

Skylights

Newsletter of the Astronomical Society of Northern New England



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Skylights Editor:
Paul Kursewicz



Member of NASA's
Night Sky Network



**Astronomical League
Member**

ASNNE MISSION

ASNNE is an incorporated, non-profit, scientific and educational organization with three primary goals:

- 1) To have fun sharing our knowledge and interest with others.
- 2) To provide basic education in astronomy and related sciences to all who are interested.
- 3) To promote the science of Astronomy.

What's Up In July

By *Bernie Reim*

The month of July is named for Julius Caesar. It used to be the fifth month of the year when March was the first month. July always marks the first full month of summer for us in the northern hemisphere.

Even though the nights are getting a little longer again starting on the very first night after the summer solstice, which just happened on Sunday morning June 21, the days are still very long and the nights are still very short compared to the rest of our year.

Each season has its pros and cons related to the quality and conditions for viewing the night sky that it presents us. The winter nights can be bitter cold and are very long with lots of time to look at the sky and search for faint objects through telescopes and binoculars or just looking up. There is much less humidity and the stars appear sharper, especially the bright stars making up the winter hexagon. There is a winter Milky Way, but it is much fainter than our summer Milky Way. That is because you are looking out the edge of our galaxy in winter and the stars are much less concentrated there than when you look into the center of our galaxy right below Sagittarius and Scorpius in our summer sky.

There is a clever trick you can use on some perfect summer nights to actually EXPERIENCE the majesty, speed, and power of our home galaxy instead of just looking up at it and seeing a faint band of light far away that doesn't really seem to affect anyone or anything. Nothing could be further from the truth. In the 10 minutes it will take you to read this whole article the earth will have traveled about 12,000 miles around the sun, which is halfway around the earth and the height of the 31 dedicated GPS satellites that pass over the same spot on earth twice every day in what is called middle earth orbit, which has nothing to do with the Hobbit or the Lord of the Rings. The other orbits are called low earth orbit, about 100 to 1500 miles, and geostationary orbit at 22,300 miles up. They are also known as LEO, MEO, and GEO.

In those same 10 minutes our sun and the earth and the other 7 planets in our family will have traveled about 80,000 miles around the center of our galaxy in a very complex spiraling path that never repeats. To give you a sense of the immense size of our galaxy which consists of at least 300 billion other suns, about half of them larger than our own day star, which is no dwarf at 864,000 miles in diameter; even at those great speeds, it still takes us a quarter of a billion years just to make one orbit around the center of our galaxy. That is called a galactic year and we are on our 19th orbit in the long and illustrious 4.6-billion-year history of the earth.

To actually experience just a tiny bit of these great speeds and motions and power that always surrounds us, and continually moves us whether or not we are aware of it, you could lie down on the earth in a comfortable way and instead of looking up at the Milky Way as we usually do, pictures yourself looking DOWN into the center of our great galaxy from the bottom of the earth. There is no up or down in space and we are always in space aboard a fast-moving spherical platform. Nothing is ever as static as it seems.

Now, instead of just thinking of looking down into space from the bottom of the earth, you could also imagine that you can cut your bonds of gravity to our home planet and the moon and the sun. The next most powerful source of gravity is the center of our mighty Milky Way galaxy, at whose heart lurks a powerful black hole with the mass of 4 million suns. Now you are falling into the center of our galaxy and you get a much better sense of its true power and immensity and our real and dynamic and ever-changing place in space.

This is actually not as far-fetched as it may seem. If you could somehow accelerate at a constant rate of 1 G or 9.8 meters per second squared, you could get all the way to Mars in about 8 hours instead of 8 months, you could get to Jupiter in about a day, Saturn in 2 days, and Pluto at 4 billion miles away in just a week. That would take an enormous amount of energy to continuously accelerate the mass of a spaceship at that rate, so this is just an interesting thought experiment for now, but it may well be possible in the not-too-distant future with antimatter and other forms of propulsion.

Our sun and Earth are located two thirds of the way out from the center of our galaxy, which is about 100,000 light years in diameter. The center is 30,000 light years away and the edge is 20,000. The winter Milky Way can be seen just to the left of Orion and it is about 20,000 lights years away to get out of our galaxy in that direction.

The weather in autumn is more predictable and stable and we usually have many clear and fairly warm nights well into late fall. By contrast, the weather in spring is much more unpredictable and unstable and windy, so we usually don't have many clear nights or cloudless sunny and warm days in spring. According to T.S. Eliot in his great poem, *The Waste-land*, April is the "cruellest month". One notable exception

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Club Contacts

Officers:

President:

David Bianchi
dadsnorlax@yahoo.com

Vice President:

Bernie Reim
bernard.reim@maine.edu

Secretary:

Sarah Myles
sarahdesignme@yahoo.com

Treasurer:

Ian Durham
idurham@anselm.edu

Board of Directors:

Gary Asperschlager
gasperschlager@gmail.com

Marty Burgess
martyfb7@gmail.com

Bernard Valliere

Star Party Co-ordinator:

Open Position

Skylights Editor:

Paul Kursewicz
pkursewicz@myfairpoint.net

Website Manager:

Open Position

NASA Night Sky Network

Co-ordinator:

Joan Chamberlin
starladyjoan@yahoo.com

JPL Solar System Ambassador:

Joan Chamberlin
starladyjoan@yahoo.com

E-mail coordinator

David Bianchi
dadsnorlax@yahoo.com

What's Up "Continued from page 1"

was the April 8, 2024 total solar eclipse visible from north-western Mexico into northeastern Canada that passed right over central and northern Maine. Against all odds, we ended up having some of the best weather along the entire 3500-mile path of the moon's shadow. Many people flew to Maine from Texas and other states where the weather predictions were more dicey.

A major spring Nor'easter snow storm had just dumped over a foot of fresh, wet snow on much of New England a couple days earlier and that had cleared out and stabilized our atmosphere for a few days afterwards. I was able to see that eclipse from an ideal location, the Height of the Land scenic overlook where the Appalachian Trail crosses on its way to its end point or starting point at the summit of Mt. Katahdin just 220 miles away, or about one tenth of its entire length.

We had a great view towards the west across Mooselookmeguntic Lake, the fourth largest lake in Maine at 16,000 acres. That long name simply means "moose feeding place" in the native Abenaki language. We were up at 2200 feet in elevation with a view of 57 miles. This lake is nestled into some very scenic mountains and it really evoked all the terrestrial beauty of this part of western Maine and this part of the earth. The view from up there on a perfectly ordinary day is spectacular enough, especially at sunset, but this was no ordinary day.

We arrived at this wonderful site at 8 in the morning to stake out a claim to see and experience this great and fairly rare event, at least for Maine. The next one over Maine will not happen again until 2079, but there will be a total solar eclipse over parts of Iceland and Spain in just over a month, August 12 of this year. The entire overlook part was already filled with cars and hundreds of eager and ambitious eclipse chasers with their extensive camera equipment and telescopes all set up, so we settled for one of the first spots on the side of the main road. We would soon be joined by thousands of other interesting people that kept piling in as the day progressed.

Eventually a microcosm of nearly the entire western world formed up here on this mountain as about 5,000 people also picked this wonderful spot to see this great eclipse. People were engaged in all kinds of creative activities from photography, cross country skiing, drawing, playing music, playing games, eating, sharing stories and knowledge, and just meeting many new people with at least one major interest in common. We all need to remember and experience more memorable events like this one to better understand that what we all have in common far outweighs our minor differences and that each one of us is always an integral part of something so much greater and more powerful than any of us will ever be able to comprehend.

The eclipse would not even start for nearly 7 more hours. The time just flew by in anticipation of this great event, enjoying the bright, early spring sunshine, and by soaking in this wonderful natural scenery along with all of its thousands of diverse people all there for the same reason, to see and experience this fairly rare natural event and to get a better sense of the power and majesty of our nearby celestial neighbors, the sun and the moon and the planets that became instantly visible near the sun as it suddenly got dark as the moon's shadow swept over all of us and this part of the earth traveling at about 2000 miles an hour. Since we had a view of 57 miles to the west, I could watch this shadow racing towards us for nearly two full minutes across the scenic mountains and the great lake before everyone and everything was pitched into blackness for about 3 more minutes.

The perfectly clear blue and cloudless sky turned all kinds of strange shades of orange and salmon and red and other colors as a very eerie 360-degree sunset began to

form all around us as the bottom tip of the 240,000 -mile-long moon's shadow cone began to sweep over us and the land.

Then a brilliant diamond ring flashed from the sun for one second as the last ray of sunlight disappeared behind a mountain on the moon. This ephemeral diamond ring in the sky was far more precious than all of the diamonds on Earth combined, because it was the source of all life and all the carbon that eventually compressed into those diamonds over billions of years.

The corona or atmosphere of the sun suddenly flashed into existence in all of its glory, extending nearly 4 million miles into space, or about 4 times the diameter of the sun. Its silky, pearl-like structure showed immense detail and projected great beauty and power like a beautiful and enigmatic halo around the source of all life in this entire solar system. That halo reaches 2 million degrees, which is 200 times hotter than the surface of the sun, and remains as one of the many mysteries still surrounding exactly how our day star really functions.

As if it was showing off just a bit, everyone could look at this corona or halo safely without any filters for the full 3 minutes that the moon completely covered the sun. I well remember several colorful prominences rising high above the surface of the sun including one huge, bright purple-red solar prominence at 5 o'clock on the sun that extended about 10 earth diameters or 80,000 miles into space. That one tiny detail alone should give everyone a much better sense of the true size and scale and power of our sun. You can fit 109 earths across the face of the sun, it weighs 333,000 times the weight of Earth, and over 1 million earths can fit into the volume of the sun. All of this is true, but it only covers half a degree of our sky and is often ignored because it seems so small. Again, nothing could be further from the truth. Everything in nature turns out to be far more detailed and interesting and significant than we ever expected.

We also looked for the shadow bands that rippled across the fresh, wet, rapidly melting snow like water waves at the bottom of a pool due to the refraction effects of our atmosphere. It is important to remember that this wonderful halo is always present around the sun; it just happens to be entirely invisible most of the time.

Then it was all over, as suddenly as it started, with another even more brilliant diamond ring flashing into existence from a black sky, signaling the return to a normal day within another minute or so. Most of us will never get to go to the moon, but we can always let the moon come to us during a total solar eclipse. In the same way, most of us will never become astronauts and go to space on a regular basis, but we can let ourselves be transported into the natural blackness of space and lifted right off the face of the earth any time that we make the effort to see a total solar eclipse, which happens about every year and a half on the average somewhere on Earth.

Let us go back to the surface of our home planet now. The highlights for this month include Venus's meeting with the Leo the Lion. Our brightest planet will be just 1.5 degrees above and to the right of Regulus, the brightest star in Leo on the evening of July 8, one hour after sunset looking west. That is similar to the conjunction of Venus and Jupiter that we just had on June 9 when Venus passed just 1.6 degrees up and to the right of Jupiter. The full moon and sun each only cover half a degree of the sky. 1.5 degrees is three full moon-widths. As if to celebrate our independence, Mars and Uranus will form a close conjunction on July 4 in Taurus just below the Pleiades open star cluster and above Aldebaran at 4 30 am. The southern

"Continued on page 3"

Moon Phases

July 7
Last Quarter

July 14
New

July 21
First Quarter

July 29
Full

Moon Data

July 11-12
East-Northeast 1hr
before sunrise Moon
joins the Pleiades,
Mars & Aldebaran

July 13
Moon Perigee
223,143

July 16-17
Looking West 45min
after sunset Moon
joins Venus and
Regulus

July 23-25
1hr after sunset
Moon travels
through Scorpius

July 25
Moon at Apogee
251,995

What's Up "Continued from page 2"

Delta aquarid meteor shower will peak on the last day of this month. Jupiter sets earlier and we will lose it towards the month. Saturn rises earlier and will be up by 11 pm by the end of the month. A short-period comet named Tempel 2 will arc through Aquarius and into Capricorn and may reach 7th magnitude, its brightest appearance since 1967.

The most interesting highlight this month will be a repeat of the same lunar phase on the same day of the first lunar landing on July 20 of 1969. On July 20 of this year, the lunar phase will be waxing crescent, just one day before first quarter, which is exactly what it was 57 years ago, or 3 Metonic cycles of 19 years each when the exact phases of the moon repeat as visible from Earth. The Greek astronomer Meton first discovered this cycle way back in 430 B.C.E. The synodic lunar month, from full moon to full moon, is 29.53 days. Multiply that by 235 lunar months times 3 cycles and you get 20,819 days or 57 years since July 20 of 1969. When you look at the moon this Monday evening, July 20, check out Tranquility Base, located near the southwestern rim of the Sea of Tranquility. You would need a small telescope or binoculars to see this in detail, but even if you don't have those, it is good to know that this exact match happens on this evening. Your view of the lighting on this part of the moon will be just 1.6 hours off from what Neil Armstrong and Buzz Aldrin saw when they landed the *Eagle* lunar module there on Sunday night, July 20 of 1969 at 10:56 p.m. and Neil spoke the now famous words "one small step for man, one giant leap for mankind".

Half a billion people of the 3.6 billion people living on Earth at that time watched this great event live as it happened. Now we have 8.4 billion people living on Earth. We could all use more unifying events like the lunar landing and total solar eclipses to unify more people on this socially and geopolitically fractured earth that we all live on and mutually share on this precious and fragile planet. The lunar landing signifies a technological breakthrough that took great courage and skill from thousands of people working well together over a long period of time with an important goal in mind, and the total solar eclipses signify completely natural events that can unify millions of people that anyone can enjoy for free (as long as they can get to the exact right spot on Earth) to just stand in awe and better understand and appreciate the great power of the sun, moon, and earth and other planets and their motions and how we are all included in that power.

The Southern Delta Aquarid Meteor Shower will last from July 12 to August 23. It will peak on Thursday morning, July 30 at a maximum rate of 25 meteors per hour from a dark sky site far away from any town or city lights. The only problem is that the full moon is the night before, so it will wash out most of these meteors as soon as it rises around 9:30 pm. These meteors are caused by the earth passing through the debris trail of Comet 96 P Machholz.

The good thing is that several other minor meteor showers happen in July and that the Perseid meteor shower also starts around the middle of July near the new moon. This year the Perseids will peak near the new moon on August 12. That will not be just another new moon since we will be in another eclipse season next month. The earth, moon, and sun will be perfectly aligned and parts of Iceland and Spain will experience a total solar eclipse on that Saturday, August 12 towards sunset.

July 1. Gottfried Leibniz, a German polymath, was born on this day in 1646. He is known as "the father of calculus:". He discovered it around 1665 independently of Isaac Newton, who named it "the science of fluents and fluxions". The Greek mathematician Archimedes developed a method similar to calculus to find the tangent of a curve nearly 2,000 years earlier. He may have also invented and built the famous Antikythera device, the first analog computer with 223 gears that could show the planet's orbits and all the different lunar months and even predict eclipses.

July 4. Henrietta Swan Leavitt was born on this day in 1868 in Lancaster, MA. She was one of the famous "Harvard Computers" who developed the spectral classification system for stars in the early 1900's. She went on to discover "Leavitt's Law", or the period-luminosity relationship of Cepheid variable stars. By carefully studying thousands of Cepheids in our galaxy, she discovered that the intrinsically brighter the star, the longer its period of fluctuation has to be. They varied from 1 to 100 days. This was an important step in the cosmic distance ladder and Edwin Hubble used this to estimate the distance to the Andromeda galaxy and to discover the fact that the entire universe is expanding. Mars will pass just 0.1 degrees south of Uranus in Taurus at 1 am.

July 6. Earth is at aphelion, or farthest from the sun, today at 94.5 million miles.

July 7. Last quarter moon is at 3:29 p.m. EDT.

July 9. Venus passes 1.5 degrees north of Regulus in Leo this evening.

July 11. The moon passes 5 degrees north of Uranus and Mars this morning.

July 12. Mercury is in inferior conjunction. It will then return to our morning sky towards the end of this month.

July 14. The moon passes 5 degrees north of Aldebaran in Taurus this morning. New moon is at 5:44 a.m. The moon passes 2 degrees north of Jupiter this evening.

July 16. The moon passes 0.5 degrees south of Regulus this evening.

July 17. Brian May was born on this day in 1949 in England. He is the lead guitarist for Queen and has a PhD in astrophysics. He was also knighted by the Queen a few years ago and does a lot of astronomy outreach and has also written some books. His specialty is stereoscopic photography. The moon passes 2 degrees south of Venus this evening. Last month on this day the moon actually occulted Venus in the daytime. On this day in 1894 George Lemaitre was born in Belgium. He was a Catholic priest and astronomer who first proposed the primeval atom hypothesis, a precursor to the Big Bang theory.

July 18. On this day in 1980, India became only the 7th nation to launch a satellite into space.

July 20. We first landed on the moon on this day in 1969 at 10:56 pm. Remember to look at the moon tonight since its phase will very closely match what Armstrong and Aldrin saw when they landed there 57 years ago.

July 21. First quarter moon is at 7:06 a.m.

July 24. The moon passes 0.6 degrees south of Antares in Scorpius tonight.

July 25. Marconi was born on this day in 1874 in Italy. He was a pioneer in the development of radio communications along with Nikola Tesla. That eventually led to radio astronomy thanks to Grote Reber and Karl Jansky in 1933.

July 27. Pluto is at opposition today at 3 am in the constellation of Capricornus just to the east of Sagittarius and the center of our Milky Way galaxy. Saturn is stationary will begin its retrograde, or westward motion against the fixed background of stars today at 7 p.m. in Pisces. It will reach its opposition for this year on October 10 when it will rise at sunset and not set until sunrise.

July 29. Jupiter is in conjunction with the sun. It will show up again in our morning sky in a few months. Full moon is at 10:36 a.m. This is also known as the Hay or Thunder Moon.

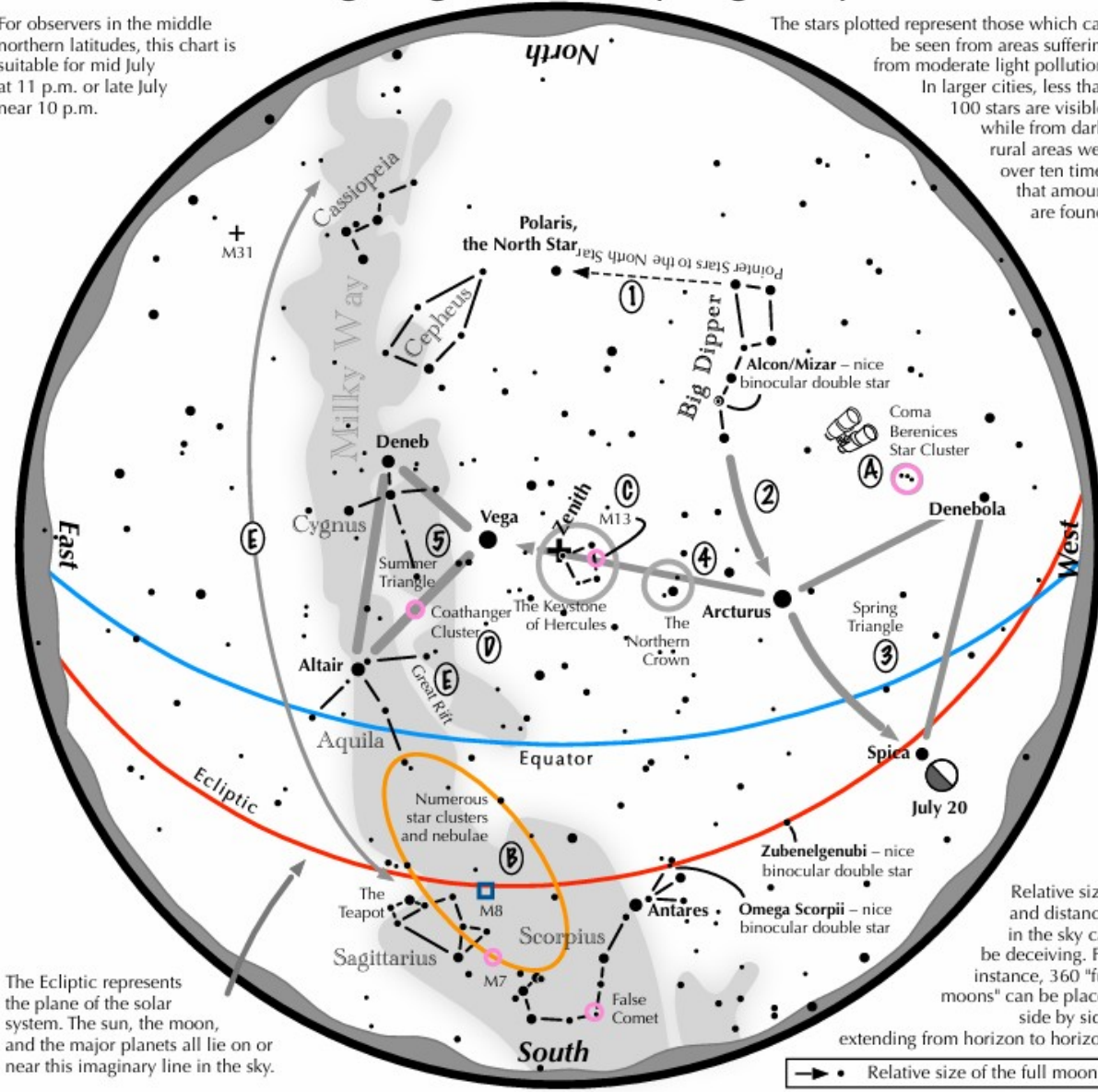
July 30. The Southern Delta Aquarid meteor shower peaks this morning.

Navigating the mid July Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 p.m.

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



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

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

→ • Relative size of the full moon.

Navigating the mid July 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 first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica.
- 3 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 4 To the northeast of Arcturus shines another star of similar 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.
- 5 High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
- D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.



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Submitted By

Marty Burgess

This group were taken in Acadia National Park from a pull off on the loop road. All photos taken with Dwarf 3 around 2AM and processed with the Dwarf Lab Stellar system.



M6 aka the Butterfly cluster, is an open star cluster found near the tail of Scorpius low in the southern sky. It is 1.59 kly distant. Embedded in the Milky Way, it was one of the targets being tracked for the capture of the image of MW.



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M8 aka NGC 6523 or the Lagoon Nebula is found near Sagittarius. It is 4-6000 light years away. Like the Butterfly Cluster it was a target used for tracking while taking photos of the Milky way.



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And M 24, the Small Sagittarius Star Cloud, a patch of stars in a gap of the cosmic dust cloud. 10,000 Light years away.

Astro-Imaging with a Dwarf3

Submitted by Paul Kursewicz

Lunar Occultation of Venus 6-17-26

Dwarf3 Astro Mode with Astro Filter
Photo Editing Software Used: PixInsight & Photoshop
Exposures varied from 1/300sec to 1/500sec
Some images were 2, 3 & 4 stacked while others had no stacking

3:34 PM (Pre Occultation)



This was my first Daytime Occultation. It was a beautiful day with blue skies. The bummer was, about 80 percent of the sky was filled with Cumulus clouds. That made locating the Moon very difficult. I was able to find the Moon with my naked-eye around 11am when it was in the eastern sky. But was unable to find it again when it got into the *brighter* southern sky.

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3:58 PM (Ingress—Venus 1/4 Eclipsed)



My preferred imaging device would of been my SX50 camera. But I couldn't find the Moon with it. So I ended up using the Dwarf3, but in a funky way (in Astro Mode instead of Photo Mode). In my image, Venus is being eclipsed by the Moon's Dark Limb. It took about 25 seconds to disappear behind the Moon allowing time to not only watch the occultation, but to snap off some pictures.

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4:00 PM (Ingress—Venus 3/4 Eclipsed)



I thought the Dwarf3 would find the Moon for me using its plate solving. So I entered Astro Mode and selected the Moon from its Sky Atlas. It told me to find the Moon, center it in the field of view, then hit the tracking button. No chance of doing that because I still couldn't find the Moon. However, by using the Dwarf's manual controls I did finally bump into Venus which was much brighter than the Moon. Now I was able to frame both in the field.

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5:04 PM (Egress—Venus 1/4 visible)

During Egress clouds began covering the event. But I was still able to capture images. I don't know if my pictures would have been better using Photo Mode verses Astro Mode. I didn't switch to Photo Mode because I feared losing my alignment on the Moon. Since the Dwarf3 was not tracking the Moon, I used the Dwarf's arrow buttons to keep it centered in the field of view.

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5:08 PM (Egress—Venus almost clearing the Moon's Limb)



The Moon was 3.1 days old and 11% illuminated. Fortunately, it was 38° away from the Sun, far enough to comfortably observe without fear of potential eye damage. I tried finding the Moon with binoculars but had no success. After Ingress, Venus took about an hour to reappear again. The last time we had a daytime occultation like this one was 11 years ago.

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5:12 PM (Post Occultation)

This unusual rare event was technically challenging for me. Some websites made it sound like it would be simple. Just look up and find the Moon, then take out your cell phone and start taking pictures. Maybe younger eyes could spot the Moon, but I wonder if a cell phone would have handled it. After going on-line and looking at other people's pictures, I was surprised to see that their photos looked very similar to mine. Turns out Astro Mode worked just fine.

Camera: Canon PowerShot SX50 HS

Jupiter, Venus, Mercury

Submitted By Paul Kursewicz

Jupiter, Venus,
and Mercury
(lower right)
were in planetary
alignment on the
night of 6-3-26.



Six days later on
the 9th Jupiter &
Venus made their
closest approach
of the year...
Mercury is at
lower right.



The Dance of the Solar Prominences

Submitted By Bernie Reim

I went to our observatory at Pete's house to look through our 8-inch telescope with our new hydrogen-alpha filter. A filter like that allows you to see deeper into the sun than just an aluminized mylar standard solar filter like ones you would use to watch solar eclipses. The sun puts out a lot of its energy in the 650-nanometer band which is red. The h alpha filters can be tuned to different wavelengths around that number. This filter cuts out all the other wavelengths and only lets this very narrow frequency of light through. That carries a lot of information from the sun to us and allows you to see the dynamic and ever-changing prominences instead of just the dark sunspots like the regular solar filters do.

I had stared at the sun for hours using similar filters at an observatory in Richmond, VA. The sun is so dynamic and ever-changing that I never cease to be amazed by its awesome power. It is like being transported right to the solar surface and entering a world of unimaginable and cataclysmic turbulence. I half expected to feel the heat and hear the roar, forgetting that I am safely 93 million miles away at 20 degrees F and not 10,000 Degrees!

The sun almost becomes transparent when you use a good H alpha filter. I got the sense that I can peer deeply into its pulsing heart instead of just skimming the surface which is all a regular solar filter will let you do. The sun actually does have some sort of a pulse and it is continuously quaking with giant star quakes.

One sunspot group was shaped into a near-perfect V, like 20 geese hightailing it away from the sun before their feathers melt like Icarus. Filaments, plagues, and faculae were dancing around the sunspots, almost moving visibly in real time.

The largest prominence was on the lower left, an unformed mass of gas slowly yet irrepressibly billowing outward and expanding quite noticeably on those 40 minutes. A long, trailing tendril of gas streamed out from one upper edge of this prominence, delineating part of powerful solar magnetic field in that area. It looked a little like a cumulo-nimbus storm cloud one Earth.

The next group of solar prominences was like a forest of little loops, 4 or 5 of them perfectly formed with clear sky visible through them, like the rings of Saturn. Then came an amazing construction, a fairly tale castle in the sky fit for the best mythological kings and queens. It was a series of loop prominences superimposed on each other in fantastic forms that could be anything you could imagine. A little later on, a higher loop became barely visible behind this construct, almost as if the sun were adding a third story to this hellishly hot yet ephemeral castle on the sun with the most whimsical and heavenly shape.

The sun is always spinning quite rapidly, completing one rotation of its 865,000-mile diameter in just 26 days. Since the sun is 865,000 miles in diameter, or 109 times bigger than the earth which spins at just over 1000 miles per hour at its equator, the sun spins at about 4200 miles per hour at its equator. Jupiter is the fastest rotating of all of our planets at 28,000 miles per hour, or 37 times the speed of sound. No wonder its entire surface looks like a brilliant and constantly living Vincent van Gogh STARRY NIGHT painting with far more swirls of fantastic motion and beauty and vivid detail than Van Gogh could even have dreamed of.

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The sun fuses about 700 million tons of hydrogen into helium every second, producing a pure net energy gain of 4 million tons of energy per second. The sun and every star is always performing the ultimate selfless act of giving of itself with no hope or need of any return at the expense of its own life eventually. That will be 10 billion years for the average star like our sun, which has 5 billion more years to go even at this furious and unimaginable rate. The dimmer red stars burn through their fuel so slowly that they will last 100 billion years, or many times older than the entire known universe.

The sun looks very static and fairly small when just glancing up at it briefly during the day. If you spend a few minutes looking at it through a safe aluminized mylar solar filter, you will see sunspots, but they will still look static even though they are moving across its surface at the speed that the sun is rotating. An hour later you would notice that the sunspot or group of spots would have moved a tiny bit.

What you really need to catch a much better sense of the sun's rotation and dynamic nature is a hydrogen alpha filter like the one I was looking through that day and many other times. Then you can see the prominences grow and shrink in real time around the limb of the sun, forming all of these ever-changing and purely random shapes. All of this still has to follow the magnetic fields and the laws of physics, but the results are staggering and always different, just like no two snowflakes are ever the same due to the slightly different conditions each snowflake encounters on its way to the ground through our lower atmosphere. It is still a great mystery how the corona is so much hotter than the surface of the sun and how the solar wind accelerates during a flare and exactly how and why these giant 10 times plus earth-sized loops crash back onto the solar surface.

Even with the expensive hydrogen alpha filters, you still only get a slightly better sense of the true nature of the sun and it is still in ultra slow motion. However, this vibrant and ever-changing landscape of the solar surface kept me spell bound and entranced as I was beginning to really understand what was going on here right before my eyes.

It then dawned on me how lucky I was to even be able to look through an expensive filter like this for such an extended period of time without being a professional astronomer studying the sun. I was able to better understand the nature of our source of life just by being interested in this and part of our astronomy club so that I did not have to buy my own h alpha filter.

Probably only a few million people have ever looked through such filters for any length of time (looking through one at a star party for a few seconds does not count!) There are now 8.38 billion people on Earth. Many more people have looked through the mylar solar filters that you can get for a dollar or two for use during a solar eclipse. Up to 50 million people at a time would see the sun in all of its stages as it is slowly being devoured by the moon during a total or partial solar eclipse. However, it still looks static and boring during all of its partial phases until the final second when you no longer need any kind of a solar filter. Then it is finally all safe to look at the sun directly, but only for a few very brief moments before all of life gets back to "normal".

You need close to an hour of really studying the sun through this filter to let it sink in and study and appreciate the constant, dramatic, slow-motion continual changes. You don't even need to know the math or try to discover something new.

"Continued on page 17"

Due to light pollution many in cities have never seen the Milky Way galaxy or many stars at all. They don't know what they are missing or how that can change your viewpoint of where and who you really are and where we are all going through time and space. We are all losing a little of our important heritage and all the benefits that come with contemplating and experiencing a truly dark night sky and the inspiration that can give us. There are also economic benefits from not wasting so much light and using the right wavelength and kinds of light.

In a similar way, only about 700 people have ever been in space to look down on Earth from 250 to 300 miles up. All those astronauts and people without exception have attained some version of the OVERVIEW EFFECT from their experience, even if it was for only a few minutes at the very edge of space, only 62 miles up. They have all seen that the only real boundary that matters at all is the THIN BLUE LINE, which is the atmosphere of the earth that allows us to breathe and live and protects us from the cold and dark, unforgiving infinite blackness of space.

There were little tiny spikes all around the sun, but they seemed to be a little more pronounced towards the north and south poles of the sun. Continuing my circumnavigation of this great life-giving ball of hydrogen and helium gas 333,000 times more massive than the earth and over 1.4 million times its puny volume, I ran into the remains of a giant prominence that broke open and violently erupted into space earlier that morning. It left only two curved spikes at the base of this once-magnificent loop. Later on, I noticed a series of larger spikes growing out of the center of this dead prominence, like tender new sprouts pushing through the ground after a natural disaster like a fire or volcanic eruption on Earth.

That completed my first trip around. Due to the dynamic nature of the sun, each of these areas were constantly changing and new prominences were boiling out of this primordial sun-soup like a great witch's brew out of which we could never guess what amazing shapes may form next.

I also noticed a little more detail with each trip around and at times our atmosphere on Earth that I was looking through was clearer, giving me better glimpses into the details of the prominences. That is similar to seconds of steadier seeing when studying planets through a telescope that would suddenly reveal more features and let you catch more detailed and realistic glimpses of these planets that are often enshrouded even on clear nights due to atmospheric turbulence.

On my third or fourth trip around I noticed a little disconnect blob just barely discernable above the largest mass of unformed gas that was showing promising signs of turning into a spectacular loop prominence in the next few hours. But alas and alack, I had to tear myself away from this amazing window into our solar system's driving, sustaining, and maintaining inferno, and return to the far more mundane and earthly matters like earning a living. However, if you really enjoy your work, it is never mundane or earthly.

Work Party at the Observatory 5-16-26

Submitted By Paul Kursewicz

Nine members (Dave, Marty, Dwight, Jim, Wayne, Larry, Gary, Jerry, & Paul) showed up at Starfield to do maintenance on structures, grounds, the observatory, and the two telescopes.



The shed got scraped and painted.

“Continued on page 19”



The 16-inch Meade Dec Gear was removed, cleaned and greased.



Maintenance was also performed on the 8-inch Zeiss and junk material was put into Jerry's and Paul's pick-up trucks and brought to the dump.

Club Meeting & Star Party Dates

Date	Subject	Location
July 10	<p><u>ASNNE Club Meeting:</u></p> <p>Club Meeting:</p> <p>No club meeting at The New School on Friday July 3rd.</p> <p>Instead our July club meeting will be held at our Observatory on the 10th where we will have our annual club BBQ and Picnic. Bring your own food and drink. Gas grills will be available for use. You can arrive early around 4pm. In the past we usually started the BBQ between 5pm and 6pm. If it's clear that night we will have a starparty. If it rains, we will meet at The New School for our usual club meeting.</p> <p>Bernie Reim - "What's UP"</p> <p>Astro Shorts: (news, stories, jokes, reports, questions, photos, observations etc.)</p> <p>Last Month Last month we had our meeting at The New School and Zoom was made available. We had a guest speaker, Tom Luther. He gave us a presentation on his interest in creating electronic music. Specifically, using astronomical data (mathematics) and turning it into a musical composition. Bernie then did his What's Up presentation.</p>	Talmage Observatory at Starfield West Kennebunk, Me.
TBD	Club/Public Star Party: Weather permitting.	Talmage Observatory at Starfield West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunk [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great. http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

Directions to Talmage Observatory at Starfield [Alewife Road, Kennebunk, ME]

From North:

Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for the ASNNE sign on the pole.

From South:

Get off the turnpike at exit 25 in Kennebunk. After toll both turn right on Rt 35. Go up over the turnpike and immediately turn right on Rt 35. About 4 miles along you will crest a hill and see a large field on your right. Continue until you reach the end of the field. Turn right into the Starfield Observatory site at the last telephone pole along the field. Look for the ASNNE sign on the pole. If you come to a very sharp 90 degree right turn you have just passed the field.

Principal Meteor Showers in 2026

January 4
Quadrantids

April 22
Lyrids

May 6
Eta Aquarids

July 30
Delta Aquarids

August 12
Perseids

October 9
Draconid

October 21
Orionids

November 9
Taurids

November 18
Leonids

November 26
Andromedids

December 14
Geminids

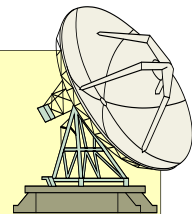
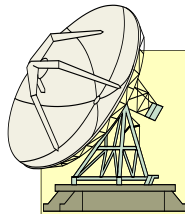
December 22
Ursids

Note: Dates are for maximum

MEMBERSHIP DUES

Membership fees are for the calendar year beginning in January and ending in December. Dues (see page 23 for prices) are payable to the treasurer during November for the upcoming year. New members who join during or after the month of July shall pay half the annual fee, for the balance of the year. Checks should be made payable to the Astronomical Society of Northern New England (A.S.N.N.E). If you would like to mail in your dues, use the form on page 23. Or you can use PayPal via asnne.astronomy@gmail.com

A Member who has not paid current dues by the January meeting will be dropped from membership, (essentially a two-month grace period.) Notice of this action shall be given to the Member by the Treasurer. Reinstatement shall be by payment of currently due dues.



Got any News?

Skylights Welcomes Your Input.

Here are some suggestions:

*Book reviews -- Items for sale -- New equipment --
Ramblings -- Star parties -- Observing -- Photos.*

Our club has Merchandise for Sale at: <https://www.cafepress.com/shop/ASNNE/products>

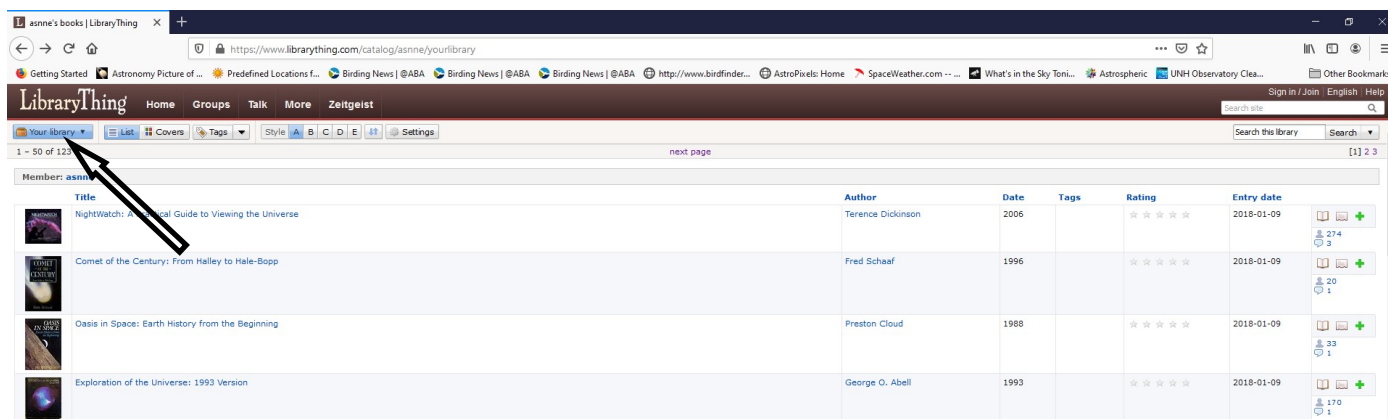


*ALL money raised goes to our operating fund.
Any design can be put on any item.*

Contact David Bianchi dadsnorlax@yahoo.com for further details.

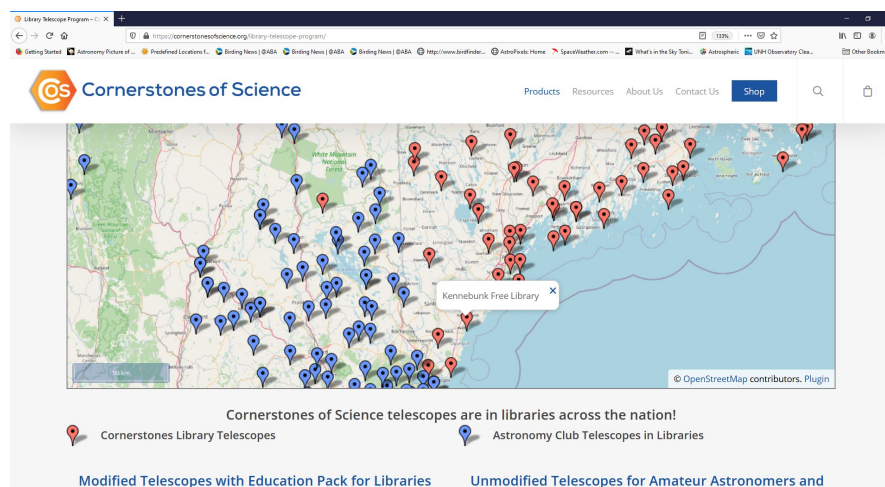
Astronomy Club & Library Resources

Our club has a library of astronomy books which are stored at The New School in Kennebunk, Maine (our monthly club meeting location). To request a book(s), contact one of the club officers. A listing of books is provided here: <https://www.librarything.com/profile/asmne> . After clicking on the link, a window will open. Click on “Your library” near the upper left corner (as shown by the arrow below). Then scroll down to the end of the page to go to the next page.



Would you like to borrow a telescope? While many astronomy clubs may have a scope to lend out, there are also many libraries which have telescopes for their guests to use. Here are a couple of links.

The following link will bring up an active map (see screen shot below) of the USA showing the libraries which have telescopes to lend out: <https://cornerstonesofscience.org/library-telescope-program/>



The below link will show a list of known participating library locations for the state of Maine.
<https://www.librarytelescope.org/locations/usa/maine>

To join **ASNNE**, please fill out the below membership form. *Checks should be made payable to: Astronomical Society of Northern New England (A.S.N.N.E).* For more details, please visit our website: <http://www.asnne.org>



Astronomical Society of Northern New England
 P.O. Box 201
 Kennebunk, ME 04043-1338

2026 Membership Registration Form

(Print, fill out and mail to address above) or Use PayPal via asnne.astronomy@gmail.com

Name(s for family): _____

Address: _____

City/State: _____ Zip code: _____

Telephone # _____

E-mail: _____

Membership (check one):

Individual \$50 _____ Family \$ 60 _____ Student under 21 years of age \$10 _____ Donation _____

Total Enclosed _____

Tell us about yourself:

1. Experience level: Beginner _____ Some Experience _____ Advanced _____

2. Do you own any equipment? (Y/N) And if so, what types?

3. Do you have any special interests in Astronomy?

4. What do you hope to gain by joining ASNNE?

5. How could ASNNE best help you pursue your interest in Astronomy?

6. ASNNE's principal mission is public education. We hold many star parties for schools and the general public for which we need volunteers for a variety of tasks, from operating telescopes to registering guests to parking cars. Would you be interested in helping?

Yes _____ No _____

7. ASNNE maintains a members-only section of its web site for names, addresses and interests of members as a way for members to contact each other. Your information will not be used for any other purpose. Can we add your information to that portion of our web site?

Yes _____ No _____

