the Skyscraper
vol. 49 no. 6
June 2022

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

In This Issue:

Seagrave Memorial Observatory Open Night
Saturdays,
June 4 & June 18

Solar Star Party
Saturday, June 18

AstroAssembly
Saturday, October 1

The Radio JOVE Project & NASA Citizen Science

A presentation by Chuck Higgins Saturday, June 4 at Seagrave Observatory & via Zoom, 7:00pm EDT

Meeting presentation will also be conducted over Zoom. Contact Linda Bergemann (LBergemann@aol.com) for Zoom Meeting link and information.

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 JOVE 2.0 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.

Dr. Chuck Higgins grew up in Huntsville, Alabama, and the space program and rumblings of the Apollo engine test firings at the nearby NASA Marshall Space Flight Center captured his interest in astronomy and space. He completed a B.S. degree in physics from the U. of Alabama-Huntsville and received M.S. and Ph.D. degrees from the U. of Florida where he studied the radio emissions from the planet Jupiter.

He was a National Research Council postdoctoral fellow at NASA's Goddard Space Flight Center and is now a professor of physics and astronomy at Middle Tennessee State University. He is the advisor of MTSU's Astronomy Club and he mentors undergraduate students with their research projects.

Dr. Higgins is a founding member of a NASA-sponsored education project called Radio JOVE with the goal to use radio astronomy to help students, teachers, and the public get involved in science. As part of the NASA Space Science Education Consortium (NSSEC), Radio JOVE partners with other education groups and citizen scientists to promote science education. His research is the study of the magnetospheres of Jupiter and the Sun using low frequency radio telescopes, including the Long Wavelength Array (LWA) in Socorro, New Mexico.

He is a frequent hiker in many of the great state parks in Tennessee.

President's Message

by Linda Bergemann

I am writing this message in mid-May, following a cloudy Astronomy Day. In spite of the clouds, we had a productive day at the Museum of Natural History and Planetarium. Solar observing was cancelled, but Michael Corvese, chair of the Program Committee, reported that about 150 people, adults and children, visited our exhibit tables inside the museum. My thanks to Ian Dell'Antonio, Conrad Cardano, Jim Meltzer, Mark Munkacsy, and Steve and Kathy Siok for educating the public on various topics in astronomy. And thanks to the many others who were ready to help had the weather cooperated. Special thanks to Michael Corvese and Renee Gamba for coordinating this event.

Over the last week, I have been reviewing the responses to a survey that we conducted last year. I have been looking for ideas for speakers and for activities in which our members show interest. This, and the dark cloud that seems to have settled over North Scituate, got me to thinking about radio astronomy. A couple of months ago, member Jeff Padell sent me an email article about NASA's Radio JOVE Project and its new Radio Telescope Kit. A forecast for clouds for the night of the Total Lunar Eclipse convinced me to look into it. The Radio JOVE project began in 1999, for teams of students and individuals to learn radio astronomy by building and operating a radio telescope. The scope of the Radio JOVE project was extended in 2016 to incorporate citizen science research in heliophysics. By participating in the project, citizen scientists can (1) gain hands-on experience in building and operating single-frequency radio telescopes constructed from inexpensive kits, (2) make radio observations by operating their basic radio telescopes, and (3) analyze the data obtained by the telescopes they constructed or from remote telescopes through the Internet. This sounds to me like something that might interest some members of Skyscrapers. I am in search of someone in Skyscrapers to champion establishing a group of amateur radio astronomers within Skyscrapers. If there is sufficient interest, I would then propose that the Society purchase the Radio Telescope Kit, at a cost of about $400, for installation on the grounds of Seagrave Memorial Observatory. If this sounds like something that would interest you, please contact me, and we will work together to bring this to fruition.

More cloudy weather astronomy! Are you up for a challenge? Interested in astrophotography, but not sure how to get started? How about the Summer 2022 Edition of NASA's Astrophoto Challenges? This include two challenges: the MicroObservatory Challenge and the NASA Data Challenge. Enter either challenge — or both! The MicroObservatory Challenge requires that you capture (using MicroObservatory) your own real-time telescope image of the Carina Nebula, and process it with MicroObservatory's JS94L tool. The NASA Data Challenge requires that you select any of NASA's images of Eta Carina & the Carina Nebula, and process them with MicroObservatory's JS94L tool. The challenge will end on July 31st. Find detailed instructions on how to participate in either challenge on the MicroObservatory Challenge page and the NASA Data Challenge page. The MicroObservatory Team and NASA's Universe of Learning will review all of the submissions, and highlight entries that demonstrate compelling and creative image-processing techniques. Standout entries will be recognized on the MicroObservatory Challenge page and the NASA Data Challenge page. Every standout entry will receive expert feedback from NASA scientists! Skyscrapers will showcase all of the entries at a meeting in the Fall.

New Member

Welcome to Skyscrapers

Bill Cooper,
of San Francisco, CA

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 **June 15** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.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.

Solar Day: June 18

by Steve Siok

Saturday, June 18, is "Solar Observing Day" at Seagrave Observatory! June 18 is the Saturday closest to the Solstice so it is an apt day to celebrate the sun! Skyscrapers hope we have clear skies and we can have fun with a whole bunch of activities.

Solar observing will begin at 1 PM. All members, guests and public are invited. We will have several telescopes available for solar observing; all of them safe for solar viewing. We will have a telescope with a white-light (aperture) filter to see sunspots under normal white light; the best way to see sunspot groups. We will have a telescope with a hydrogen-alpha filter for viewing prominences/eruptions coming off the edge of the sun in addition to sunspots. We will also have a Sunspotter telescope which will project an image of the sun onto a paper surface, for very safe observing. At 1:30 and 2:30 PM, Skyscrapers member and solar observer Jeff Padell will give a presentation in the meeting hall discussing all aspects of solar physics, chemistry and dynamics. And, we will have a short video about the sun from the Kalamazoo Astronomical Society which will run continuously, also in the meeting hall.

The second phase of our day will be a telescope workshop. Several new members have expressed a need for assistance setting up and observing with their scopes. This is meant to be a time to get together, talk about scopes and assist those struggling to get started. This part of the program will begin at 3 PM. If you plan to bring your telescope for some guidance, please let us know the make and model in advance so we can have someone prepared to assist. Help with polar alignment and finding objects will occur after dark.

We will have a suppertime! Not sure yet what we will do, but stay posted. Starts at 5 PM.

Finally, we will observe with the public in the evening, clear skies permitting!

So, everyone, please mark June 18 on your calendars. I am hoping for clear skies and think we can have a real old-fashioned day of observing.

Lunar Observing Group Meeting

Every second Monday at 7 PM via Zoom

New participants are welcome to join at anytime. If you are interested in participating in this program, please send an email to corvesemichael@gmail.com

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

Skylights: June 2022

by Jim Hendrickson

June gives us the nights with the fewest hours of darkness, but there is still much to see during these short nights.

Solstice occurs at 5:14 on the 21st, and late in the afternoon on the 21st, the Sun crosses from Taurus and into Gemini. Earliest sunrise occurs at 5:10am on June 14, and the latest sunset occurs at 8:24pm on June 27. With solstice comes the shortest night of the year, June 20-21. During this overnight period, we're only in astronomical darkness (when the Sun is 18° or more below the horizon) for four hours and 23 minutes. Astronomical twilight ends at 10:35pm and begins at 2:58am.

Most are familiar with the twelve zodiac constellations, and that the Sun crosses through 13, as it spends about 18 days in the non-zodiac constellation Ophiuchus in early December. Although the ecliptic, the apparent path on the sky of the center of the Sun as seen from the center of Earth, does not go through more than 13 constellations, the southern portion of the Sun's disk actually spends a few hours in a 14th, Cetus, in late March.

If you look at a map of the constellations with the ecliptic plotted, you can almost see how the Sun is leaping over Orion, reaching its crest just as it passes over the hunder's club, before beginning to descend once again.

For 3 ½ days in June, leading up to the solstice, the southern limb of the Sun is within ⅓ ° of the northernmost boundary of Orion, the section of the constellation representing the hunter's club.

June begins with the Moon going through its waxing crescent phase. On the 1st, the dwarf planet Ceres is just 1.5° to its west. On the 5th, the crescent Moon will be just 0.2° from 3rd magnitude Eta Leonis, and become part of Leo's Sickle asterism for one night. The Moon reaches its first quarter phase in Leo on the 7th.

The Moon occults Dschubba (Delta Scorpii) on the 12th. The dark limb of the Moon covers the 2nd magnitude star at 10:19pm, and it reappears from behind the sunlit limb, beyond Crater Petavius, at 11:23pm. Because Dschubba is a binary star, you may notice its magnitude 4.0 companion wink out a few seconds before the magnitude 2.4 primary.

The Full Strawberry Moon occurs on the night of the 13th-14th, and is the lowest Full Moon of the year, culminating at just 22° above the horizon at 12:25am.

From June 18th and onward until its New phase on the 28th, the waning Moon passes beneath the line of planets in the morning sky. Last quarter Moon occurs on the 20th.

The morning planet parade continues through June, when all five bright planets appear in the sky before sunrise. While the planets are more separated than they were earlier this year, their arrangement this month is notable for them appearing in order, from east to west, of their absolute distance from the Sun. We'll start with the innermost, and look at each planet in this sequence.

Mercury spends June in the morning sky but will not attain sufficient altitude to be easily observed until the second week of the month. By the 13th, it rises a full hour before the Sun, and on the 16th, it attains its greatest elongation, 23° west of the Sun. It remains in a favorable position for viewing though the rest of the month. Through a telescope, Mercury shows a crescent phase until the 22nd, when it transitions past its half phase and into a gibbous. Over the course of the month, its apparent size shrinks from 11.3 to 6.1 arcseconds as its distance from Earth nearly doubles, from 0.6 to 1.1 AU.

Venus remains prominently visible in the morning sky, rising about 2 hours before the Sun. Being on the far side of the Sun from Earth, Venus shows a gibbous phase, and shrinks from 13.7 to 12.1 arcseconds throughout June, as its distance increases from 1.2 to 1.4 AU.

Watch the skies on the morning of the 26th, when Venus appears 6.5° directly below the Pleiades cluster, and the waning gibbous Moon is just 2° to the north of Venus.

June begins with Mars less than 2° east of Jupiter, in Aquarius, but continues moving eastward through Pisces, gaining significant distance from Jupiter. In early June, Mars rises at 2:30am. The distance to the Red Planet closes from 1.5 AU to 1.3 AU by the end of June, when it rises at about 1:30am, and becomes a 7.2 arcsecond gibbous globe in a telescope.

Jupiter begins the month in Pisces, rising just after 2:00am. It becomes a resident of Cetus, notably a non-zodiac constellation, on the 25th, and will spend the summer within the whale..

Saturn rises just after midnight, in Capricornus. If you recall a few weeks back how all of the morning planets were evenly spaced, close together, note their positions in early June, when Saturn, Jupiter, and Venus are evenly spaced, with about 39° separating each planet pair.

Uranus is still fairly low in the east at the onset of morning twilight in early June, but an encounter with Venus on the 12th makes a good opportunity to see it. Although Uranus is theoretically visible to the unaided eye under ideal conditions, it will be a bit washed out by twilight when it rises, and even if it were in a dark sky, its proximity to brilliant Venus would make it quite a challenge to spot, given that Venus is about 8,000 times as bright as Uranus. Binoculars, or even better, a small telescope with low magnification, will reveal the pair quite nicely. At this conjunction, Uranus is nearly 16 times farther away than Venus (20.528 and 1.293 AU, respectively). Our seventh planet will become easier to see as it rises higher before sunrise during the latter half of June.

Neptune can be found on the border of Pisces and Aquarius, by drawing a line from Iota to Lambda Piscium, the eastern north-south segment of the Circlet aster-

Events in June

02 Mercury Stationary
05 Saturn Stationary
07 **First Quarter**
12 Moon occults Delta Scorpii
12 Venus 1.6° S of Uranus
14 Earliest Sunrise (5:10am)
14 **Full Strawberry Moon**
16 Neptune Western Quadrature
16 Mercury Greatest Elongation West (23°)
18 Moon 6.3° S of Saturn
20 **Last Quarter**
21 **Solstice**
21 Moon 5.0° S of Jupiter
22 Moon 5.4° W of Mars
22 Mercury 3.0° N of Aldebaran
26 Moon 2.0° N of Venus
27 Moon 3.2° N of Mercury
27 **Latest Sunset (8:24pm)**
28 Neptune Stationary
28 Jupiter Western Quadrature
28 **New Moon**

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

ism, and continuing southward just a little more than the same distance, about 5° from Lambda, and about 1° WSW of magnitude 5.5 20 Piscium.

Dwarf planet Pluto, in the far eastern reaches of Sagittarius, is now high enough to observe well before the onset of twilight. It can be found just 1° southwest of globular cluster M75. Pluto will require a 12-inch or larger telescope to see. Also, asteroid 4 Vesta, which is moving eastward through Aquarius, is about 8° east of Saturn, shining at magnitude 7.3 and requiring only binoculars to see.

In the evening sky, you will have noticed that Orion has now disappeared, but we still have the entire eastern portion of the Winter Hexagon visible well into darkness. Pollux and Castor have assumed an orientation nearly parallel with the horizon, and will be visible in the evening sky for about another month, finally disappearing from view around July 4. Capella, in Auriga, stays in our sky considerably longer than the other winter constellations because it is nearly circumpolar, only dipping out of view at our latitude for about 3 hours before rising again in the NNE. If Capella is not visible in the sky due to it being below the horizon, or obstructed, you can always "find" it using the bowl of the Big Dipper. Use the top 2 stars of the bowl as pointers, and extend the line to the dipper's right, or past the end opposite of the handle. At a distance of about 6 times the length of the bowl (60°, since the top of the bowl is about 10°) will be Capella.

Most notably, June nights herald the emergence of the Milky Way into the evening sky. When seen from a dark sky, the rising of the summer Milky Way is one of the most stunning sights. Knowing that its blotches of glowing clouds consist of billions of stars is an irresistible invitation to take your binoculars or telescope on an aimless wander through the Backbone of Night. Observing away from artificial light on June nights, you may, in addition, often be greeted with one of nature's Earthly illuminated spectacles, the fireflies.

Matariki

by Francine Jackson

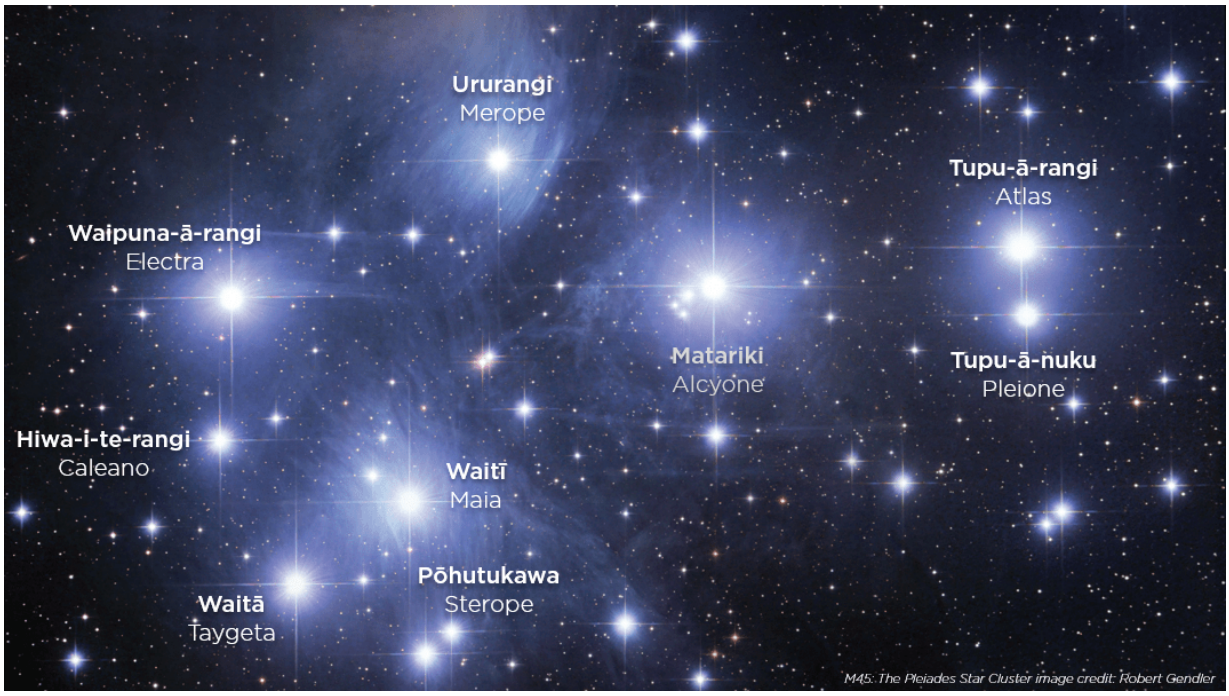
Many of you are aware of the saying "dog days," the time of the year when the weather is so hot that Rover has trouble breathing. Of course, his not being able to sweat may make life even more uncomfortable. Actually, though, this saying has its roots, not in Fido, but in the sky, when the first time the stars Sirius, the Dog star, and Procyon, the Little Dog star, had their first appearances in the morning sky, their heliacal risings. For those in Egypt, it was a sign that the Nile River was about ready to flood its banks, resulting in water available for the riverside farms.

The concept of heliacal rising, the first time a celestial object is just far enough away from the morning Sun that it appears for the first time in the sky, has also been very important for many Polynesian people. They waited for Matariki to be visible in the morning. But, most weren't waiting for just one star – for them, Matariki was the Pleiades, our M45.

For many cultures, as far east as Easter Island (Rapa Nui), the heliacal rising of the Pleiades, in June or July, marked the beginning of the year; its disappearance in April signified the end of the fishing season. In the Hawai'ian islands, Pleiades is Makali'i, and is connected to both food and navigation. And, because this cluster rises in the Southern Hemisphere, for some it is responsible for winter frosts, as the stars were seven sisters made of icicles who once a year pulled icicles from their bodies and threw them to Earth.

For some cultures, Matariki was just one star in this open cluster, marking the mother of the other stars. For example, in Maori, the Pleiades was made up of nine naked-eye stars, the others being the children Matariki guided across the sky each evening.

Although the concept of Matariki had been lost among the ages with the arrival of European settlers and newer lifestyles in the 19th century, it has undergone a revival in the 1990s, as modern Maori groups wanted to return the celebration of the Pleiades in the predawn sky. It is now once again an annual event, bringing a former celebrated part of the peoples' lifestyle back as part of their heritage.



Māori and Greek names for the nine stars of Matariki. Credit Robert Gendler

NASA Night Sky Notes:

Solstice Shadows

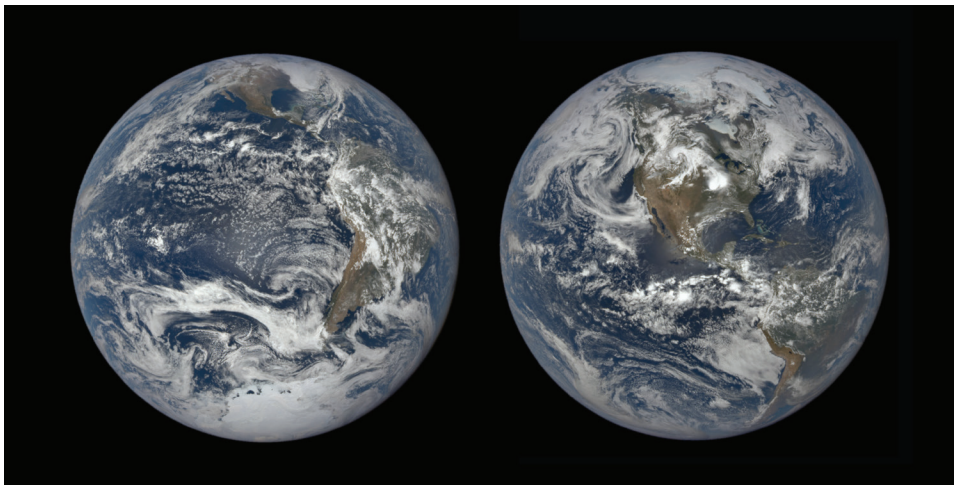
By David Prosper

Solstices mark the changing of seasons, occur twice a year, and feature the year's shortest and longest daylight hours - depending on your hemisphere. These extremes in the length of day and night make solstice days more noticeable to many observers than the subtle equality of day and night experienced during equinoxes. Solstices were some of our earliest astronomical observations, celebrated throughout history via many summer and winter celebrations.

Solstices occur twice yearly, and in 2022 they arrive on June 21 at 5:13 am EDT (9:13 UTC), and December 21 at 4:48pm EST (21:48 UTC). The June solstice marks the moment when the Sun is at its northernmost position in relation to Earth's equator, and the December solstice marks its southernmost position. The summer solstice occurs on the day when the Sun reaches its highest point at solar noon for regions outside of the tropics, and those observers experience the longest amount of daylight for the year. Conversely, during the winter solstice, the Sun is at its lowest point at solar noon for the year and observers outside of the tropics experience the least amount of daylight- and the longest night – of the year. The June solstice marks the beginning of summer for folks in the Northern Hemisphere and winter for Southern Hemisphere folks, and in December the opposite is true, as a result of the tilt of Earth's axis of rotation. For example, this means that the Northern Hemisphere receives more direct light from the Sun than the Southern Hemisphere during the June solstice. Earth's tilt is enough that northern polar regions experience 24-hour sunlight during the June solstice, while southern polar regions experience 24-hour night, deep in Earth's shadow. That same tilt means that the Earth's polar regions also experience a reversal of light and shadow half a year later in December, with 24 hours of night in the north and 24 hours of daylight in the south. Depending on how close you are to the poles, these extreme lighting conditions can last for many months, their duration deepening the closer you are to the poles.

While solstice days are very noticeable to observers in mid to high latitudes, that's not the case for observers in the tropics - areas of Earth found between the Tropic of Cancer and the Tropic of Capricorn. Instead, individuals experience two "zero shadow" days per year. On these days, with the sun directly overhead at solar noon, objects cast a minimal shadow compared to the rest of the year. If you want to see your own shadow at that moment, you have to jump! The exact date for zero shadow days depends on latitude; observers on the Tropic of Cancer (23.5° north of the equator) experience a zero shadow day on the June solstice, and observers on the Tropic of Capricorn (23.5° south of the equator) get their zero shadow day on December's solstice. Observers on the equator experience two zero shadow days, being exactly in between these two lines of

A presenter from the San Antonio Astronomy Club in Puerto Rico demonstrating some Earth-Sun geometry to a group during a "Zero Shadow Day" event. As Puerto Rico lies a few degrees south of the Tropic of Cancer, their two zero shadow days arrive just a few weeks before and after the June solstice. Globes are a handy and practical way to help visualize solstices and equinoxes for large outdoor groups, especially outdoors during sunny days!
Credit & Source: Juan Velázquez / San Antonio Astronomy Club



These images from NASA's DSCOVR mission shows the Sun-facing side of Earth during the December 2018 solstice (left) and June 2019 solstice (right). Notice how much of each hemisphere is visible in each photo; December's solstice heavily favors the Southern Hemisphere and shows all of South America and much of Antarctica and the South Pole, but only some of North America. June's solstice, in contrast, heavily favors the Northern Hemisphere and shows the North Pole and the entirety of North America, but only some of South America.
Credit: NASA/DSCOVR EPIC Source: https://www.nasa.gov/image-feature/goddard/2021/summer-solstice-in-the-northern-hemisphere

latitude; equatorial zero shadow days fall on the March and September equinoxes.

There is some serious science that can be done by carefully observing solstice shadows. In approximately 200 BC, Eratosthenes is said to have observed sunlight shining straight down the shaft of a well during high noon on the solstice, near the modern-day Egyptian city of Aswan. Inspired, he compared measurements of solstice shadows between that location and measurements taken north, in the city of Alexandria. By calculating the difference in the lengths of these shadows, along with the distance between the two cities, Eratosthenes calculated a rough early estimate for the circumference of Earth – and also provided further evidence that the Earth is a sphere!

Are you having difficulty visualizing solstice lighting and geometry? You can build a "Suntrack" model that helps demonstrate the path the Sun takes through the sky during the seasons; find instructions at stanford.io/3FY4mBm. You can find more fun activities and resources like this model on NASA Wavelength: science.nasa.gov/learners/wavelength. And of course, discover the latest NASA science at nasa.gov.

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!

Lunatic's Corner: Crater Bullialdus

by Michael Corvese

Lunatic's Corner is a new bi-monthly column discussing all things lunar with origins in Skyscrapers Lunar Observing Program group.

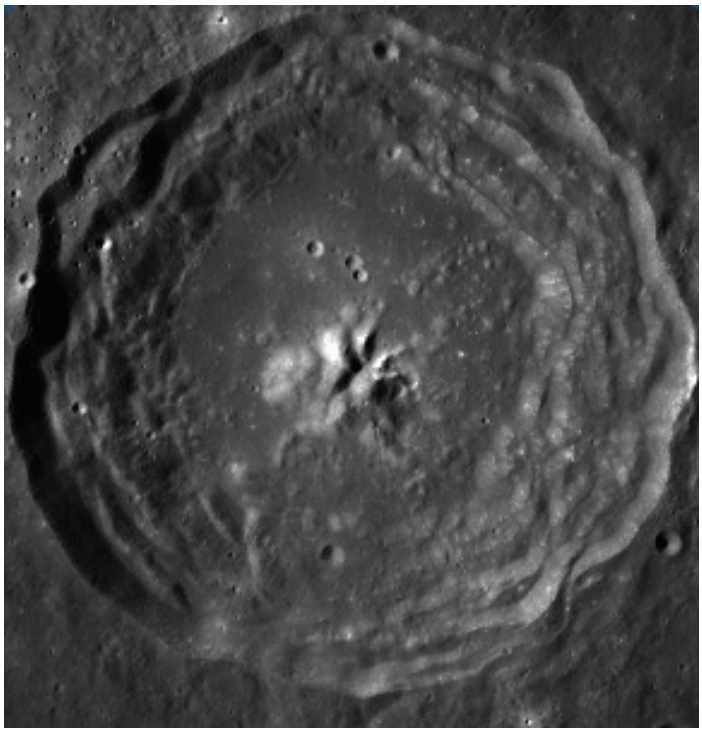
This month's topic is the crater Bullialdus. Bullialdus is the latinized name of Ishmael Boulliau, a 17th century French priest, astronomer, and mathematician. He lived from 1605-1694, was a prolific letter writer, and actively involved with scientific societies of his time. Thousands of letters survive today, giving us key insights into this interesting man and his colleagues. He was a contemporary and correspondent of Galileo, Hevelius, Huygens, Pascal, and Gassendi to name a few.

In 1645, he published Astronomia Philolaica, considered the most important book on astronomy in the time between Kepler and Newton, where he discusses details of planetary motion and Kepler's ellipses. Boulliau was also an early supporter of Copernican theory and the first to surmise that gravity followed the inverse square law, later to be confirmed by Newton.

The crater bearing his name is the most prominent crater within the Mare Nubium (Sea of Clouds) in the south-west quadrant of the Moon. The crater is about 40 miles wide and 2 miles deep. The central peaks rise to a height of about 8,000 ft. and have a raised ridge that runs from the central peaks to the south-east wall. It is a complex crater having central peaks and high, terraced walls that show signs of landslips. The floor of the crater is rough with low rises and thought to have an unusual convex shape.

Nearby craters include the flooded crater Lubiniezky to the north-west and the smaller crater, Konig, to the south-west. There are also a series of 10 craters surrounding the main crater that have letter designations, the most prominent being Bullialdus A and Bullialdus B. When viewed at a high sun angle, the central peaks and rim are very bright with bright spots visible on the crater floor. Bullialdus is best viewed around lunar day 10 (waxing gibbous) and lunar day 24 (waning crescent) . Point your telescope at crater Bullialdus on a clear, moonlit night and you will not be disappointed!

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



Galaxy in Ursa Major:
NGC 5474

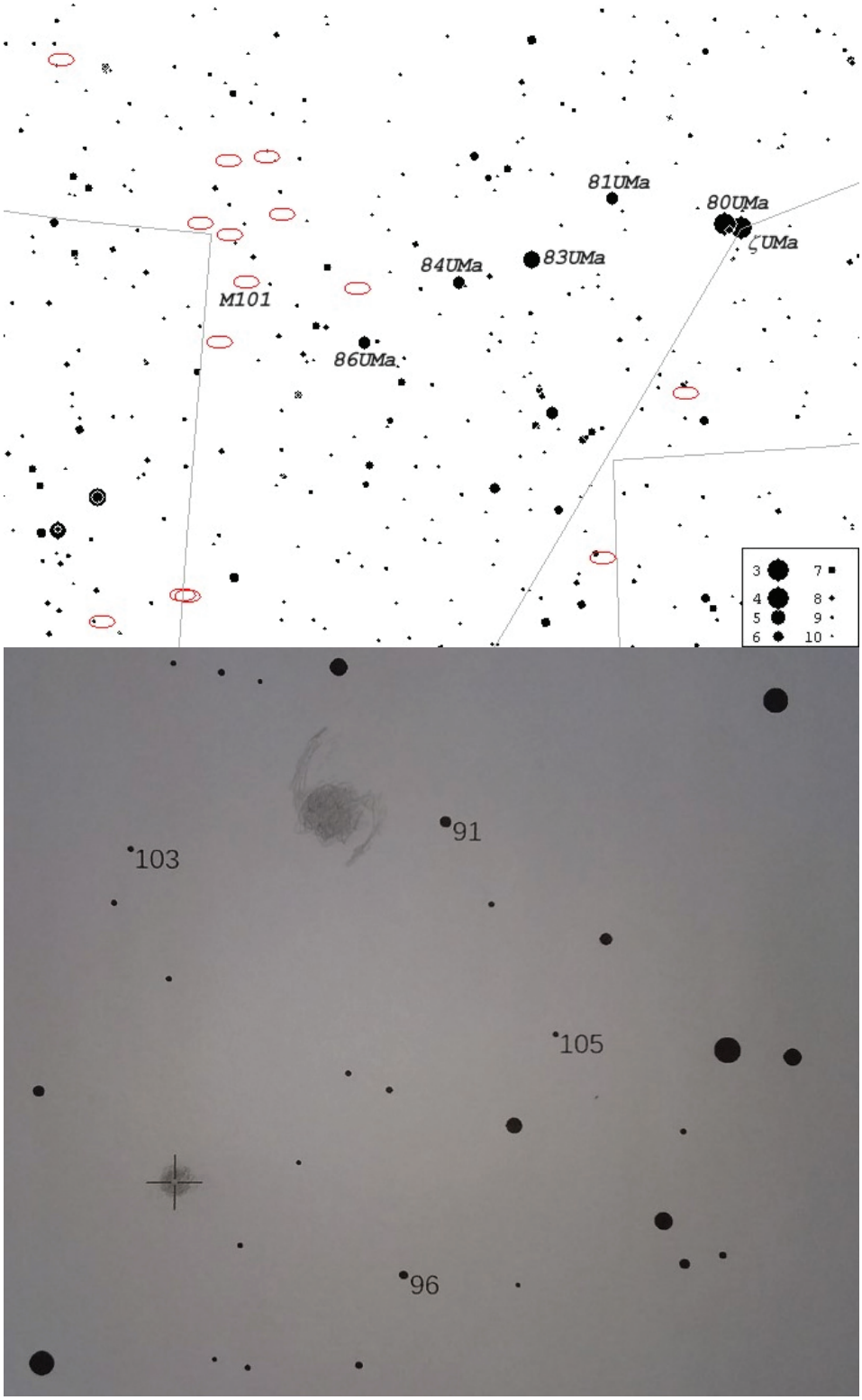
by Glenn Chaple for LVAS

This month's Observer's Challenge is the peculiar dwarf galaxy NGC 5474 in Ursa **(Magnitude 10.8; Size 4.7')** Major. William Herschel, who discovered it on May 1, 1788, entered it in his deep sky catalog with the designation H 1-214, which translates to Herschel, Class I [Bright Nebulae], 214th entry). Anyone who has tried to observe this galaxy visually might argue that it belongs in Herschel's Class II (Faint Nebulae).

NGC 5474 can be located by using its coordinates (RA 14h 05m 01.6s, Dec +53o 39' 44"), but I highly encourage visual observers to star-hop there instead. That's because the starting point is the beautiful double Mizar – the middle star in the handle of the Big Dipper. From Mizar, a series of stellar stepping stones that includes its naked eye partner Alcor (80 Uma), then 81, 83, 84, and 86 Uma will take you to M101, the Pinwheel Galaxy (refer to Finder Chart A). If you're unable to see this 8th magnitude face-on spiral don't bother with NGC 5474, which is also a face-on spiral but 3 magnitudes fainter.

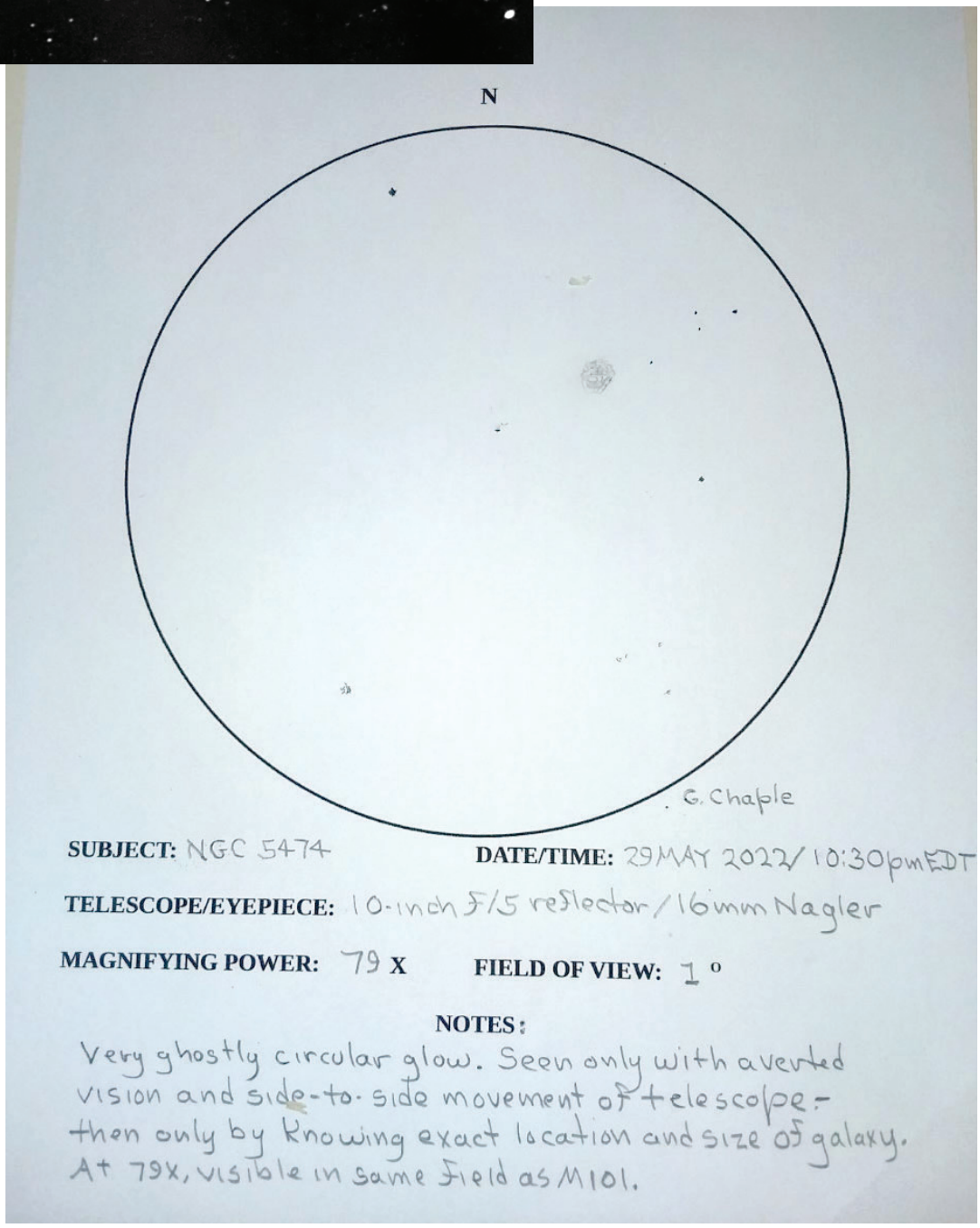
If you can see M101, spend a few minutes trying to tease out as much detail as you can. The exercise will ready your eye for NGC 5474, which lies less than a degree south-southeast (Finder Chart B). My first attempt to capture NGC 5474 with my 10-inch f/5 reflector was "iffy." The limiting naked eye magnitude was around 5 – typical for my suburban skies. But there was a slight hint of humidity in the air, and all I could make out were fleeting glimpses of a small, ghostly circular glow. A few nights later, a mass of clear, dry air settled over the area, and I tried again. This time NGC 5474 was definitely visible – still a small and faint roundish blob, but steadily seen with averted vision. There was no sigh of its oddly-placed nucleus. A big help in capturing NGC 5474 was knowing the galaxy's exact location and approximate size. My best view was with a 79X wide-field eyepiece that captured M101 in the same field of view.

The nearness of NGC 5474 to M101 isn't coincidental. The little galaxy is a companion of the Pinwheel – both being about 21 million light years away. The odd skewing of its nucleus towards M101 was once thought to be a result of a gravitational tug from the much-larger galaxy but is now thought to be internally produced.The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll 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 or access past reports, log on to rogerivester.com/category/observers-challenge-reports-complete.



M101 (near top) and NGC 5474 (lower left, marked with cross) Chart prepared using AAVSO's Variable Star Plotter (VSP). Numbers indicate stellar magnitudes (decimals omitted). North is up in this 1½ by 1½ degree field. Chart limiting magnitude is 11.0. Galaxies drawn to scale.

Image by Mario Motta, MD (ATMoB) 90 minutes of imaging Lum filter only. Taken with 32 inch F6.5 telescope, with ZWO ASI6200 camera, stacked and processed with pixinsight. North is up



The Sun, Moon & Planets in June

This table contains the ephemeris of the objects in the Solar System for each Saturday night in June 2022. Times in Eastern Standard Time (UTC-5) through March 12 & Eastern Daylight Time (UTC-4) from March 13. 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	**4**	4 47.9	22 24.2	Tau	-26.8	1892.0	-	-	-	1.014	05:12	12:44	20:17
	11	5 16.8	23 03.9	Tau	-26.8	1890.4	-	-	-	1.015	05:10	12:46	20:21
	18	5 45.9	23 23.8	Tau	-26.8	1889.1	-	-	-	1.016	05:10	12:47	20:24
	25	6 15.0	23 23.5	Gem	-26.8	1888.2	-	-	-	1.016	05:12	12:49	20:25
Moon	**4**	8 22.3	23 58.6	Cnc	-10.6	1793.3	49° E	18	-	-	09:18	17:02	00:35
	11	14 02.8	-11 12.4	Vir	-12.5	1953.7	132° E	83	-	-	17:13	22:26	03:29
	18	21 23.8	-21 21.9	Cap	-12.5	1942.4	130° W	82	-	-	23:49	04:42	09:44
	25	3 02.9	16 13.7	Ari	-10.5	1780.4	45° W	15	-	-	02:41	10:03	17:36
Mercury	**4**	3 38.9	15 30.5	Tau	1.9	10.8	18° W	13	0.460	0.626	04:33	11:33	18:32
	11	3 47.7	15 53.4	Tau	1.0	9.3	22° W	25	0.440	0.725	04:13	11:15	18:18
	18	4 10.1	17 37.7	Tau	0.4	7.9	23° W	40	0.408	0.851	04:01	11:11	18:22
	25	4 45.3	20 05.0	Tau	-0.2	6.8	21° W	56	0.369	0.995	03:59	11:20	18:42
Venus	**4**	2 23.2	12 07.8	Ari	-3.9	13.7	36° W	79	0.728	1.239	03:32	10:20	17:09
	11	2 55.4	14 43.5	Ari	-3.9	13.2	34° W	81	0.727	1.285	03:26	10:24	17:24
	18	3 28.4	17 03.9	Tau	-3.9	12.7	33° W	83	0.726	1.328	03:22	10:30	17:38
	25	4 02.4	19 05.3	Tau	-3.8	12.3	31° W	84	0.725	1.370	03:20	10:36	17:53
Mars	**4**	0 30.1	1 19.7	Cet	0.6	6.5	66° W	87	1.384	1.441	02:18	08:26	14:34
	11	0 49.1	3 19.2	Psc	0.6	6.7	68° W	87	1.382	1.403	02:02	08:17	14:32
	18	1 08.0	5 16.0	Psc	0.5	6.9	69° W	86	1.381	1.366	01:46	08:08	14:31
	25	1 26.8	7 09.1	Psc	0.5	7.0	71° W	86	1.381	1.329	01:31	08:00	14:29
1 Ceres	**4**	6 38.5	26 50.8	Gem	8.8	0.4	25° E	99	2.611	3.490	06:42	14:33	22:24
	11	6 51.9	26 46.5	Gem	8.8	0.4	22° E	99	2.607	3.522	06:28	14:19	22:09
	18	7 05.4	26 38.0	Gem	8.7	0.4	18° E	100	2.603	3.548	06:15	14:05	21:55
	25	7 18.9	26 25.2	Gem	8.7	0.3	15° E	100	2.600	3.569	06:02	13:51	21:39
Jupiter	**4**	0 17.3	0 35.4	Psc	-2.1	37.6	69° W	99	4.966	5.235	02:07	08:12	14:16
	11	0 21.1	0 58.0	Psc	-2.2	38.3	75° W	99	4.965	5.133	01:42	07:48	13:54
	18	0 24.5	1 17.9	Psc	-2.2	39.1	81° W	99	4.965	5.027	01:17	07:24	13:31
	25	0 27.4	1 34.8	Psc	-2.2	40.0	87° W	99	4.964	4.920	00:51	06:59	13:07
Saturn	**4**	21 51.7	-14 09.7	Cap	0.7	17.4	108° W	100	9.886	9.523	00:36	05:46	10:56
	11	21 51.6	-14 11.5	Cap	0.7	17.6	115° W	100	9.885	9.415	00:09	05:19	10:29
	18	21 51.2	-14 14.9	Cap	0.7	17.8	122° W	100	9.883	9.312	23:41	04:51	10:00
	25	21 50.5	-14 19.8	Cap	0.6	18.0	129° W	100	9.881	9.216	23:13	04:22	09:32
Uranus	**4**	2 56.4	16 24.9	Ari	5.9	3.4	27° W	100	19.701	20.600	03:47	10:50	17:54
	11	2 57.9	16 31.1	Ari	5.8	3.4	33° W	100	19.700	20.541	03:20	10:24	17:28
	18	2 59.2	16 36.9	Ari	5.8	3.4	40° W	100	19.699	20.471	02:54	09:58	17:02
	25	3 00.5	16 42.3	Ari	5.8	3.5	46° W	100	19.698	20.391	02:27	09:32	16:36
Neptune	**4**	23 44.5	-2 56.4	Psc	7.9	2.3	78° W	100	29.917	30.110	01:47	07:39	13:30
	11	23 44.8	-2 54.8	Psc	7.9	2.3	85° W	100	29.917	29.993	01:20	07:12	13:03
	18	23 45.0	-2 53.9	Psc	7.9	2.3	91° W	100	29.917	29.875	00:53	06:44	12:36
	25	23 45.1	-2 53.6	Psc	7.9	2.3	98° W	100	29.917	29.758	00:25	06:17	12:09
Pluto	**4**	20 03.5	-22 30.0	Sgr	14.4	0.2	135° W	100	34.537	33.812	23:23	03:58	08:34
	11	20 03.0	-22 32.3	Sgr	14.4	0.2	142° W	100	34.542	33.738	22:55	03:30	08:06
	18	20 02.5	-22 34.7	Sgr	14.3	0.2	149° W	100	34.546	33.675	22:27	03:02	07:38
	25	20 01.9	-22 37.3	Sgr	14.3	0.2	155° W	100	34.551	33.624	21:59	02:34	07:09

Trustees News

by Bob Janus, Steve Hubbard & Richard Doherty

Next time you get to Seagrave Observatory, you just might notice that there are fewer small trees and brush around the edges of the property.

On Saturday, May 14, an enthusiastic group of volunteers arrived with all sorts of power tools, blowers, rakes and more to do our annual cleanup of the grounds. A dead tree covered with vines, dead limbs and a number of saplings that would have one day grown into sky blocking giants were cut down, sectioned and then dragged out back to our brush pile.

Areas along the edges were raked and dead leaves and brush was removed. Following this, everyone was treated to a lunch of pizza picked up by Bob Janus.

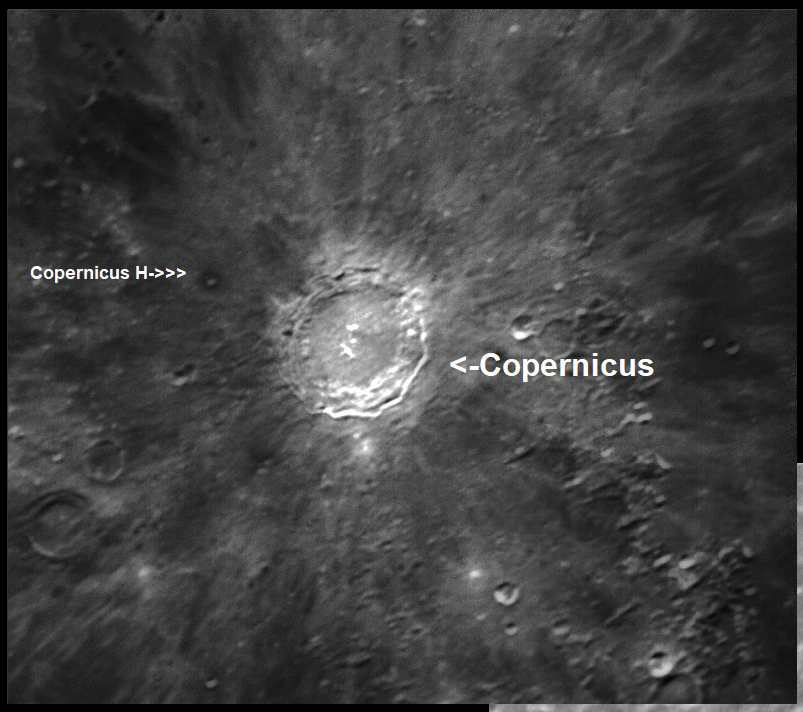
A big THANKS to everyone who helped from the Trustees.

Oh, and don't forget… we'd love to have you consider helping with our public open nights. Just let one of us know if you're interested.

Trustees: Bob Janus, Steve Hubbard, Richard Doherty

Total Lunar Eclipse of May 15-16 through partly cloudy skies by Bob Horton.

Lunar Features on May 13 by Steve Hubbard. I was out last night with my 6 inch refractor doing more with the AL Lunar program. I used a ZWO 120mm imager for all of these and processed with Autostackert and Astra Image. One is of the Gamma Reiner lunar swirl, Another is Copernicus crater with a feature called Copernicus H which is a dark feature surrounding a fresh crater and finally some dark features on the crater Alphonsus. The dark feature seen were thanks to a recent *Sky & Telescope* article about searching for them.



Sagittarius taken with 85mm lens and Canon RA by Bob Horton at Rangely Lake, Maine.

Observing Reports:
Tau Herculids Meteor Shower

Dave Huestis:

Once again, we got clouded out.

Went out around 11pm. Was greeted by complete overcast.

Stayed out until just after midnight. Only caught a glimpse of Vega for about a minute, just shining through the cloud deck.

Went inside. Checked radar showing cloud cover, which was streaming out of the northwest.

There was even a rain shower northwest of Worcester and moving towards the southeast.

Went to bed. Got up around 3:15 am. Still overcast.

Have not heard any news about the shower at this time. Did the shower materialize at all in the US?

Bob Horton:

I stayed outside from 11pm until 1:30am. I had plenty of brief breaks in the clouds, seeing the brighter stars until about 1am. I quickly became solid overcast, and I gave up and went to bed at 1:30am. I saw one meteor around 11:40pm that was about 1st magnitude.

June 2022

Volume 27

STARRY SCOOP

Editor: Kaitlynn Goulette

WHAT'S UP

The Summer Solstice occurs on June 21st and marks the first day of summer for those of us in the Northern Hemisphere. On this day, the sun reaches its northernmost point in the sky, and we also have the longest period of daylight hours.

All month long before sunrise, the five naked-eye planets provide a nice treat in the southeastern sky. Mercury, Venus, Mars, Jupiter, and Saturn, appearing in the same order as their distance from the sun, form a "line" along the ecliptic - the apparent path of the sun. Hidden within this line of naked-eye planets are Uranus and Neptune, which can be observed using binoculars or a small telescope. The moon joins these celestial bodies from the 18th to the 26th.

This month in the evening sky, Leo the Lion is noticeably plunging towards the western horizon as it chases Cancer the Crab and its Beehive Cluster. The Virgo region is following closely behind but remains high enough in the sky to provide an opportunity to observe the myriad galaxies within it.

In the southern sky, Scorpius the scorpion moves into center stage, following behind Libra, the Scales of Justice. At one time, these two star patterns formed one constellation with Libra being the claws of the scorpion, but now they are officially separate constellations. The southern sky at this time of year also provides a great opportunity to use binoculars or a small telescope to observe many globular clusters, including two of my favorites, M4 and M5.

Eighteen years ago on June 30th, the Cassini spacecraft entered Saturn's orbit after a seven-year voyage from earth. It then remained in orbit around the Ringed Planet for 13 years, until its fuel supply was depleted. Cassini taught us about the development of our solar system and took many dazzling photos. It also carried the European Huygens probe, which became the first spacecraft to land on Saturn's moon Titan. In September of 2017, with little to no fuel remaining, Cassini was deliberately plummeted into Saturn's atmosphere to prevent any possibility of an interaction with Saturn's moons.

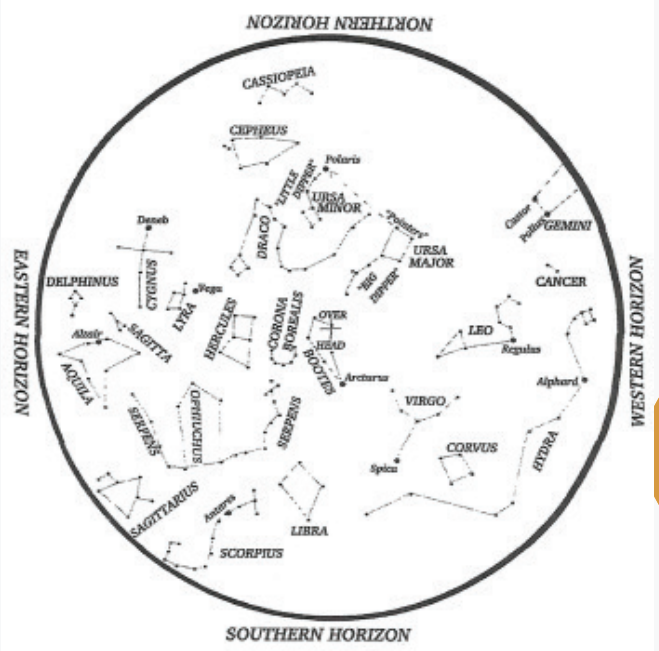
JUNE'S SKY

14: Full Moon

16: Mercury at Greatest Western Elongation

21: June Solstice

29: New Moon



Credit: Roger B. Culver

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

June 2022

Volume 27

OBSERVATIONS

On May 21st, my father, sister, and I brought our 8-inch Dobsonian telescope to a public stargazing event in Windsor, MA. It was hosted by Notchview, with members of the Arunah Hill Natural Science Center providing equipment and telescopes to view the universe.

Shortly after twilight, we began observing star clusters, including the famous Beehive Cluster and M13, the Great Globular Cluster in Hercules. My sister Krystyna helped operate our 8-inch Dobsonian telescope and showed people many double stars, including the Double-Double in Lyra and Castor in Gemini. People found it amazing how a star appears as a single point of light with the unaided eye, but through a telescope, multiple stars are revealed. As the sky darkened, we focused on fainter deep sky treasures, which included nebulae and galaxies. Some objects worth mentioning are the Ring Nebula, the Sombrero Galaxy, M81, M66, and the Whirlpool Galaxy.

The Whirlpool Galaxy was the stand-out favorite of the evening. With the dark, clear skies far from light pollution, the spiral arms and dust lanes of the galaxy were prominent. People were taking extra time to view it at the eyepiece and even came back for a second observation.

It was a pleasant surprise when we spotted the International Space Station (ISS) moving just above the tree line in the northwest sky. It's always exciting to view the ISS and even more fun when sharing that excitement with an enthusiastic crowd.

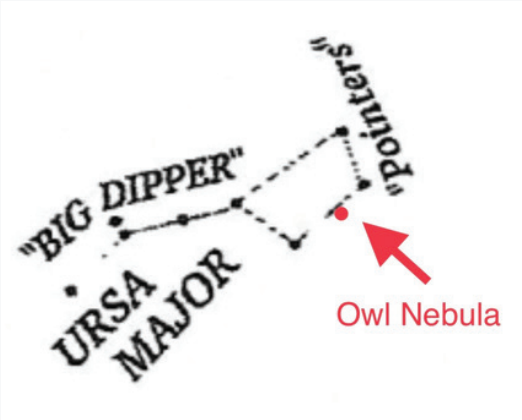
The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact starryscoop@gmail.com. The Starry Scoop is now on Facebook. Clear skies!

OBJECT OF THE MONTH

The featured object for this month is the Owl Nebula, also known as M97. This planetary nebula is about 2,030 light years away and is one of four such nebulae listed in the Messier Catalog. It's called the Owl Nebula because, through a telescope, two darker patches are revealed which resemble the face of an owl.

The Owl Nebula is located in northern Ursa Major, 2.5 degrees southeast of Merak, the southwest corner of the Dipper's bowl. Under dark skies, it can be seen with a small telescope. A medium-sized telescope brings out more detail. Good luck!

.



The Owl Nebula

Participants gather for a night of stargazing at Notchview.

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.

47 Peeptoad Road
North Scituate, Rhode Island 02857