



Skylights



Newsletter of the Astronomical Society of Northern New England



Dec 2022



Member of NASA's
Night Sky Network



Astronomical League

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.*

ASNNE's ANNUAL CHRISTMAS/HOLIDAY PARTY **POT LUCK & GUEST SPEAKER (SEE PAGE 15 FOR DETAILS)**



What's Up In December

By Bernie Reim

The month of December always marks the beginning of winter for us in the northern hemisphere. That will happen at exactly 4:48 P.M. EST on the 21st this year. It finally got seasonably cold, but there are many great and fairly rare highlights this month that will be well worth making the effort and braving some colder weather to see and experience for yourselves.

Mighty Mars reaches its highest and best opposition in many years on December 8 and it will even be occulted by the moon a few hours earlier on Wednesday night the 7th. All 7 members of our family of planets will be visible in the evening sky, which is also fairly rare. Just half a year ago in June all 7 of these planets were visible at the same time in our morning sky, so they have migrated 180 degrees since then as all of the planets always keep orbiting at their own paces.

Venus has reappeared in our evening skies, and it will form a nice pairing with Mercury low in the southwestern evening sky half an hour after sunset. This will be your last chance to see Saturn in the evening sky for this year since it will set by 8 pm by the end of this month. Then Uranus and Neptune are also visible in the evening sky, but you would need a telescope to see them.

Then we will have not one, but two good meteor showers, the Geminids and the Ursids, the asteroid 4 Vesta is at its brightest, and Comet C/2022 E3 (ZTF) continues to brighten close to Polaris, but you would still need a telescope to see it.

On top of all that we had a historic event last month, the launch of Artemis 1, marking the beginning of our return to the moon after a 50-year absence. NASA was trying to do this since the end of August and they finally got it into space after surviving two hurricanes and many other setbacks, which is a testament to our perseverance and engineering skills. This is a 25-day unmanned mission with many goals in mind to prepare for humans to be launched on Artemis 2 by 2025.

They do have 3 mannequins on board with many sensors on them to test for conditions that live humans will soon experience. One has a radiation vest to see how much less radiation that one will receive. They also have 11 other "passengers" on board, CubeSats that will be deployed at different points during the mission from the Orion service module to accomplish all kinds of goals including becoming the smallest spacecraft to land on the moon, testing new methods of propulsion, and another one has a solar sail that will unfold and fly it on to an asteroid.

Then the CAPSTONE CubeSat, about the size of a microwave oven, launched earlier this summer, will trace the near rectilinear halo orbit around the moon for half a year that the future Gateway orbiting lunar space station will follow. Another main mission for this first Artemis flight is to test the heat shield on the new Orion capsule, built for up to 6 astronauts, as it reenters our atmosphere at 24,600 mph,

nearly 10 times faster than a high velocity bullet, and 7600 mph faster than any other, smaller capsule has ever reentered our atmosphere. The friction with our atmosphere will generate temperatures of 5,000 degrees F, half the temperature of the surface of the sun and 2.5 times hotter than lava from a volcano. It will deploy no less than 11 parachutes to slow it all the way down to 20 mph as it safely plops into the Pacific off the coast of San Diego on December 11.

This remarkable new space capsule will then have completed a journey over 1000 times farther into space than the ISS orbits at 250 miles high. I sat in a model of this great new space capsule with 20,000 times the computing power of the Apollo capsules, when I last visited the Johnson Space Center in Houston, a true testament to our ingenuity and advancement of our engineering skills since we last ventured to the moon.

As if to highlight and alert the world to this great new mission, the moon went through a total lunar eclipse on November 8, Election Day, just 8 days before the launch of Artemis on the 16th. I watched this eclipse across a lake right up to sunrise, when the moon faded out while it was still in our shadow. The most memorable part of this eclipse was being aware of what created the beautiful orange and subtle red hues on the moon, which was the combined effect of all of the sunrises and sunsets around the entire earth projected onto the moon at the same time. I watched one single sunrise happen right in

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What's Up "Continued from page 1"

front of me while all the combined sunrises and sunsets were being projected onto the moon while it was still deep in our umbral shadow. That is a great way to become more aware of the entirety of our precious planet and what its atmosphere is always doing for us.

Mars reaches opposition every 26 months as we catch up with it in our faster orbit around the sun. This time it will only get within 50.6 million miles of us, compared to its closest approach to us in nearly 60,000 years of only 35 million miles back on August 27 of 2003. However, it will reach over 70 degrees high in the sky in Taurus, which is much higher than Mars reached in 2003. Mars was two and half times brighter in 2003 than it will get this time and it was also nearly twice as large then, but not as high, which means its light had to pass through more of our atmosphere. Look for many nice features on Mars through a telescope like some of its dark markings, its polar icecaps, and even some of its thin atmosphere, which should all be visible for another month until the end of January.

An unusual bonus for this opposition will be the full moon occulting or covering up Mars exactly at opposition of the moon and Mars. We are right on the southern line of this occultation, which most of this country will be able to see except for most of the east coast. The full moon will cover Mars at 10:57 pm and it will reappear about half an hour later at 11:24 pm. I have watched daytime occultations of Venus by the moon and even graze occultations of some of the stars in the Pleiades as they blinked on and off as their light glanced through the valleys between the mountains on the moon, the same effect that produces the colorful and dramatic Bailey's beads and the diamond ring effect during a total solar eclipse.

Venus and Mercury form a nice pair low in the southwestern evening sky half an hour after sunset in Sagittarius. Mercury reaches greatest elongation from the sun on the winter solstice, December 21. They will be at their closest, just 1.5 degrees apart, on the 28th. Look for a beautiful conjunction with a slender waxing crescent moon on Christmas Eve. They will be about 20 degrees to the west of Saturn in Capricorn along the ecliptic. We will lose Saturn by the end of this month.

Jupiter is still quite brilliant at minus 2.5 magnitude, or about 20 times brighter than Saturn. It just ended its retrograde or westward motion against the fixed background of stars on Thanksgiving Day, November 24. Now it is back to its normal eastward motion in Pisces and getting a little fainter each night as we pull farther ahead of it in our orbit around the sun.

The Geminids, usually the best meteor shower each year, will peak on December 14th, but it will be active from the 4th to the 17th. Unfortunately the full moon happens one week earlier, so it will rise around midnight as a last quarter moon to spoil the best part of this shower, since they are usually much better after midnight because we are then turning into the source of the meteors. You can usually expect up to 100 Geminids per hour, but that rate will be cut way down this year. Then you have another shower, the Ursids, active from the 17th to the 26th and peaking on the 23rd right at the new moon, which is ideal. Caused by Comet 8P/Tuttle, they usually only produce 10 meteors per hour. They will still both be worth watching if it is clear on those nights.

Dec.1. The moon passes 3 degrees south of Jupiter this evening.

Dec.7. Full moon is at 11:08 p.m. EST. This is also known as the Cold, Long Night, or Moon-before-Yule. Mars will be occulted by this moon starting at 11 pm. Gerard Kuiper was born on this day in 1905. The Kuiper Belt of Pluto-like objects was named after him.

Dec.8. Mars is at opposition, rising at sunset and setting at sunrise. Margaret Geller was born on this day in 1947. She is an astrophysicist who teaches at Harvard and discovered the "Great Wall" of galaxies in 1989, the largest structure in the universe at the time 760 million light years long.

Dec. 11. Annie Jump Cannon was born on this day in 1863. She was a famous member of the all-women "Harvard Computers" who developed the classification system of stars on the HR diagram along with discovering Helium in the sun. The moon is at apogee, or farthest from the earth today at 252,195 miles.

Dec. 14. The Geminid meteor shower peaks. Tycho Brahe was born on this day in 1546. He was the greatest observer on Earth before the telescope was invented. Along with Kepler, his observations proved that all of the planets actually orbit in ellipses and not perfect circles.

Dec. 16. Last quarter moon is at 3:56 a.m.

Dec. 17. The Wright brothers flew the first heavier-than-aircraft on this day in 1903. It would only take 66 more years to fly all the way to the moon.

Dec. 23. New moon occurs at 5:17 a.m. The Ursid meteor shower peaks this morning.

Dec. 24. The moon is at perigee, or closest to Earth at 222,619 miles this morning. The moon is very close to Mercury and Venus this evening.

Dec. 25. Isaac Newton was born on this day in 1642.

Dec. 26. The moon passes 4 degrees south of Saturn this morning.

Dec.27. Johannes Kepler was born on this day in 1571.

Dec. 28. Sir Arthur Eddington, a famous British astronomer was born on this day in 1882. He took some photographs of a star behind the sun during a total solar eclipse in May of 1919 that proved Einstein's new General Theory of Relativity correct.

Dec. 29. Mercury passes 1.4 degrees north of Venus this evening. The moon passes 2 degrees south of Jupiter this morning. First quarter moon is at 8:21 p.m. EST.



Moon Phases

Dec 7

Full

Dec 16

Last Quarter

Dec 23

New

Dec 29

First Quarter

Moon Data

Dec 1

Neptune 3° north
of MoonJupiter 3° north
of Moon

Dec 5

Uranus 0.7° south
of Moon

Dec 7

Mars 0.5° south
of Moon

Dec 11

Moon at apogee

Dec 24

Moon at perigee

Venus 3° north
of MoonMercury 4° north
of Moon

Dec 26

Saturn 4° north
of MoonEDITOR: Reprint of December's 2019 Observers Challenge**OBSERVER'S CHALLENGE* – DECEMBER, 2022**

By Glenn Chaple

NGC 246 – Planetary Nebula in Cetus (Mag: 10.9; Size: 4.6' X 4.1')

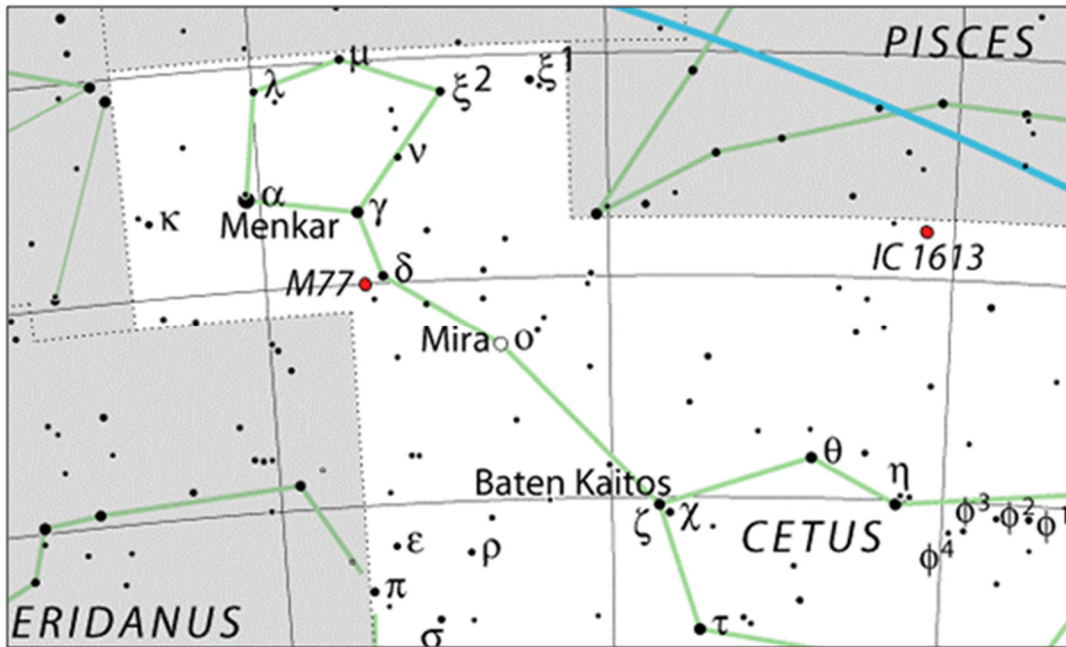
Our November Observer's Challenge, the planetary nebula NGC 246 in Cetus, challenges us in two ways. First, it's in a remote part of the constellation Cetus. You can log in its coordinates (RA 00h47m, dec -11°28') on a GoTo scope or star-hop 5½ degrees from 3rd magnitude eta (η) Ceti. Second, it's faint! Some guides list its magnitude as 8.0, but that's its photographic magnitude. Visually, it's an 11th magnitude object – two magnitudes fainter than the Ring Nebula (M57). Worse yet, it's 3 times larger than the Ring, making it a low surface brightness target.

My recent (mis)adventures attempting to view NGC 246 with a 10-inch f/5 reflector attest to its elusiveness. The first time, I could make out what looked like a wide multiple star comprised of a handful of 11th magnitude components. Even with averted vision, I was unable to detect any nebulosity. It was a moonless night, but skies were slightly hazy. I was unsuccessful on the next clear night. No haze this time, but lens fogging foiled my effort. As of this writing, I'm waiting for a clear, moonless, *low humidity* evening for a third attempt. I'll heed Boston ATMs Vice President Rich Nugent's advice to enhance NGC 246's visibility with an OIII filter. Because of the planetary's rather large size, I'll work with a medium magnification – perhaps 75-90X.

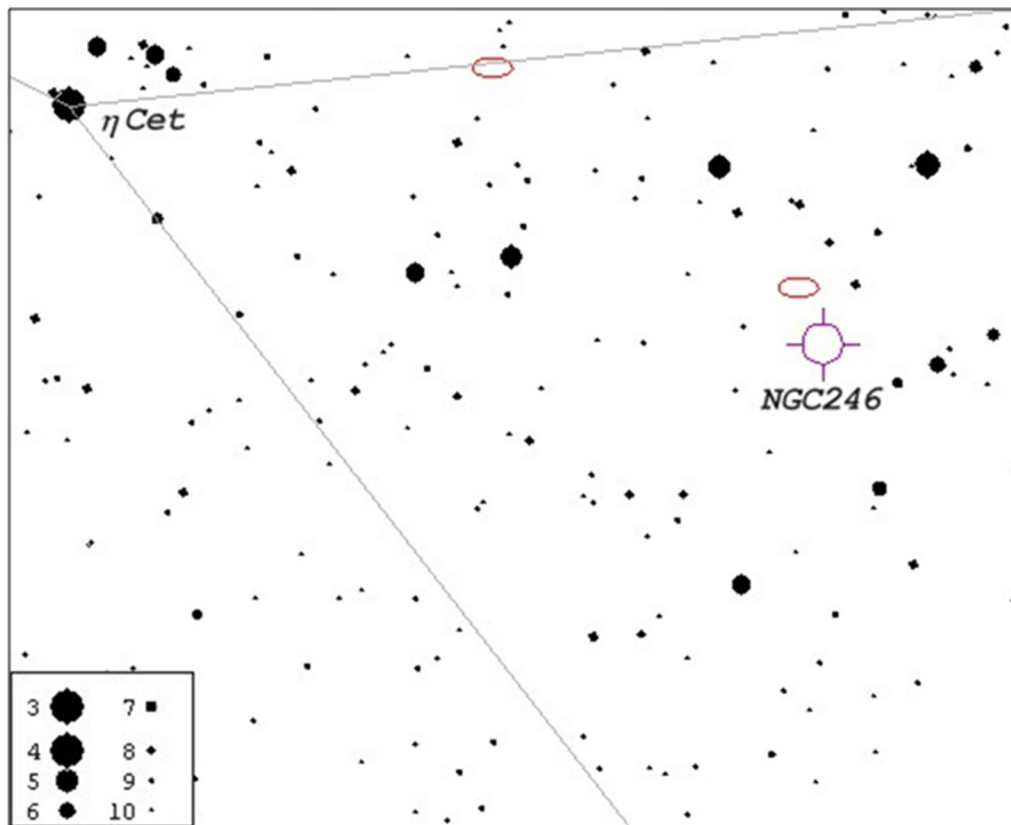
Due to its visual appearance, NGC 246 has been nick-named the "Pac-Man Nebula" or the "Skull Nebula". "Pac-Man" is obvious in the accompanying image made by ATMob member Doug Paul, while fellow ATMob member Mario Motta's image shows the "Skull".

While you have NGC 246 in the eyepiece field, look a half degree NNE for the 12th magnitude galaxy NGC 255. William Herschel discovered this barred spiral on November 27, 1785 - the same evening he found NGC 246. It's plotted on the finder chart and appears in Doug Paul's wide-field image.

"Continued on page 4"



constellation-guide.com (IAU and *Sky and Telescope*)



astrosurf.com Field is 6 degrees square

“Continued on page 5”



Image by Doug Paul (ATMoB) Canon 80D, 400mm f2.8 lens, iso800, 93subs*30sec=46.5min North is up



**Image by Mario Motta (AAVSO) 32 inch telescope, SBIG STL 1001E camera, processed in PixIsight
80 minutes H alpha, 80 minutes O3 filter. 20 minutes S2 filter North is up**

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Here is a picture that I took of NGC 246 (a.k.a. The Skull Nebula) back in November. The fuzzy object to the lower left of the Skull is a galaxy.



Image by Paul Kursewicz (ASNNE) Canon Powershot SX 50 HS, 1200mm, f/3.5 zoom lens, ISO 3200, 115subs*1min = 115min, Baader Moon & Skyglow filter, 11-14-22

**The purpose of the Observer's Challenge is to encourage the pursuit of visual observing and is open to everyone who is interested. Contributed notes, drawings, or photographs will be published in a monthly summary. Submit them to Roger Ivester (rogerivester@me.com). To access past reports, log on to rogerivester.com/category/observers-challenge-reports-complete.*

Principal Meteor Showers in 2022

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 17 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 17.

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.

Benefits of Membership

- Attend our monthly meetings and club star parties
 - Our Monthly Newsletter: *Skylights*
 - Discounts on *Sky & Telescope*. and *Astronomy* magazine subscriptions
 - Automatic subscription to the Astronomical League's quarterly newsletter, *The Reflector*
 - With proper training, access to the equipment at ASNNE's Talmage Observatory at Starfield.
 - By special arrangement, free admission to the Southworth Planetarium at USM in Portland
- Enjoy sharing your interest and have fun learning about Astronomy!

Our Club has Merchandise for Sale at: www.cafepress.com/asnne



***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.



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Binoculars: A Great First Telescope

By David Prosper

Do you want to peer deeper into the night sky? Are you feeling the urge to buy a telescope? There are so many options for budding astronomers that choosing one can be overwhelming. A first telescope should be easy to use and provide good quality views while being affordable. As it turns out, those requirements make the first telescope of choice for many stargazers something unexpected: a good pair of binoculars!

Binoculars are an excellent first instrument because they are generally easy to use and more versatile than most telescopes. Binoculars can be used for activities like stargazing and birdwatching, and work great in the field at a star party, along the hiking trail, and anywhere else where you can see the sky. Binoculars also travel well, since they easily fit into carry-on luggage – a difficult feat for most telescopes! A good pair of binoculars, ranging in specifications from 7x35 to 10x50, will give you great views of the Moon, large open star clusters like the Pleiades (M45), and, from dark skies, larger bright galaxies like the Andromeda Galaxy (M31) and large nebulae like the Orion Nebula (M42). While you likely won't be able to see Saturn's rings, as you practice your observing skills you may be able to spot Jupiter's moons, along with some globular clusters and fainter nebulae from dark sites, too.

What do the numbers on those binocular specs actually mean? The first number is the magnification, while the second number is the size in millimeters (mm) of the lenses. So, a 7x35 pair of binoculars means that they will magnify 7 times using lenses 35 mm in diameter. It can be tempting to get the biggest binoculars you can find, but try not to get anything much more powerful than a 10x50 pair at first. Larger binoculars with more power often have narrower fields of vision and are heavier; while technically more powerful, they are also more difficult to hold steadily in your hands and "jiggle" quite a bit unless you buy much more expensive binoculars with image stabilization, or mount them to a tripod.

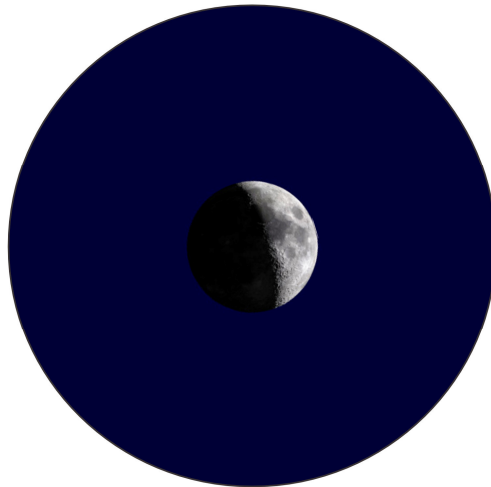
Would it surprise you that amazing views of some astronomical objects can be found not just from giant telescopes, but also from seemingly humble binoculars? Binoculars are able to show a much larger field of view of the sky compared to most telescopes. For example, most telescopes are unable to keep the entirety of the Pleiades or Andromeda Galaxy entirely inside the view of most eyepieces. Binoculars are also a great investment for more advanced observing, as later on they are useful for hunting down objects to then observe in more detail with a telescope.

If you are able to do so, real-world advice and experience is still the best for something you will be spending a lot of time with! Going to an in-person star party hosted by a local club is a great way to get familiar with telescopes and binoculars of all kinds – just ask permission before taking a closer look! You can find clubs and star parties near you on the Night Sky Network's Clubs & Events page at bit.ly/nsnclubsandevents, and inspire your binocular stargazing sessions with NASA's latest discoveries at nasa.gov.

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The two most popular types of binocular designs are shown here: **roof-prism** binoculars (*left*) and **porro-prism** binoculars (*right*). Roof prisms tend to be more compact, lighter, and a bit more portable, while porro-prisms tend to be heavier but often offer wider views and greater magnification. What should you choose? Many birders and frequent fliers often choose roof-prism models for their portability. Many observers who prefer to observe fainter deep-sky objects or who use a tripod with their observing choose larger porro-prism designs. There is no right answer, so if you can, try out both designs and see which works better for you.

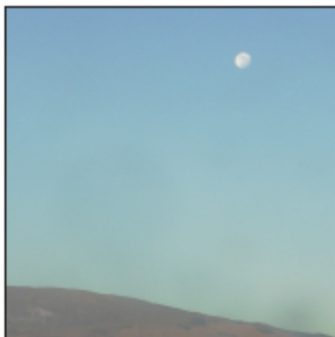


A pair of good binoculars can show craters on the Moon around 6 miles (10 km) across and larger. How large is that? It would take you about two hours to hike across a similar-sized crater on Earth. The “Can You See the Flag On the Moon?” handout showcases the levels of detail that different instruments can typically observe on the Moon, available at bit.ly/flagmoon. *Moon image courtesy Jay Tanner*

Can You See the Flag on the Moon?

Let's take a closer look.

The smallest crater a human eye can see on the Moon is 100 km (60 mi) across. You could drive across a crater that size in an hour... if there were lunar freeways.



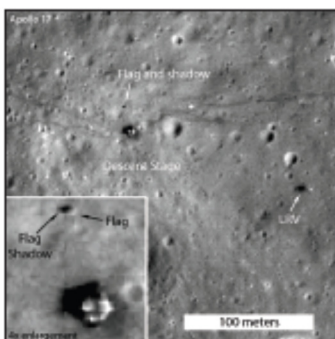
A backyard telescope can resolve craters about 1 km (0.6 mi) across about the size of a large neighborhood.



(Moon image courtesy NASA's Scientific Visualization Studio: svs.gsfc.nasa.gov/4442)

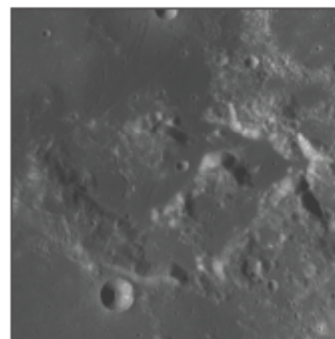
NASA's Lunar Reconnaissance Orbiter can resolve objects about 1 meter across and can just make out the flag left by Apollo 17 astronauts.

(NASALunar Reconnaissance Orbiter)



Through a pair of good binoculars, the smallest crater you can see on the Moon is 10 km (6 mi) across. You could walk 10 km in about two hours here on Earth.

(Moon image Jay Tanner)



The Hubble Space Telescope could just make out a crater 100 meters or yards across, the length of a soccer field.

(Image via trek.nasa.gov/moon)



Astronauts first landed on the Moon in 1969. This image is from Apollo 17 in 1972. What would be the largest feature they could see on Earth?

(NASA)



Find activities and local astronomy events with the NASA Night Sky Network: nightskynetwork.org

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bit.ly/flagmoon

Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

Barnard's "E" Dark Nebula (B 142 & 143)

SPECS: RAW mode, f/3.56, FL 133mm, ISO 1600, 35 x 1min exposures, 9-23-22



I took this picture of **Barnard's E** during our *Starfest Convention*. Looking near the center of my image, you will see a pair of dark nebulae that together form a capital letter "E." It is officially designated as B142 (upper two prongs) and B143 (lower prong). The **E** lies against the rich Milky Way in Aquila. Dark nebulae give off no light of their own and they don't reflect light from nearby stars. The only way we see them is if they lie in front of bright backgrounds. They can create some really interesting patterns. The famous Horsehead Nebula (Barnard 33) is an example of a dark nebula silhouetted against a red reflection nebula. **Barnard's E** size is about that of the full moon at a distance estimated at about 2,000 light years. The bright reddish orange star near the **E** is Tarazed (Gamma Aquilae). It's in a giant phase of its life where it is no longer burning hydrogen, but is burning helium and carbon instead. These "carbon stars" take on a characteristic deep red color. The large bright white star is Altair. Most dark nebulae are a challenge to see visually. They show up better in long duration photographs.

"Continued on page 12"

From the pages of “Burnham’s Celestial Handbook” copyright 1978

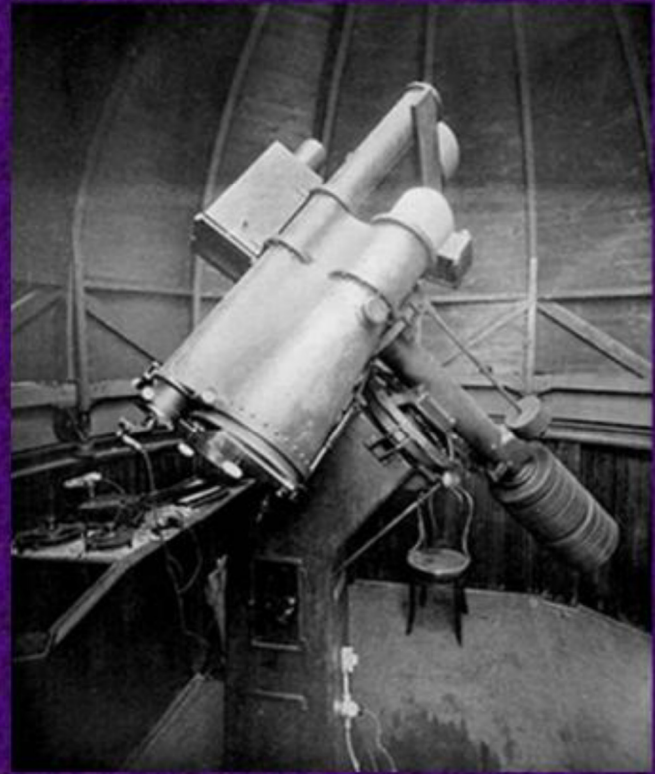
Bernard’s “E” Dark Nebula



Lowell Observatory took this picture of B143 & B142. The location of the dark silhouette that forms a capital letter “E,” is left of center in the photo. Behind the “E” is a dense field of Milky Way stars, and the dust from the nebula is seen in the foreground. Burnham points out that the star clouds of Aquila are remarkable for the great profusion and complexity of dark nebulous matter. The “E” Nebula can be seen through binoculars on a good night at a dark site. I had no luck seeing it in binoculars or through a telescope from my yard, or from Starfield, the skies are not dark enough.

What is This?

Submitted by Paul Kursewicz



Edwards Emerson Barnard (most commonly known as E.E. Barnard) was a prolific astronomer in the late 1800s and early 1900s. Among other accomplishments, he cataloged many dark nebulae, giving each of them a "B" number. B142 and B143 are two of these nebulae, and how appropriate it is that the two nebulae appear to form a large "E" in the sky - just like the astronomer's first two initials (that's Barnard in the photo).

In 1897, Barnard made a successful sales pitch to the wealthy Yerkes Observatory benefactor Catherine Bruce, to fund a new wide-field 10" photographic refractor telescope for Barnard's exclusive use. This instrument became known as the "Bruce Telescope" and its 10" doublet lens was made by John Brashear of Pittsburgh. It was also coupled with a 6.25" German Voigtlander portrait lens. With it Barnard took over 4000 images, and made a number of photographic nebula discoveries, and re-imaged the large-scale Milky-Way structures he had earlier photographed using the small lantern camera at Lick.

It was the richness of the star clouds and outstanding Milky-Way features, showing much more fine detail in the dark regions than ever before, which became the center of Barnard's work. This was the evidence, from his own photographs, that eventually convinced Barnard, beginning in 1913 to finally come around to the thought that these dark voids were actually obscuring dark matter blocking the view of the more distant Milky-Way. This was a huge discovery among the astronomical world, as now all the various galaxy formation models would have to take into account these dark clouds of dust and gas.

November 8, 2022 Total Lunar Eclipse

Photo Submitted by Paul Kursewicz



I was not planning to go out and see this early morning eclipse. I have seen my fair share throughout the years. However, on that morning I just happened to wake up at 3:50 am. And when I looked out my dining room window and saw how super clear sky was, there was no way I was going back into bed. I had to go outside. But, where could I go to see the eclipse? Too many tall trees in my yard. So I hopped into my truck and started to head out of my development. Before reaching the end I saw the eclipsed Moon on my left side down a long and straight side road. I pulled my truck over to the side of the road and then walked down this side road about 50 yards. At this spot I had a clear view of the eclipse with no tall trees or buildings in my way. So I set up my camera and tripod and started taking pictures, around 100 images. With all of those pictures at hand I eventually decided to use only 13 of them, and created this mosaic showing the progression of the total lunar eclipse. In my picture, the very top image of the partially eclipsed Moon was taken at 4:28 am. The center image shows totality, and it was my last image taken at 5:20 am. If you missed this eclipse, the next one that is visible from North America won't be until March 2026.



Club Meeting & Star Party Dates



Date	Subject	Location
DEC 2	<p><u>Christmas/Holiday/Club Meeting & Party</u></p> <p><u>Pot Luck Supper 6:30 PM</u></p> <p>Bring your favorite dish - salad - desert - or drink.</p> <p><u>Club Meeting 7:30 PM</u></p> <p>Guest Speaker: Corey Cain (Corey Cain Photography). Topic: Astrophotography, but more on the stories of how he gets them with a local seacoast bent.</p> <p>Bernie Reim - What's UP</p> <p>Astro Shorts: (news, stories, jokes, reports, questions, photos, observations etc.)</p>	The New School, Kennebunk, Me.
Last Month	<p>We met at the New School last month. Three new members were present. Bernie did his What's Up. Ian did a presentation on his time dilation experiment which required driving up to the top of Mt. Washington to get data on Muons. That was followed by Astroshorts. Chuck showed us some photos that he took of the Pelican Nebula, M31, and the Heart Nebula.</p>	
DEC 16	Club/Public Star Party: Weather permitting. Check before heading over. Rain Date the 17th.	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.

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.

The screenshot shows the LibraryThing website interface. The user is logged in as 'asmne'. The page displays a list of books in the user's library. The first book is 'NightWatch: A Practical Guide to Viewing the Universe' by Terence Dickinson, published in 2006. Other books include 'Comet of the Century: From Halley to Hale-Bopp' by Fred Schaaf (1996), 'Oasis in Space: Earth History from the Beginning' by Preston Cloud (1988), and 'Exploration of the Universe: 1993 Version' by George O. Abell (1993). The 'Your library' link in the top navigation bar is highlighted with a black arrow.

Title	Author	Date	Tags	Rating	Entry date
NightWatch: A Practical Guide to Viewing the Universe	Terence Dickinson	2006		☆☆☆☆☆	2018-01-09
Comet of the Century: From Halley to Hale-Bopp	Fred Schaaf	1996		☆☆☆☆☆	2018-01-09
Oasis in Space: Earth History from the Beginning	Preston Cloud	1988		☆☆☆☆☆	2018-01-09
Exploration of the Universe: 1993 Version	George O. Abell	1993		☆☆☆☆☆	2018-01-09

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 screenshot shows the Cornerstones of Science website. The main feature is a map of the United States with numerous pins indicating library locations. A pop-up window for 'Kennebunk Free Library' is visible. Below the map, there is a legend and text explaining the program.

Cornerstones of Science telescopes are in libraries across the nation!

- Cornerstones Library Telescopes
- Astronomy Club Telescopes in Libraries

Modified Telescopes with Education Pack for Libraries Unmodified Telescopes for Amateur Astronomers and

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 1338
 Kennebunk, ME 04043-1338

2023 Membership Registration Form

(Print, fill out and mail to address above)

Name(s for family): _____

Address: _____

City/State: _____ Zip code: _____

Telephone # _____

E-mail: _____

Membership (check one):

Individual \$35 _____ Family \$ 40 _____ 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 _____

