Skylights

Newsletter of the Astronomical Society of Northern New England

Dec 2024

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.

ASNNE's Annual Christmas/Holiday Party

Pot Luck Supper 7:00pm (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. This year that will happen at exactly 4:12 a.m. on Saturday morning the 21st. That is called the winter solstice and marks the longest night and shortest day of the whole year as the sun reaches its lowest point in our sky. For us at this latitude of 43.5 degrees north, the sun will only reach 24 degrees into our sky at high noon. By comparison, it reaches 68 degrees high on the summer solstice. The word solstice means "sun stands still".

The sun will rise at 7:12 am and already set at 4 pm. However, even though this is the shortest day, it is not the latest sunrise. That will occur about two weeks later and the earliest sunset of 3:59 pm happened on December 8. That is because we orbit the sun in ellipses and not perfect circles and we are tilted at 23.5 degrees with respect to our ecliptic plane.

We had an unusually warm fall, but that is bound to change to closer to normal for our winter. All the seasons are great up here in New England and each one has many unique features to offer. You just need to be prepared to be able to enjoy all of it. There are several great highlights this month to help you enjoy the sky above us and learn many useful new things about our true place in space and how everything is always moving through this inconceivably vast space that all of us inhabit.

Some of the many wonderful highlights that we will encounter this month that will make it well worth your while to brave any cold weather that mother nature may throw at us include Jupiter at its best, Venus getting higher and brighter in our evening sky, and Mars beginning its retrograde motion on the same day that Jupiter reaches opposition, which is Saturday the 7th. Mars will reach its own opposition about a month after Jupiter, which is on January 16 of next year. For part of this month all five of the brightest planets will be visible, but they will not be lined up in order like they were a few years ago in June in the morning sky. An asteroid named Eunomia will reach opposition at 8th magnitude near Jupiter on the 14th. The great comet of October, Tsuchinshan-ATLAS is still visible in Aquila the Eagle, but you will need a telescope to find it now. Then there is always the possibility of the BLAZE STAR, T Corona Borealis to erupt at any second and become 1,000 times brighter and easily visible to the naked eye at about the brightness of Polaris at 2.1 magnitude. Then there will be several nice conjunctions of planets with the moon and not one, but two meteor showers, the Geminids and the Ursids.

Jupiter, the king of our planets at 10 times the size of Earth will become the "star" of our evening sky this month. It will reach opposition on the 7th which means that it will rise at sunset, remain in the sky all night long and not set until sunrise, similar to a full moon. That is also when any superior planet from Mars out to Neptune is at its closest and brightest for the year or the period when we are the closest to that planet, which is only once every 26 months in the case of Mars. Opposition always occurs at the midpoint of the retrograde loop of the superior planet. It just means that the planet is directly opposite the earth from the sun on that day.

This will be the best opposition of Jupiter in 10 years because it will be unusually high in the sky in Taurus this time as we get close to it this year. Look for Jupiter in the Winter Hexagon just to the left of the Pleiades open star cluster and just above and to the left of the orange star named Aldebaran, which is 65 light years away and marks the eye of an angry bull perpetually charging the might hunter Orion, but never able to get to him. The Pleiades star cluster consists of about 500 stars, only 6 of which are visible without binoculars and they form a shape similar to the Little Dipper, but only covering one degree of the sky instead of the roughly 10 degrees that the real Little Dipper covers as it is always dipping invisible liquid into the Big Dipper.

Be aware that the actual photons of light that reach your eyes the next time you see the Pleiades left there about 400 years ago, which is the same time that Galileo turned to the sky the first telescope ever invented in the 200,000- year history of modern humans. We had the capacity to invent such an instrument long ago along with the potential for inventing rockets to get us into space and to the moon, but it just took us a long time to actually do that and reap the benefits of such discoveries. The laws of physics and mathematics which allow all of this were here for billions of years, but we just discovered a few of them and put them to good use fairly recently.

"Continued on page 2"

Inside This Issue

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What's Up "*Continued from page 1*"

Even now, 400 plus years later, we have barely begun to scratch the surface of the marvelous secrets that the universe holds for each one of us even with the vastly advanced technology that we are now privileged to use and have available to help us interpret what we are really seeing with all of these amazing new telescopes like the James Webb Space Telescope and many others. What really counts is what we do with all of this great new knowledge which will help determine how much more we can learn.

Mars will once again roughly double in brightness this month, from minus 0.5 magnitude to minus 1.2 magnitude. One full magnitude is 2.5 times difference in brightness and every 5 magnitudes is exactly 100 times difference. The red planet has now drifted into Cancer from Gemini and it will halt its relatively rapid eastward or direct motion against the fixed background of stars on the 7th, the same day that Jupiter reaches opposition. Then Mars begins its retrograde or westward motion back towards Gemini and it will reach its own opposition on January 16 of next year.

It now rises at 8:30 pm and stands 30 degrees high outshining the nearby stars of the twins Castor and Pollux in Gemini and Procyon in Canis Minor, all part of the famous Winter Hexagon. Mars will pass near the Beehive Star cluster in Cancer when it appears to stand still for a day. This is a similar cluster to the Pleiades, but it has about 1,000 stars and is about 570 light years away. The light you will see from this other nearby cluster left there during a very important time which changed the course of history on Earth when the renaissance started at the end of the Middle Ages and the invention of the printing press by Gutenberg in 1440.

Venus continues to get brighter and higher in our evening sky as it is catching up with us in its faster orbit around the sun. Venus will enter Capricorn from Sagittarius on the 6th as it also gets less illuminated by the sun. It will be only 55 percent illuminated and about 20 % larger than it was when it started this month. It will reach a magnitude of minus 4.3 which makes it 15 times brighter than Mars and about 4 times brighter than Jupiter.

Saturn is still in Aquarius and is already up well before it gets dark. It is getting a little fainter each day as it is drifting farther and farther away from us. Through a telescope you will notice that its famous rings are getting quite thin. They will disappear completely from our line of sight in March of next year, but Saturn will sink below our horizon about then before it reappears in our morning sky.

The Geminids are usually the very best and reliable meteor shower each year, but this year they will peak just two days before the full moon on the 15th. So instead of 60 meteors per hour, you may only see about one tenth of that. This is one of only two of our 10 or so major meteor showers that is not directly caused by a comet. The Quadrantids on January 4 is the other meteor shower caused by an asteroid and not a comet. The Geminids are caused by an asteroid named 3200 Phaethon which orbits the sun every year and a half.

They will all emanate from the radiant in Gemini and most of them will burn up about 60 to 70 miles high, which is where outer space starts at the Karman line where there are so few air molecules left that the sky will appear black in the middle of the day with a bright sun shining. They will tend to be brighter than other meteors because they are denser than regular comet dust. You will also see some greenish meteors caused by the oxygen, magnesium, and nickel in this asteroid.

The other meteor shower this month, the Ursids, will fare much better as far the phase of the moon goes, but it is a far less prolific shower with a maximum rate from a dark sky site of only 6 meteors each hour. The moon will be last quarter, so it will set around midnight, which is when meteor showers tend to get much better since the earth is then turning into the meteors instead of away from them like it does before midnight. The Ursids will peak on the 22nd, the day after winter starts. They are caused by Comet 8P/Tuttle which orbits the sun every 13.5 years and they will all emanate from Ursa Minor, which is also commonly known as the Little Dipper.

Dec.1.New moon is at 1:21 a.m.

Dec.4. The moon passes two degrees south of Venus this evening.

Dec.7. Mars is stationary, ending its direct eastward motion and starting its retrograde motion today. Jupiter reaches opposition. Gerard Kuiper was born on this day in 1905. The Kuiper belt is named for him. Its most famous member is Pluto at about 40 astronomical units from the sun and then there is also Sedna, Eris, Quaoar, and Makemake along with about 1000 other smaller Kuiper belt objects or icy dwarf planets or trans-Neptunian objects.

Dec.8. The moon passes 0.3 degrees north of Saturn this morning. Neptune is stationary. First quarter moon is at 10:27 am.

Dec.10. Mercury passes 7 degrees north of Antares in Scorpius this morning.

Dec.11. Annie Jump Canon was born on this day in 1863. She was part of the famous "Harvard Computers" that developed the stellar classification system along with Henrietta Swan Leavitt, Antonia Maury, and Williamina Fleming, Cecelia Payne, and several others.

Dec.13. The Geminid meteor shower peaks.

Dec.14. Tycho Brahe was born on this day in 1546. He worked with Johannes Kepler to show that all planets and moons orbit in ellipses and not perfect circles before the telescope was invented. He also discovered a Type 1A supernova in Cassiopeia in 1572. The moon 5 degrees north of Jupiter this evening.

Dec.15. Full moon is at 4:02 a.m. EST. This is also known as the Cold, Long Night, or Moon before Yule.

Dec.16. E.E. Barnard was born on this day in 1857 in Nashville, TN. He was an American astronomer and photographer. He discovered the fifth moon of Jupiter, Amalthea along with 16 comets in his career. He also measured the proper motion of a red dwarf star only 6 light years away in Ophiuchus that has the fastest motion of any star in our sky relative to the other stars. It is not moving with the general stream of stars around the center of our galaxy, it is merely passing through our neighborhood of space. It moves 10.3 arc seconds per year, or the width of the full moon every 174 years, which is half a degree of the sky. That is fully 100 times faster than the average star moves through our sky, which is only 0.1 arc seconds per year. It is called Barnard's runaway star. Adam Reiss was born on this day in 1969. He got the Nobel prize in physics in 2011 for his 1998 discovery that the entire universe was expanding at an ever-increasing rate due to a mysterious anti-gravity force called dark energy. He shared the prize with Brian Schmidt and Saul Perlmutter.

Dec.18. The moon passes 0.9 degrees north of Mars this morning.

Dec.21. The winter solstice is at 4:21 a.m.

Dec.22. Last quarter moon is at 5:18 p.m. The Ursid meteor shower peaks tonight.

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

Dec.26. Charles Babbage was born on this day in 1791 in London. He invented the first programmable computer and had many other useful inventions.

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

Dec. 28. Sir Arthur Eddington was born on this day in 1882. He proved Einsteins general theory of relativity correct during a solar eclipse on May 29 of 1919 by measuring the precise amount that the gravitational field of the sun will bend starlight.

Dec.30. New moon is at 5:27 p.m.

★

Moon Phases

Dec 1 & 30
New

Dec 8
First Quarter

Dec 15
Full

Dec 22
Last Quarter

Moon Data

Dec 4
Venus 2° north of Moon

Dec 8
Saturn 0.3° south of Moon

Dec 9
Neptune 0.8° south of Moon

Dec 12
Moon at perigee

Dec 13
Uranus 4° south of Moon

Dec 14
Jupiter 5° south of Moon

Dec 18
Mars 0.9° south of Moon

Dec 24
Moon at apogee

Dec 28
Mercury 6° north of Moon

OBSERVER'S CHALLENGE* – December, 2024

by Glenn Chaple

NGC 891 – Spiral Galaxy Cluster in Andromeda (Magnitude 9.9, Size 12' X 2')

If you're a fan of TV sci-fi shows and are old enough, the accompanying image of the edge-on spiral galaxy NGC 891 taken by astroimager Mario Motta should look oddly familiar. It appeared, along with images of other galaxies, during the closing credits of the mid-1960s sci-fi anthology "Outer Limits."

Typical of edge-on spirals, NGC 891 displays a luminous spindle shape bisected by a dark lane. This lane, created by dust clouds that inhabit the spiral arms, obscures the galaxy's bright nucleus. As a result, NGC 891 is much darker than its listed magnitude of 9.9 might indicate. Although glimpsed with difficulty with apertures as small as 4 inches, this low surface brightness galaxy more realistically requires an aperture of 8 to 10 inches under a dark sky environment.

To find NGC 891, owners of GoTo telescopes need only enter its 2000.0 coordinates RA $2^h22^m33^s$ and DEC $+42^o20'53"$ and press the button on the control paddle. I recommend, however, that you eschew the electronics and "go to" NGC 891 via the star-hop method. The reason? Your starting point is gamma (γ) Andromedae (Almach), 3 ½ degrees due west. Mirach is one of the finest double stars in the night sky, a dazzling amber and blue pair whose magnitude 2.3 and 5.0 components are 9.5 arc-seconds apart. What a great way to begin your journey to NGC 891!

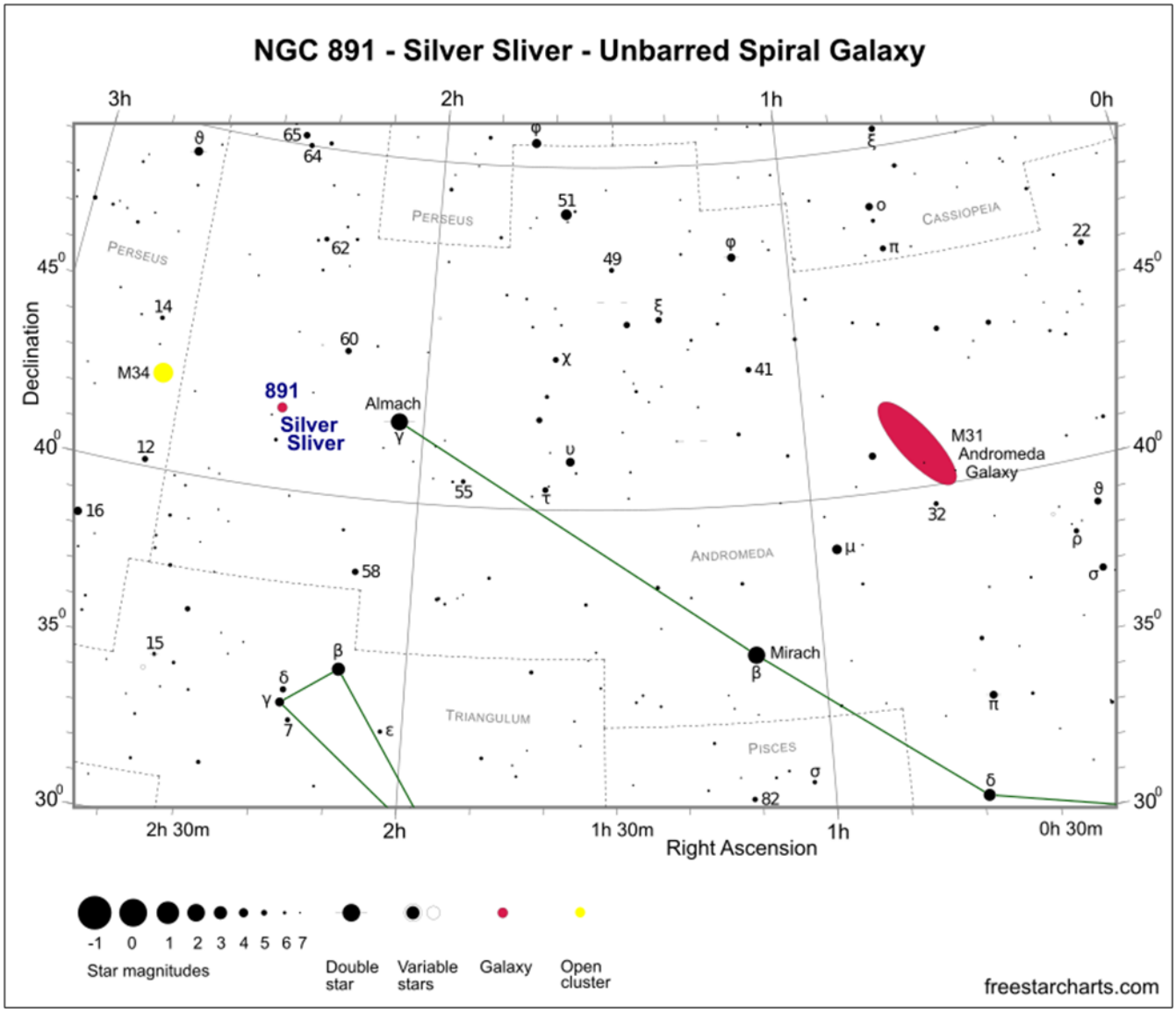
NGC 891 was discovered by (who else?) William Herschel on 6 October 1784 with an 18.7 inch reflecting telescope. He described it as "Considerably bright, much extended above 15' 3' broad, a black division 3 or 4' long in the middle."

Most references assign a distance to NGC 891 of 30 million light years. Its apparent 12 arc-minute breadth translates to an actual size of 100,000 to 120,000 light years.

Here are your NGC 891 challenges: 1. Can you behold the beauty of the topaz and sapphire gem set Almach without being moved to tears? (OK, maybe hyperbole on my part, but this colorful pair is a stunning can't miss sight.) 2. Can you glimpse NGC 891 with a telescope aperture less than 8 inches? 3. What is the smallest aperture that will capture the galaxy's dust lane?

"Continued on page 4"

NGC 891Finder Charts



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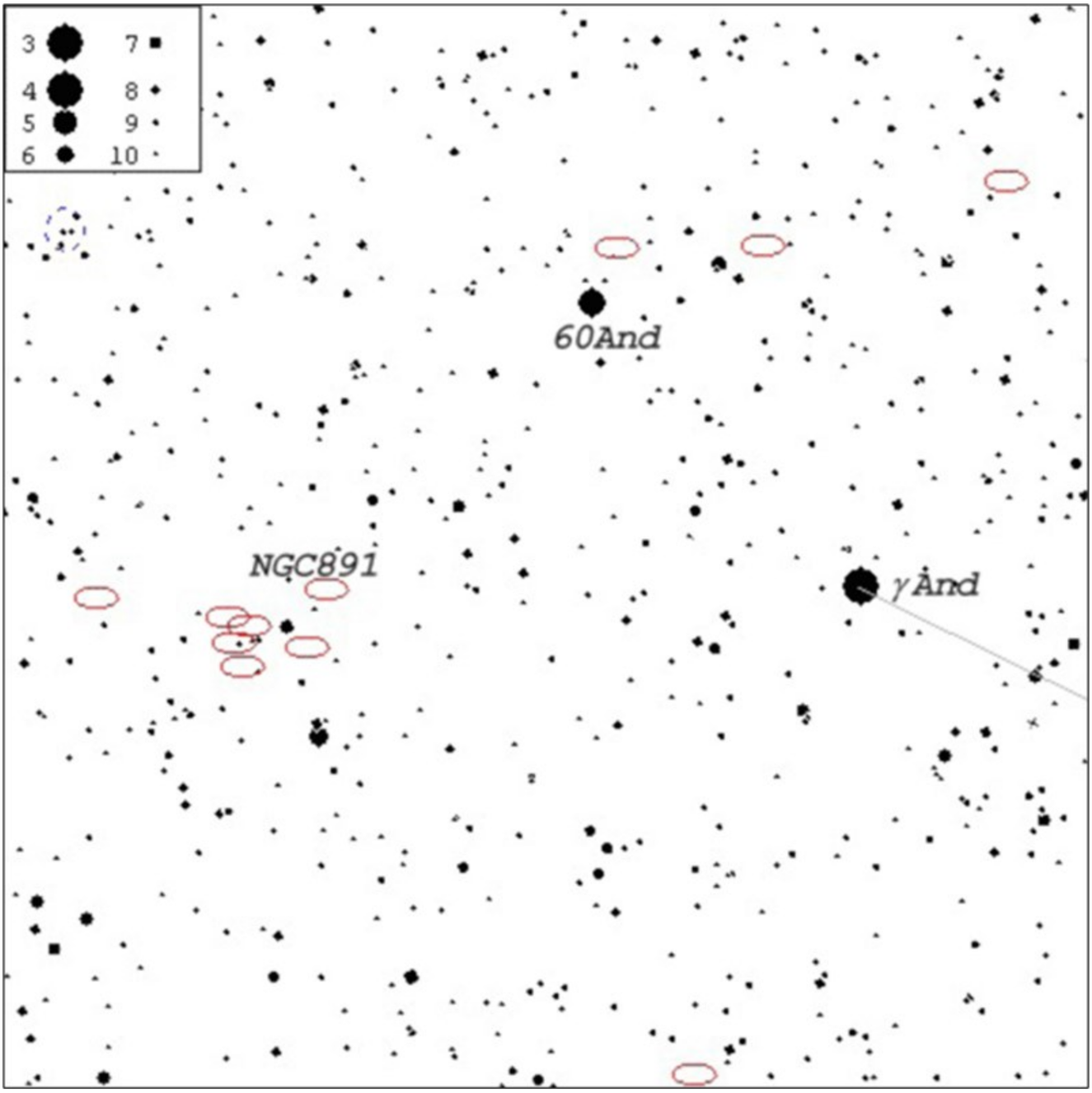

www.astrosurf.com

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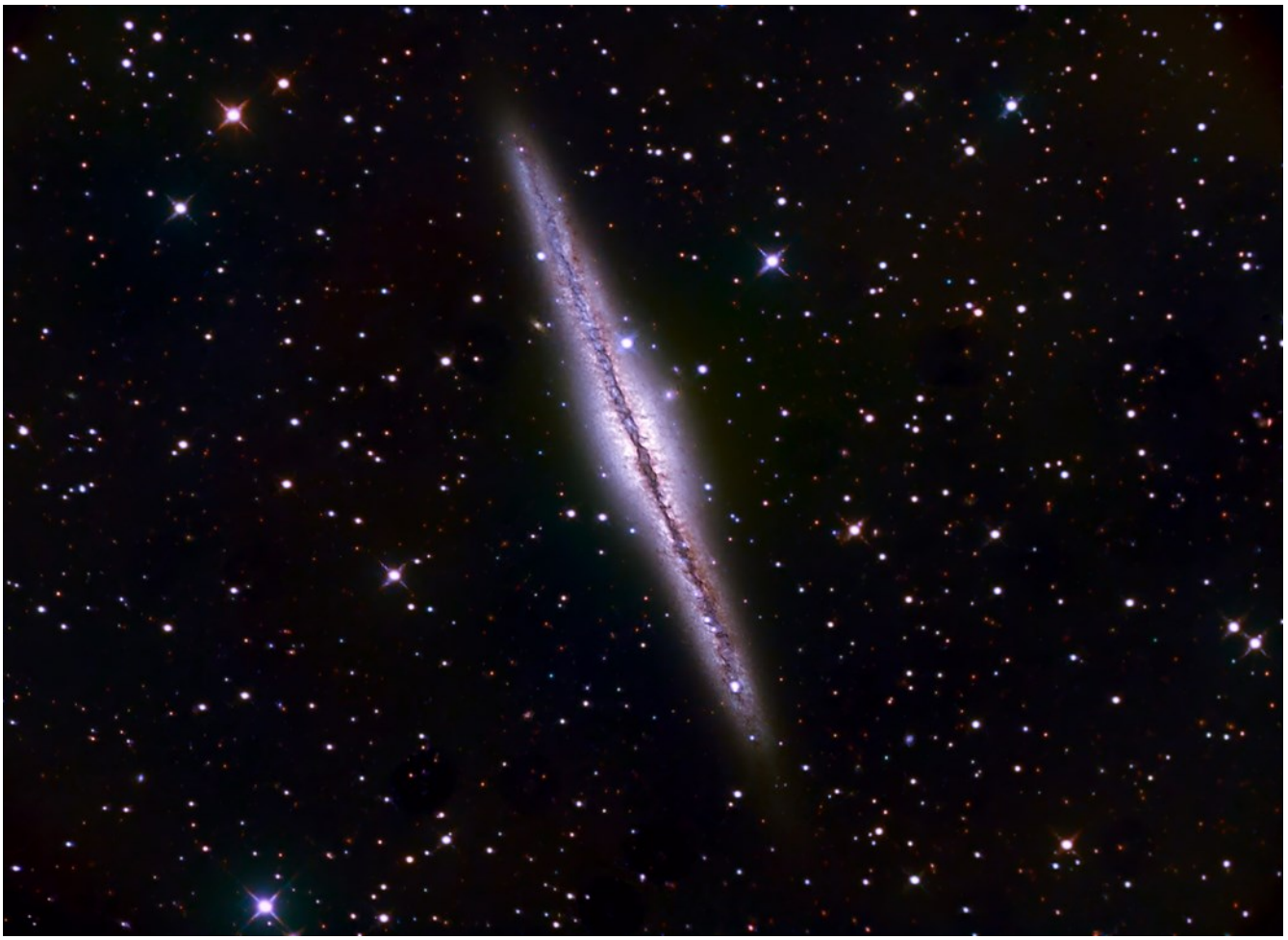
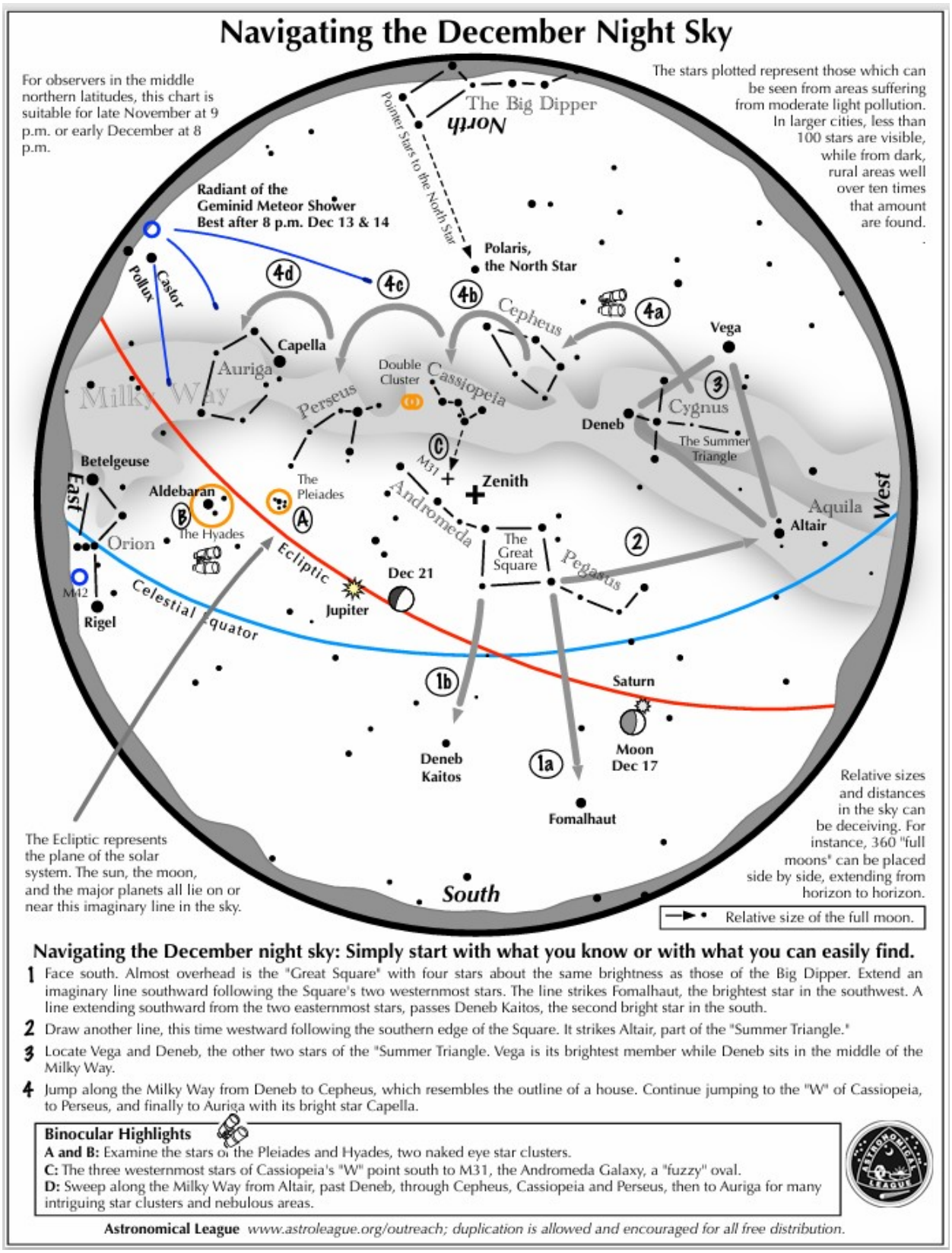
NGC 891 Image

Mario Motta, MD (ATMoB)

"4 hours imaging with RGB and Lum filters, on my 32 inch scope and zwo 6200 camera."





Navigating the December night sky: Simply start with what you know or with what you can easily find.

1. Face south. Almost overhead is the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend an imaginary line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the southwest. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second bright star in the south.
2. Draw another line, this time westward following the southern edge of the Square. It strikes Altair, part of the "Summer Triangle."
3. Locate Vega and Deneb, the other two stars of the "Summer Triangle. Vega is its brightest member while Deneb sits in the middle of the Milky Way.
4. Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights
A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas.

Astronomical League *www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.*

Principal Meteor Showers in 2024

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

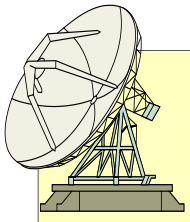
December 22
Ursids

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. 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.



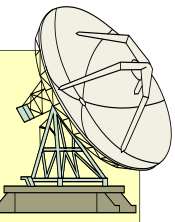
Got any News?

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.

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!

December's Night Sky Notes: Spot the King of Planets

By Dave Prosper
Updated by Kat Troche

Jupiter is our solar system's undisputed king of the planets! Jupiter is bright and easy to spot from our vantage point on Earth, helped by its massive size and banded, reflective cloud tops. Jupiter even possesses moons the size of planets: Ganymede, its largest, is bigger than the planet Mercury. What's more, you can easily observe Jupiter and its moons with a modest instrument, just like Galileo did over 400 years ago.

NASA's Juno mission captured this look at the southern hemisphere of Jupiter on Feb. 17, 2020, during one of the spacecraft's close approaches to the giant planet. This high-resolution view is a composite of four images captured by the JunoCam imager and assembled by citizen scientist Kevin M. Gill. Credit: NASA, JPL-Caltech, SwRI, MSSS | Image processing by Kevin M. Gill, © CC BY

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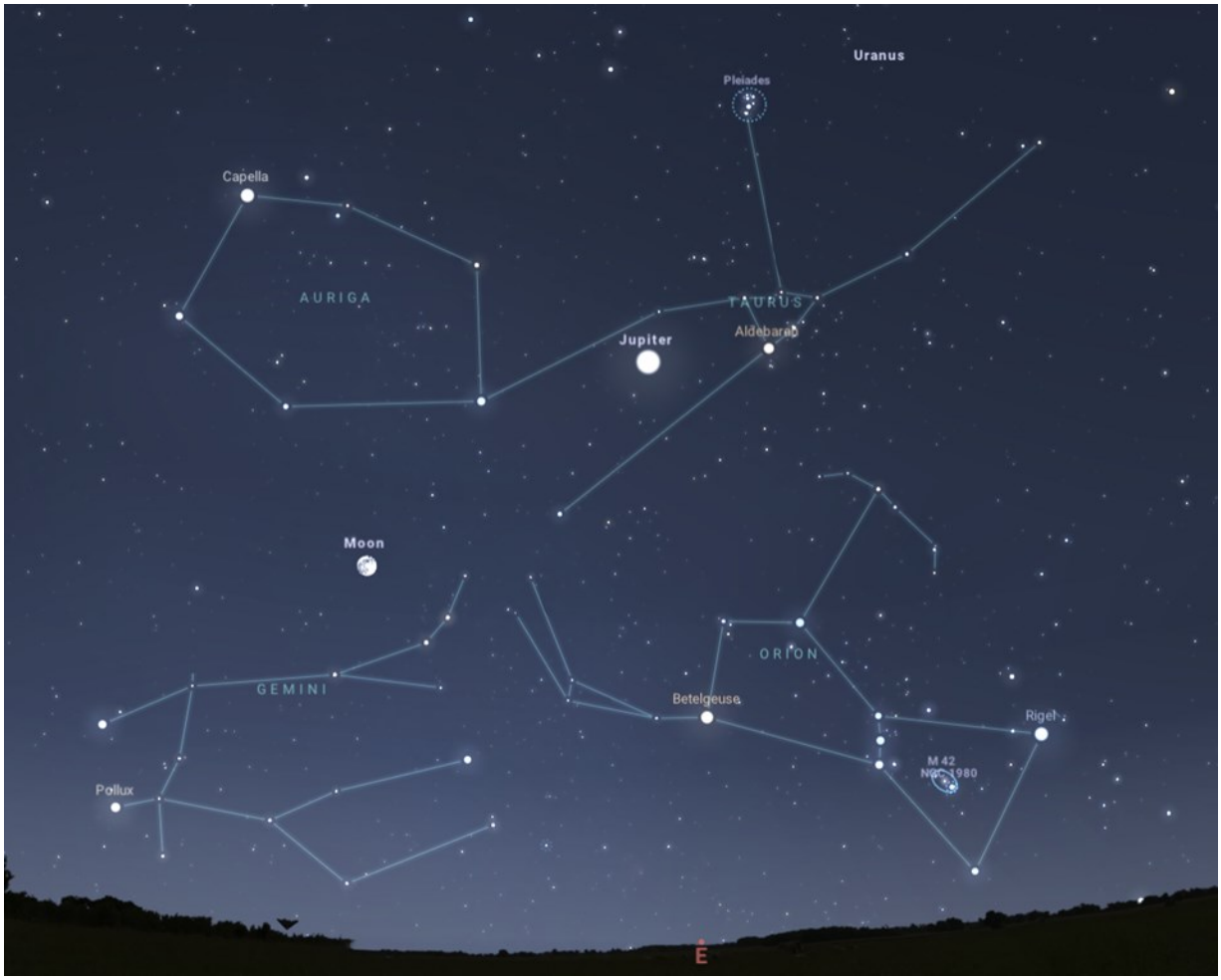
Jupiter's position as our solar system's largest planet is truly earned; you could fit 11 Earths along Jupiter's diameter, and in case you were looking to fill up Jupiter with some Earth-size marbles, you would need over 1300 Earths to fill it up – and that would still not be quite enough! However, despite its formidable size, Jupiter's true rule over the outer solar system comes from its enormous mass. If you took all of the planets in our solar system and put them together, they would still only be half as massive as Jupiter all by itself. Jupiter's mighty mass has shaped the orbits of countless comets and asteroids. Its gravity can fling these tiny objects towards our inner solar system and also draw them into itself, as famously observed in 1994 when Comet Shoemaker-Levy 9, drawn towards Jupiter in previous orbits, smashed into the gas giant's atmosphere. Its multiple fragments slammed into Jupiter's cloud tops with such violence that the fireballs and dark impact spots were not only seen by NASA's orbiting Galileo probe but also by observers back on Earth!



Look for Jupiter near the Eye of the Bull, Aldebaran, in the Taurus constellation on the evening of December 15, 2024. Binoculars may help you spot Jupiter's moons as small bright star-like objects on either side of the planet. A small telescope will show them easily, along with Jupiter's famed cloud bands. How many can you count? Credit: Stellarium Web

"Continued on page 11"

Jupiter is easy to observe at night with our unaided eyes, as well-documented by the ancient astronomers who carefully recorded its slow movements from night to night. It can be one of the brightest objects in our nighttime skies, bested only by the Moon, Venus, and occasionally Mars, when the red planet is at opposition. That's impressive for a planet that, at its closest to Earth, is still over 365 million miles (587 million km) away. It's even more impressive that the giant world remains very bright to Earthbound observers at its furthest distance: 600 million miles (968 million km)! While the King of Planets has a coterie of 95 known moons, only the four large moons that Galileo originally observed in 1610 – Io, Europa, Ganymede, and Calisto – can be easily observed by Earth-based observers with very modest equipment. These are called, appropriately enough, the Galilean moons. Most telescopes will show the moons as faint star-like objects neatly lined up close to bright Jupiter. Most binoculars will show at least one or two moons orbiting the planet. Small telescopes will show all four of the Galilean moons if they are all visible, but sometimes they can pass behind or in front of Jupiter or even each other. Telescopes will also show details like Jupiter's cloud bands and, if powerful enough, large storms like its famous Great Red Spot, and the shadows of the Galilean moons passing between the Sun and Jupiter. Sketching the positions of Jupiter's moons during the course of an evening – and night to night – can be a rewarding project! You can download an activity guide from the Astronomical Society of the Pacific at bit.ly/drawjupitermoons

Now in its eighth year, NASA's Juno mission is one of just nine spacecraft to have visited this impressive world. Juno entered Jupiter's orbit in 2016 to begin its initial mission to study this giant world's mysterious interior. The years have proven Juno's mission a success, with data from the probe revolutionizing our understanding of this gassy world's guts. Juno's mission has since been extended to include the study of its large moons, and since 2021 the plucky probe, increasingly battered by Jupiter's powerful radiation belts, has made close flybys of the icy moons Ganymede and Europa, along with volcanic Io. What else will we potentially learn in 2030 with the Europa Clipper mission?

Find the latest discoveries from Juno and NASA's missions to Jupiter at science.nasa.gov/jupiter/

Originally posted by Dave Prosper: February 2023

Last Updated by Kat Troche: November 2024

Point and Shoot Camera Astro-Imaging (no telescope)

Canon PowerShot SX50 HS

Submitted By Paul Kursewicz

Cosmic Question Mark

RAW Mode, FL 240mm, f/3.5, ISO 1600, 44 x 3min, Baader Filter, 9-8-24

The **Cosmic Question Mark** is a faint emission nebula in the constellation Cepheus and is 3,000 light years away. It includes various nebula. NGC 7822 makes up the upper half (the curvy part) of this nebula and SH2-170 (also known as Little Rosetta) is the little dot at the bottom at 7,500 ly away. The entire nebula is large spanning five degrees vertically.

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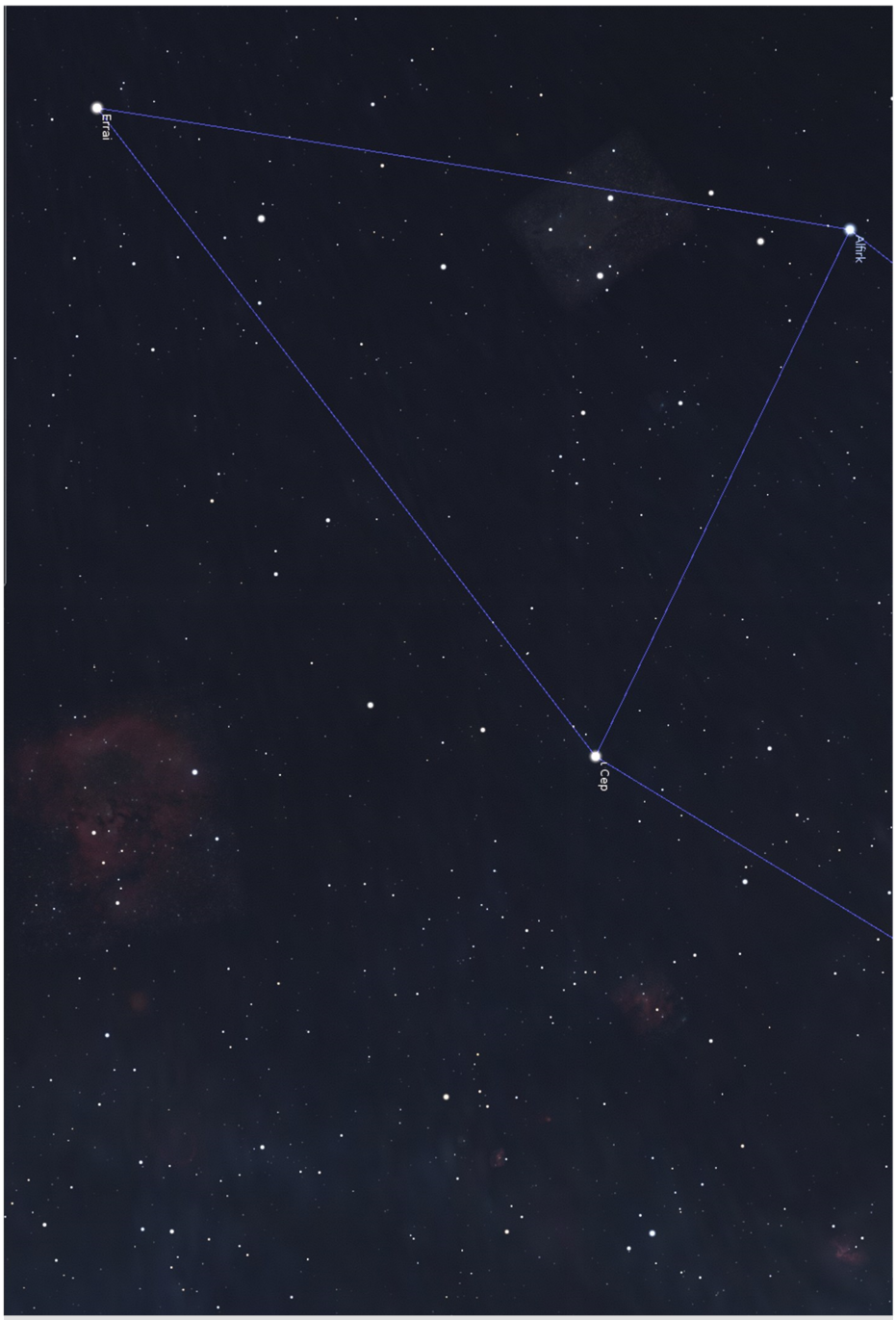
Finder Chart

Credit: Stellarium



I used Stellarium to create this finder chart. The **Cosmic Question Mark** in Cepheus is located near the left edge of this image. NGC 7822 is home to one of the hottest stars in the Orion Arm of our Milky Way galaxy, named BD+66 1673. It's an O5V type star and is part of a binary star system. It has a surface temperature of 80,540 degrees Fahrenheit, and a luminosity 100,000 times that of our Sun.

"Continued on page 14"

Point and Shoot Camera Astro-Imaging (no telescope)

Canon PowerShot SX50 HS

Submitted By Paul Kursewicz

Waxing Gibbous Moon & Saturn

JPEG Mode, FL 258mm, f/5.6, ISO 1600, 1/8 sec, Hand Held, 11-10-24

Do you Get the Feeling that Someone up There is Looking at You?

I took this picture just before the clouds socked everything in. Saturn (0.09º above-left of the Moon) was bright enough to shine through the clouds. Saturn's rings are *sometimes* wide open as seen from Earth, and *sometimes* appear to us as edgewise. Its rings are closing now.

Club Meeting & Star Party Dates

Date	Subject	Location
DEC 6	**Christmas/Holiday/Party & Club Meeting** **Pot Luck Supper 7:00 PM** **Bring your Favorite Dish - Salad - Desert - or Drink.** **Club Meeting 7:30 PM** **Bernie Reim** - What's UP **Astro Shorts:** (news, stories, jokes, reports, questions, photos, observations etc.)	**The New School, Kennebunk, Me.**
Last Month	**Last month we had our meeting at The New School. A Zoom meeting was also conducted. Our guest speaker did not show up. Club members gave astro shorts. And our President gave us a presentation of a collection of Comet pictures which he obtained from club member photos and pictures from the Web.**	
TBD	**Club/Public Star Party: TBD**	**Talmage Observatory at Starfield West Kennebunk, Me.**

Directions to ASNNE event locations

Directions to The New School in Kennebunck [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

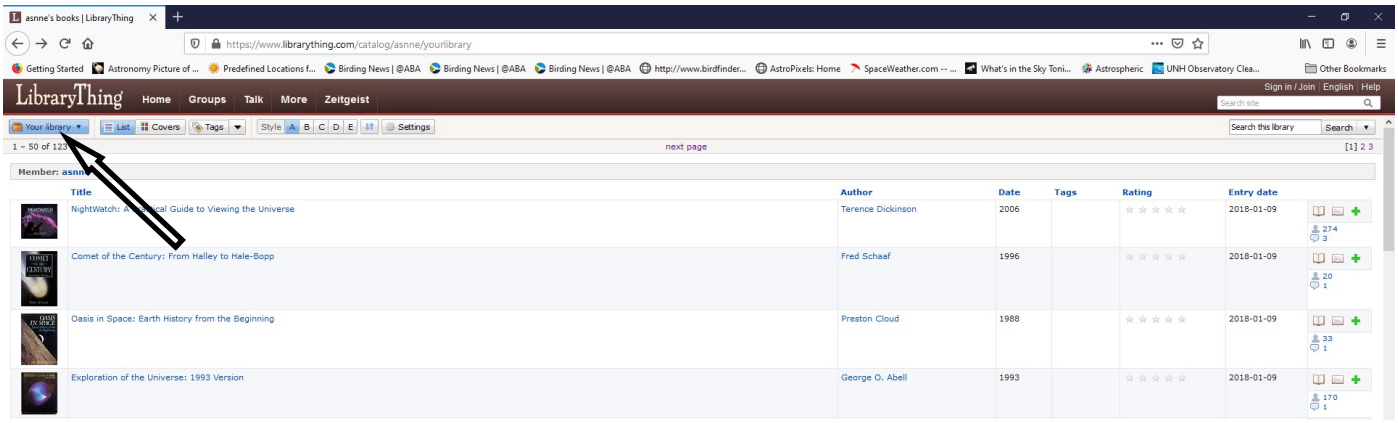
Directions to Talmage Observatory at Starfield [Alewive Road, Kennebunk, ME]

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.

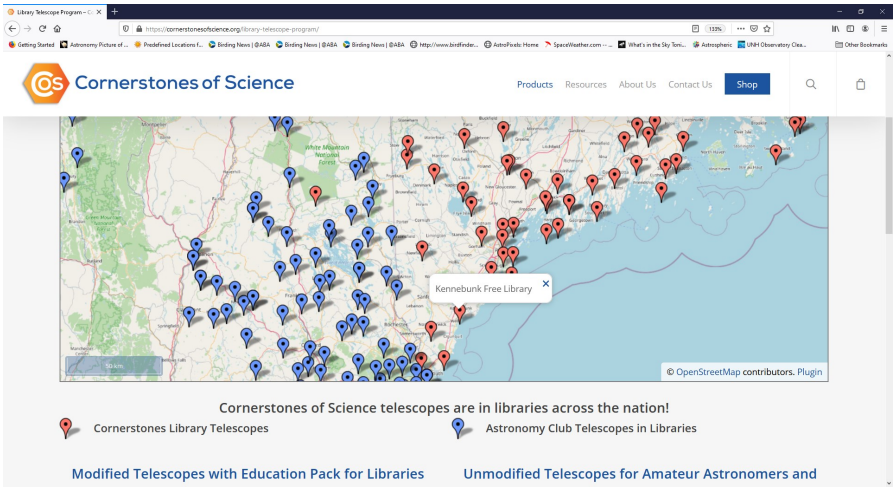
Astronomy Club & Library Resources

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/asnne . 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 1338
Kennebunk, ME 04043-1338

2025 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_____