



the Skyscraper

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Seagrave Memorial Observatory Member Night

Saturday, July 17 at 8:30 pm

Learn the constellations; observing with binoculars; viewing through observatory telescopes. Bring your binoculars or telescope.

Highlights of the Southern Sky

An Online Presentation by Stephen O'Meara
Saturday, July 10, 1:30pm EDT via Zoom

Contact Linda Bergemann (L.Bergemann@aol.com)
for Zoom Meeting link and information.

Stephen O'Meara moved to Botswana in southern Africa eight years ago. He is an old friend of Skyscrapers having lived his early years in Massachusetts. Stephen visited Seagrave Observatory many times.

His talk will be an overview of how and why he came to live in Botswana with an emphasis on it's natural and cultural setting.

He will also touch upon the dark skies and objects visible from his location below the equator that can't be seen from our more northern latitudes.

Stephen James O'Meara is an award-winning astronomer and author. He spent his early career on the editorial staff of Sky & Telescope magazine in Cambridge, Massachusetts. He also spent some 15 years as a contributing editor and consultant for Odyssey, a science magazine for young adults, and served as associate editor for GeminiFocus, the quarterly publication of the Gemini Observatory in Hawaii for nearly 15 years. Stephen is currently a monthly columnist and contributing editor for Astronomy magazine, a contributing writer for Fifth Star Labs's Sky Guide App.

Stephen has received several awards including the Omega Centauri Award for "advancing astronomy through observation, writing, and promotion, and for sharing his love of the sky." He has also been awarded with the Caroline Herschel Award for his greatest visual achievements, including being the first person to sight Halley's Comet on its 1985 return, the discovery of dark "spokes" in Saturn's B ring before the Voyager 1 spacecraft imaged them, and being the first person to determine the visual rotation period of the distant planet Uranus. For these accomplishments, the International Astronomical Union named asteroid 3637 O'Meara in his honor.

Stephen has authored or coauthored more than a dozen popular books on astronomy (including his acclaimed Deep-Sky Companion six-book series) and other science topics. Stephen's scary science book: Are You Afraid Yet: The Science Behind Scary Stuff, was honored as one of the 2010 Young Adult Library Services Association Quick Picks for the Reluctant Young Adult Readers List. He also created and co-authored Star-Gazing with Jack Horkheimer: Cosmic Comics for the Skywatcher, and recently co-edited the Oxford Dictionary of Spaceflight.

His latest books: Night Skies of Botswana, published in 2021 by Penguin Random House <https://www.penguinrandomhouse.co.za/book/night-skies-botswana/9781775847366> and Mars, published in 2021 by Reaktion Press <http://www.reaktionbooks.co.uk/display.asp?ISBN=9781789142204>

When he's not looking at the sky, Stephen enjoys researching volcanic eruptions and has appeared on dozens of TV documentaries ranging from "Ripley's Believe It or Not" to the Smithsonian Institution's "Incredible Journey — a celebration of 125 years of discovery at the Smithsonian."

National Geographic Explorer's "Volcano Hunters" documents his research into finding a correlation being the Moon's tidal pull and volcanic activity; the film was selected as one of the year's best National Geographic documentaries and won the 2002 Golden Eagle Award for excellence in documentary. He recently retired his contract as a videographer for National Geographic Digital Motion and a contract photographer for National Geographic Image Collection.

Stephen continues his tradition of sharing his love for all things scientific through his writing, editing, and lectures.

President's Thoughts

by Steve Siok

Hello everyone, Welcome to July. I hope many of you can join us on Monday, July 5 at 12:30 for our welcome back picnic as well as our Zoom meeting with Steve O'Meara on July 10 at 1:00 PM. And remember July 17 is our kickoff observing session focused on members. See you all then.

However once again, with much sadness, I need to inform you about the passing of one of our longtime Skyscraper members. [Tina Huestis](#), Dave's wife, passed away suddenly on June 5. Tina was a Skyscraper member for 36 years. She enjoyed observing with Dave and they travelled together to several Eclipse Expeditions. Tina was an institution at Astro-Assembly, where she greeted all our guests as they came through the registration tent. Tina's and Dave's love of astronomy actually brought them together because they met while working at the Hayden Planetarium in Boston. She was also an accomplished bird watcher so she and Dave also traveled on birding trips. Tina will most be missed for her caring and loving disposition and selflessness.

We attended [Tina's funeral mass](#) at St. Eugene's Church in Chepachet. I looked around as the processional began and I counted two dozen Skyscrapers in the congregation. Throughout the service I thought about the caring in our Skyscraper family and how so many of our members have a bond beyond astronomy. All of our new members are welcomed into this family.

Wishing everyone clear skies, Steve



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 **July 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.

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Skylights: July 2021

by Jim Hendrickson

I'd like to introduce what I hope will be a fairly regular feature, by thanking Dave Huestis for his decades of contributions to our newsletter. Last month, Dave announced his retirement from being a monthly contributor, and it is worth noting the significance of his work. I first encountered Dave's writings during the Halley's Comet era, when I would read his "Ask the Astronomer" articles in the Woonsocket Call. As I was just beginning to learn about the sky at the time, and knew no one knowledgeable in astronomy, my Dad and I decided to take a trek to try to find Seagrave Observatory one Saturday afternoon. The journey was unsuccessful, and I wouldn't make my first visit to Seagrave until a decade later, having become a book-learned amateur astronomer, which included Dave's articles.

When I became editor two years later, it was Dave's articles that mainly kept The Skyscraper going for many years, when content was light and the average issue was only three pages (page 4 was the address label and directions). Over the decades Dave has diligently covered all manner of happenings in the sky, from the Moon and planets, meteor showers, equinoxes and solstices, sunspots and eclipses. His articles were straightforward and informative, simple to understand, and made astronomy accessible to all, not just those with sophisticated equipment or expertise. Dave also continues to make countless contributions as our historian, including the 75th anniversary book published in 2007, all written by Dave.

Of course, no mention of Dave's efforts would be complete without mentioning that with Dave's writing, and Tina's editing, they made a great team. As a result, their articles were of superb quality and accuracy, and were worthy of publication in a book. In fact, some years after the publication of the 75th anniversary book, Dave informed me that he later found only one error in it, that no one has yet found.

A big thank you to Dave and Tina for the many contributions to Skyscrapers over the years!

Sun, Moon & Planets

Earth reaches **aphelion**, the farthest point in its orbit around the Sun, on July 5.. At about 6pm EDT, we will be 1.016729 AU (152.1 million km) from the Sun. Compared this with perihelion, when we will be

closest, on January 4 at 0.98 33 36 AU (147.1 million km) from the Sun.

While **Mars** has been visible in our evening sky for the past year, reaching its most recent, and very favorable, opposition in October, this month presents the last time the Red Planet will be clearly visible before it fades into twilight. While it doesn't present much of a view through a telescope owing to it being nearly opposite the Sun from Earth, it is worth watching throughout the month.

You'll notice the apparent distance between **Venus and Mars** closing with each passing night. They begin the month 8° apart and culminate on the 12th & 13th, when Venus and Mars appear just 1/2° apart. At this time, Venus outshines Mars by a factor of 200. Venus is 1.43 AU away and Mars is 2.47 AU away. Additionally, the waxing crescent Moon appears to the west of, then to the east of the pair on the 11th and 12th, respectively.

While you're watching Venus close in on Mars, you'll see it pass over the northern portion of the **Beehive Cluster (M44)** on July 2. Because the stars in the Beehive are rather dim compared to Venus, the best viewing will be about an hour after sunset, when they will be only about 4° above the horizon. If you miss the closest position on the 2nd, they will be fairly close from the 1st through the 4th.

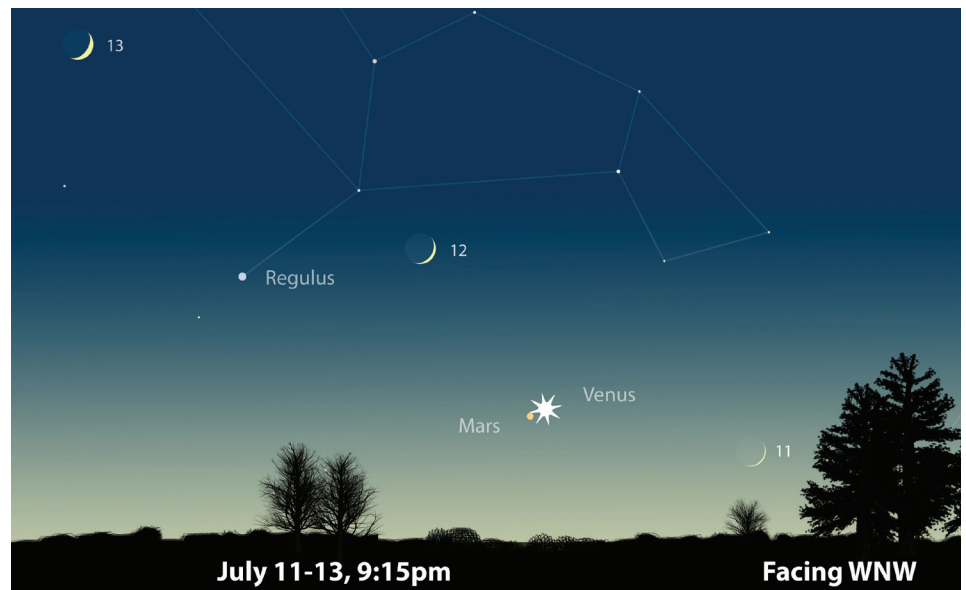
The waxing crescent Moon joins Venus & Mars on July 11th and 12th, and later in the month, Venus, Mars and Regulus in Leo form a dynamic triangle that changes quite drastically. On the 21st, Venus aligns

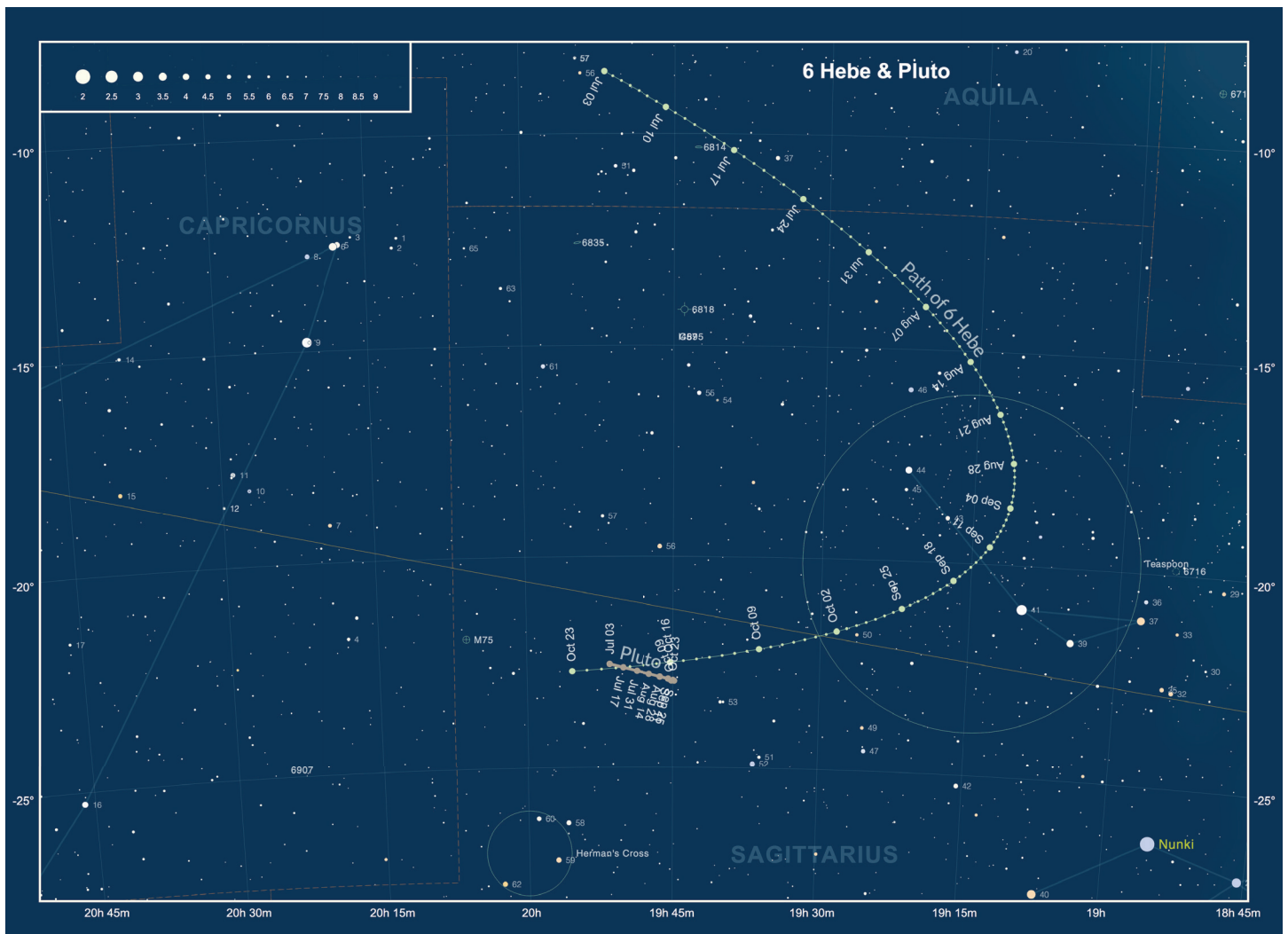
Events in July

- 1 Last Quarter Moon
- 2 Venus & M44 (0.2°)
- 4 Mercury Greatest Elongation (W 22°)
- 4 Moon & Uranus (4.5°)
- 5 Earth at Aphelion
- 8 Moon & Mercury (4.0°)
- 9 New Moon
- 11 Moon & Venus (5.6°)
- 12 Venus & Mars (0.5°)
- 17 First Quarter Moon
- 17 Pluto Opposition (mag. 14.9)
- 17 6 Hebe Opposition (mag. 8.4)
- 21 Venus & Regulus (1.1°)
- 23 Full Buck Moon
- 25 Moon & Jupiter (5.0°)
- 29 Mars & Regulus (0.6°)
- 31 Last Quarter Moon

Times in Eastern Daylight Time (UTC-4). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W)

with Regulus, just 1° away, and one of the final notable events of the 2020-2021 apparition of Mars occurs on July 29st, when it passes within 0.6° of **Regulus**. Such a pairing generally presents a striking view with binoculars or a telescope, especially given that Mars is just 0.5 magnitudes dimmer than Regulus, but because they will be very low on the horizon and struggling to shine through bright twilight, the color contrast of the pair is mostly lost. One aspect that you can look for, however, is noting how Regulus twinkles, and Mars, even at its diminutive 3.9 arcsecond apparent diameter, shines relatively constant--one of the distinguishing features that helps to visual-





ly identify planets among the stars.

Saturn rises just after 22:00 EDT in early July, and just before 20:00 by the end of the month, as it nears opposition on August 2. Now that Saturn is high enough to observe with a telescope fairly early in the evening, you may notice that its ring plane angle is less than it was last year. Although the ring plane angle as seen from Earth can vary slightly compared to that relative to the Sun, the difference is relatively small, and observing the angle of the rings is a good indicator of the progress of seasons on the ringed planet, which takes 29.5 years to complete one orbit. Each season lasts just over 7½ years, and we're currently viewing Saturn's northern hemisphere summer. As the ring plane angle continues to close, we watch Saturn reach its equinox. The ring angle will be narrowing until the next equinox in 2025, when they will appear edgewise, after which we will be looking at Saturn's southern hemisphere.

Jupiter rises at 23:00 at the beginning of July and at 21:00 at the end of the month. Jupiter currently resides in Aquarius and is the apex of an isosceles triangle with Saturn

and Fomalhaut (Alpha Piscis Austrinus) that is 20°x30°, pointing towards the Great Square. The just-past-Full Moon joins the gas giants beginning on July 24th, when it rises just 6° below Saturn, and just 4.5° south of Jupiter the following night..

The best opportunity to see **Mercury** in July is during the first half of the month, when it rises over an hour before the Sun. Mercury reaches its maximum elongation, 22° west, on the 4th. Watching Mercury with a telescope during this time reveals its rapidly changing phase, from a 19% crescent on July 1st, through a 82% gibbous by the 16th. While observing Mercury with binoculars or a telescope, you'll see it pass two stars in Gemini, magnitude 3.3 Propus (Eta Geminorum) on the 14th, followed by magnitude 2.9 Tejat (Mu Geminorum) on the 15th.

The **Full Buck Moon** occurs on July 23rd, and for us in New England, it rises completely above the southeastern horizon just a few minutes past sunset, which makes for dramatic views and photos. This full Moon is notable for being substantially south of the ecliptic at a time when the Moon is already near the southernmost point on the

ecliptic. Only June's full Moon was farther south in true declination, by only about 1.5°. Still, our Full Moon this month will be only 24° above the southern horizon when it transits at 1:01 EDT on the 24th.

This low-cast light of the late-July Moon can create a very serene and immersive setting, especially if one can remove oneself from distracting artificial light and sound. In the wooded areas, this is the time of year that the katydids begin to appear, becoming our nighttime companions with their intermittent chirping, and if you're out near a field, the abundant sound of crickets and the sporadic flash of a late-season firefly add to the experience. And don't forget to look for the opposition effect: if you face away from the Moon, an apparent brightening around your shadow can often be seen.

The Buck Moon is named for the male deer that, during this time of year, are known for their seasonal antler growth. Other Full Moon names for July include Thunder Moon, Hay Moon, and our own Francine Jackson suggested Apollo Moon, in recognition of the first lunar landing in July 1969.

Neptune rises at about 23:00 in mid July (an hour later at the beginning of July, and an hour earlier at the end of the month). Located about 5° south of the Cirlet asterism in Pisces (though the planet remains in Aquarius), it shines at magnitude 7.8. Tracking Neptune's movement will be relatively easy as it appears within 10 arcminutes from 7.2 magnitude HD 221801, passing just 4 arcminutes south of the star on the 17th.

Uranus is a morning planet in July, rising in the constellation Aries at 01:00 (+/- one hour at the beginning/end of the month). You can spot its aqua-green, 5.7 magnitude glow within a triangle formed by similarly bright stars Pi, Omicron, and Sigma Arietis. The waning crescent Moon is nearby on the night of the 31st/August 1st.

Asteroid **6 Hebe** reaches opposition on July 17, and is closest to Earth on the 26th, at a distance of 1.260 AU. It shines as brightly as magnitude 8.3, visible in binoculars, in the star-rich fields of southern Aquila and northern Sagittarius.

Dwarf planet **Pluto** also reaches opposition on July 17. At a distance of 33.305 AU, Pluto doesn't shine any brighter than magnitude 14.3, so you'll need about a 12" telescope to spot it visually. It is located just 4° NNW of the Herman's Cross asterism in



Saturn's moons on June 24, 2016 with an 80mm refractor. With a tracking mount and a relatively short exposure of 4 seconds, all of Saturn's major moons can be captured.

eastern Sagittarius.

Observing Challenge: Iapetus

While you're looking at Saturn, check to see how many of its moons you can see. Titan will be the brightest, at about 9th magnitude. Saturn has three mid-sized moons between 10th and 11th magnitude that are visible, and orbit inside of Titan. But there is another, more distant, mid-sized moon that isn't always easily visible, Iapetus. Because Iapetus is tidally locked with Saturn, and it

has, at some point in its past, swept up dark material on its leading hemisphere, leaving its trailing hemisphere somewhat brighter, it varies by as much as 2 magnitudes as it goes around its 79-day orbit around Saturn. We can see it more easily when it is on the western side of Saturn and moving away from us, which is where it is during early July. If you miss this opportunity to see the bright side of Iapetus, the next time it will be in this part of its orbit will be during mid-September.

The Space Shuttle: One Decade After

by Francine Jackson

This July marks ten years since the last flight of one of the hardest members of the NASA fleet: The Space Shuttle. Some of us old-timers might actually recall a young Steve Hubbard standing in front of the group, letting us know about the "New" craft that NASA was getting ready to introduce in the early 1980s, an actual, reusable one that could be launched like a rocket, expend its giant fuel tank and accompanying rockets, and fly home, landing just like a regular airplane.

There were several constructed, with the first actual launch, the shuttle Columbia, occurring April 12, 1981. Unlike future trips, only two persons traveled upwards: John W. Young, commander, and Robert L. Crippen, pilot. The flight lasted just over 54.5 hours, and was the first American-crewed space flight since Apollo-Soyuz in 1975. By coincidence, the date was the 20th anniversary of Yuri Gagarin's first human space-flight in 1961.

Since then, the Space Shuttle has been

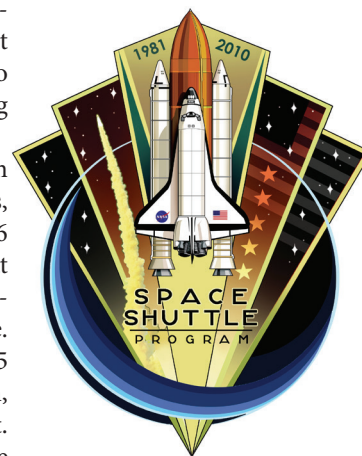
an invaluable piece of work: Sending crew members, many not from test pilot school as previously required, as most had originated from, but scientists, engineers, and others. It was instrumental in participation of Mir experiments, and the construction of and the International Space Station; it conducted many scientific experiments, and launched many satellites, not to mention the Hubble Space Telescope, after which it brought up five sets of mechanics to keep the telescope working for as long as possible.

The Shuttle program suffered two major losses, with the Challenger in 1986 and Columbia in 2003, but through it all, it had proven itself incredibly reliable. The last launch, STS-135 Atlantis, left Earth July 8th, 2011, returning July 21st. Until SpaceX was capable

of sending crafts to the ISS, all necessary flights left from Russia, onboard the Soyuz spacecraft.

The end of the Space Shuttle was supposed to usher in the replacement Constellation program, with ambitious possibilities, including returning to the Moon in 2020, and a possible manned Mars flight several years later. But then, in 2010, then

President Obama shelved the program. Was it a good idea? There doesn't seem to be a real answer to that, especially as there is, at present, no actual future replacement within the NASA portfolio. However, with SpaceX, and other private space programs, the possibility of continuing a passenger and goods transport seems, at least at present, capable of travel off the planet.



The Sun, Moon & Planets in July

This table contains the ephemeris of the objects in the Solar System for each Saturday night in July 2021. Times in Eastern Daylight Time (UTC-4). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

| Object | Date | RA | Dec | Const | Mag | Size | Elong | Phase(%) | Dist(S) | Dist(E) | Rise | Transit | Set |
|----------------|-----------|---------|----------|-------|-------|--------|--------|----------|---------|---------|-------|---------|-------|
| Sun | 3 | 6 49.1 | 22 57.3 | Gem | -26.8 | 1887.7 | - | - | - | 1.02 | 05:16 | 12:50 | 20:25 |
| | 10 | 7 17.9 | 22 13.7 | Gem | -26.8 | 1887.8 | - | - | - | 1.02 | 05:20 | 12:51 | 20:22 |
| | 17 | 7 46.3 | 21 11.4 | Gem | -26.8 | 1888.4 | - | - | - | 1.02 | 05:26 | 12:52 | 20:18 |
| | 24 | 8 14.3 | 19 51.5 | Cnc | -26.8 | 1889.4 | - | - | - | 1.02 | 05:32 | 12:52 | 20:12 |
| | 31 | 8 41.7 | 18 15.5 | Cnc | -26.8 | 1890.7 | - | - | - | 1.02 | 05:39 | 12:52 | 20:05 |
| Moon | 3 | 1 34.0 | 5 01.8 | Psc | -11.5 | 1768.7 | 78° W | 39 | - | - | 01:19 | 07:54 | 14:40 |
| | 10 | 7 14.2 | 24 45.9 | Gem | -4.8 | 1807.2 | 3° W | 0 | - | - | 05:32 | 13:27 | 21:17 |
| | 17 | 13 15.5 | -4 30.0 | Vir | -11.8 | 1941.5 | 85° E | 45 | - | - | 13:26 | 19:08 | 00:39 |
| | 24 | 20 14.9 | -24 42.5 | Cap | -12.7 | 1943.6 | 176° E | 100 | - | - | 20:26 | 01:02 | 05:43 |
| | 31 | 2 04.6 | 8 34.0 | Psc | -11.9 | 1774 | 96° W | 55 | - | - | 23:44 | 06:32 | 13:30 |
| Mercury | 3 | 5 18.1 | 19 40.1 | Tau | 0.6 | 8.4 | 21° W | 32 | 0.40 | 0.80 | 04:00 | 11:19 | 18:38 |
| | 10 | 5 49.1 | 21 23.5 | Tau | -0.1 | 7.0 | 21° W | 51 | 0.36 | 0.96 | 03:57 | 11:24 | 18:51 |
| | 17 | 6 35.4 | 22 41.8 | Gem | -0.8 | 6.0 | 16° W | 72 | 0.32 | 1.12 | 04:11 | 11:44 | 19:17 |
| | 24 | 7 33.8 | 22 31.7 | Gem | -1.5 | 5.4 | 10° W | 91 | 0.31 | 1.26 | 04:43 | 12:15 | 19:47 |
| | 31 | 8 36.1 | 20 16.3 | Cnc | -2.2 | 5.1 | 2° W | 100 | 0.32 | 1.33 | 05:29 | 12:50 | 20:10 |
| Venus | 3 | 8 39.5 | 20 06.0 | Cnc | -3.8 | 11.4 | 26° E | 89 | 0.72 | 1.48 | 07:22 | 14:41 | 22:00 |
| | 10 | 9 14.0 | 17 46.5 | Cnc | -3.8 | 11.7 | 28° E | 88 | 0.72 | 1.45 | 07:38 | 14:48 | 21:57 |
| | 17 | 9 47.3 | 15 04.0 | Leo | -3.8 | 12.0 | 29° E | 86 | 0.72 | 1.41 | 07:55 | 14:54 | 21:51 |
| | 24 | 10 19.6 | 12 02.7 | Leo | -3.9 | 12.4 | 31° E | 84 | 0.72 | 1.37 | 08:12 | 14:58 | 21:44 |
| | 31 | 10 51.0 | 8 46.8 | Leo | -3.9 | 12.8 | 33° E | 82 | 0.72 | 1.32 | 08:28 | 15:02 | 21:35 |
| Mars | 3 | 9 04.3 | 18 01.4 | Cnc | 1.8 | 3.8 | 32° E | 97 | 1.67 | 2.44 | 07:54 | 15:04 | 22:14 |
| | 10 | 9 21.7 | 16 42.1 | Cnc | 1.8 | 3.8 | 30° E | 98 | 1.67 | 2.47 | 07:49 | 14:54 | 21:58 |
| | 17 | 9 38.9 | 15 17.5 | Leo | 1.8 | 3.7 | 27° E | 98 | 1.67 | 2.50 | 07:44 | 14:43 | 21:42 |
| | 24 | 9 55.9 | 13 48.2 | Leo | 1.8 | 3.7 | 25° E | 98 | 1.67 | 2.53 | 07:40 | 14:33 | 21:25 |
| | 31 | 10 12.7 | 12 14.5 | Leo | 1.8 | 3.7 | 23° E | 99 | 1.66 | 2.55 | 07:35 | 14:22 | 21:09 |
| 1 Ceres | 3 | 3 21.7 | 11 52.6 | Ari | 9.2 | 0.4 | 50° W | 98 | 2.85 | 3.39 | 02:35 | 09:21 | 16:07 |
| | 10 | 3 31.2 | 12 29.3 | Tau | 9.2 | 0.4 | 55° W | 98 | 2.85 | 3.31 | 02:15 | 09:03 | 15:52 |
| | 17 | 3 40.4 | 13 02.9 | Tau | 9.1 | 0.4 | 59° W | 98 | 2.85 | 3.23 | 01:54 | 08:45 | 15:35 |
| | 24 | 3 49.3 | 13 33.3 | Tau | 9.1 | 0.4 | 63° W | 97 | 2.84 | 3.15 | 01:34 | 08:26 | 15:19 |
| | 31 | 3 57.9 | 14 00.8 | Tau | 9.1 | 0.4 | 68° W | 97 | 2.84 | 3.06 | 01:13 | 08:07 | 15:01 |
| Jupiter | 3 | 22 17.2 | -11 44.1 | Aqr | -2.5 | 45.4 | 129° W | 99 | 5.04 | 4.33 | 22:57 | 04:17 | 09:36 |
| | 10 | 22 15.9 | -11 53.4 | Aqr | -2.6 | 46.3 | 136° W | 100 | 5.04 | 4.25 | 22:29 | 03:48 | 09:07 |
| | 17 | 22 14.1 | -12 05.7 | Aqr | -2.6 | 47.1 | 144° W | 100 | 5.03 | 4.18 | 22:01 | 03:19 | 08:36 |
| | 24 | 22 11.7 | -12 20.6 | Aqr | -2.6 | 47.7 | 151° W | 100 | 5.03 | 4.12 | 21:32 | 02:49 | 08:06 |
| | 31 | 22 08.9 | -12 37.6 | Aqr | -2.7 | 48.3 | 158° W | 100 | 5.03 | 4.07 | 21:02 | 02:18 | 07:34 |
| Saturn | 3 | 20 59.8 | -17 48.9 | Cap | 0.4 | 18.3 | 149° W | 100 | 9.96 | 9.07 | 22:04 | 02:59 | 07:55 |
| | 10 | 20 58.1 | -17 56.9 | Cap | 0.3 | 18.4 | 156° W | 100 | 9.95 | 9.02 | 21:35 | 02:30 | 07:25 |
| | 17 | 20 56.2 | -18 05.5 | Cap | 0.3 | 18.5 | 163° W | 100 | 9.95 | 8.98 | 21:06 | 02:01 | 06:55 |
| | 24 | 20 54.2 | -18 14.4 | Cap | 0.2 | 18.5 | 170° W | 100 | 9.95 | 8.95 | 20:38 | 01:31 | 06:25 |
| | 31 | 20 52.1 | -18 23.5 | Cap | 0.2 | 18.5 | 178° W | 100 | 9.95 | 8.94 | 20:09 | 01:02 | 05:55 |
| Uranus | 3 | 2 46.2 | 15 36.8 | Ari | 5.8 | 3.5 | 57° W | 100 | 19.75 | 20.28 | 01:45 | 08:45 | 15:45 |
| | 10 | 2 47.1 | 15 41.0 | Ari | 5.8 | 3.5 | 64° W | 100 | 19.75 | 20.17 | 01:18 | 08:18 | 15:19 |
| | 17 | 2 47.9 | 15 44.6 | Ari | 5.8 | 3.5 | 70° W | 100 | 19.75 | 20.06 | 00:51 | 07:52 | 14:52 |
| | 24 | 2 48.6 | 15 47.6 | Ari | 5.8 | 3.5 | 77° W | 100 | 19.74 | 19.95 | 00:24 | 07:25 | 14:26 |
| | 31 | 2 49.2 | 15 49.9 | Ari | 5.8 | 3.6 | 83° W | 100 | 19.74 | 19.83 | 23:57 | 06:58 | 13:59 |
| Neptune | 3 | 23 36.8 | -3 44.7 | Aqr | 7.9 | 2.3 | 108° W | 100 | 29.92 | 29.59 | 23:47 | 05:36 | 11:25 |
| | 10 | 23 36.6 | -3 46.0 | Aqr | 7.9 | 2.3 | 115° W | 100 | 29.92 | 29.48 | 23:20 | 05:08 | 10:57 |
| | 17 | 23 36.4 | -3 47.8 | Aqr | 7.8 | 2.3 | 122° W | 100 | 29.92 | 29.38 | 22:52 | 04:41 | 10:29 |
| | 24 | 23 36.1 | -3 50.2 | Aqr | 7.8 | 2.3 | 128° W | 100 | 29.92 | 29.28 | 22:25 | 04:13 | 10:01 |
| | 31 | 23 35.7 | -3 53.1 | Aqr | 7.8 | 2.3 | 135° W | 100 | 29.92 | 29.20 | 21:57 | 03:45 | 09:33 |
| Pluto | 3 | 19 52.9 | -22 29.0 | Sgr | 14.3 | 0.2 | 165° W | 100 | 34.31 | 33.33 | 21:17 | 01:53 | 06:28 |
| | 10 | 19 52.2 | -22 31.5 | Sgr | 14.3 | 0.2 | 172° W | 100 | 34.32 | 33.31 | 20:49 | 01:25 | 06:00 |
| | 17 | 19 51.5 | -22 34.1 | Sgr | 14.3 | 0.2 | 178° W | 100 | 34.32 | 33.31 | 20:21 | 00:56 | 05:32 |
| | 24 | 19 50.8 | -22 36.6 | Sgr | 14.3 | 0.2 | 174° E | 100 | 34.33 | 33.32 | 19:49 | 00:24 | 04:59 |
| | 31 | 19 50.1 | -22 39.0 | Sgr | 14.3 | 0.2 | 167° E | 100 | 34.33 | 33.34 | 19:21 | 23:56 | 04:31 |

NASA Night Sky Notes:

Observe the Milky Way and Great Rift

By David Prosper

Summer skies bring glorious views of our own Milky Way galaxy to observers blessed with dark skies. For many city dwellers, their first sight of the Milky Way comes during trips to rural areas - so if you are traveling away from city lights, do yourself a favor and look up!

To observe the Milky Way, you need clear, dark skies, and enough time to adapt your eyes to the dark. Photos of the Milky Way are breathtaking, but they usually show far more detail and color than the human eye can see - that's the beauty and quietly deceptive nature of long exposure photography. For Northern Hemisphere observers, the most prominent portion of the Milky Way rises in the southeast as marked by the constellations Scorpius and Sagittarius. Take note that, even in dark skies, the Milky Way isn't easily visible until it rises a bit above the horizon and the thick, turbulent air which obscures the view. The Milky Way is huge, but is also rather faint, and our eyes need time to truly adjust to the dark and see it in any detail. Try not to check your phone while you

wait, as its light will reset your night vision. It's best to attempt to view the Milky Way when the Moon is at a new or crescent phase; you don't want the Moon's brilliant light washing out any potential views, especially since a full Moon is up all night.

Keeping your eyes dark adapted is especially important if you want to not only see the haze of the Milky Way, but also the dark lane cutting into that haze, stretching from the Summer Triangle to Sagittarius. This dark detail is known as the Great Rift, and is seen more readily in very dark skies, especially dark, dry skies found in high desert regions. What exactly is the Great Rift? You are looking at massive clouds of galactic dust lying between Earth and the interior of the Milky Way. Other "dark nebulae" of cosmic clouds pepper the Milky Way, including the famed Coalsack, found in the Southern Hemisphere constellation of Crux. Many cultures celebrate these dark clouds in their traditional stories along with the constellations and Milky Way.

Where exactly is our solar system within the Milky Way? Is there a way to get a sense of scale? The "Our Place in Our Galaxy" activity can help you do just that, with only birdseed, a coin, and your imagination: bit.ly/galaxyplace. You can also discover the amazing science NASA is doing to understand our galaxy - and our place in it - 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!



If the Milky Way was shrunk down to the size of North America, our entire Solar System would be about the size of a quarter. At that scale, the North Star, Polaris - which is about 433 light years distant from us - would be 11 miles away! Find more ways to visualize these immense sizes with the Our Place in Our Galaxy activity: bit.ly/galaxyplace



The Great Rift is shown in more detail in this photo of a portion of the Milky Way along with the bright stars of the Summer Triangle. You can see why it is also called the "Dark Rift." Credit: NASA / A.Fujii

Planetary Nebula in Ophiuchus: NGC 6572

by Glenn Chaple for LVAS

(Mag: 8.1, Size: 16" X 13")

The visual observer is all too aware that, with the exception of double stars like gold and yellow Albireo and ruby-red carbon stars like R Leporis, the deep sky is a pretty colorless place. Bright planetary nebulae like this month's Observer's Challenge, NGC 6572 in Ophiuchus, are a notable exception.

NGC 6572 was discovered by the Russian-German astronomer Friedrich Georg Wilhelm von Struve in 1825. Struve was in the midst of a survey to catalog double stars when he came upon "a star surrounded by bright green ellipse of fuzzy light." At the time, astronomers were unaware of the true nature of such a curiosity. Today we know that NGC 6572 is a planetary nebula – an expanding luminous shell of gas ejected by an aging star. It's relatively young as planetary nebulae go, perhaps no more than 2600 years.

The 2000.0 coordinates for NGC 6572 are: R.A. 18h 12m 06.6s, Dec. +6° 51' 13". I star-hopped there by starting at the 5th magnitude star 71 Ophiuchi, the unlabeled star just south of 72 Ophiuchi on Finder Chart A. Finder Chart B shows an 8th magnitude star, SAO 123133 just northwest of 71 Ophiuchi. A line from this star through 71 Ophiuchi and extended 1.3° brought me to a triangle of 8th magnitude stars, NGC 6572 was a little less than a degree SSE of the southernmost star in the triangle.

At 39X in my 10-inch f/5 reflector, NGC 6572 appeared stellar. At 208X, it was definitely non-stellar when compared to a pair of stars immediately to its east. It seemed slightly elongated in a north-south orientation and was decidedly pale blue. I was unable to detect the central star, which is said to be 13th magnitude.

NGC 6572 is approximately 5000 light years away. This translates to an actual diameter of 1/3 light year.

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.



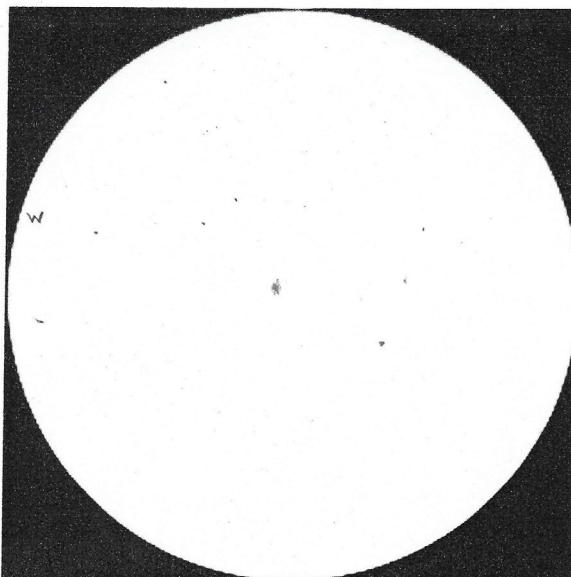
NGC 6572 image by Mario Motta, MD (ATMOB) 32-inch scope.



OBSERVING LOG

NAME: Glenn Chaple
 DATE (M/D/Y) 6/17/2021 TIME: 1:15 am EDT
 OBSERVING SITE: 82 S. Harbor Rd. Townsend MA
 SKY CONDITIONS: Seeing (Antoniadi Scale) bad Limiting Magnitude 5.0
 OBJECT: NGC 6572 TYPE: PN CONSTELLATION: Oph

SKETCH (note direction of west)

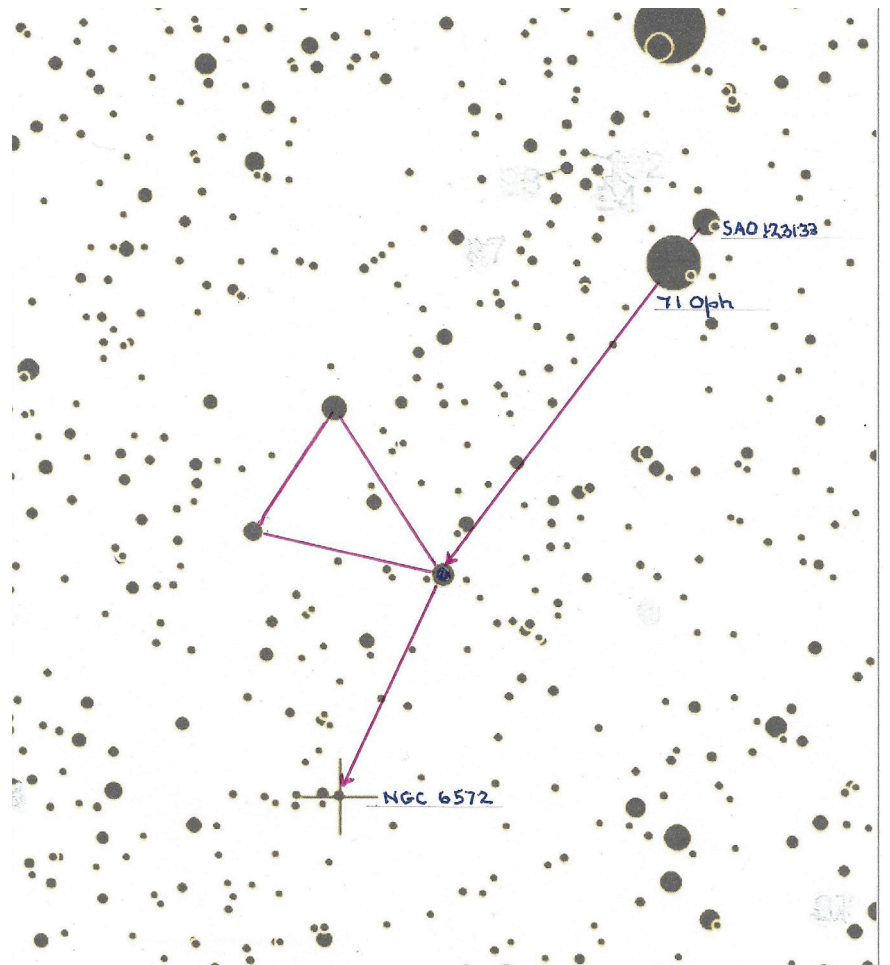


NOTES:

*Slightly elongated N-S.
Light blue color*

OBSERVING EQUIPMENT

Binoculars X
 Telescope: 10-inch f/5 reflector Eyepiece: 6 mm Radian
 Mag: 208X Field Diam: 0.3° Filter (if any): _____



From AAVSO's Variable Star Plotter (VSP). Annotations by Glenn Chaple. Field 3° by 4°. Stars plotted to 11th magnitude.

Museum of Natural History Quasquicentennial: June 6, 2021

by Jim Hendrickson

On Saturday, June 6, the Museum of Natural History at Roger Williams Park held its 125th anniversary celebration, with a particular emphasis on Maribelle Cormack, who was the Museum Director from 1947-1972. Aside from being Director, Cormack was a prolific author and was instrumental in establishing the planetarium, which bears her name. She was also one of the founding members of Skyscrapers, Inc. and attended many of the eclipse expedi-

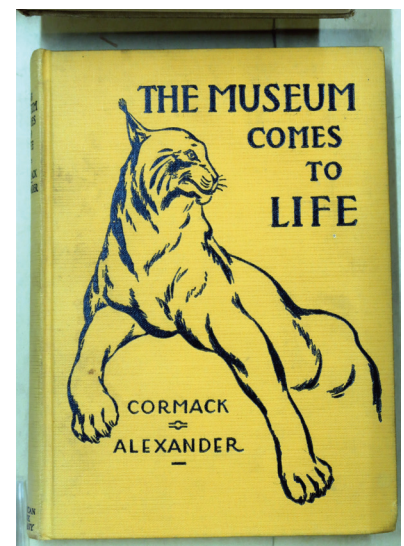
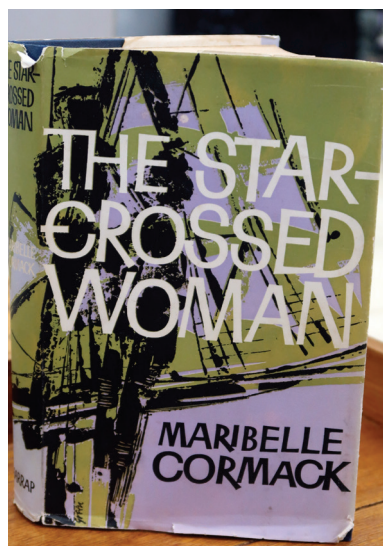
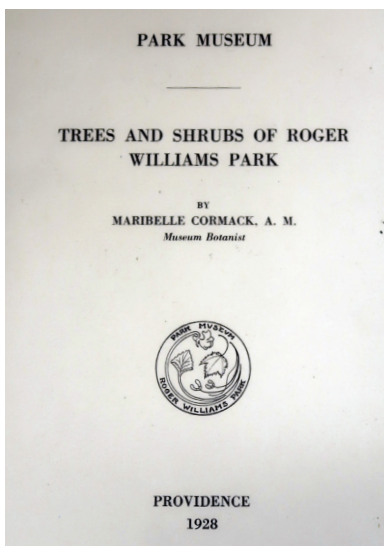
tions during the early years.

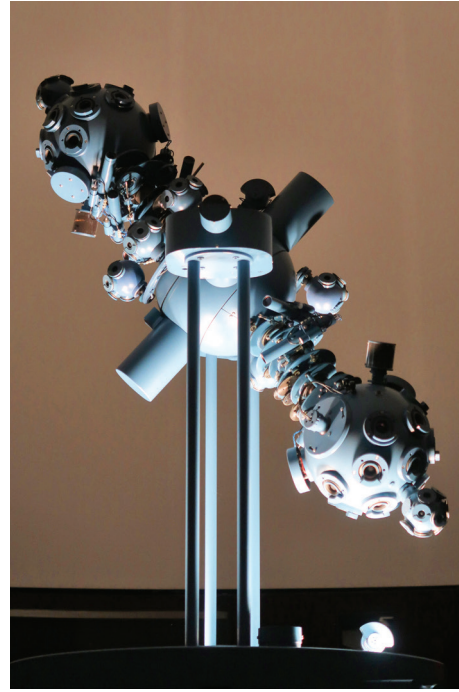
The museum's celebratory activities included planetarium shows, a tour of the archives, a new photographic exhibit dedicated to Maribelle Cormack, a scale solar system drawn in chalk, and bird walks around the park.

Maribelle Cormack: Her Dream Became A Reality

Born in Buffalo, New York on January 11, 1902, the life of Maribelle Cormack was not typical for a woman of her time. She went on to earn multiple college degrees, travel the world, and publish 13 books during her lifetime. In 1926, Cormack was hired as the Head of the Education Department at the Museum of Natural History, and succeeded to Directorship in 1947, which she held until retiring in 1972 at the age of 70. She passed away in July 1984 and her legacy lives on through the Cormack Planetarium, which she considered to be her greatest accomplishment. Her work continues to bring joy to those of all ages.

This exhibit was developed by Julia Stearly, a 9th grade student at the Paul W. Crowley East Bay Met School.

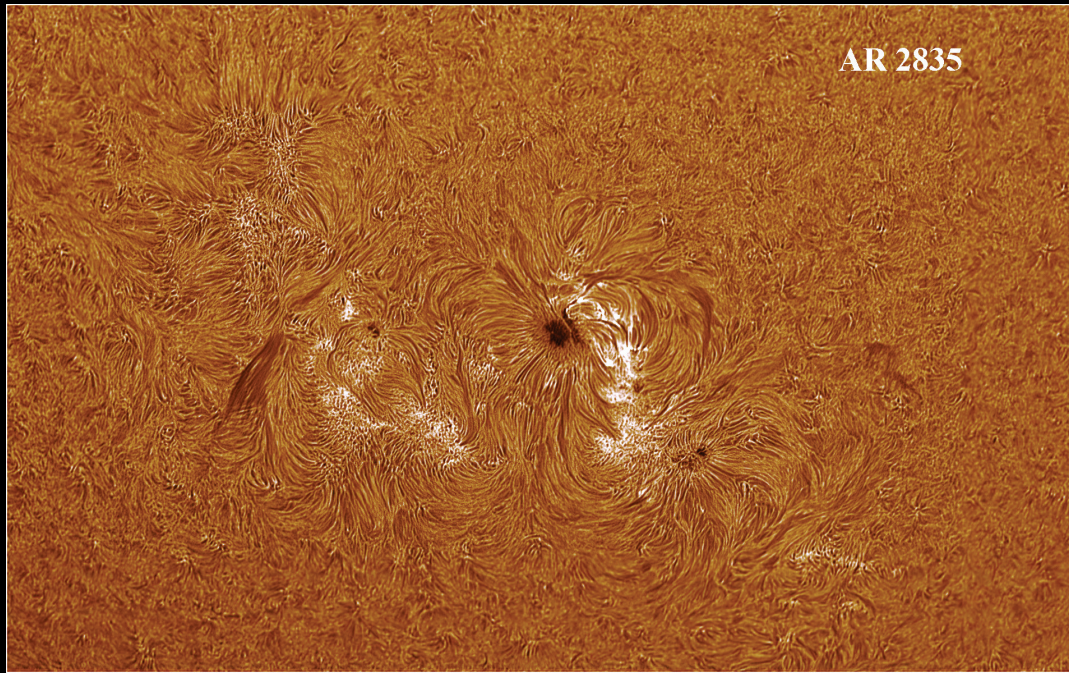




June Reports

Skyscrapers CASH FLOW to DATE 7/4/2021
Fiscal Year 2021-22

| | TOTAL |
|--|-----------------|
| INFLOWS | |
| Astronomical League Membership Contrib. | 157.00 |
| Donation | |
| Donation:Amazon Smile | 31.24 |
| Donation | |
| Donation:Donation for Capital Improvements | 100.00 |
| Donation:Misc Donation | 2,452.50 |
| TOTAL Donation | 2,583.74 |
| Dues | |
| Dues:Family | 840.00 |
| Dues:Regular | 1,100.00 |
| Dues:Senior | 950.00 |
| TOTAL Dues | 2,890.00 |
| Misc Income | 10.00 |
| Misc Income:Interest Inc | 0.94 |
| Misc Income:Sale of Items | 1,282.95 |
| TOTAL Misc Income | 1,293.89 |
| Shipping | 253.63 |
| TOTAL INFLOWS | 7,178.26 |
| OUTFLOWS | |
| Astronomical League Membership Expense | 167.50 |
| Corporation, State Fee | 20.00 |
| Misc Expenses | 19.00 |
| PayPal Fee | 114.69 |
| Shipping Exp | 143.70 |
| Trustee Expense | |
| Trustee Expense:Property Maintenance | 309.62 |
| TOTAL Trustee Expense | 309.62 |
| Utilities | |
| Utilities:Electric | 59.22 |
| Utilities:Internet | 183.97 |
| TOTAL Utilities | 243.19 |
| TOTAL OUTFLOWS | 1,017.70 |
| OVERALL TOTAL | 6,160.56 |



AR 2835 on June 29

Here is a capture by Jeff Padell of Active Region 2835 using Lunt ED102, Quark Chromosphere, ZWO ASI174mm-cool. It was really hot out there, 98 degrees.

NGC 4319 & Markarian 205 Quasar

Here's an image of NGC 4319 from June 15 by Steve Hubbard. This galaxy is in Draco and is about 77 million LY away and is 12.8 Mag. What's interesting is that there is a quasar right next to it that was thought to have been ejected from the galaxy. That was incorrect. The Quasar is 14 times further away at about 1 billion LY and is Mag 14.5. Other galaxies in the image are identified. Taken with 14" SCT,



Saturn

One-shot Color image of Saturn taken June 26, 2021 at 8h 58m UT (4:58am local time) with the ZWO 290MC with UV/IR cut filter Magnitude 0.4 Diameter 18.1" CMI=212.6° CMIII=267.9° Planet was 43.6 degrees above the horizon.

Observer: Name: Gregory T. Shanos PharmD Location: Longboat Key (Sarasota), Florida USA 27° 20' 58.57 N latitude 82° 36' 18.76 W elev 5meters



June 10 Partial Solar Eclipse

A few images of the eclipse from Dave Huestis, who observed from a hilltop site near the loading docks at BJ's in Johnston.





June 10 Partial Solar Eclipse

Didn't go anywhere special but here's my image from 6:15 am just as the sun was emerging from low clouds. Canon EOS 7D, $f/4$, $1/125$, 280mm, ISO400, 1000 Oaks solar film filter by Lloyd Merrill



June 10 Partial Solar Eclipse

From North Kingstown town beach; Canon 6D with Televue 60 APO; Manfrotto tripod; Astrozap solar filter; Image #1 (360mm @ $f6$); Images #2-5 (900mm @ $f15$) with a Televue 2.5X Powermate. By Ronald Zincone.



June 10 Partial Solar Eclipse

It looks like many people had mostly clear skies across the region. It was great to see another Transit of Luna, this was my 5th. These things seem to often occur during the earliest sunrise of the year but it was worth going out early for.

Francine and Jim Hendrickson went to Conimicut Point in Warwick, which has a very good view of the entire eastern half of the sky. A bit of cloud interfered for a few minutes after sunrise, but the eclipse was visible most of the time from just before maximum all the way until the end. I had my Canon with 200mm lens and hand held camera shot through Lunt 35mm H-alpha scope.

There were a few people at the park, mostly doing their normal morning walks, and a couple there specifically to see and photograph the sunrise/eclipse. It was fun to share the H-alpha views with a few people who had never seen an eclipse before.

Did anyone else see the wicked sun pillar before sunrise? My best eclipse image is a composite stack of 2 images, showing Nayatt Point Lighthouse across the bay. It was too underexposed during the actual sun shot so I Photoshopped in a longer exposure of it I had taken a few minutes earlier.



STARRY SCOOP

Editor: Kaitlynn Goulette



WHAT'S UP

On the 5th of July, the Earth reaches aphelion, which is its farthest point away from the sun in its elliptical orbit. While many people think this affects the seasons here on earth, aphelion is not related to the seasons at all. Instead, it's the tilt of the earth's axis that causes the seasons. When we are tilted towards the sun, we are more exposed to the sun's rays, giving us summer. During winter, we are tilted away from the sun and only receive some of the sun's heat.

July's night sky offers a fantastic edge-on view of our spiral galaxy, the Milky Way. From a dark location, countless stars blend together to form this silvery path across the sky. It rises like steam from the Teapot asterism in the constellation Sagittarius and arcs across the sky to the Cassiopeia region. In this cloud-like band, a vast collection of objects are visible through binoculars and telescopes. One of my favorite activities is to scan this area and observe the many beautiful deep-sky treasures within the Milky Way.

Mars and Venus are both very low in the evening sky at sunset this month, with the crescent moon joining them on the 11th and 12th. However, it will be challenging to spot the 3% illuminated moon on the 11th. On the 13th, these two planets reach conjunction and will be about half a degree apart. This close encounter will emphasize the contrasting colors of these planets.

Jupiter and Saturn are visible in the sky after midnight and can be seen until sunrise. These two bright beacons will be visited by the moon on 24th, 25th, and 26th.

The Delta Aquarids meteor shower runs from July 12th to August 23rd and peaks on the 28th and 29th of this month. It produces up to 20 meteors an hour and while the full moon may make it difficult to spot some of the fainter meteors, you will still be able to see the brighter ones. This is best observed from a dark location after midnight.

JULY'S SKY

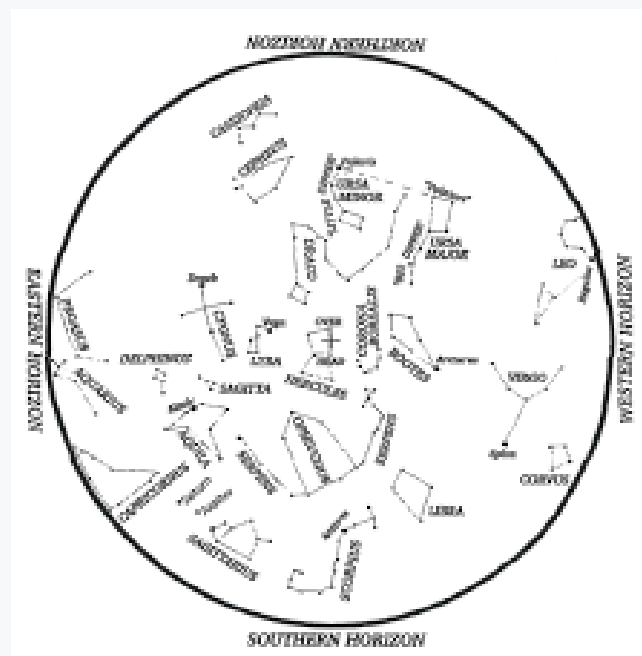
4: Mercury at Greatest Western Elongation

5: Earth at Aphelion

10: New Moon

24: Full Moon

28-29: Delta Aquarids Meteor Shower Peak



Credit: Roger B. Culver

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

OBSERVATIONS

When I awoke on the morning of June 10th, I was filled with excitement and anticipation about witnessing a rising eclipsed sun. While this was only to be a partial eclipse from New England, it would be occurring at sunrise for what promised to be a once-in-a-lifetime event.

Unlike most sunrises, this one appeared as blazing horns ascending from the distant treeline through a thin layer of clouds.

For my observations, I used eclipse glasses and an 8-inch Dobsonian telescope with a full aperture solar filter. I photographed it using my Canon 450d camera with a 300mm lens.

I feel so very fortunate to have enjoyed this memorable event with my family and friends.



Photo by Neilgen Doucette
10 June 2021

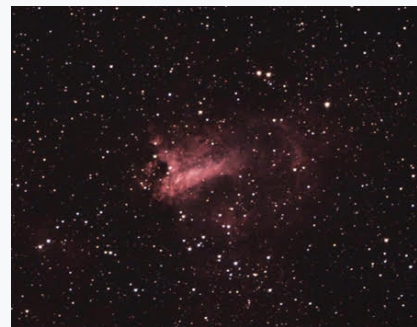


The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact starryscoop@gmail.com. The Starry Scoop is now on Facebook. Clear skies!

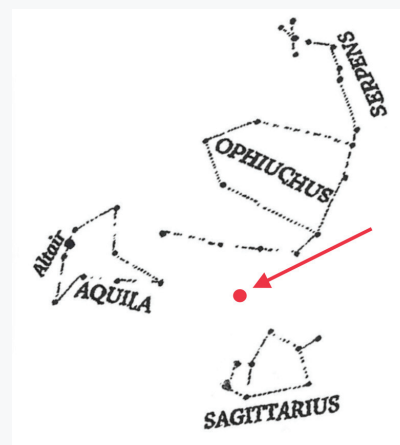
OBJECT OF THE MONTH

The featured object for July is the Swan Nebula, also known as M17. This emission nebula is about 5,500 light-years away and is one of the brightest in our galaxy. Encapsulated inside this nebula is the open cluster NGC 6618. While most of these stars are hidden behind gas and dust, their radiation helps light up this nebula. At an age of about a million years old, these stars are among the youngest in our galaxy.

You can find M17 about 10 degrees above the Teapot asterism in the constellation Sagittarius. Be mindful that this is a very busy section of the sky and is crowded with many celestial features. Binoculars or a telescope will be needed to resolve this 6th magnitude nebula. Below is a star map that will help you find this object.



Swan Nebula
Photo by: TJ Connolly



Location of Swan Nebula

Directions to Seagrave Memorial Observatory

From the Providence area:

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

From Coventry/West Warwick area:

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

From Southern Rhode Island:

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

From Northern Rhode Island:

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

From Connecticut:

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

From Massachusetts:

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



47 Peeptoad Road
North Scituate, Rhode Island 02857