

Skylights

Newsletter of the Astronomical Society of Northern New England



Aug 2020



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.

What's Up In August

By Bernie Reim

The month of August is named for Augustus Caesar. We have reached the middle of summer now and there are as many interesting highlights in our skies as always with one additional and rare bonus, the brightest comet in 23 years.

So get out under the warm skies and enjoy the great beauty always residing far above us along with this rare primordial visitor from deep space, not to return again for nearly 7000 more years. One can only wonder what the earth will be like then with everything happening and changing so fast now.

Our four brightest planets will all be nicely lined up in the morning sky all month long by 3 am each morning. Then there will be the usual close conjunctions with the moon along with the less usual opposition of our largest asteroid, Ceres. Then the famous Perseid Meteor Shower will happen on the night of the 11th. This is usually the second best shower each year, a close second to the Geminids in December. Then the real bonus will be the remaining views of Comet NEOWISE. It will remain visible all month, but it will fade from being visible without binoculars by around the middle of August.

Jupiter and Saturn now both rise before sunset, since they are both just past opposition now, but still nearly at their best for the whole year. So they will reach their highest point in our summer sky before midnight. I was showing both of these huge gas giants to a small group of people the other night that had never looked through a telescope before. They were quite amazed at what they could see even through a lower power eyepiece and the implications of possible life on Europa, a moon of Jupiter, and Enceladus, the sixth largest of the 82 known moons of Saturn, with salty water vapor laced with complex organic molecules escaping into space from its south pole and forming the vast and diffuse E ring around Saturn.

It was a perfect night with the stars slowly and then much more rapidly emerging from the pale twilight as evening gently merged into full nighttime. The wondrous band of our Milky Way galaxy, sometimes called the backbone of the night, clearly stretched from its center just below Scorpius and Sagittarius across the ocean, through the vast Cygnus star fields and the summer triangle and on into Perseus the Hero below Cassiopeia, seemingly bridging the earth with myriad and mysterious wonders just beyond.

Mars now rises before midnight and Venus will rise at quarter of three in the morning all month long, becoming the last planet to fill in the quartet of our fellow traveling planets as we all endlessly orbit the sun. Notice that Mars is getting visibly brighter and larger each evening as the earth is rapidly catching up with our neighbor in its orbit. The red planet will not begin its retrograde motion until early next month leading to its close opposition in October.

Our largest and first-discovered asteroid, Ceres, will reach opposition on the 28th in the constellation of Aquarius at 7.7 magnitude, so you would need binoculars to see it. It is 600 miles in diameter, about the size of Texas, and makes up fully a quarter of all the mass of the millions of asteroid inhabiting the belt between Mars and Jupiter.

The Perseid meteor shower will last for much of this month, but it will peak on Tuesday night the 11th into Wednesday morning the 12th. Caused by Comet Swift-Tuttle, this shower lasts for around 20 days since the material from this comet is spread out over nearly 30 million miles of space. We travel around the sun at the rate of 1.6 million miles every day, so it takes us that long to traverse the entire debris field from this great

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comet which returns every 130 years. It was last here in 1992. You can expect up to 60 meteors per hour, but the last quarter moon will rise just after midnight to wash out about one third of the meteors after that time, which is when showers usually reach their peak towards morning as the earth is spinning into the source of the meteors after midnight. Look northeast towards Perseus as soon as it gets dark. The radiant of this shower is just below the double cluster in Perseus. Sand grain-sized pieces of this huge comet (it is 16 miles in diameter, one of the largest of all comets) will disintegrate in our upper atmosphere at 36 miles per second, or twice as fast as we are always orbiting the sun.

The "star" of that memorable night was undoubtedly Comet NEOWISE. Discovered by a low-earth orbiting satellite on March 27 of this year, it has already brightened more than one million times to second magnitude as of the middle of July when I first saw it. It should still be visible without binoculars as it traverses below the Big Dipper into Coma Berenices and Bootes above Virgo for part of this month, even though it is fading fast. Contrary to popular belief, it is only moving about one degree per day westward right now. You can see it as soon as it gets dark until about 11 pm when it sinks too low into the western horizon. It will pass right by a globular star cluster named M53 in Coma Berenices on August 7, which will make a great photo op.

NEOWISE stand for Near Earth Orbiting wide field infrared survey explorer. Most comets are now discovered by automated ground-based telescopes doing sky surveys and specifically looking for potentially hazardous asteroids that could hit us in the near future. PanSTARRS, LINEAR, SWAN, and NEAT are four more of these that have each discovered dozens of new comets and asteroids.

A first-time visitor from deep space nearly one light year distant in the Oort cloud, which harbors around one trillion comets, which is about as many galaxies as there are in the known universe, Comet NEOWISE is the quintessential image of everything that is still mysterious in our solar system. It turns out that we do know quite a bit about these icy snowballs and we have already landed on several comets and asteroids, but they still harbor many mysteries that are important for us to discover because of their potential danger. We know that this comet holds about 1 million Olympic-sized swimming pools full of water and that much of the water on earth may have originally come from comets and asteroids.

The nucleus of NEOWISE is only 3 miles across, but its long tail stretches about one million miles into space, always facing away from the sun. Its coma is about the size of Earth. NEOWISE has two distinct tails, a straight ion tail and a slightly curved dust tail. It may also have an invisible sodium tail, like Comet Hale-Bopp had. NEOWISE

is the brightest comet to grace our skies since Hale-Bopp in 1997 and only the 5th bright naked-eye comet in the last 50 years, so make sure you try to catch and photograph it before it disappears, not to be seen again for nearly 7000 years.

Aug.1. Maria Mitchell was born on this day in 1818. She was an important American astronomer, naturalist, and educator who also discovered a comet in 1847. The nearly full moon will be close to Jupiter tonight and near Saturn the next night soon after sunset.

Aug.3. Full moon is at 12 noon. This is also known as the Grain, Green Corn, or Sturgeon moon. The Messenger Spacecraft was launched to Mercury on this day in 2004. We now have the BepiColombo mission well on its way to Mercury. It is a 7 year journey and it will get there in 2025. It takes that long to get all the way to Saturn, but the orbital mechanics and the sun's strong gravitational field make it very difficult to orbit the sun or Mercury safely.

Aug.4. The Phoenix mission to Mars was launched on this day in 2007.

Aug.6. The Curiosity Rover landed on Mars on this day in 2012. It is still working well and making lots of new discoveries and taking many great pictures.

Aug.9. The moon and Mars will be just one degree apart one hour before sunrise.

Aug.11. Last quarter moon is at 12:46 pm. The Perseid Meteor Shower peaks tonight.

Aug.12. The Parker Solar probe was launched on this day two years ago. It will not get to the sun for 5 more years, in spite of the great speed that it is traveling. It will reach nearly one tenth of one percent of the speed of light, or 430,000 mph, by the time it gets to the sun. That is nearly as fast as the earth and sun are always traveling already around the center of our Milky Way galaxy. It will literally "touch" the sun, getting to within 4 million miles of its surface, which is just inside the solar corona, which is its very hot but not very dense atmosphere.

Aug.15. The moon passes close to Venus in Gemini in the morning sky an hour before sunrise.

Aug.17. On this day in 2006 Voyager 1 reached 100 A.U. from the sun, which is twice as far out as Pluto orbits on average. 7 years later, it crossed over the heliopause at 123 A.U., where the influence of our sun ends in space.

Aug.18. New moon is at 10:43 p.m.

Aug.21. This is the 3-year anniversary of the great American total solar eclipse. I drove all the way to Idaho to stand right in the middle of the moon's shadow as it raced over me at 2000 miles an hour causing day to turn into night in an instant at high noon. The planets and some stars immediately appeared and the pearly, iridescent ever-changing corona of the sun became visible and seemed to reach out to us across the space separating us.

Aug.25. The Spitzer Space Telescope was launched on this day in 2003. That is the infrared telescope related to the Hubble Space Telescope, which is still working. The Spitzer just stopped working at the end of January this year. Last quarter moon is at 1:59 p.m.

Aug.28. The moon passes near Jupiter for the second time this month.

Moon Phases

Aug 3
Full

Aug 11
Last Quarter

Aug 18
New

Aug 25
First Quarter

Moon Data

Aug 1
Jupiter 1.5° north
of Moon

Aug 2
Saturn 2° north
of Moon

Aug 6
Neptune 4° north
of Moon

Aug 9
Mars 0.8° north
of Moon

Moon at apogee

Aug 10
Uranus 4° north
of Moon

Aug 15
Venus 4° south
of Moon

Aug 21
Moon at perigee

Aug 29
Pluto 1.2° north
of Moon

OBSERVER'S CHALLENGE* – August, 2020

by Glenn Chaple

Messier 20 – Nebula/Cluster in Sagittarius (Mag: 6.3, Size: 30')

This second installment of the “Summer of Sagittarius” takes us to M20, nick-named the “Trifid Nebula.” Like last month’s Observer’s Challenge (M8, the “Lagoon Nebula”), the Trifid is a nebula/cluster complex. It is also 5200 light years away and may be associated with the Lagoon. Although not a naked eye target, the Trifid Nebula is easily located just 2 degrees north and slightly west of the Lagoon; in fact, they can be viewed together in the same low-power, wide-field telescopic view.

M20 was discovered by Charles Messier on June 5, 1764. William Herschel viewed it 20 years later and catalogued it as four separate objects. Oddly enough, his son John saw three segments of the nebula, and was the first to describe it as “trifid.”

My initial sighting of M20 occurred on the evening of August 20, 1977. Because I had just viewed M8 with my 3-inch f/10 reflector, I was able to note that M20 is much fainter. Sharing a one-degree field with M20 was the open cluster M21. Because of the low magnification used (30X), I failed to notice the Trifid’s bright embedded double star, identified by the William Herschel designation H N 6AC (magnitudes 7.6 and 8.7, spectral classes O8V and B6V, separation 10.7 arc-seconds). Two summers later, I resolved this pretty pair with the same 3-inch and a magnification of 60X. A sketch of M20 I made while attending the 2012 Stellafane Convention and observing with a 4.5-inch f/8 reflector (magnifying power 75X) shows both nebulosity (just 2 areas) and double star.

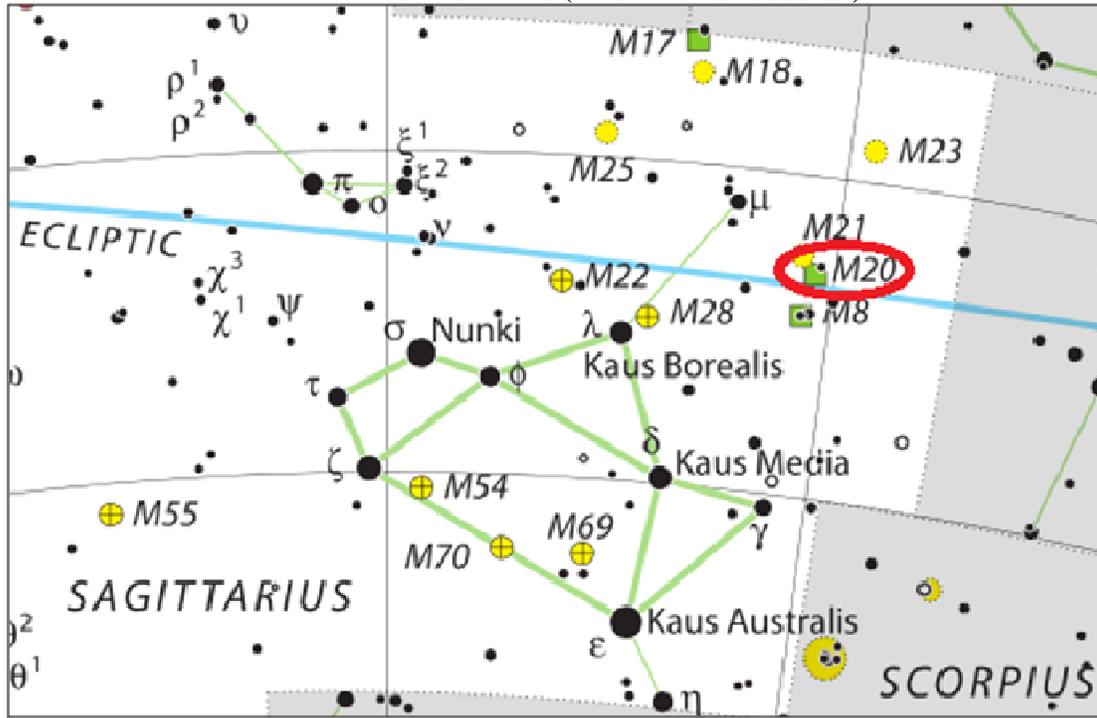
Compare my sketch with an image made by Mario Motta with a 32-inch scope. Not only are four lobes visible (what Stephen James O’Meara likens to as a “four-leaf clover”), but so is the intervening dark nebula (Barnard 85) that separates them. Also visible are the striking colors – red for the four-lobed part of M20 (an emission nebula) and blue for the area surrounding a 7th magnitude star further north (left in Motta’s image). Its bluish hue indicates that it’s a reflection nebula – a cloud of dust illuminated by the embedded star.

Here are some challenges you might consider while observing M20. Are you able to see the four lobes of O’Meara’s “clover?” He notes that the fourth leaf is fainter than the others, and jokingly adds that “you should feel lucky if you glimpse it!” Check out H N 6 with high magnification. Can you spot a magnitude 10.4 star just 6.2 arc-seconds north-northeast of the main star (essentially on the opposite side from its magnitude 8.7 partner)? This stellar pair bears the designation H N 40. Why two catalog identities for the same star? Don’t ask me. You’ll have to ask William Herschel, and he’s not around to provide the answer.

**The purpose of the Observer’s Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you’d like to contribute notes, drawings, or photographs, we’ll 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 or access past reports, log on to rogerivester.com/category/observers-challenge-reports.*

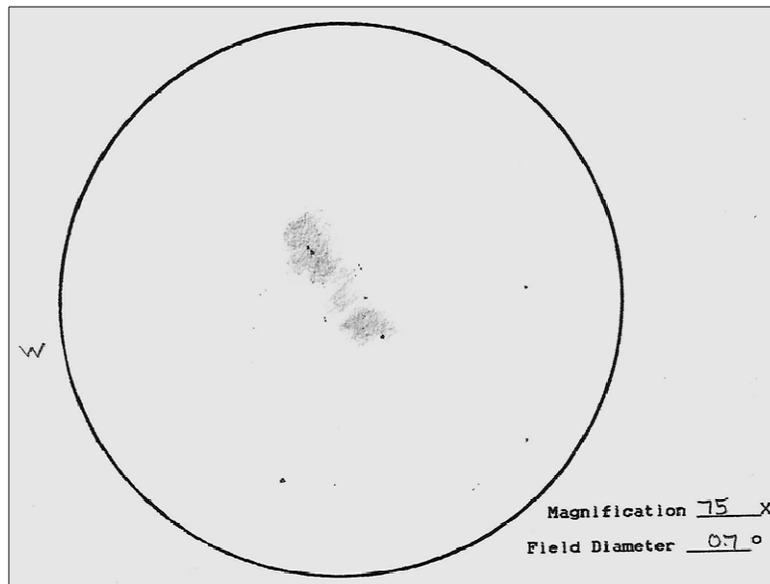
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Finder Chart for M20 (The “Trifid Nebula”)



www.messier-objects.com (chart from IAU and *Sky and Telescope*)

Images of Messier 20



M20, as seen with 4.5-inch f/8 reflector. Sketch by Glenn Chaple

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M20 in R,G,B, Lum, and a bit of Ha, to produce a color image with both the emission and reflectance part of the nebula. total about 5 hours. Taken with 32 inch scope and ASI6200 camera North is to the left. Image by Mario Motta (ATMoB)



EDITOR: This is a picture that I (Paul Kursewicz) took of the Lagoon and Trifid Nebulas while I was in Casper, Wyoming for the 2017 Total Solar Eclipse. I used my Canon Power-shot SX50 HS. Specs: RAW mode, FL 136mm, ISO 1600, 6 x 1 min each, 8-17-17

Principal Meteor Showers in 2020

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*

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: www.cafepress.com/asne



*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.

RED ALERT – Downward Pointing Lasers

NASA is planning to use (or is already using) downward pointing lasers which are mounted on their spacecrafts. For those of us who look at the night sky through a telescope, or a pair of binoculars, this is a potential hazard. If a laser beam enters our instrument at the very time we are viewing, eye injury or blindness could occur. Contact physicist, Dr. Jennifer Inman, jennifer.a.inman@nasa.gov and tell her your concerns about this perilous issue. Why should we have to live in fear each time we look into a telescope or a pair of binoculars? This is unacceptable!



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!

Summer Triangle Corner: Deneb

By David Prosper

The Summer Triangle is high in the sky after sunset this month for observers in the Northern Hemisphere, its component stars seemingly brighter than before, as they have risen out of the thick, murky air low on the horizon and into the crisper skies overhead. Deneb, while still bright when lower in the sky, now positively sparkles overhead as night begins. What makes Deneb special, in addition to being one of the three points of the Summer Triangle? Its brilliance has stirred the imaginations of people for thousands of years!

Deneb is the brightest star in Cygnus the Swan and is positioned next to a striking region of the Milky Way, almost as a guidepost. The ancient Chinese tale of the Cowherd (Niulang) and the Weaver Girl (Zhinü) - represented by the stars Altair and Vega - also features Deneb. In this tale the two lovers are cast apart to either side of the Milky Way, but once a year a magical bridge made of helpful magpies – marked by Deneb – allows the lovers to meet. Deneb has inspired many tales since and is a staple setting of many science fiction stories, including several notable episodes of *Star Trek*.

Astronomers have learned quite a bit about this star in recent years, though much is still not fully understood – in part because of its intense brightness. The distance to Deneb from our Sun was measured by the ESA's Hipparcos mission and estimated to be about 2,600 light years. Later analysis of the same data suggested Deneb may be much closer: about 1,500 light years away. However, the follow-up mission to Hipparcos, Gaia, is unable to make distance measurements to this star! Deneb, along with a handful of other especially brilliant stars, is too bright to be accurately measured by the satellite's ultra-sensitive instruments.

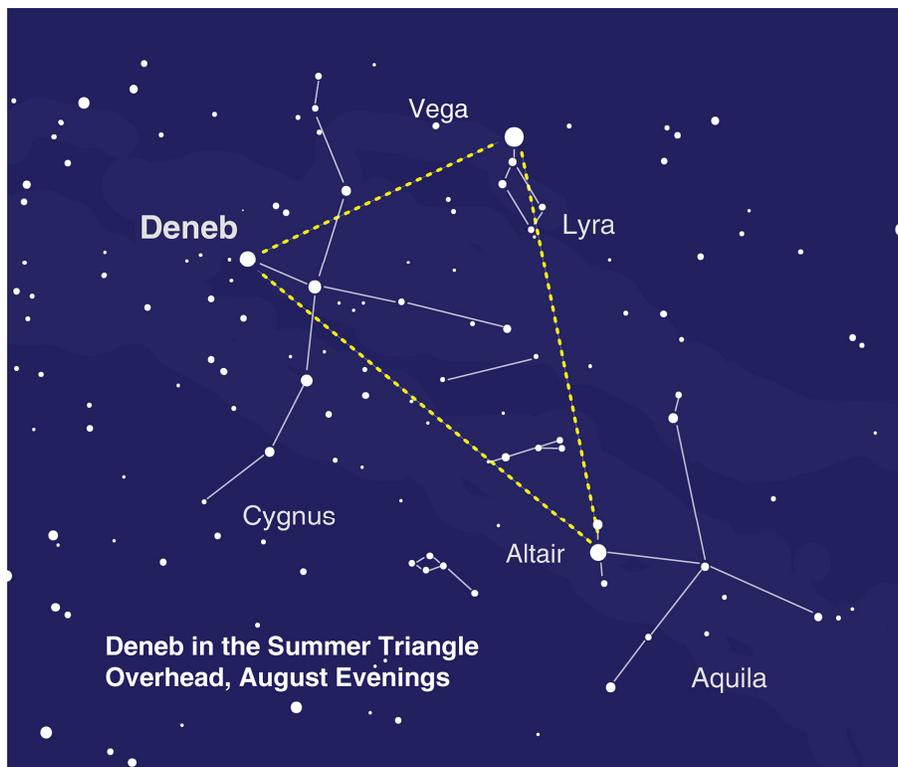
Deneb is unusually vivid, especially given its distance. Generally, most of the brightest stars seen from Earth are within a few dozen to a few hundred light years away, but Deneb stands out by being thousands of light years distant! In fact, Deneb ranks among the top twenty brightest night time stars (at #19) and is easily the most distant star in that list. Its luminosity is fantastic but uncertain, since its exact distance is also unclear. What is known about Deneb is that it's a blue-white supergiant star that is furiously fusing its massive stocks of thermonuclear fuel and producing enough energy to make this star somewhere between 50,000 and 190,000 times brighter than our Sun if they were viewed at the same distance! The party won't last much longer; in a few million years, Deneb will exhaust its fuel and end its stellar life in a massive supernova, but the exact details of how this will occur, as with other vital details about this star, remain unclear.

Discover more about brilliant stars and their mysteries at nasa.gov.

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Long exposure shot of Deneb (brightest star, near center) in its richly populated Milky Way neighborhood. Photo credit: Flickr user jpstanley.
Source: <https://www.flickr.com/photos/jpstanley/1562619922>
License: <https://creativecommons.org/licenses/by-nc-sa/2.0/>



Spot Vega and the other stars of the Summer Triangle by looking straight up after sunset in August!

Comet Neowise Photos

Submitted by **Kate Miner** (Pat Aichele's daughter) **Camera: Canon EOS Rebel**

Kate said these photos were taken from a light polluted residential neighborhood with a huge street light in her front yard

Specs: 300mm lens, ISO 1600, f/5.6, 6 sec exposure, 7-18-20



Specs: 300mm lens, ISO 1600, f/5.6, 15 sec exposure, 7-19-20



Specs: 300mm lens, ISO 1600, f/5.6, 2.5 sec exposure, 7-20-20



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Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

[*Special Edition Comet Neowise*]

Comet Neowise

Specs: JPEG, f/3.5, FL 59mm, ISO 1000, single 1 min exposure, 7-17-20



The best comet performance for Northern Hemisphere observers since the 1997 appearance of Comet Hale-Bopp. The comet arrived at perihelion on July 3, sweeping to within 27.7 million miles of the Sun and is now heading back out to the outer reaches of space. As for the comet's tail, so far it has displayed a beautiful, gently curved tail of dust which many observers using binoculars and small telescopes have remarked has shown a noticeable yellowish tinge. A much fainter ion (gas) tail is barely seen in this image just to the left of the dust tail. On this night astronomical twilight began at 10:23 pm. I took this picture around the 11th hour just before the comet disappeared below the tree tops. Along with the trees, I included a section of an old farm house for perspective. Comet Neowise is a long period comet and was discovered on March 27, 2020. It was an 18th magnitude comet back then and in July it brightened to a naked-eye comet. When I took this picture the comet was just under 2nd magnitude. As of July 28th the comet was about 4.5 magnitude.

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Specs: RAW, f/4, FL 180mm, ISO 400, 12 x 2 to 2.5 min exposures, 7-21-20



I stacked on the comet and lengthened the exposure in small increments as it got darker (hence the tear drop star trails). The comet's ion (gas) tail is the thin blue streak going straight up and the broad white streak is the comet's dust tail.

Specs: RAW, f/4, FL 136mm, ISO 400, single 2 min exposure, 7-21-20

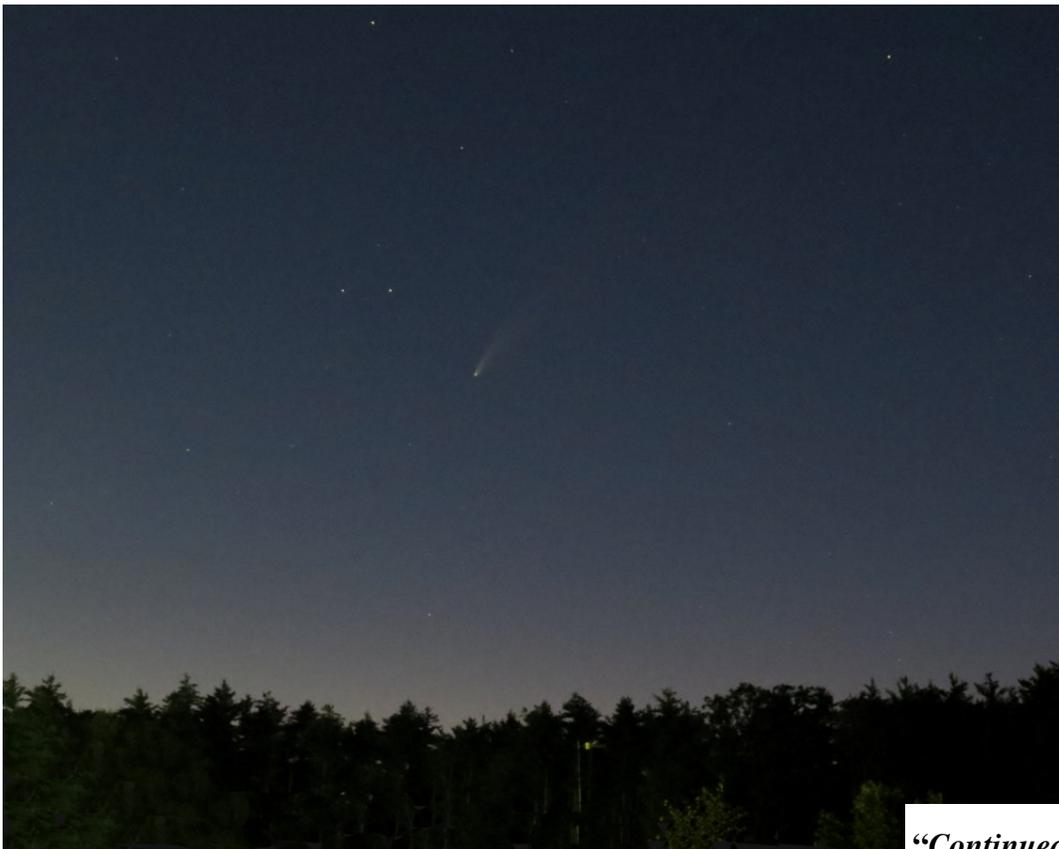


“Continued on page 12”

Specs: RAW, f/3.5, FL 133mm, ISO 1000, single 1 min 45 sec exposure, 7-20-20



Specs: JPEG, f/3.5, FL 75mm, ISO 1600, single 50 sec exposure, 7-17-20



“Continued on page 13”

Farewell Comet Neowise

Specs: JPEG, f/3.5, FL 59mm, ISO 1000, single 40 sec exposure, 7-17-20



I took this picture around 11:00 pm. You can just make out the top of my truck (below center). I did not have my truck headlights on. As I was taking this picture a vehicle was driving up the driveway. I was fortunate that, my exposure ended as soon as the vehicle drove into the driveway. I think the accidental lighting actually added to this shot.

Club Meeting & Star Party Dates

Date	Subject	Location
<u>Aug 7</u>	<p><u>ASNNE Club Meeting:</u></p> <p>Our August Club meeting at The New School Has been cancelled due to the Coronavirus.</p> <p>Although nothing has been set in stone when this newsletter was published, it looks as though we will be having another club meeting via ZOOM.</p> <p>So, a computer or a phone will be required. Ian Durham has volunteered to organize all of this. As we get closer to Aug 7th, Ian will post a connection link to join Zoom.</p> <p>Topic: Bernie Reim will do "What's Up." Ian Durham may be doing a constellation of the month. And Gary Asperschlager may do an astrophotography presentation. Also, astro shorts.</p>	<u>The New School, Kennebunk, Me.</u>
<u>Last Month</u>	<p>At our Zoom meeting last month Bernie Reim gave his "What's Up" talk. Paul Kursewicz gave a brief report on the "Satellite Constellations 1 Workshop" that he attended. He will submit a detailed five page report (with graphs and charts) in the September issue of Skylights. The rest of the meeting was devoted to astro shorts.</p>	
<u>TBD</u>	Club/Public Star Party: Cancelled due to the Coronavirus.	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.

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

2020 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 _____

