Ari	-2.3	40.2	88° W	99	4.962	4.888	23:42	06:39	13:37
Jupiter	**12**	2 50.4	15 02.7	Ari	-2.3	41.1	94° W	99	4.963	4.782	23:16	06:14	13:12
Jupiter	**19**	2 52.2	15 09.3	Ari	-2.4	42.1	101° W	99	4.964	4.676	22:50	05:48	12:47
Jupiter	**26**	2 53.4	15 13.2	Ari	-2.4	43.0	107° W	99	4.965	4.573	22:23	05:22	12:20
Saturn	**5**	22 31.7	-11 07.8	Aqr	0.6	18.7	157° W	100	9.779	8.838	21:02	02:23	07:45
Saturn	**12**	22 29.9	-11 19.3	Aqr	0.5	18.8	164° W	100	9.777	8.799	20:33	01:54	07:15
Saturn	**19**	22 28.0	-11 31.2	Aqr	0.4	18.9	171° W	100	9.775	8.774	20:04	01:25	06:45
Saturn	**26**	22 26.0	-11 43.3	Aqr	0.4	18.9	178° W	100	9.773	8.763	19:32	00:51	06:10
Uranus	**5**	3 22.1	18 10.5	Ari	5.8	3.6	80° W	100	19.637	19.796	00:02	07:13	14:24
Uranus	**12**	3 22.6	18 12.3	Ari	5.8	3.6	86° W	100	19.636	19.679	23:35	06:46	13:57
Uranus	**19**	3 22.9	18 13.5	Ari	5.7	3.6	93° W	100	19.635	19.560	23:08	06:19	13:29
Uranus	**26**	3 23.0	18 14.0	Ari	5.7	3.6	99° W	100	19.634	19.442	22:41	05:51	13:02
Neptune	**5**	23 52.3	-2 12.0	Psc	7.8	2.3	135° W	100	29.907	29.182	21:50	03:44	09:38
Neptune	**12**	23 51.9	-2 15.4	Psc	7.8	2.3	142° W	100	29.907	29.104	21:22	03:16	09:10
Neptune	**19**	23 51.3	-2 19.2	Psc	7.8	2.4	149° W	100	29.907	29.038	20:54	02:48	08:41
Neptune	**26**	23 50.7	-2 23.3	Psc	7.8	2.4	156° W	100	29.907	28.984	20:26	02:20	08:13
Pluto	**5**	20 06.1	-23 02.7	Sgr	14.4	0.2	166° E	100	34.823	33.837	19:21	23:54	04:27
Pluto	**12**	20 05.5	-23 05.1	Sgr	14.4	0.2	159° E	100	34.828	33.877	18:53	23:26	03:59
Pluto	**19**	20 04.8	-23 07.3	Sgr	14.4	0.2	153° E	100	34.833	33.931	18:25	22:58	03:31
Pluto	**26**	20 04.2	-23 09.3	Sgr	14.4	0.2	146° E	100	34.837	33.997	17:57	22:30	03:02

NASA Night Sky Notes:

Super Blue Sturgeon Moon

by Vivian White

On August 1st, catch a full Moon rising in the east just 30 minutes after sunset. We are seeing the entire sunlit side of the Moon as it is nearly (but not quite) in line with the Sun and Earth. The Farmers' Almanac calls this month's Moon the "Sturgeon Moon", for the time of year when this giant fish was once abundant in the Great Lakes. Cultures around the world give full Moons special names, often related to growing seasons or celebrations.

As the Moon rises later and later each night, the bright sunlit part appears to get smaller or "wane" - we call this a waning gibbous Moon. About a week later, on August 8th, we see only one half of the Moon alight. At this phase, the Moon rises around midnight and sets around noon. Have you ever seen the Moon in the daytime? You may notice this phase towards the southwest in the morning sky. Hold up a ball or egg beside it and see how the Sun lights up the same part.

By August 16th, the Moon has gone through its crescent phase and is now only showing its dark side towards the Earth. Did you know the dark side and the far side of the Moon are different? The Moon always shows the same face towards Earth due to the gravitational pull of Earth, so the far side of the Moon was only viewed by humans for the first time in 1968 with the Apollo 8 mission. However, the dark side is pointed at us almost all the time. As the Moon orbits the Earth, the sunlit side changes slowly until the full dark side is facing us during a new Moon. When the Moon is just a small crescent, you can sometimes even see the light of an Earthshine reflecting off Earth and lighting up the dark side of the Moon faintly.

Then as the Moon reappears, making a waxing (or growing) crescent Moon, best seen in the afternoons. By the time it reaches the first quarter on August 24th, we see the other half of the Moon lit up. At this point, the Moon passes through Earth's orbit and marks the spot where the Earth was just 3 hours prior. It takes the Earth about 3 hours to move the distance between the Moon and Earth.

The Moon on August 30th is referred to as a blue moon. Blue moons are not actually blue in color of course; it refers to the second full Moon in any month. Since it takes 29.5 days to complete the cycle from full to new and back to full, most months will see only one. But occasionally, you'll fit two into one month, hence the phrase "once in a blue moon." We see a blue moon about once every 3 years on average - next in May 2026. In addition, this full Moon appears larger in the sky than any other full Moon this year - an unofficial supermoon. A supermoon appears larger than average because it is closer in its slightly elliptical orbit. The difference in apparent size between the smallest and largest full Moon is about the size difference between a quarter and a nickel. Even at its largest, you can always cover the whole Moon with your pinky extended at arm's length.

Follow the Moon with us this month and keep a Moon journal if you like - you may be surprised what you discover! moon.nasa.gov/moon-observation

Image of waning crescent Moon shown next to a ball on a stick that is lit by the Sun on the same side as the Moon, with trees and a blue sky in the background. Try this with an egg or any round object when you see the Moon during the day! Credit: Vivian White

Earthshine as seen from the International Space Station with the sun just set - Astronaut Photograph ISS028-E-20073 was taken on July 31, 2011, and is provided by the ISS Crew Earth Observations Facility and the Earth Science and Remote Sensing Unit, Johnson Space Center

Observer's Challenge:

NGC 6217/5: Galaxy in Ursa Minor

by Glenn Chaple

Magnitude 11.2, Size 3.0' X 2.4'

When it comes to offering galaxies for the backyard observer, Ursa Major and Ursa Minor are at opposite ends of the spectrum. Sky and Telescope's Pocket Sky Atlas plots several dozen in Ursa Major, nine in the Bowl alone, compared to just one in the entirety of Ursa Minor. Our July Observer's Challenge is that lone Ursa Minor galaxy, NGC 6217.

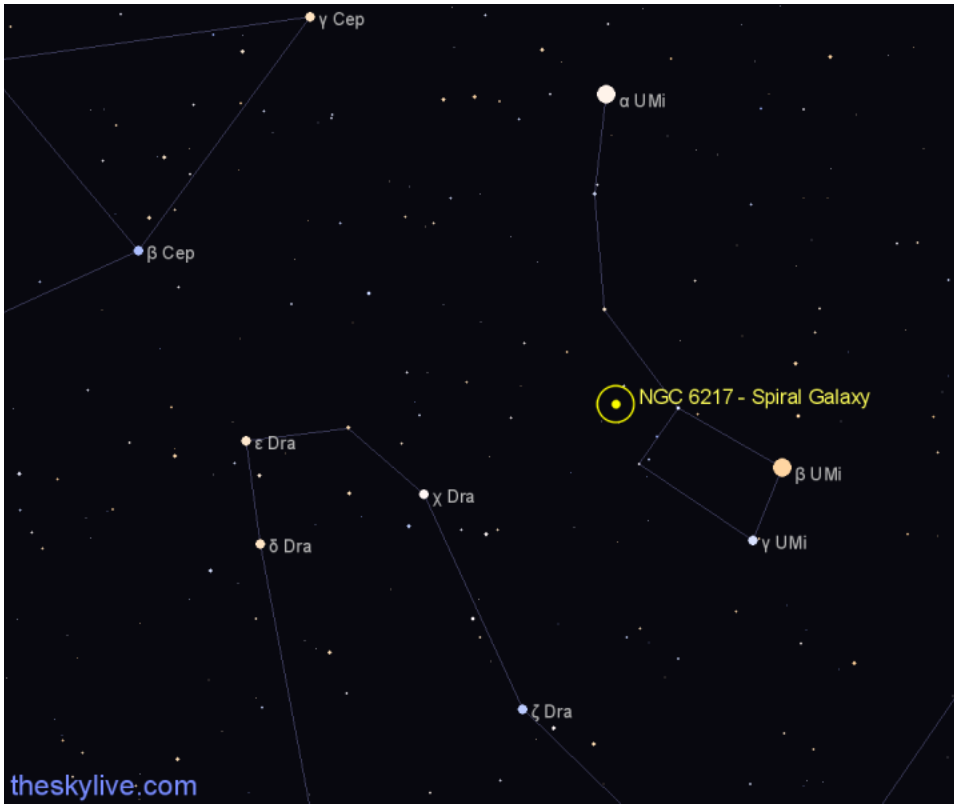
NGC 6217 was discovered by William Herschel on December 12, 1797, and is bright enough to be included in the Herschel 400 observing program. Its 2000.0 coordinates are: RA 16h32m39.2s, Dec +78o11'53.6". Star-hoppers can find their way to NGC 6217 by working their way 2.5 degrees ENE from Zeta Ursae Minoris or a similar distance NNE from Eta Ursae Minoris.

I observed NGC 6217 on the evening of June 19, 2023, using a 10-inch f/5 reflecting telescope and a magnifying power of 139X. Under my suburban magnitude 5 skies, I was able with averted vision to make out a pair of starlike specks surrounded by a faint oval-shaped haze oriented in a NW to SE direction. Upon returning indoors, I checked my resources and learned that the central-most speck was the galaxy's nucleus, while the other was a foreground Milky Way star.

Classified as a barred spiral galaxy, NGC 6217 is undergoing a high rate of star formation. Assuming a distance of 67 million light years, it has a diameter of 55,000 light 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.

NGC6217, an interesting barred spiral 67 MLY away in Ursa Minor. This is a starburst galaxy, and also reported to have a "false outer ring" to which I believe is the blue spiral outer arms seen in my image encircling the inner galaxy. This was taken with my 32 inch scope, with ZWO ASI6200 camera with R/G/B and Lum filters. I also added some Ha filter imaging, but little showed. I read recently that for galaxies red shifting away from us, after 50-70 MLY, the "red Ha" is red shifted out of the narrow band pass that the filter will transmit, and this may explain why even if a starburst galaxy, Ha regions appear less intense at this distance away. Total integration time is about 4 hours. Processed with CCD stack, then PixInsight. Mario Motta



August 2023

Volume 41

STARRY SCOOP

Editor: Kaitlynn Goulette

WHAT'S UP

This month, we are treated to the Sagittarius region as the constellation reaches its highest point in the southern sky. Astronomers have found that our Milky Way is a typical spiral galaxy, and the Sagittarius region is where the galactic center is located. This area is the "downtown district" of our galaxy, home to many deep-sky celestial treasures. The edge-on view of the Milky Way spans the entire sky, stretching from the Sagittarius region, through Cygnus, and continuing to Cassiopeia in the north.

Saturn appears over the eastern horizon following sunset this month, offering great views throughout the entire night. It reaches opposition on the 27th, which is when the planet is positioned directly opposite the sun with respect to Earth. A backyard telescope reveals its beautiful rings and a handful of its moons, including its largest, Titan. Jupiter rises around midnight all month long and is a wonderful target in the morning hours for early risers. Its detailed features and atmospheric bands, along with the four Galilean moons, are never disappointing observations.

The famed Perseid meteor shower peaks this month on the evening of the 12th into the morning of the 13th. Annually, it runs from July 17th to August 24th. At its peak, the shower produces up to 100 meteors per hour. The crescent moon will be in the sky but shouldn't impede the show very much. For best viewing, find yourself in a dark location after midnight.

August 25th marks 20 years since the Spitzer Space Telescope was launched. It was the fourth and final mission of NASA's Great Observatory Program, which included the Hubble Space Telescope, Chandra X-Ray Observatory, and Compton Gamma-Ray Observatory. Spitzer, unlike any spacecraft before it, utilized an Earth-trailing orbit and studied infrared radiation with its Cryogenic Telescope Assembly. Spitzer retired on January 30th, 2020, after more than 16 years of operation.

AUGUST'S SKY

1: Full Moon, Supermoon

10: Mercury at Greatest Eastern Elongation

12-13: Perseid Meteor Shower Peak

16: New Moon

27: Saturn at Opposition

31: Full Moon, Supermoon, Blue Moon

Credit: Roger B. Culver

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

OBSERVATIONS

The rainy weather has made it difficult to observe recently, but while on vacation at the beach I was able to stargaze under less light-polluted skies than at home. I didn't bring any telescopes due to the salt and sand, but a pair of binoculars was my weapon of choice. The southern view was over the ocean with minimal light pollution, and I had fun sharing the binoculars with my family and friends.

Lately, even on the partly cloudy nights, I've found enthusiasm to observe from fellow astronomers Richard Sanderson and Warren Carrington, who have been consistently stargazing and sharing their observations. After the sun goes down, Richard Sanderson, President of the Springfield STARS Club, enjoys views of the moon on rare clear nights. Along with spending time under the night sky, Warren Carrington has also taken his solar imaging to the next level. Much of their great work can be found on the STARS Club-Massachusetts Facebook Page. Warren showcases his photography on his website wcarrington.com, which I recommend visiting.

Inspired by Richard and Warren, I put my new 8-inch Schmidt-Cassegrain telescope to use. The persistent cloudiness limited me primarily to viewing the moon, but I enjoyed both observing and imaging some of my favorite lunar targets, including the Clavius and Gassendi regions. In the coming weeks, I want to focus on planetary imaging and capture Saturn and Jupiter in the early morning hours before school is back in session.

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 for the month of August is the Butterfly Nebula, designated NGC 6302. This nebula has one of the most complicated structures studied by astronomers. The central star's outflow forms an hourglass appearance, in contrast to typical ring-shaped planetary nebulae. Dust clouds prevent astronomers from observing the central star directly, but it can be detected by the ultraviolet radiation it emits.

At about 4,000 light-years away, the entire nebula spans over 3 light-years. It's located in the constellation Scorpius, four degrees west of the star Shaula, the scorpion's "stinger."

Butterfly Nebula
Photo Credit: NASA/ESA/Hubble

Photo by: Warren Carrington

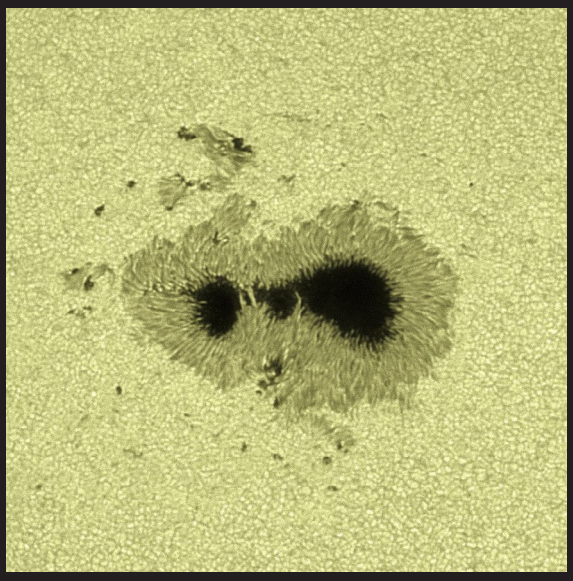
Solar Activity on July 11 by Conrad Cardano

The weather has been really lousy this summer between the clouds and Canadian smoke. I finally got a good one.

This video was taken on July 11, 2023 from 11:28 am to 12:29 pm.

Equipment used: scope: Lunt 60mm H-alpha , camera: ASI294MM Pro using 2.3 micron pixels, Exposure: 1 ms, Capture software: SharpCap Pro, Stacking software: Auto-stakkert, Processing Software: Astro Art, 100 frames were taken every minute, dark and flat frames were taken and applied by SharpCap., frames were cropped to concentrate just on this prominence.

See full video at http://www.theskyscrapers.org/solar-activity-july-11-2023



White light solar images on July 12 by Steve Hubbard

6 inch refractor, Altair solar white light wedge, Apollo mi
camera with 5nm green photosphere filter.

AstroAssembly 2023

Friday & Saturday, September 29 & 30

Seagrave Memorial Observatory 47 Peeptoad Road North Scituate, Rhode Island

6:00 PM **AstroEve Friday Night Social Hour**

7:00 PM **Friday Night Short Talks**
Free to attend by all

8:30 PM **Friday Night Observing at Seagrave Memorial Observatory**
Weather-permitting

All day Saturday
Swap Table (please bring your own table), Solar Viewing, Astrophotography Contest, Homemade Telescopes (bring yours!)

9:00 AM **Registration Open**
Coffee & pastries provided. Registration includes evening pizza and snacks, members: $25, non members: $30

10:30 AM **Stephen LaFlamme, Skyscrapers, Inc.**
Peering DEEP into the Andromeda Galaxy

12:00 PM **Lunch**
See selections below. Pre-registration required

Astrophotography Contest: Noon to 4pm
See website for more information

1:15 PM **Darryl Davis & Caity Sullivan, Charles Hayden Planetarium**
A Brief History of the Charles Hayden Planetarium

2:30 PM **Dr. Mario Motta, ATMoB & Massachusetts Medical Society**
Light Pollution Effects on Human Health & Environmental Damage

3:45 PM **Ed Ting, ScopeReviews**
Five to Buy & Five Not to Buy - Equipment Recommendations from Ed

5:00 PM **Food/Social Hour**
Pizza, snacks, soda, water & coffee

6:00 PM **Raffle & Astrophotography Awards**

6:30 PM **Sean Walker, Sky & Telescope**
Get Ready for Totality 2024

8:00 PM **Observing at Seagrave Memorial Observatory**
The observatory's telescopes will be available for observing, or set up your own telescope on the grounds.

Times of specific activities are subject to change. Astrophoto contest submissions must be printed and mounted or framed. For up-to-date program information, visit our website: http://www.theskyscrapers.org/astroassembly2023

____ Registrations x $30 each = $ _____

____ Registrations (Skyscrapers member) x $25 each = $ _____

____ Registrations (youth under 18) Free

Boxed Lunch * x $15 each = $ _____

____ Grinder: Italian Deluxe

____ Grinder: Turkey

____ Grinder: Roast Beef

____ Spinach Pie

____ Garden Salad Dressing _____

____ Caesar Salad Dressing _____

____ Greek Salad Dressing _____

Total = $ _____

Name(s) _____

_____

_____

Email (required) _____

Register online:

- or -

Send completed form and check (made payable to Skyscrapers, Inc.) to:

AstroAssembly
c/o Edward Walsh
226 Maple Street
Danielson, CT 06239

* Deli lunch includes chips, drink and a cookie. Grinders come toasted, with lettuce, tomato, onion and mild pepper rings. Spinach Pie comes with pepperoni, olive and mozzarella. Available dressings are Oil & Vinegar, Ranch, Italian, Greek and Honey Mustard.

Directions to Seagrave Memorial Observatory

www.theSkyscrapers.org

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.

SKYSCRAPERS INC.

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