



# the Skyscraper

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October 2023

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

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## Partial Annular Eclipse Observing Saturday, October 14

An annular solar eclipse will occur on Saturday, October 14. Here, in Rhode Island, the eclipse will begin at 12:16, reach maximum at 1:26, and end at 2:34. However, we will only have 19% coverage. Although we will not have any formal programming that day, Seagrave Observatory will be open for those who may want to observe the eclipse safely.



## International Observe the Moon Night Saturday, October 21

Join us at Seagrave Memorial Observatory for International Observe the Moon Night (InOMN) Saturday, October 21, from 7:00-9:00pm. First celebrated in 2010, InOMN is sponsored by NASA and was established to celebrate the arrival of the Lu-

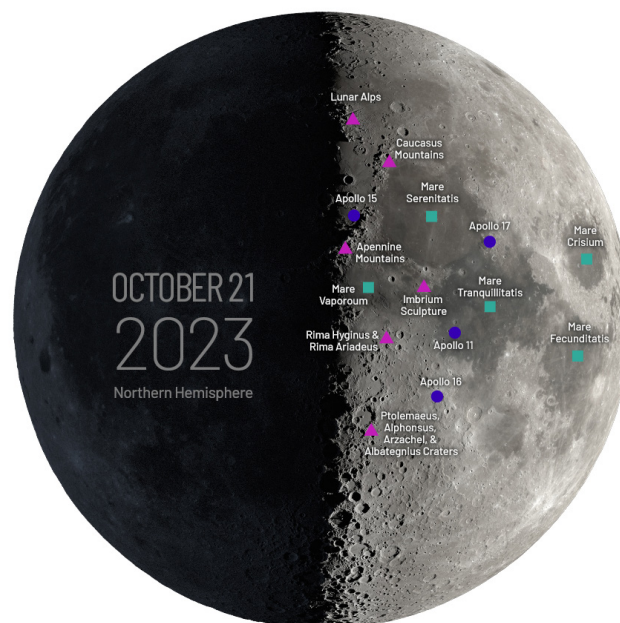
nar Reconnaissance Orbiter (LRO) at the Moon in 2009. Today, over 500 events are held worldwide to celebrate observation of the Moon.

Seagrave Observatory will be open for public observation on this night (weather permitting). The historic Alvan Clark telescope and our Meade 12" will be open for great views of the first quarter moon. Skyscrapers members will be on hand with personal telescopes set up in the courtyard for lunar observing. In addition, the meeting hall will be open and running Moon-themed videos.

Please join us for a relaxing and family-friendly evening of lunar observation, videos, and conversation.



**Seagrave Memorial  
Observatory  
Open Nights**  
Saturdays in October  
@ 7pm



# President's Message

by Linda Bergemann

Please join me in thanking all of the members of Skyscrapers who helped to make AstroAssembly 2023 a success.

In spite of the rain and mud, I think I can say that everyone enjoyed themselves. Everyone I have spoken with enjoyed the speakers, the food and the friendship. If you were unable to attend, videos of the talks will be posted on our YouTube channel after editing.

Special thanks to Bob Horton, 2nd VP, for laying the foundation for AstroAssembly way back in the winter months, and to Kathy Siok for grabbing the baton and running to the finish line.

I hope that I haven't missed anyone, but the following people made this year's AstroAssembly happen:

Kathy Babcock  
Jim Brenek  
Steve & Maria Brown  
Russ Chaplis  
Katie Chippendale  
Michael Corvese

Tony Costanzo  
Jim Crawford  
Rich Doherty  
Dan Fountain  
Jim Hendrickson  
Bob Horton  
Steve Hubbard  
Sue Hubbard  
Dave Huestis  
Kerry & Linda Hurd  
Francine Jackson  
Bob Janus  
John Kocur  
Steve LaFlamme  
Laura Landen  
Rick Lynch  
Mercedes Rivero-Hudec  
Kathy & Steve Siok  
Denise & David Turco  
Scott Tracy  
Ed Walsh  
Ronald Zincone

THANK YOU!

Mark your calendar for next year, the first Friday/Saturday in October. Planning for next year will begin after the first of the new year. Please consider raising your hand to be part of our planning team, so we can improve on this year's success.

My thanks to all, volunteers and attendees.

## Observing Events:

### Open Nights

Oct. 7, 7-9 PM  
Oct. 14, 7-9 PM  
Oct. 21, 7-9 PM  
Oct. 28, 7-9 PM

### Star Parties\*

Oct. 27 at River Bend Farm,  
5 PM  
Oct. 28 at Narragansett Boat  
Club, 5 PM  
Oct. 28 at Providence  
Pedestrian Bridge, 5:30 PM

\*Members are welcome and appreciated at all of these events



## 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 **October 15** to Jim Hendrickson at [hendrickson.jim@gmail.com](mailto: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](mailto:jim@distantgalaxy.com). Note that you will no longer receive the newsletter by postal mail.

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# A Visit to the Planetary Seekers and Star Gazers Society

by Patricia Lake

*Patricia, the grandmother of our youngest member, Luke Labriola, presented this short ghost story that she wrote following her first visit to Seagrave Observatory.*

Dan and Patricia met Steve at a social gathering, and excitedly listened as Steve described his participation in an Astronomy group, “The Planetary Seekers and Star Gazers Society”. This sounded like something that their fifteen-year-old grandson, Luke, would enjoy, since he intends to become an astrophysicist.

The next Saturday evening the grandparents and Luke traveled on a dark, remote road, with only the stars and the moon to light their way. Soon, their GPS indicated that they had arrived at the meeting site of “The Planetary Seekers and Star Gazers Society”. However, only open fields appeared as far as their eyes could see! After they continued driving for a while past all known directions, some buildings illuminated by red lights appeared. Then the family saw vehicles having license plates that bore inscriptions with lettering in a language indecipherable to humans. The family was startled, when on second glance, the vehicles appeared to be unfamiliar, circular shaped transports, with rows of tiny windows.

The trio continued walking on a dark and stoney path leading to a building with a flickering scarlet light, and strange gargoyle-shaped steps. As Dan, Patricia, and Luke entered the building, a meeting was in progress, with strange green flashing lights displayed on a large screen. When the speaker came into focus, he appeared to be wearing an iridescent fringed body suit. While it was difficult to hear him, it soon became apparent that he was speaking in an unusual fashion, sounding like he was croaking in beeps and bits. The speaker had a glowing laser pointing at a slide show of round, as well as triangular buildings with portholes. The undulating eerie green light emanating from the buildings was accompanied by a sharp buzzing sound, and there was a strange smell like burning electrical wires.

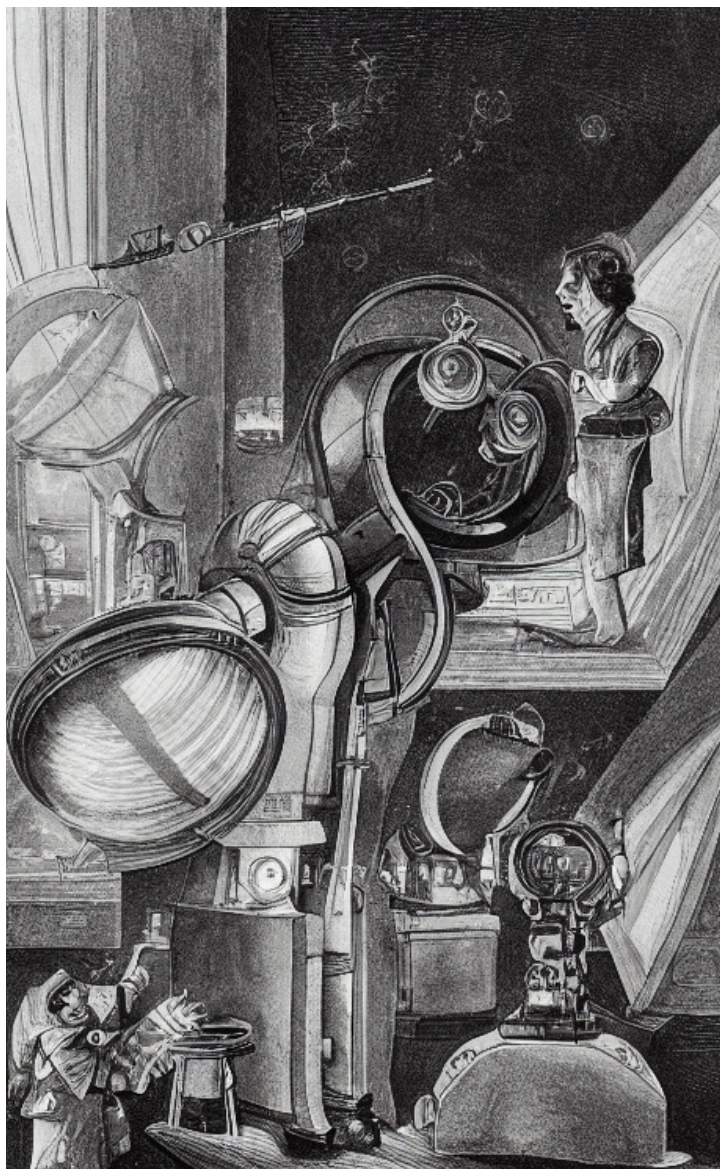
When the dim lights in the room became brighter, some of the people turned around, and Luke noticed that there were

people with blue faces, some with scaly lime green faces, and some with purple skin. Furthermore, their faces were oddly shaped, with oversized eyes, spiral noses, and sloping foreheads. They appeared to have two rows of pointed teeth in their yellow mouths. Luke’s muscles grew tense, and as he began to breathe faster and faster, he felt faint. However, Grandpa brought him something to drink that tasted like an exotic fruit punch, and Luke began to relax. Luke became fascinated by the sights, sounds, smells, and tastes that he was experiencing.

As Grandpa led Luke out of the room, past a memorial telescope stand, shimmering people-shaped blue lights materialized. The lights guided Grandpa and Luke to a dark tower-shaped structure containing a one hundred- and fifty-year-old gigantic telescope. As Grandpa and Luke climbed the outside stairs, they became aware that the loosely attached staircase was moving in the wind, and loudly clanging against the tower. They continued to a dark room at the top of the staircase, where a glowing outline of a man and a teenaged boy clad in nineteenth century clothing appeared. The man, named Vincent, had breath that smelled like rotting fish, as he gestured to the barely visible teen named Edward. Vincent proudly explained that he had given his son, Edward, the telescope for his 16th birthday

in 1873. Vincent said that they were about to see a satellite, and a spiral galaxy that had not been visible since 1923. Grandpa and Luke were eager to see the sky, so as they got closer to Vincent, they held their breath to avoid the horrid smell, and took turns looking through the telescope. Turning to where Vincent and Edward had stood, Grandpa and Luke saw no one there.

The tower began to move back and forth, and Luke began to smell something familiar and delicious. Luke heard his mom saying: “Wake up, the pancakes are ready, and it’s time to get ready for church”. As Luke opened his eyes, he realized that it was Sunday morning, and he was on his family’s boat, gently rocking in the breeze.



# Skylights: October 2023

by Jim Hendrickson

The most significant event occurring in the sky during October is a solar eclipse on the 14th. This is an **annular eclipse** that appears over the western states, and Rhode Island is far from the path of annularity. An annular eclipse is a special category of a partial eclipse where even if you are on the centerline of the eclipse, the Moon is too far away to block the entire disk of the Sun, thereby leaving a ring of the Sun's photosphere visible during the midpoint of the eclipse. As it is a partial eclipse, there is no time when it is safe to view it directly without proper filters.

Although Rhode Island is quite distant from the path of annularity, we will still experience a partial eclipse during which the Moon covers about 19% of the Sun's diameter. For us, the event begins with first contact, at 12:16pm, continues to maximum eclipse at 1:25pm, and ends at 2:34pm.

The last 6pm sunset occurs on the 17th. The next day the Sun sets after 6:00pm will be March 10.

After spending the past 45 days in Virgo, the Sun enters Libra on October 31.

Just past midnight on the 3rd, the waning gibbous **Moon** is just 1° south of the Pleiades. This is a spectacular view in a small telescope at low magnification.

Last Quarter Moon is on the 6th, in Gemini.

On the morning of the 7th, the waning crescent Moon is just 1.5° south of Pollux. It is then 3.5° northwest of M44 on the following morning.

The Moon is new on the 14th, bringing us the partial solar eclipse detailed above..

The **Full Hunter's Moon** occurs at 4:24pm EDT on the 28th. It rises at 5:38pm, which is seven minutes before sunset. The Moon is joined by Jupiter, which rises about 20 minutes later. The two are just 2.3° apart early the following morning.

You may notice, right at moonrise, that the southeastern limb of the Moon appears a bit dim. It is because there is a partial eclipse occurring during this month's Full Moon. While we won't see the partial phases, it is still in the outer shadow, the penumbra, at moonrise, and continues to move out until the penumbral eclipse ends at 6:26pm EDT.

The maximum 12% partial eclipse is visible over Africa, Europe and most of Asia.

The next partial lunar eclipse visible

from Rhode Island is an 8% on September 17, 2024, and the next total lunar eclipse occurs on March 14, 2025.

The crescent Moon appears 4° east of Antares on the 18th.

Another noteworthy event involving the Moon in October occurs on International Observe the Moon Night, October 21, when the First Quarter Moon occults magnitude 4.5 59 Sagittarii at 8:13pm EDT. The star re-emerges from the bright limb of the Moon, about 3 arcminutes from the southern limit of the terminator, 29 minutes later.

The waning gibbous Moon is just 0.9° south of Alnath (beta Tauri) early in the morning of November 1.

Early October is the best time to see **Mercury**, as the innermost planet rises an hour before sunrise on the 1st, and is positioned nearly vertically above the horizon with respect to the Sun.

Superior conjunction occurs on the 20th, followed by a lackluster evening apparition.

**Venus** continues to put on its best performance in the morning sky in October. Moving eastward through Leo, the brilliant planet passes 2.3° south of Regulus on the 9th, and on the 10th, the 25.6-day crescent Moon is 5.8° north of Venus, and 3.6° north of Regulus, forming a near-perfect line in the predawn sky.

Venus is at greatest elongation on the

## Events in October

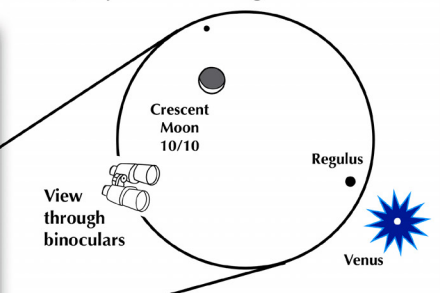
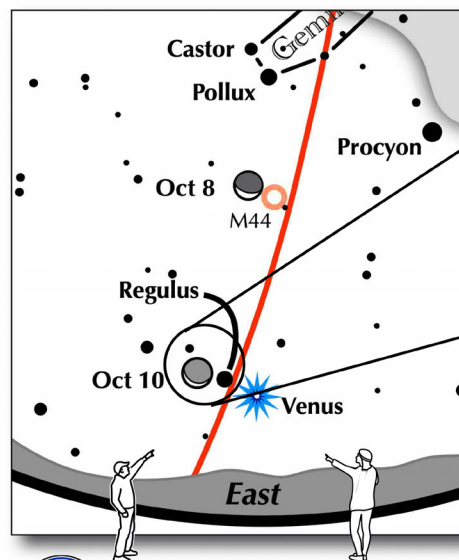
- 1 Moon 2.0° NNW of Jupiter
- 3 Moon 1.0° S of M45
- 6 Last Quarter Moon
- 6 Earth 1.0 AU from Sun
- 7 Moon 1.5° S of Pollux
- 7 Earliest Venurise (3:03am)
- 8 Moon 3.7° NNW of M44
- 9 Draconids Meteor Shower peak
- 9 Venus 2.3° S of Regulus
- 10 Moon 5.8° N of Venus
- 14 **New Moon (1247), Annular Solar Eclipse**
- 15 Moon 3.3° SE of Mars
- 18 Moon 4.0° E of Antares
- 20 Mercury Superior Conjunction
- 21 **First Quarter Moon**
- 21 Orionids Meteor Shower peak
- 23 Venus Greatest Elongation W46
- 24 Moon 4.3° SW of Saturn
- 26 Moon 1.5° SSE of Neptune
- 28 **Full Hunter's Moon, Partial Lunar Eclipse**
- 29 Moon 2.3° NNW of Jupiter
- 29 Mercury 0.5° SE of Mars
- 29 Moon 1.6° NNW of Uranus
- 30 Moon 3.6° SW of M45

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

23rd, extending 46° west of the Sun. It is at its point of greatest elongation that the Sun-Earth-Venus geometry presents Venus in a 50% illuminated "quarter Moon" phase. From this point on, Venus will steadily decrease in angular size and become more gibbous in phase, until it passes superior conjunction in June 2024..

Earliest Venusrise occurs at 3:03am EDT on October 7.

### In the early morning on October 10, try this challenge:



### Crescent moon meets Venus and Regulus

On the morning of October 10, the crescent moon, glowing full with earthshine, floats left of brilliant Venus. Look 90 minutes before sunrise.

Between them, shines Leo's brightest star, Regulus.

Two mornings earlier a thicker crescent moon was near M44, the Beehive star cluster.

The meeting of the crescent moon and Venus also occurs on the mornings of November 9 when the moon nearly covers Venus, and of December 9.

View to the east  
on October 10  
90 minutes before sunrise





On October 6, **Earth** crosses 1 AU distance from the Sun, moving towards perihelion on January 2.

Although still in the evening sky, **Mars** has become difficult to observe as it remains low on the horizon, and sets within 30 minutes of the Sun. The Red Planet is now about as far as it gets from Earth, at over 2.5 AU away, and its diminutive 3.7 arcsecond disc is smaller than that of Uranus.

The 1.3% illuminated, 1.1-day crescent Moon is 3.2° east-southeast of Mars on the 15th.

Mars passes into Libra on the 24th.

Reaching opposition early next month, **Jupiter** is visible in the east soon after dark, and shines brightly throughout the night as it moves westward (retrograde) through Aries.

October begins with the waning gibbous Moon 2.0° to the north-northwest of Jupiter, making a striking pair as the two rise into the evening sky together.

As Earth draws towards its closest point to Jupiter, just 3.98 AU away in late October, the giant planet attains a sizable diameter of 49.5 arcseconds. This is about the largest that any planet can appear from Earth except for Venus, which, near its inferior conjunction, can appear as large as 60 arcseconds.

Jupiter is joined by the full Moon on the 29th, when at about 3:00am, the two are just 2.3° apart. With a wide-field telescope, this is a good opportunity to compare their apparent sizes. Looking at them separately, you may not have realized that Jupiter is

greater than 1/40th the size of the Moon in our sky.

There are some interesting Galilean moon events to watch this month. A transit of Ganymede occurs between 9:05pm and 10:15pm EDT on the 5th, when the moon is never fully “inside” of Jupiter’s disk. At the same time, Io’s shadow will be transiting Jupiter, followed by the moon itself a few minutes after Ganymede’s transit ends.

An almost identical series of events occurs just after midnight on the 13th, with Io and Ganymede both transiting Jupiter’s disk simultaneously. Look for the shadows of each moon before the transit, with Ganymede’s shadow crossing Jupiter’s southern polar region beginning around 10:00pm EDT on the 12th.

Finally, another double transit of Io and Ganymede takes place on the 20th, this time with Io somewhat ahead of Ganymede. These three double transits demonstrate the orbital resonances of the Galilean moons, with Ganymede making one circuit for each four of Io.

Visible in the southeast after sunset, **Saturn** is at its best position for early evening observers, slowly moving westward (retrograde) through Aquarius. Now that we’re a few weeks removed from Saturn’s opposition in August, the planet-Earth-Sun angle is wide enough to once again give the ringed planet its majestic three-dimensional appearance in a telescope, as the shadow of its globe can be seen on the far side of the rings.

On the morning of the 24th, the waxing gibbous Moon passes 4.3° southwest of Sat-

urn

**Uranus**, our seventh planet, is quite easy to locate in Aries. Once the Pleiades have risen, look at them with binoculars, then slowly move along a line towards Jupiter. About halfway along this line you will find a magnitude 4.4 star. This is Botein (delta Arietis), a class K2 giant star that lies 170 light years away that is about twice the mass of the Sun, and shines with 45 times its luminosity. From this star, move southward, perpendicular to the line connecting the Pleiades and Jupiter. You’ll only need to move about five Moon diameters (2.4°) until you find the magnitude 5.7 blue-green glow of Uranus, 155 light minutes (18.7 AU) away.

The Moon is 1.6° north-northwest of Uranus on the 29th, shortly after Moonrise.

**Neptune** is in Pisces, and is fairly easy to find, lying almost directly on a line extended from magnitude 4.1 iota Piscium through magnitude 4.5 lambda Piscium, the two stars making up the eastern segment of the Circlet asterism, and continuing southward about the same distance. You’ll see a magnitude 5.5 star, 20 Piscium. Locate Neptune within 0.5° to the west-southwest of this star.

On the 25th, the waxing gibbous Moon passes within 2.0° to the south of Neptune.

Dwarf planets & asteroids

**Ceres** is now in Libra, and sets soon after the Sun. It will become visible again in December.

**Pluto** is still in eastern Sagittarius, about 1.5° southwest of globular cluster M75. It is best viewed in early evening, when it is highest in the sky.

**Vesta** moves into Gemini on October 7, and begins its retrograde loop late in the month, when it brightens to magnitude 7.5.

An interesting bit of celestial coincidence occurs during early October. Because the sky is divided into 24 hours of right ascension, it can be thought of as a clock which completes one cycle for each sidereal rotation of Earth, which is approximately four minutes faster than the 24-hour mean solar day. This is the point at which stars on a given line of right ascension cross the meridian. The right ascension crossing the meridian at a particular location on Earth is known as sidereal time, although it indicates a position (pertaining to the sky) more than an actual time.

Since sidereal time is indicated in hours, minutes, and seconds, there is one point during the year when sidereal time lines up with local time. This “sidereal synchroniza-

## ASTRONOMICAL LEAGUE Double Star Activity

### Other Suns: Gamma Andromedae

**How to find Gamma Andromedae on an October evening**

Face northeast. Find the Great Square and the curve of stars extending to the lower left. This is Andromeda. Gamma is the third star on the string and is as bright as the major stars of the Big Dipper. From the “W” of Cassiopeia, Gamma lies to the lower right.

Suggested magnification: 40x  
Suggested aperture: >2 inches

**Gamma Andromedae**  
A-B separation: 9.7 sec  
A magnitude: 2.3  
B magnitude: 5.0  
Position Angle: 63°  
A & B colors: orange, blue

tion” occurs on October 2 at 6:56pm (18h 56m 30s) EDT for most of Rhode Island. Your time (and date) of sidereal synchronization will vary by time zone, and to an even greater extent, where you are within your time zone. Generally, the farther east you are, the earlier the synchronization occurs, and later for observers farther west.

The Summer Triangle remains a prominent feature of the early evening sky in October, as the large and bright asterism is high overhead after evening twilight fades. But you will notice that in the south, the familiar summer star patterns of Scorpius and Sagittarius are slowly sinking towards the southwestern horizon.

The springtime beacon of Arcturus departs the western sky during the early evening hours, and the Big Dipper assumes its autumnal horizontal orientation, with the Little Dipper rotated into position that appears to be spilling its contents into the Big Dipper.

The King Cepheus lies high in the north, welcoming your exploration of its deep sky treasures. Cassiopeia and Andromeda are high in the north and east, bringing even more spectacular objects within view, including the Andromeda Galaxy.

To the southeast, Fomalhaut (alpha Piscis Austrinus) is usually a lone, bright beacon in an apparent void of stars, but it cur-

rently appears as if it’s a pillar upon which Saturn is standing, about 20° above it.

In early October, you may notice a few meteors originating from an area near the head of Draco, about 15° northwest of Vega, as the annual Draconid shower peaks on the 8th-9th.

By mid-month, Orion will appear low in the east by 11:00pm, and don’t miss his annual meteor shower, peaking on the 20th-21st.

If you’re an early morning observer, the Winter Hexagon, consisting of the constellations Auriga, Taurus, Orion, Canis Major, Canis Minor, and Gemini, appears high in the south before twilight.

## Saturn Now Has 146 Known Moons

by Francine Jackson

And, the Winner is. . .?

At the moment, Saturn. It has reclaimed the trophy for the most satellites orbiting a planet. According to Sky & Telescope’s September, 2023 issue, the International Astronomical Union’s Minor Planet Center has recorded the orbits of 63 new moons traveling around our most beautiful ringed planet, bringing its total count to 146. Now

in second place is Jupiter, with only 95. Surprisingly, this number had given Jupiter honors earlier this year.

These discoveries are the result of observations made with the Canada-France-Hawaii Telescope between 2019 and 2021. In studying size distribution of Saturn’s moons, astronomers located many more smaller ones than larger ones. This leads them to

believe that they are the result of a collision between two objects near Saturn as recently as 100 million years ago. Many of these are within about 2 miles across. As such, it is believed there are probably dozens more to be found, and possibly hundreds of even smaller moons orbiting the planet.

Apparently, Saturn will be the moon winner for a long time!

## Star Party Reports

**Starts at Sunset, Providence RI  
Thursday, September 14, 2023  
by Francine Jackson**

It was a beautiful Thursday early evening, September 14, when Jim Hendrickson, Fred Sammartino and Francine Jackson set up two telescopes and a pair of binoculars on Providence’s new Pedestrian Bridge, as part of the city’s WaterFire “Starts at Sunset” festival.

Even before sunset occurred, people stopped, asking what we were doing, and what we would be looking at, besides the buildings we were observing before darkness fell.

Then it was on to Saturn, where all three of us had slightly varied images through our respective instruments. The public was fascinated, and virtually everyone stopped to ask to look.

Later in the evening, we learned there were other telescopes set up on the other side of the bridge; however, they were not on the bridge proper. With us, we also could give a lesson on vibration, caused

by those walking on the bridge. When someone would walk by, a person looking through a telescope could actually discern the footsteps of that individual, a good way to show how important stability can be.

Hundreds of people passed our site, and almost all stopped to ask what we were looking at. As happens with Saturn, all were

amazed with their ability to see the rings.

We broke down about 9:00 P.M., when the program was waning. The persons putting it together were thrilled that we participated, and hoped we could, in the future, continue to be a part of their WaterFire Bridge program.





# The South Pole-Aitken Basin

by Michael Corvese

Although not visible from Earth, the South Pole-Aitken Basin is a unique and interesting feature on the Moon's surface. It was not discovered until Moon orbiting satellites detected it in the 1960's, though some earth-bound astronomers previously noted the ridge of mountains on the southern limb of the Moon and suspected a large crater or basin. After its initial discovery, the full extent of its size and topography were not known until the NASA Clementine and Galileo missions of the 1990's.

This basin is the largest, deepest, and oldest impact basin on the Moon. It is 1,600 miles wide, and averages 4 to 5 miles deep. Some of the mountains on the southern side of the basin are estimated to be over 30,000 feet, even higher than Mount Everest! Keep in mind that the Moon is only about 1/4 the size of the Earth. The south Pole-Aitken Basin is thought to have been formed between 4.2 and 4.3 billion years ago by a 140-mile-wide impactor, striking the Moon at an oblique angle. This occurred during the pre-Nectarian epoch, a very early stage in the Moon's evolution.

The southern rim of the basin, informally known as the Leibnitz Mountains, are visible at full Moon during a favorable libration. Several peaks have been named (or numbered) and are observable even with small telescopes. Some parts of the Moon in this region, near the south pole, are in

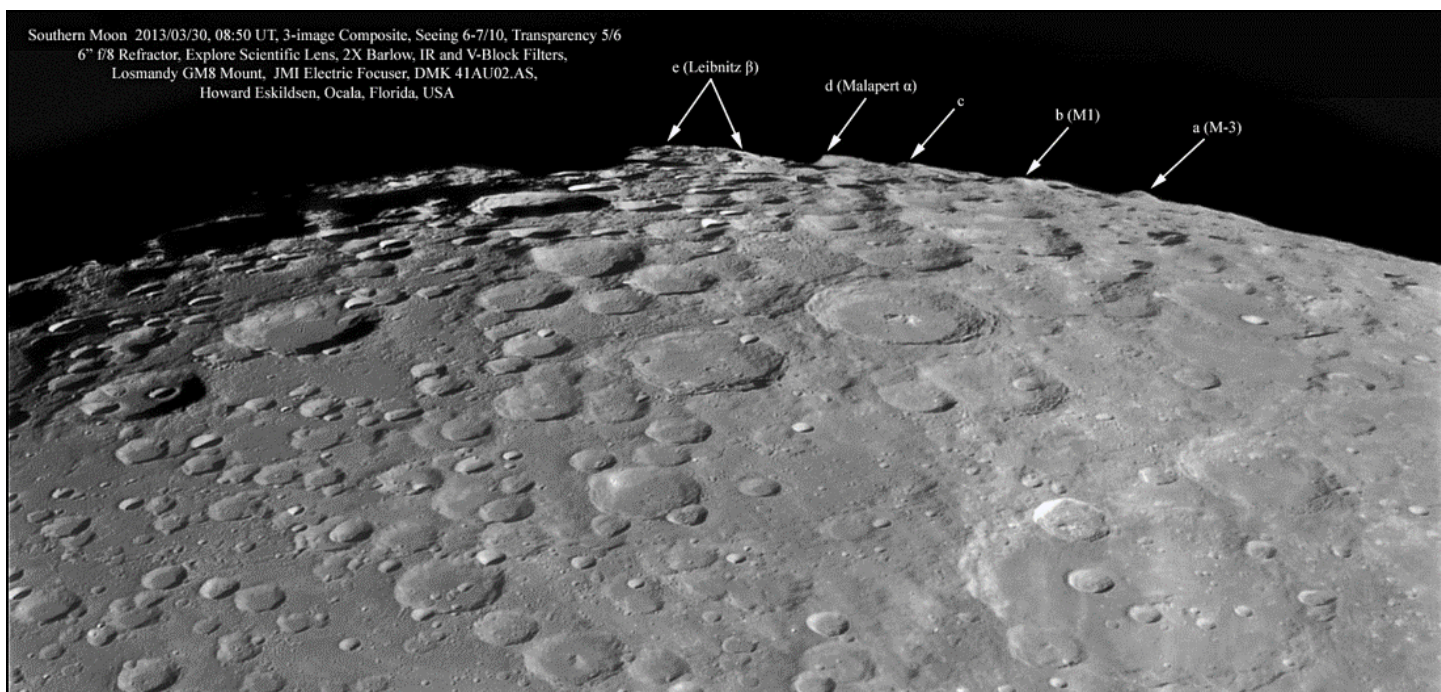
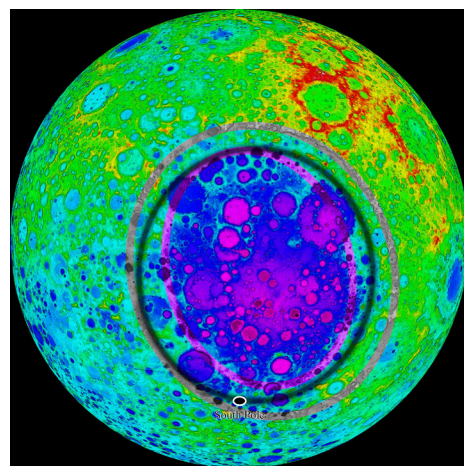
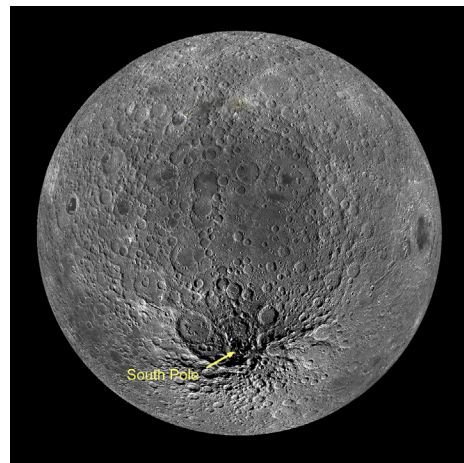
permanent shadow and it is suspected that water in the form of ice may be present. A source of water would be necessary to sustain any type of base or station on the Moon, so this area has been of great interest lately.

Robert Grant Aitken, for whom this basin was named, was an American and native Californian astronomer who lived from 1864-1951. After his career as a mathematics and astronomy professor, he was appointed an assistant astronomer at Lick Observatory in 1895. He began a systematic study of double stars and by 1915, Robert Grant Aitken had discovered and measured the orbits of over 3000 double stars. He received the prestigious Bruce Medal for his work in cataloguing these stars. He became Associate Director of Lick Observatory in 1923 and Director in 1930. He was also President of the Astronomical Society of the Pacific from 1899-1915. You may recognize this group's name since today they are the contractor that operates NASA's Night Sky Network, a coalition of amateur astronomy clubs to which Skyscrapers belongs. Another large impact crater is also named after Aitken. It is located on the far-side of the Moon and defines the northern extent of the South Pole-Aitken Basin.

Next full Moon, which is not usually a good time for observing, take your telescope out and try to identify the peaks of

the Leibnitz Mountains and know that on the far-side of those mountains, the Moon's largest impact basin looms.

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



Southern Moon 2013/03/30, 08:50 UT, 3-image Composite, Seeing 6-7/10, Transparency 5/6  
6" f/8 Refractor, Explore Scientific Lens, 2X Barlow, IR and V-Block Filters,  
Losmandy GM8 Mount, JMI Electric Focuser, DMK 41AU02.AS,  
Howard Eskildsen, Ocala, Florida, USA



## Observer's Challenge:

# NGC689: Planetary Nebula in Delphinus

by Glenn Chaple

### Magnitude 10.5, Size 18"

There are three reasons why a deep-sky object can be a challenge for the visual observer. It may be large and faint, it may be small and star-like, or it may be situated far from any bright guide star and hard to find. The latter two hurdles apply to this month's Observer's Challenge, the planetary nebula NGC 6819 in Delphinus.

Its 2000.0 coordinates are: RA 20h15m08.8s, Dec +12o42'15.6", about 2 ½ degrees south of 4.9 magnitude rho (ρ) Aquilae and 5 degrees east and slightly south of 5.4 magnitude eta (η) Delphini. I used the latter route when tracking down NGC 6891 with a 10-inch f/5 reflector just after midnight on July 20, 2023.

Because I use low magnification when star-hopping, I might have mistaken NGC 6891 for a 10th magnitude star had I not known its precise location. Even when viewing with a magnifying power of 208X, all I could make out was what looked like an out-of-focus star. It was only when I moved an OIII filter between eye and eyepiece and the object remained bright while a 9.5 magnitude field star dimmed did I confirm its identity as a planetary nebula. I was unable to make out the magnitude 12.5 central star.

NGC 6891 is described as a "triple-shell planetary nebula." It's likely I viewed just the bright inner shell, which spans roughly 10 arc-seconds. Perhaps under darker skies, I might have made out the 18 arc-second-wide middle shell. A faint outer halo, some 80 arc-seconds across, might be picked up with large-aperture instruments.

Before leaving the area, aim your scope about one degree to the ENE. This should bring you to the pretty double star Struve 2664 (STF2664 or Σ2664). Medium aperture scopes will bring out the golden yellow hues of its magnitude 8.1 and 8.3 component stars, which are separated by 28 arc-seconds. They were a "nice sight" when I split them with a 3-inch f/10 reflector at 60X back in the fall of 1978.

NGC 6891 was discovered on September 22, 1884, by the English-born astronomer Ralph Copeland. Sources place its distance at about 12,000 light years, but recent GAIA data indicate a closer distance of 8400 light years.

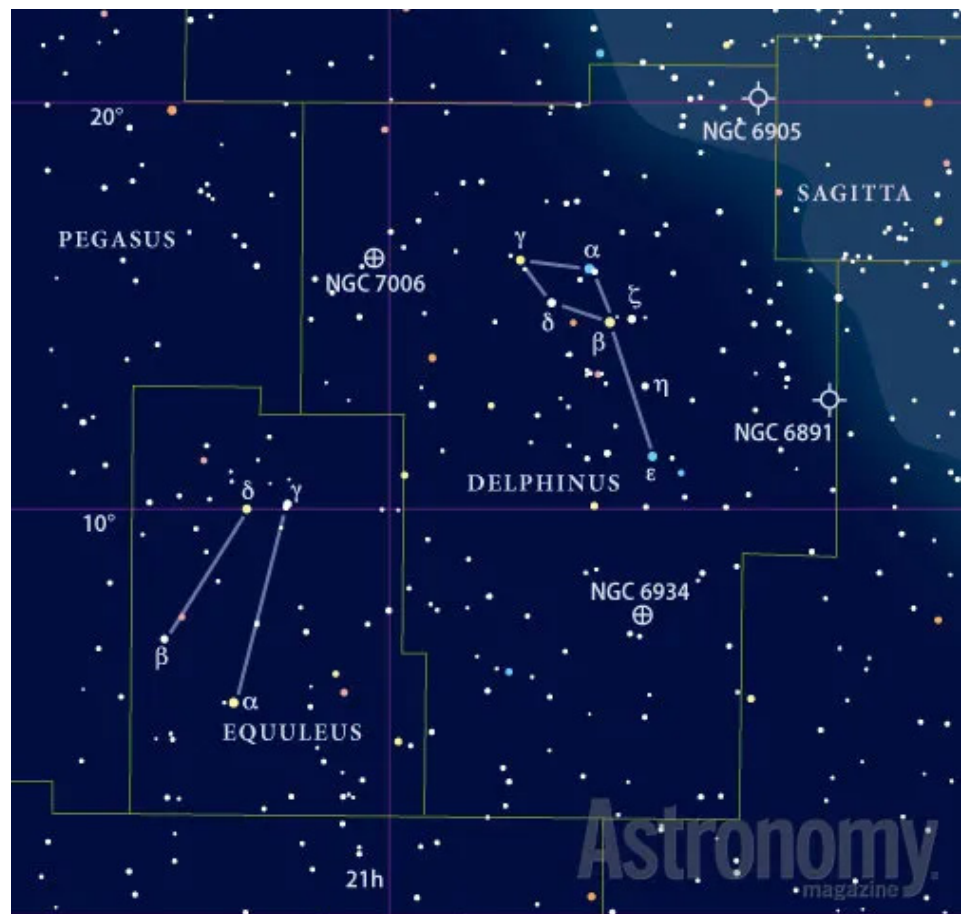
The purpose of the Observer's Challenge is to encourage the pursuit of visual observ-

ing. 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

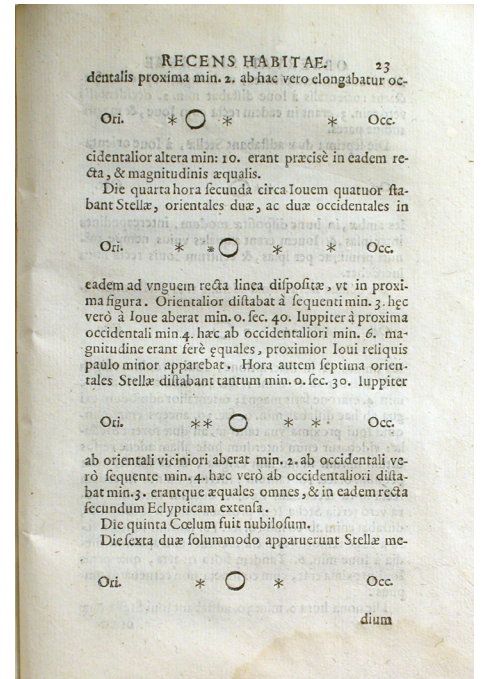
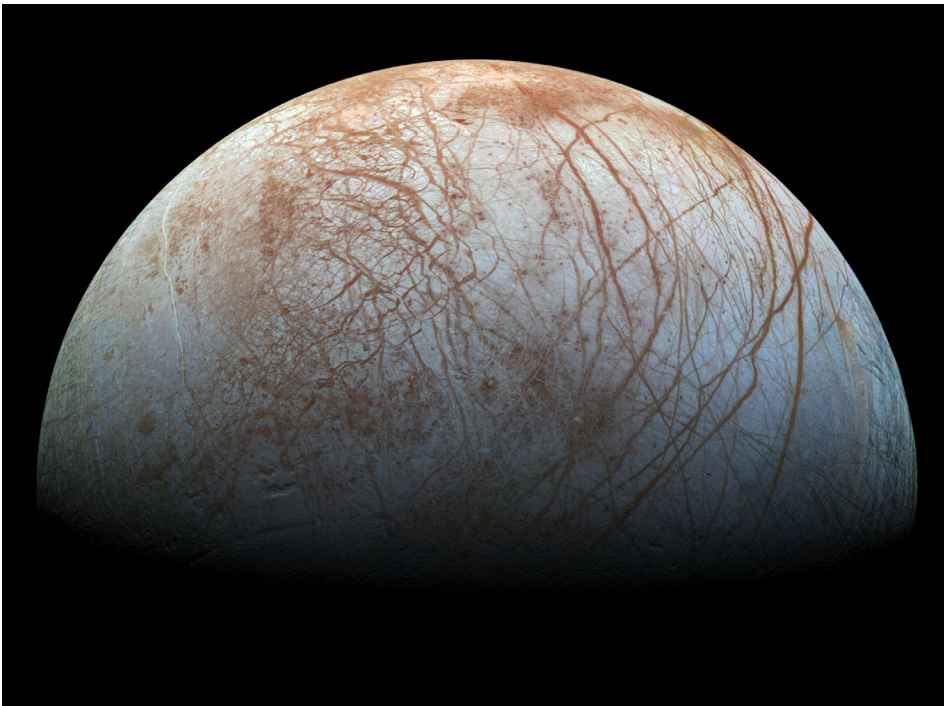
Roger Ivester ([rogerivester@me.com](mailto:rogerivester@me.com)). To find out more about the Observer's Challenge, log on to [rogerivester.com/category/observers-challenge-reports-complete](http://rogerivester.com/category/observers-challenge-reports-complete).



"Taken with 32 inch telescope and ZWO ASI 6200 camera, and with NB imaging using Ha, O3, and S2 filters. 2.5 hours total imaging time. I noticed in O3 filter faint outer ejected material, so I pushed the O3 with extra frames, and stretched to enhance this outer material. Interesting outer structure seen this way." Mario Motta, MD. (ATMoB)







Galileo's drawings of Jupiter and its Medicean Stars from Sidereus Nuncius. Image courtesy of the History of Science Collections, University of Oklahoma Libraries.

## NASA Night Sky Notes: From Galileo to Clipper, Exploring Jupiter's Moons

by Vivian White

*"... We, too, are made of wonders, of great and ordinary loves, of small invisible worlds, of a need to call out through the dark."*

From In Praise of Mystery: A Poem for Europa by Ada Limon

As autumn begins, if you're up late, you may notice a bright point of light rising in the east. Look a bit closer, with a pair of binoculars, and you'll notice it's not a star at all. While stars look point-like no matter how big your backyard telescope, this light appears as a circle under closer examination. Even more curious, you will likely see a line of smaller dots on one or both sides. Congratulations! You've rediscovered the king of the planets - majestic Jupiter - and its four largest moons.

Galileo famously chronicled the four moving dots near Jupiter and surmised that they were orbiting the distant world. While Jupiter has well over 80 discovered moons as of September 2023, these brightest four are called the "Galilean Moons" - Io, Europa, Ganymede, and Callisto. (Great mnemonics exist to remember these in order of distance from Jupiter, such as "I Eat Green Caterpillars") You can follow these like Galileo did, using stargazing apps or the handy

image below. A favorite beginning observing challenge is to track the movement of the Galilean Moons over the course of many nights. Even within a few hours, you will notice them moving in relation to Jupiter, just as Galileo did.

Fast forward 414 years, and NASA will be sending a robotic mission to investigate the surface of one of these distant worlds. The Europa Clipper Mission is launching to the cold, icy moon in 2024, to begin orbiting in 2030. With its salty oceans covered by ice, Europa was chosen as an excellent location to continue the search for life outside of Earth. Clipper will be the largest spacecraft ever sent to another planet, designed to withstand Jupiter's punishing radiation. Once it arrives at Jupiter in 2030, NASA plans to do about 50 flybys of Europa, mapping almost the entire surface of this watery world.

What was once only dreamed of in the small telescope of Galileo, or in great works of fiction, NASA is turning our wildest imagination into reality. One of the celebrated quotes from the classic 2010: Odyssey Two warns, "All these worlds are yours, except Europa. Attempt no landing there." Science fiction fans can feel relieved know-

ing that writer Arthur C. Clarke gave his blessing for the Europa Clipper mission.

Join the Europa Message in a Bottle Campaign to send your name with the spacecraft, hear the rest of the poem by the US Poet Laureate, and learn more about the wonders of space travel with the Clipper Mission: <https://europa.nasa.gov/participate>

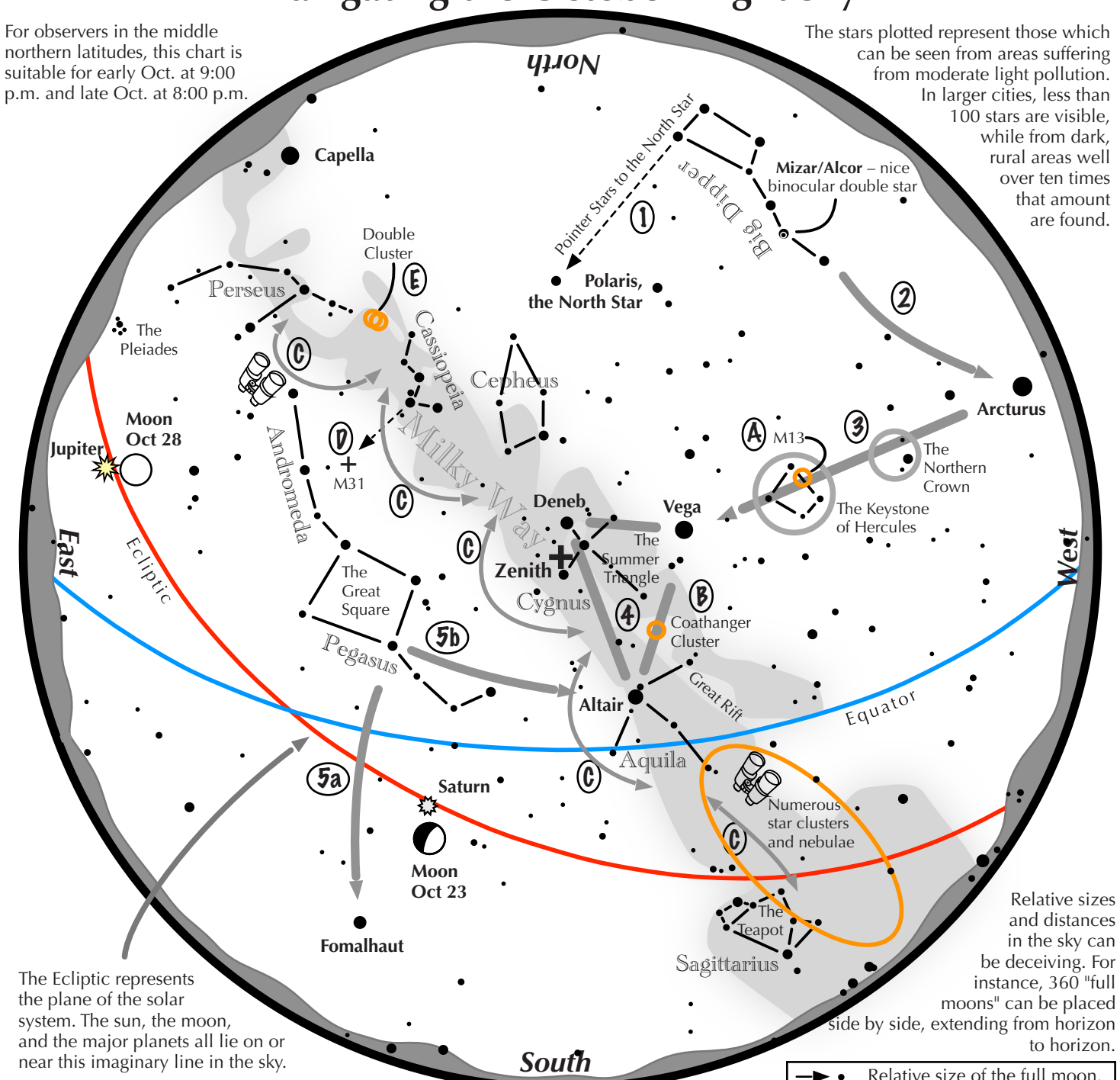
Watch a wonderful Clipper webinar with Dr. Cynthia Phillips, planetary geologist with the mission: <https://www.youtube.com/live/RnnLJBLRBCA?feature=shared&t=269>

This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!

# Navigating the October Night Sky

For observers in the middle northern latitudes, this chart is suitable for early Oct. at 9:00 p.m. and late Oct. at 8:00 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 October 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 early October 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 Nearly overhead lie the summer triangle stars of Vega, Altair, and Deneb.
- 5 High in the east are the four moderately bright stars of the Great Square. Its two southern stars point west to Altair. Its two western stars point south to Fomalhaut.

### Binocular Highlights

**A:** On the western side of the Keystone glows the Great Hercules Cluster, a ball of 500,000 stars. **B:** 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger. **C:** Sweep along the Milky Way for an astounding number of fuzzy star clusters and nebulae amid many faint glows and dark bays, including the Great Rift. **D:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **E:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster.



Astronomical League [www.astroleague.org/outreach](http://www.astroleague.org/outreach); duplication is allowed and encouraged for all free distribution.



# The Sun, Moon & Planets in October

This table contains the ephemeris of the objects in the Solar System for each Saturday night in October 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
<b>Sun</b>	<b>7</b>	12 49.6	-5 19.0	Vir	-26.8	1919.8	-	-	-	1	06:49	12:34	18:18
	<b>14</b>	13 15.3	-7 58.0	Vir	-26.8	1923.6	-	-	-	0.998	06:57	12:32	18:07
	<b>21</b>	13 41.5	-10 31.5	Vir	-26.8	1927.5	-	-	-	0.996	07:05	12:30	17:56
	<b>28</b>	14 08.2	-12 57.3	Vir	-26.8	1931.3	-	-	-	0.994	07:13	12:30	17:46
<b>Moon</b>	<b>7</b>	7 22.9	26 32.8	Gem	-11.7	1786.1	85° W	46	-	-	23:25	07:30	15:28
	<b>14</b>	12 43.5	-4 13.0	Vir	-6.9	1786.3	9° W	1	-	-	06:43	12:30	18:07
	<b>21</b>	18 54.9	-28 50.6	Sgr	-11.6	1916	75° E	37	-	-	14:17	18:40	23:08
	<b>28</b>	1 27.8	8 10.1	Psc	-12.7	1972.1	169° E	99	-	-	17:38	00:46	08:08
<b>Mercury</b>	<b>7</b>	12 15.8	0 17.6	Vir	-1.1	5.2	10° W	93	0.353	1.291	05:58	12:02	18:04
	<b>14</b>	13 00.7	-4 57.5	Vir	-1.2	4.9	5° W	99	0.393	1.379	06:34	12:19	18:02
	<b>21</b>	13 44.5	-10 03.1	Vir	-1.2	4.7	1° E	100	0.429	1.424	07:09	12:35	18:00
	<b>28</b>	14 27.7	-14 40.4	Lib	-0.8	4.7	5° E	99	0.454	1.435	07:43	12:51	17:58
<b>Venus</b>	<b>7</b>	9 58.8	10 03.5	Leo	-4.4	29.8	45° W	41	0.723	0.567	03:03	09:43	16:22
	<b>14</b>	10 23.1	8 44.6	Leo	-4.3	27.3	46° W	45	0.722	0.619	03:05	09:40	16:14
	<b>21</b>	10 49.0	7 02.2	Leo	-4.3	25.2	46° W	49	0.721	0.672	03:10	09:38	16:06
	<b>28</b>	11 16.0	4 59.3	Leo	-4.2	23.3	46° W	53	0.72	0.725	03:17	09:38	15:58
<b>Mars</b>	<b>7</b>	13 38.8	-9 57.0	Vir	1.6	3.7	13° E	99	1.588	2.546	07:56	13:22	18:48
	<b>14</b>	13 56.7	-11 41.2	Vir	1.6	3.7	11° E	100	1.581	2.549	07:53	13:12	18:32
	<b>21</b>	14 15.0	-13 22.0	Vir	1.6	3.7	9° E	100	1.572	2.55	07:50	13:03	18:16
	<b>28</b>	14 33.6	-14 58.4	Lib	1.6	3.7	6° E	100	1.564	2.547	07:47	12:54	18:01
<b>1 Ceres</b>	<b>7</b>	14 31.5	-10 19.1	Lib	8.9	0.3	26° E	99	2.697	3.562	08:49	14:14	19:38
	<b>14</b>	14 42.6	-11 26.6	Lib	8.9	0.3	22° E	100	2.702	3.603	08:37	13:58	19:18
	<b>21</b>	14 54.0	-12 31.7	Lib	8.8	0.3	18° E	100	2.707	3.638	08:25	13:41	18:58
	<b>28</b>	15 05.5	-13 34.3	Lib	8.8	0.3	14° E	100	2.713	3.667	08:13	13:25	18:38
<b>Jupiter</b>	<b>7</b>	2 47.4	14 39.5	Ari	-2.7	48.2	150° W	100	4.97	4.083	19:30	02:26	09:22
	<b>14</b>	2 44.4	14 25.5	Ari	-2.7	48.7	157° W	100	4.971	4.036	19:01	01:56	08:51
	<b>21</b>	2 41.1	14 09.8	Ari	-2.7	49.1	165° W	100	4.972	4.004	18:31	01:25	08:19
	<b>28</b>	2 37.5	13 53.1	Ari	-2.8	49.4	173° W	100	4.974	3.986	18:01	00:54	07:46
<b>Saturn</b>	<b>7</b>	22 15.4	-12 43.0	Aqr	0.6	18.4	138° E	100	9.762	9	16:40	21:55	03:11
	<b>14</b>	22 14.3	-12 48.6	Aqr	0.6	18.2	130° E	100	9.76	9.083	16:12	21:27	02:42
	<b>21</b>	22 13.5	-12 52.5	Aqr	0.7	18	123° E	100	9.758	9.175	15:43	20:58	02:13
	<b>28</b>	22 13.0	-12 54.5	Aqr	0.7	17.9	116° E	100	9.756	9.276	15:16	20:30	01:45
<b>Uranus</b>	<b>7</b>	3 20.6	18 04.7	Ari	5.7	3.7	141° W	100	19.627	18.84	19:50	03:00	10:10
	<b>14</b>	3 19.7	18 01.3	Ari	5.7	3.8	148° W	100	19.626	18.772	19:21	02:31	09:41
	<b>21</b>	3 18.7	17 57.5	Ari	5.6	3.8	155° W	100	19.625	18.716	18:53	02:03	09:12
	<b>28</b>	3 17.6	17 53.4	Ari	5.6	3.8	163° W	100	19.624	18.673	18:25	01:34	08:43
<b>Neptune</b>	<b>7</b>	23 46.6	-2 50.5	Psc	7.8	2.4	162° E	100	29.906	28.952	17:35	23:26	05:18
	<b>14</b>	23 45.9	-2 54.7	Psc	7.8	2.4	155° E	100	29.906	28.997	17:07	22:58	04:50
	<b>21</b>	23 45.3	-2 58.5	Psc	7.8	2.4	148° E	100	29.906	29.056	16:39	22:30	04:21
	<b>28</b>	23 44.8	-3 01.9	Psc	7.8	2.3	141° E	100	29.905	29.127	16:11	22:02	03:53
<b>Pluto</b>	<b>7</b>	20 02.3	-23 15.9	Sgr	14.5	0.2	104° E	100	34.866	34.603	15:11	19:43	00:15
	<b>14</b>	20 02.3	-23 15.9	Sgr	14.5	0.2	97° E	100	34.87	34.726	14:43	19:15	23:47
	<b>21</b>	20 02.4	-23 15.7	Sgr	14.5	0.2	91° E	100	34.875	34.851	14:16	18:48	23:20
	<b>28</b>	20 02.6	-23 15.2	Sgr	14.5	0.2	84° E	100	34.88	34.975	13:48	18:20	22:53

# STARRY SCOOP

Editor: Kaitlynn Goulette



## WHAT'S UP

This month we are treated to a cosmic delight. An annular solar eclipse occurs on October 14th, which happens when the moon is positioned too far out in its orbit and does not cover the entire disk of the sun. The eclipse path travels across the southwestern United States and New England residents will see a partial eclipse. Make sure to use proper equipment and safe solar filters when viewing this special event. Eclipse glasses will be sold at the Springfield MA Museum Store.

October evenings welcome autumn constellations as they prepare to dominate the southern sky. Pegasus the flying horse is easily recognizable, especially the asterism known as the Great Square of Pegasus. Still high overhead is the Summer Triangle. It's comprised of the 1st magnitude stars Deneb, Altair, and Vega, and features an edge-on view of the Milky Way, which passes directly through it.

Jupiter and Saturn are once again visible in our evening sky. They appear as the brightest star-like objects to the unaided eye and are breathtaking worlds when viewed through a telescope. Venus dominates our morning sky and is joined by the moon on the 10th. Much like the moon, Venus goes through phases that can be easily observed with a backyard telescope.

This month brings us the peaks of two meteor showers. The Draconids runs annually from October 6th to the 10th and peaks on the evening of the 8th into the following morning. This shower is unusual as it's best viewed in the early evening hours. Later in the month, the Orionid meteor shower peaks on the 20th and 21st. This annual shower runs from October 2nd to November 7th and is produced by particles left behind by the famed Comet Halley. For best viewing find yourself a dark place after midnight.

One year ago on October 3rd, the James Webb Space Telescope released its first image of an exoplanet. The image was captured using four different light filters and marked the first time NASA had ever taken a direct image of a planet that lies outside of our solar system. This gas-giant planet has no solid surface and is about 6-12 times the mass of Jupiter. The image marked the starting point of in-depth study of remote worlds.

## OCTOBER'S SKY

**8-9: Draconid Meteor Shower Peak**

**14: New Moon**

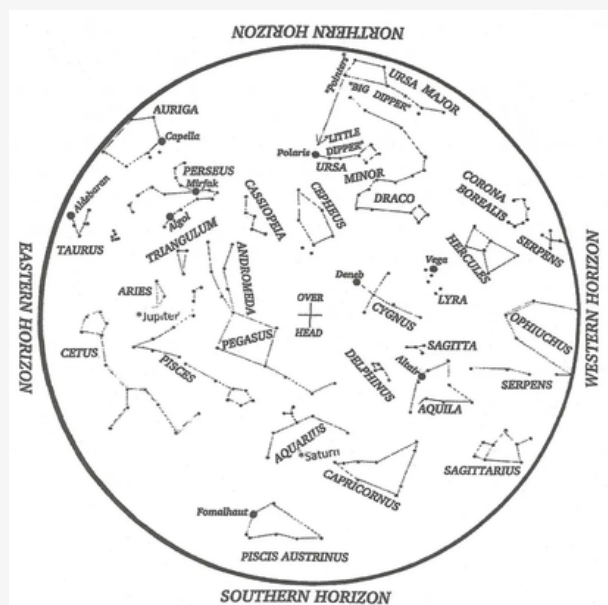
**14: Annular Solar Eclipse**

**20-21: Orionid Meteor Shower Peak**

**30: Venus at Greatest Western Elongation**

**28: Full Moon**

**28: Partial Lunar Eclipse**



Credit: Roger B. Culver

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



# OBSERVATIONS

Putting Arunah Hill's new observatory to work, my good friend Ed Faits, past president of the Arunah Hill Natural Science Center and the Springfield STARS Club, has been taking advantage of every clear night he can.

Ed has been focusing on astrophotography. Over the past few weeks, he's been learning how to capture deep sky objects using his ZWO 533 camera. He utilizes Arunah Hill's new Paramount MX Mount and his own Celestron Rasa 8-inch telescope. His targets include much of the Messier catalog and other celestial treasures.

Ed's interest in astrophotography began when he built his first telescope with his father in 1966. Later, he bought a book by Hans Vehrenberg titled "Atlas of Deep-Sky Splendors." This volume highlights images that the author had taken of over 400 deep-sky objects using the technology of the 1950s and 60s. Having access to 21st century equipment at Arunah Hill's new observatory, Ed has recently decided to learn the inner workings of astrophotography and has set a goal of capturing every object in the book. He wants each image to be as good as or better than Vehrenberg's.

Astrophotography seems to be taking over the astronomy world. Compared to visual observations, photography captures much more detail and is the natural progression for many amateur astronomers. In the future, I hope to join the bandwagon of astrophotography as well.



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](mailto:starryscoop@gmail.com). The Starry Scoop is now on Facebook. Clear skies!

# OBJECT OF THE MONTH

The featured object this month is the Helix Nebula, designated NGC 7293. This object is a planetary nebula and was formed by a dying star that ejected its outer layers of gas. At a distance of about 650 light-years, it's one of the closest bright planetary nebulae to Earth. It spans roughly 2.5 light-years and is estimated to have an age of about 10,600 years.

Shining at 7.6 magnitude, this planetary nebula can be spotted with a pair of binoculars or a backyard telescope. Find it in the constellation Aquarius, about 12 degrees northwest of the bright star Fomalhaut.



Helix Nebula

Photo Credit: NASA, ESA, and C.R. O'Dell (Vanderbilt University)



The Andromeda Galaxy

Photo by: Ed Faits

# 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