

Newsletter of the Astronomical Society of Northern New England





Member of NASA's Night Sky Network



Astronomical League

ASNNE MISSION

ASNNE is an incorporated, nonprofit, 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 August

By Bernie Reim

he month of August is named for Augustus Caesar and it also has 31 days like July which is named for Julius Caesar. This is already the last full month of summer and it will host many interesting celestial events as the days are getting noticeably shorter

even as the nights are getting longer once again.

These events include our two largest planets, Jupiter and Saturn, at their best for the year, all 5 of the brightest planets being visible in the evening sky, a 10^{th} magnitude comet, another asteroid at opposition, and the best display of the annual Perseid meteor shower until 2025.

Saturn in Capricorn will be the first to reach opposition. The ringed planet will rise at sunset and continue to grace our sky all night long, not setting until sunrise. That will happen on the second of August. At zero magnitude, goldenhued Saturn will appear about 15 times or 3 magnitudes fainter than Jupiter, which now rises an hour after Saturn.

Our largest planet, 10 times our size, can be found 15 degrees to the east of Saturn along the ecliptic in Aquarius. Jupiter will reach its own opposition on the 19^{th} . Both of these gas giants are in retrograde or westward motion against the fixed background of stars now for another couple of months. Jupiter's retrograde will carry it west into Capricorn on the 18^{th} , so both of our largest planets will share the same constellation for a while.

Look for the four large Galilean moons, Io, Europa, Callisto, and Ganymede in a good pair of binoculars. Three of them, are in a resonance with each other, demonstrating how carefully tuned they are. The fastest and innermost one, Io, makes four orbits around Jupiter for each orbit that the slowest and outermost moon makes, Ganymede, which is also the largest moon in our solar system at 3200 miles in diameter. Then Europa is in the middle, making two orbits for every one that Ganymede makes. It takes Ganymede one week to orbit Jupiter and it is tidally locked with the same side facing Jupiter, similar to our moon being tidally locked with Earth.

Now is the best time of year to see the two

dark belts straddling the equator, called the North and South Equatorial belts. Through a telescope you can also see some of its plumes and festoons. Jupiter rotates in just less than 10 hours, so all these features are moving quite quickly. There are also some mutual occultations and eclipses of its Galilean moons happening this month.

Mercury will form a very close conjunction with Mars low in the western evening sky on the 18th. They will get about as close as Saturn and Jupiter did on the winter solstice last year, which was only a tenth of a degree. You may need binoculars to see them since Mars is about 200 times fainter than Venus which is now in Virgo, halfway to its brightest star, Spica. Mercury and Mars are in Leo, about 20 degrees to the west of brilliant Venus. Then Mercury will drop out of our picture even as Venus continues to slowly climb into our sky, setting about an hour after sunset each evening.

The comet challenge for this month will be a little easier than the one was for last month. Comet 4P/Faye should reach 10^{th} magnitude between the Hyades and Pleiades star clusters in Taurus, so you could see it in a 6-inch

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What's Up "Continued from page 1"

telescope. Discovered by Herve Faye in Paris in 1843, it orbits the sun every 7.6 years.

The featured asteroid that will reach opposition this month is named Julia, after Saint Julia of Corsica who was kidnapped, sold into slavery and then crucified for her faith about 1500 years ago. This asteroid will reach 8.9 magnitude, so it should be easy to see in a small telescope when it reaches opposition on the 24^{th} . This will happen in the water jar asterism in Aquarius, just above where Jupiter is now located. Look for it anytime this month other than the 4 days around full moon from the 20^{th} . At 90 miles in diameter, Julia is one of the larger asteroids of the roughly one million named asteroids that are in the main belt between Mars and Jupiter.

Edouard Stephan discovered this asteroid in 1866. He also discovered the marvelous group of 5 interacting galaxies called Stephan's Quintet located in the constellation of Pegasus about 300 million light years away. That may seem like a huge distance from Earth, but compared to the radius of the known, or observable universe, which is 50 billion light years, that is nearly 200 times closer to us. I have seen this impressive group of galaxies several times through different telescopes, each time thinking that I was seeing about 1 trillion stars all at once in this little part of the sky in Pegasus.

The main highlight for this month will be the annual Perseid meteor shower. They have already started and they will last for most of this month, but they will peak around noon on Thursday the 12th, so the best time to see them would be Wednesday night the 11th into Thursday morning and also the next night and morning into the 13th. The moon will not interfere since it will only be a slender waxing crescent four days after new and it will set around 10 pm, which is well before the best time to view meteor showers. The earth spins into any meteor showers that may be occurring after midnight, so that would be the best time to see them. Before midnight we are spinning away from any meteors. That can be compared to looking out the back window of a car during a snowstorm versus looking out the front window as you are driving right into the storm. We start looking out the front window around midnight, but showers usually get even better towards morning. The whole earth can be seen as a relatively small spaceship anyway, so this is a good analogy to orient yourself in space and better understand what is really happening as we are continually orbiting the sun along with the rest of our family of planets in an intricate and complex open helical dance, never to return to the same place in space twice.

You could see over 60 meteors per hour this year, although they will not be evenly spaced out. The Perseids are the second best shower each year right after the Geminids on December 13. Caused by Comet Swift-Tuttle, these are among the fastest meteors of any of the 10 major showers that we can enjoy each year, smashing into our atmosphere at 130,000 mph, or about twice the speed that we are always orbiting the sun. This comet was only

discovered in July of 1862, but the Perseids have been recorded for 2,000 years, since 36AD. The comet orbits the sun every 133 years and last visited us in 1992, when it caused greatly increased rates of meteors.

During a close approach of Comet Temple-Tuttle, which causes the Leonid Meteor shower, I saw nearly 1,000 meteors per hour for 3 hours on the morning of November 18 of 2001 from our newly built observatory in Kennebunk. That averaged one every 4 seconds and there was not a single lull of more than 10 seconds that whole night. We also saw about 15 fireballs or bolides that lit up the whole night in brilliant flashes of light and left long, twisting streamers far better and more dramatic and powerful than any man-made fireworks. That was the first and only time that I had a good sense of the real time motion of the earth through space around the sun as we were plowing through all this debris at 67,000 mph.

Most meteors created by showers burn up around 55 miles high, which is considered the edge of space, where both Richard Branson and Jeff Bezos have just visited for a few brief minutes using very different approaches. You need to be within 100 miles of the meteor to see it from your very limited vantage point on Earth. None of the meteors from showers are big enough to survive their fiery plunge and become a meteorite. They are only about the size of a sand grain. About 500 tons of meteoric material enters our atmosphere every single day, which is the equivalent of 20 of the largest sarsen stones used to build Stonehenge.

Aug.2. Saturn is at opposition tonight.

Aug.3. The Messenger spacecraft arrived at Mercury on this day in 2004. We have another mission of the way there now that will arrive in 2025 named BepiColumbo.

Aug.4. The Phoenix Mission arrived at Mars near its North Pole on this day in 2007.

Aug.6. The Curiosity Rover launched to Mars on this day in 2012. It is still working, but the much newer Perseverance Rover has greater capabilities.

Aug.8. New moon is at 9:50 A.M. EDT.

Aug.11. The moon passes near Venus and Mars this evening.

Aug. 12. The Perseid meteor shower peaks tonight.

Aug. 15. First quarter moon is at 11:20 A.M.

Aug. 18. Mercury and Mars will be just a tenth of a degree apart tonight.

Aug.19. Jupiter is at opposition tonight.

Aug.20. The moon passes near Saturn tonight.

Aug. 22. The moon passes near Jupiter tonight. Full moon is at 8:02 A.M. This is also known as the Sturgeon, Green Corn, or Blueberry moon.

Aug.30 Last quarter moon is at 3:13 A.M. EDT.

Moon Phases

Aug 8 New

Aug 15 First Quarter

> Aug 22 Full

Aug 30 Last Quarter

Moon Data

Aug 2 Moon at apogee

Aug 9 Mars 4^o south of Moon

Aug 11 Venus 4^o south of Moon

Aug 17 Moon at perigee

Aug 20 Saturn 4^o north of Moon

Aug 22 Jupiter 4^o north of Moon

Aug 23 Neptune 4^o north of Moon

Aug 28 Uranus 1.5[°] north of Moon

Aug 29 Moon at apogee

OBSERVER'S CHALLENGE* – August, 2021 by Glenn Chaple

M57, the "Ring Nebula" – Planetary Nebula in Lyra (Mag: 8.8, Size: 86" X 62")

Our August Observer's Challenge is M57, the "Ring Nebula," in Lyra. On the surface, this large and bright planetary nebula may not seem like much of a challenge. It's easily found midway between beta (β) and gamma (γ) Lyrae and is readily visible even in a common 60mm (2.4-inch) refractor. That said, there are two challenges offered by M57.

First is its annular aspect. In small-aperture scopes, M57 appears as an oval blob with no dark center. Larger instruments will reveal the dark inner region, hence the Ring itself. What is the smallest aperture that will show the "ring-ness" of M57?

The second challenge involves the visibility of M57's central star, which is said to shine at 15th magnitude but may be slightly variable. This is definitely a big scope target, although Sue French, in her book *Deep-Sky Wonders*, notes that it has been glimpsed in a 9-inch. Her recommendation is to wait for an evening of exceptional seeing and to use high magnification.

Because M57 is so easily located, I view it many times each summer – often at the onset of an observing session. I begin by centering my finderscope on a point midway between beta and gamma and then giving a slight nudge towards beta. A search with low-medium magnification (45-60X) will reveal an out-of-focus star. I then switch to high magnification (100-300X, depending on scope aperture and seeing conditions) for a closeup view.

There has been some confusion as to whether M57 was discovered by Charles Messier or his French contemporary Antoine Darquier de Pellepoix. A historical study in 2013 and published in 2017 indicated that M57 was found by Messier on January 31 1779, and observed by Darquier days later.

Distances to planetary nebulae are iffy at best. A recent measurement of the distance to the nebula's central star yielded a value of 2300 light years, The bright visual part of the Ring Nebula spans nearly a light year, while a faint surrounding halo, visible in an image taken by Mario Motta, more than doubles the nebula's size.

*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to anyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'd be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge, log on to rogerivester.com/category/observers-challenge-reports-complete.





Page 5 Skylights Got any News? Principal Meteor Skylights Welcomes Your Input. Showers in 2021 Here are some suggestions: **January 4 Ouadrantids** Book reviews -- Items for sale -- New equipment --Ramblings -- Star parties -- Observing -- Photos. April 22 Lyrids May 6 Eta Aquarids Our Club has Merchandise for Sale at: www.cafepress.com/asnne July 30 Delta Aquarids August 12 Perseids **October 9** Draconid All money raised goes to our operating fund. **October 21** Any design can be put on any item. Orionids Contact David Bianchi dadsnorlax@yahoo.com for further details. November 9 Taurids

November 18 Leonids

November 26 Andromedids

December 14 Geminids

December 22 Ursids

Note: Dates are for maximum

Attend our monthly meetings and club star parties

- Our Monthly Newsletter: *Skylights*
- Discounts on Sky & Telescope. and Astronomy magazine subscriptions

Benefits of Membership

- 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!



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 <u>nightsky.jpl.nasa.org</u> to find local clubs, events, and more!

Corner the Great Square of Pegasus By David Prosper

The Summer Triangle may be the most famous seasonal star pattern, but during early August evenings another geometrically -themed asterism rises: the Great Square of Pegasus. This asterism's name is a bit misleading: while three of its stars - Scheat, Markab, and Algenib - are indeed found in the constellation of the winged horse Pegasus, its fourth star, Alpheratz, is the brightest star in the constellation Andromeda!

August evenings are an excellent time to look for the Great Square, as it will be rising in the east after sunset. If not obvious at first, wait for this star pattern to rise a bit above the murky air, and remember that depending on your point of view, it may appear more like a diamond than a square. Look for it below the Summer Triangle, or to the southeast of nearby Cassiopeia at this time. As the Great Square rises in prominence during autumn evenings, it becomes a handy guidepost to finding more constellations, including some of the dimmer members of the Zodiac: Aries, Pisces, Aquarius, and Capricornus. Like the Summer Triangle, the Great Square of Pegasus is also huge, but Pegasus itself is even larger; out of the 88 constellations, Pegasus is 7th in size, and feels larger as the stars in its neighboring constellations are much dimmer.

There are many notable deep-sky objects found within the stars of Pegasus - ranging from easily spotted to expert level targets - making it a great constellation to revisit as your observing skills improve. Notable objects include the densely-packed stars of globular cluster M15, a great first target. The potential "Milky Way look-alike" galaxy NGC 7331 is a fun target for more advanced observers, and expert observers can hop nearby to try to tease out the much dimmer interacting galaxies of Stephan's Quintet. A fascinating (but extremely difficult to observe) object is a gravitationally-lensed quasar famously known as the Einstein Cross. Pegasus has quite a storied history in the field of exoplanet research: 51 Pegasi was the first Sun-like star discovered to be host to a planet outside our solar system, now officially named Dimidiam.

While observing Pegasus and its surroundings, keep your eyes relaxed and ready to catch some Perseids, too! August 2021 promises an excellent showing of this annual meteor shower. The crescent Moon sets early on the evening of the shower's peak on August 11-12, but you can spot stray Perseids most of the month. If you trace the path of these meteors, you'll find they originate from one point in Perseus - their radiant. Giant planets Jupiter and Saturn will be up all evening as well. Look south - they easily stand out as the brightest objects in the faint constellations Aquarius and Capricornus.

Pegasus truly holds some fantastic astronomical treasures! Continue your exploration of the stars of Pegasus and beyond with NASA at <u>nasa.gov</u>.

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While the stars of the Great Square of Pegasus are not as bright as those of the Summer Triangle, they still stand out compared to their neighbors, and make a great foundation for exploring this area of the night sky. Note that the brightness of the stars near the horizon is exaggerated in this picture.



Stephan's Quintet is one of the most famous deep-sky objects in Pegasus. First discovered in 1877, it contains the first galaxy group discovered (which includes 4 of the 5 galaxies making up the Quintet) – and has been studied extensively ever since. One day this group will merge into one supergalaxy! While famous, these galaxies are hard to spot in all but the largest backyard telescopes – but are a favorite target of astrophotographers. Take a virtual flyby of these galaxies with a tour created from Hubble data at: <u>bit.ly/quintetflyby</u>

Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

The Snake Nebula (B72) & Ink Spot (B68) Specs: RAW mode, FL 618mm, ISO 1000, 12 x 3min, 6-7-21



The **Snake Nebula** (also known as Barnard 72) is a dark nebula of about 5 light-years across, located some 650 light-years away from Earth in the constellation of Ophiuchus (the Serpent Bearer). In my picture the small S-shaped dust lane is just left of center. The very small dark spot to the lower right of the Snake (near the center of my picture) is Barnard 68 (also known as the **Ink Spot**). Barnard 72 and 68 are two of the 182 dark nebulae cataloged in the early 20th century by the American astronomer Edward Emerson Barnard. Unlike bright emission nebulae and star clusters, Barnard's nebulae are interstellar dark clouds of obscuring gas and dust. Their shapes are visible in cosmic silhouette only because they lie in the foreground along the line of sight to rich star fields and glowing stellar nurseries near the plane of our Milky Way Galaxy. Many of Barnard's dark nebulae are themselves likely sites of future star formation. A good telescopic view of the Snake Nebula requires clear dark skies. I could not see it in the clubs 16-inch Meade using a 55mm eyepiece. The low southern sky at Starfield is rather bright, but a higher power eyepiece might have fleshed it out. In my single 3 minute exposure I could just barely make out part of the S-shape.

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B72 and B68



I copied this picture from "Burnham's Celestial Handbook" copyright 1978. B72 is centered while B68 is in the upper right corner. This image was taken with the 100-inch reflector at Mt. Wilson Observatory. Burnham says Ophiuchus is a field where numerous dark markings assume some of their most curious shapes. The best known of these is undoubtedly the dark "S-Nebula," B72, a degree and a half north of Theta and slightly east.

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Club Meeting & Star Party Dates			
Date	Subject	Location	
<u>Aug 6</u>	ASNNE Club Meeting:	Talmage Observatory at Starfield West Kennebunk, Me.	
	In all likelihood we will have our August club meeting at Talmage Observatory at Starfield. We talked about having a barbeque before the meeting. If you would like to BBQ, please bring your own food, utensils, and something to drink. Our club has two gas grills. Also, you might want to bring a chair.		
	<u>Regular Meeting:</u> 7:30 pm		
	Topic: TBD. Bernie Reim will do "What's Up." Astro Shorts		
<u>Last</u> <u>Month</u>	Last month was our first indoor meeting at The New School since March 2020. It was good to get together again. We did not have a guest speaker. We discussed star-parties, business, and Astro Shorts.		
<u>Aug 6</u>	Club/Public Star Party: If the weather is clear we can observe after the meeting.	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. <u>http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137</u>

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.

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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

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Kennebunk, ME 04043-1338		
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Tell us about yourself: 1. Experience level: Beginner_ 2. Do you own any equipment?	Some Experience Advanced (Y/N) And if so, what types?	
3. Do you have any special inte	rests in Astronomy?	
4. What do you hope to gain by	joining ASNNE?	
5. How could ASNNE best help	you pursue your interest in Astronomy?	
general public for which we nee	s public education. We hold many star parties for schools and t ed volunteers for a variety of tasks, from operating telescopes to rs. Would you be interested in helping?	
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