

# Skylights

Newsletter of the Astronomical Society of Northern New England



OCT 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 October

By Bernie Reim

This is the month that the famous flaming foliage peaks for us in New England each year. Just as autumn is now transforming our landscape and cooling off our air, the sky above is also changing as fall and winter constellations are rotating into view to set the stage for a new season.

This month brings with it more than the usual share of interesting highlights. The bonus this particular October will be Mars at its most dazzling in 17 years. Then you have two other large planets, Jupiter and Saturn getting a little closer each night, Uranus at opposition in Aries, two full moons including a blue moon on Halloween, an asteroid named Flora at opposition, the usual close conjunctions of the moon with some of the planets, a very close conjunction of Venus and Regulus, and favorable conditions for not one, but two meteor showers, the Draconids on the 8<sup>th</sup> and the Orionids on the 21<sup>st</sup>.

Mars will be the magnificent star on our celestial stage for all of this month. It doubled in brightness last month as the earth was rapidly catching up with the red planet in our respective orbits, and now that we have caught it, it will even outshine Jupiter. Mars will be closest to Earth on the 6<sup>th</sup> and it will reach opposition on the 13<sup>th</sup>, when it will rise at sunset and not set until sunrise. This only happens once every 26 months, based on how we both orbit the sun, but some of these oppositions can be much better than others. This will be one of the best. Although not as close as the last one in July of 2018, which was a perihelic opposition, meaning that its perihelion or closest approach to the sun coincided with its closest approach to Earth, this one will be fully 30 degrees higher above our horizon, allowing for much better views of our neighboring and still mysterious planet.

Mars will be 39 million miles away at this opposition. To put that into a good comparison scale to picture it and not just think of a number, that is the equivalent of about 5,000 earth diameters. The earth is 8,000 miles in diameter and 25,000 miles in circumference. The sun is nearly 12,000 earth diameters away on the average. The moon is just 30 earth-diameters away. Mars will even outshine Jupiter for a while this month and its apparent diameter will reach 22 arc seconds of the sky, or nearly half a minute. 30 arc minutes is half a degree, which is the size of the full moon and the sun.

The last good opposition before the July 2018 perihelic opposition was on August 27 of 2003. That was the closest approach of Mars in nearly 60,000 years, about the time modern humans started migrating east out of Africa. Mars was only 35 million miles away then, but a long-standing rumor started circulating on the web then that Mars would become as large as the full moon in our sky. Mars, which is half the size of the earth, would have had to get within just 83 earth diameters instead of the actual 5,000 earth diameters. That is about 60 times closer than it actually got. It might have been an honest mistake if they just mixed up arc seconds and arc minutes, which is a factor of 60. In any case, it is a good exercise in understanding relative size and scale of some of our nearby neighbors in our solar system.

You will still need a telescope to enjoy all the features now visible on Mars during this great opposition. Look for dark markings and both the north and south polar icecaps. The south polar cap is mostly frozen carbon dioxide, or dry ice. It is summer at the South Pole now, so it will be smaller than usual. I already saw some of these markings through several telescopes at our club's last event a few weeks ago. Not many of us showed up, but it was good to see everyone again "live" outside and with masks on.

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**Club Contacts****Officers:****President:**

Ron Burk  
rdavidburk@yahoo.com

**Vice President:**

Bernie Reim  
berniereim@kw.com

**Secretary:**

Carl Gurtman  
carlgurt@msn.com

**Treasurer:**

Ian Durham  
idurham@anselm.edu

**Board of Directors:**

Gary Asperschlager  
gasperschlager@gmail.com

Larry Burkett  
larrybu32@yahoo.com

Keith Brown  
silverado93@twc.com

**Star Party  
Co-ordinator:**

Carl Gurtman  
carlgurt@msn.com

**Skylights Editor:**

Paul Kursewicz  
pkursewicz@myfairpoint.net

**Website Manager:**

Nan Musgrave  
mzgrvz@outlook.com

**NASA Night Sky  
Network  
Co-ordinator:**

Joan Chamberlin  
starladyjoan@yahoo.com

**JPL Solar System  
Ambassador:**

Joan Chamberlin  
starladyjoan@yahoo.com

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

We also enjoyed great views of Jupiter and Saturn and many popular favorite celestial objects like the Andromeda Galaxy and the great globular cluster in Hercules along with several nice planetary nebulae, which is a look into the distant future of what our own sun will turn into when it finally runs out of fuel in about 5 billion years.

You may even see the faint outline of Olympus Mons, the biggest volcano in the entire solar system, fully 3 times the height of Mt. Everest at 90,000 feet or 17 miles high. The whole mound covers the size of France. Then you may also see one or both of the small Martian moons, Phobos and Deimos, which means Fear and Terror. Phobos is slightly larger and brighter, but it is very close to the planet at only 3700 miles, so it is hard to see over the glare of Mars. Phobos is about 14 miles in diameter and Deimos is only 8 miles across. Deimos is much farther away from Mars, so it is easier to see. Based on what we know about gravity and orbital mechanics, Phobos is getting a little closer to Mars each year and in about 50 million years it will either crash into Mars or be torn up by its gravity into a ring of rubble.

While you are enjoying this close opposition of Mars, be aware that three different countries have recently successfully launched a whole armada of scientific exploratory missions. NASA has the Perseverance Rover with a drone that will fly in the very thin Martian atmosphere, the United Arab Emirates have HOPE, which will just orbit Mars and not land, then China has Tianwen 1, which means "questions to heaven".

That is the heaviest payload ever launched to Mars and contains an orbiter, a lander, and a rover. So humans will have invaded Mars remotely by late winter of 2021, instead of the Martians invading us. The result will be a lot of great scientific data and a much deeper understanding of this planet better preparing us for sending humans there safely in just 15 more years.

So dust off your telescopes or borrow one from a library or a friend or an astronomy club and enjoy this rare showing of Mars. The next time it will be this close and high in our sky will be the year 2035, just about the time NASA has scheduled the first humans to land on Mars.

Both Jupiter and Saturn are now back to their direct or eastward motion. They are both easily visible high in the south as soon as it gets dark enough, before any other stars become visible. Watch how the closer and faster-moving Jupiter is catching up with Saturn. That will culminate on the winter solstice, when they will be just a quarter of a degree apart, their closest conjunction in about 400 years, since the invention of the telescope and modern science began.

The planet Uranus will reach opposition in Aries on Halloween. It will reach a magnitude of 5.7, so it should even be visible without binoculars. It

will cover just 3.8 arc seconds of the sky, or 6 times smaller than Mars. It is tilted 97.8 degrees on its axis, so it appears to be rolling along the ecliptic. It exhibits a lovely pale blue color in a telescope.

Venus will pass within half a degree of Regulus in Leo on the second of this month. That is the width of the full moon. I could see the star Regulus in the daytime very close to the sun along with several planets that instantly popped into view when it was completely covered by the moon during the total solar eclipse on August 21 of 2017. I drove all the way to eastern Idaho to see that and it was well worth every second of my trip. Everyone should see a total solar eclipse at least once during their lifetimes. You will learn more about the sun, moon, and planets and the inner workings of our solar system during those few brief moments of being immersed in the moon's shadow than you ever could by just studying math and physics or watching movies of eclipses.

The Orionid meteor shower will peak on Wednesday morning the 21<sup>st</sup> at around 2 am. The conditions are favorable this year with no moonlight to see 15 meteors per hour from a dark sky site. These are tiny, sand grain-sized pieces of Halley's Comet disintegrating high in our atmosphere at 148,000 mph, or twice the speed that the earth is always orbiting the sun.

The radiant of this shower is in the club of Orion. So you could picture Orion the mighty hunter hurling these meteors at the earth or batting them towards us with his club. Halley's Comet also causes the Eta Aquarids on May 5 each year. The entire comet will not return again until 2062.

Oct.1. Full moon is at 5:06 p.m. EDT. This is also called the famous Harvest Moon because it is closer to the equinox than last month's full moon was. The Yerkes 40 inch refracting telescope was dedicated on this day in 1897. Designed by George Ellery Hale, it was the largest telescope in the world at the time and is still the largest refractor in the world even now.

Oct. 2. Mars will rise with the moon tonight right after sunset. Venus will pass within half a degree of Regulus this morning.

Oct. 4. On this day in 1957 Sputnik 1 was launched by the Russians, officially marking the beginning of the Space Age.

Oct.8. The Draconid meteor shower peaks tonight.

Oct.9. Last quarter moon is at 8:41 p.m.

Oct. 13. Mars is at opposition.

Oct. 14. Venus rises close to the waning crescent moon this morning around 4 am.

Oct. 16. New moon is at 3:32 p.m.

Oct. 21. The Orionid meteor shower peaks at 2 am.

Oct. 23. First quarter moon is at 9:24 a.m.

Oct 31. On this date in 2005 the Hubble Space Telescope discovered two more moons of Pluto, Nix and Hydra. The second full moon of this month, also called a Blue Moon, happens at 10:50 a.m

Moon Phases

**Oct 1, 31**  
Full

**Oct 9**  
Last Quarter

**Oct 16**  
New

**Oct 23**  
First Quarter

Moon Data

**Oct 2**  
Mars 0.7° north  
of Moon

**Oct 3,**  
Moon at apogee

**Oct 4**  
Uranus 3° north  
of Moon

**Oct 13**  
Venus 4° south  
of Moon

**Oct 16**  
Moon at perigee

**Oct 22**  
Jupiter 2° north  
of Moon

Saturn 3° north  
of Moon

**Oct 27**  
Neptune 4° north  
of Moon

**Oct 30**  
Moon at apogee

**OBSERVER'S CHALLENGE\* – October, 2020**

by Glenn Chaple

**NGC 7332/7339 – Galaxies in Pegasus**

(NGC 7332, Mag: 11.1, Size: 4.1' X 1.1' NGC 7339, Mag: 12.1, Size: 3.2' X 1.0')

The deep sky aficionado who has spent time exploring galaxies in the constellation Pegasus is familiar with NGC 7331 and the nearby galaxy group Stephan's Quintet. For more Pegasus galaxies, look eleven degrees due south for the interesting edge-on galactic pair NGC 7332 and NGC 7339. Both were discovered by William Herschel on September 19, 1784 and entered in his Catalogue of Nebulae and Clusters of Stars as Class II (Faint Nebulae) objects.

Far be it for me to question Sir William's judgement, but I would humbly opine that NGC 7332 should have been catalogued as a Class I (Bright Nebulae) object. I had no trouble capturing the elongated form of this 11<sup>th</sup> magnitude edge-on lenticular galaxy with a 4.5-inch reflecting telescope and magnification of 100X. NGC 7339 wasn't as accommodating. A magnitude fainter than NGC 7332 (and certainly deserving its Class II status), this edge-on spiral required a bigger scope (a 10-inch reflector), ample time to dark-adapt my eyes, and averted vision.

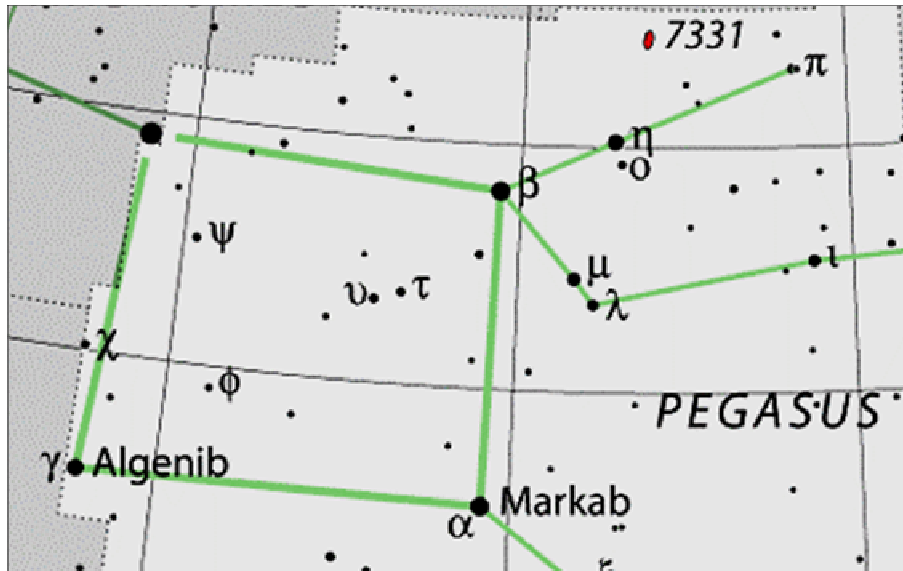
To find these galaxies with GoTo technology, use the coordinates for NGC 7332 (RA 22h 37.4m, dec. +23° 47.9'). If you're a star-hopper, train your finderscope on the wide pair mu ( $\mu$ ) and lambda ( $\lambda$ ) Pegasi (magnitudes 3.5 and 3.9, respectively). After centering lambda in a low-power eyepiece field, nudge your scope 2 degrees westward until a pair of 7<sup>th</sup> magnitude stars less than a degree apart and oriented N-S enters the field. Center the northernmost of the two in the eyepiece field and switch to a higher magnification. NGC 7332 should immediately be visible. NGC 7339, located 5 arc-minutes east of NGC 7332 will appear as a faint E-W-oriented streak.

NGC 7332 and NGC 7339 appear to form a gravitationally bound system. They lie some 67 million light years from earth.

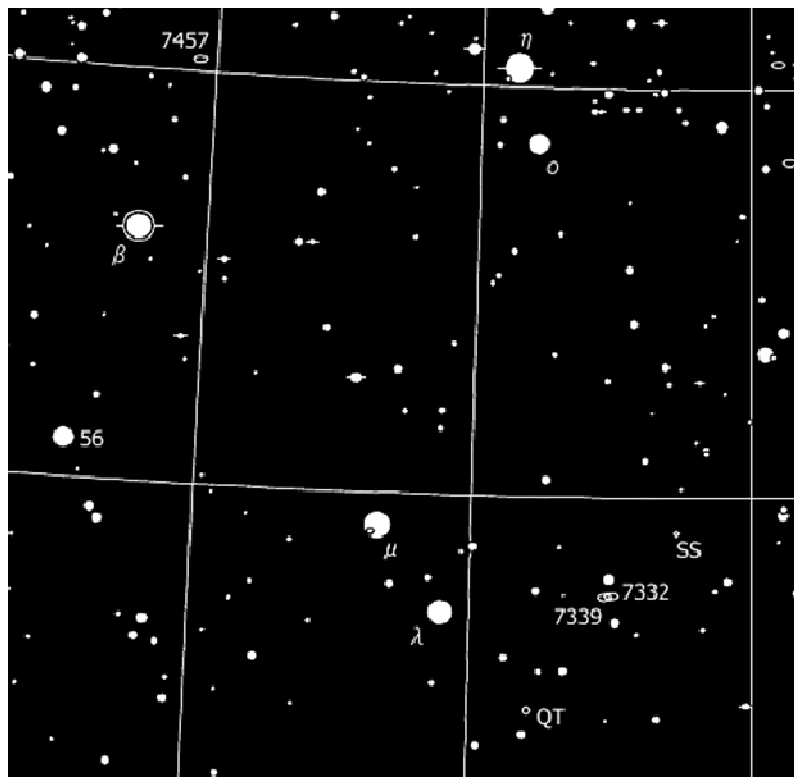
*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester ([rogerivester@me.com](mailto: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](http://rogerivester.com/category/observers-challenge-reports).*

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Finder Chart for NGC 7332/7339



[www.constellation-guide.com](http://www.constellation-guide.com)




Taki's 8.5 Magnitude Star Atlas ([takitoshimi.starfree.jp](http://takitoshimi.starfree.jp))

"Continued on page 5"



Image by Mario Motta (ATMoB), taken with ASI6200 camera though the 32 inch scope. 1 hour Lum, and 45 min each RGB.



## OBSERVING LOG

NAME: Glenn Chaple

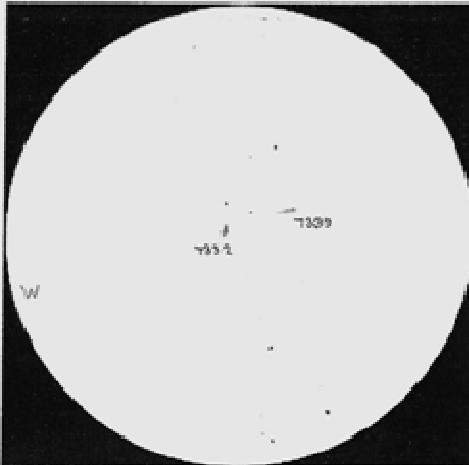
DATE (M/D/Y) 9/11/2020 TIME: 10:20 pm EDT

OBSERVING SITE: Townsend MA

SKY CONDITIONS: Seeing (Antoniadi Scale) \_\_\_\_\_ Limiting Magnitude 9.2

OBJECT: NGC 7332 Lenticular Gal TYPE: Spiral Gal CONSTELLATION: Peg

SKETCH (note direction of west)



NOTES:

NGC 7332 - easily seen with low power. Stellar nucleus at 139X. Elongated roughly N-S.

NGC 7339 - very faint at 139X. Elongated E-W

OBSERVING EQUIPMENT

Binoculars X

Telescope: 10-inch f/5 reflector Eyepiece: Summ Nagler

Mag: 139 X Field Diam: 0.6 ° Filter (if any): \_\_\_\_\_

NGC 7332/7339, as seen with 10-inch f/5 reflector at 139X. Sketch by Glenn



## 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

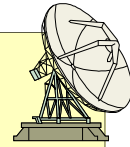
**November 26**  
Andromedids

**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](http://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](mailto: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](mailto: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](https://nightsky.jpl.nasa.org) to find local clubs, events, and more!

## Observe the Skies Near Mars

By David Prosper

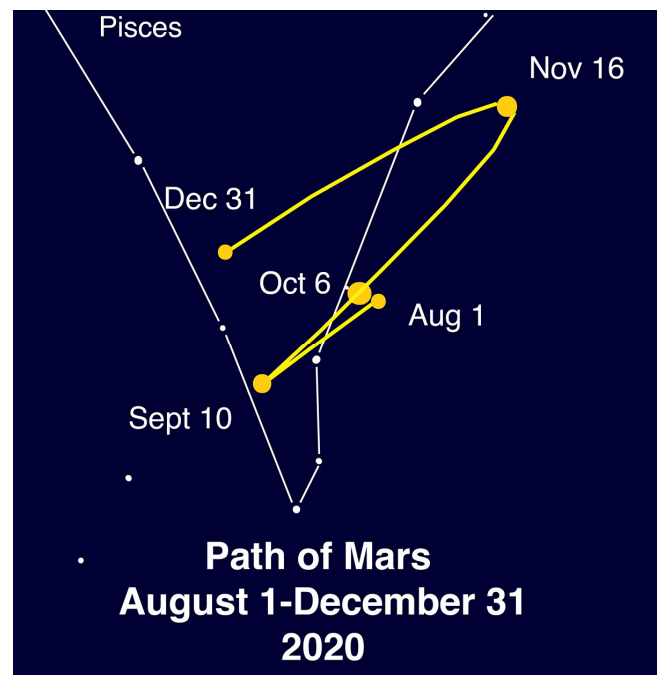
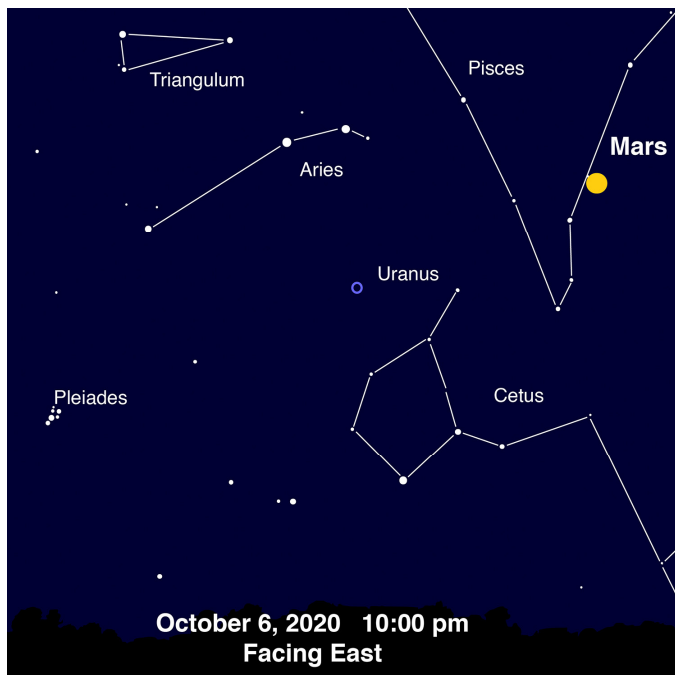
October is a banner month for Mars observers! October 6 marks the day Mars and Earth are at closest approach, a once-every-26-months event. A week later, on October 13, Mars is at opposition and up all night. Mars is very bright this month, and astronomers are eager to image and directly observe details on its disc; however, don't forget to look at the space around the planet, too! By doing so, you can observe the remarkable retrograde motion of Mars and find a few nearby objects that you may otherwise overlook.

Since ancient times, Mars stood out to observers for its dramatic behavior. Usually a noticeable but not overly bright object, its wandering path along the stars showed it to be a planet instead of a fixed star. Every couple of years, this red planet would considerably flare up in brightness, for brief times becoming the brightest planet in the sky before dimming back down. At these times, Mars would also appear to slow down its eastward motion, stop, then reverse and head westward against the stars for a few weeks, before again stopping and resuming its normal eastward movement. This change in the planet's movement is called "apparent retrograde motion." While all of the planets will appear to undergo retrograde motion when observed from Earth, Mars's retrograde appearances may be most dramatic. Mars retrograde motion in 2020 begins on September 10, and ends on November 16. You can observe its motion with your eyes, and it makes for a fun observing project! You can sketch the background stars and plot Mars as you observe it night after night, or set up a photographic series to track this motion. Does the planet move at the same rate night after night, or is it variable? As you observe its motion, note how Mars's brightness changes over time. When does Mars appear at its most brilliant?

NASA has tons of great Mars-related resources! Want to know more about apparent retrograde motion? NASA has an explainer at: [bit.ly/marsretromotion](https://bit.ly/marsretromotion). Find great observing tips in JPL's "What's Up?" videos: [bit.ly/jplwhatsup](https://bit.ly/jplwhatsup). Check out detailed views with NASA's HiRISE satellite, returning stunning closeups of the Martian surface since 2006: [hirise.lpl.arizona.edu](https://hirise.lpl.arizona.edu). NASA's Curiosity Rover will be joined in a few months by the Perseverance Rover, launched in late July to take advantage of the close approach of Mars and Earth, a launch window that opens two years: [nasa.gov/perseverance](https://nasa.gov/perseverance). Calculate the ideal launch window yourself with this handy guide: [bit.ly/marslaunchwindow](https://bit.ly/marslaunchwindow).

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The Night Sky Network's Exploring Our Solar System handout invites you to chart the positions of the planets in the Solar System, and NSN coordinator Jerelyn Ramirez recently contributed an update featuring Mars opposition! You can download both versions at [bit.ly/exploresolarsystem](https://bit.ly/exploresolarsystem). Young astronomers can find many Mars resources and activities on NASA's Space Place: [bit.ly/spaceplacemars](https://bit.ly/spaceplacemars). Here's to clear skies and good seeing for Mars's best appearance until 2033!



*(left) If you are paying this much attention to Mars, you're likely curious about the skies surrounding it! Find Mars in the constellation Pisces, with constellations Aries, Triangulum, and Cetus nearby. Aries may be the only one of these dimmer patterns readily visible from light-polluted areas. The Pleiades rises shortly after Mars. Dim Uranus is found close by, in Aries. If you are observing Mars up close, use the same eyepiece to check out Uranus's tiny blue-green disc. If you are uncertain whether you spotted Uranus, you didn't see it! Unlike stars, Uranus doesn't resolve to a point at high magnifications.*

*(right) The path of Mars during the last five months of 2020. Notice the retrograde motion from September 10 to November 16, with prime Mars observing time found in between. October 6 is the day of closest approach of Earth and Mars, "just" 38.6 million miles apart. Images created with help from Stellarium: [stellarium.org](https://stellarium.org)*



## Point and Shoot Camera Astroimaging (no telescope)

### Canon Powershot SX50 HS

*Image & write-up submitted by Paul Kursewicz*

Crescent Nebula

Specs: JPEG, f/3.5, FL 1200mm, ISO 2000, 18 x 2 min, 8-14-20



The **Crescent Nebula (NGC 6888)** is an emission nebula located in the constellation Cygnus. It's the outer shell of a dying star that was once a red giant. Although shining at magnitude +7.4, its extremely low surface brightness means a very transparent night or large optics coupled with a nebula filter (a UHC or OIII ) is required to spot it. A telescope of at least 8-inch aperture is needed to see the crescent shape. In smaller telescopes, it appears as a nebulous patch. It lies at an approximate distance of 5,000 light years from Earth and is about 26 light years across. To find the Crescent Nebula look about 2.7 degrees southwest of, Sadr, Gamma Cygni, the central star of the Northern Cross. The Crescent Nebula was discovered by William Herschel in December 1792.

# Starfest 2020



*“Continued on page 11”*





A scaled down *Starfest*.....but enjoyable. More people attended than are seen in the above photos. We had two clear nights. The first night had no dew at all. And the second night was pretty good also. The planets Jupiter, Saturn and Mars were spectacular. Surface markings and a polar cap could be seen on Mars. Looked at a variety of extended objects. I believe we had four club member scopes to look through and do a comparison with each one. Next year a *Spring Starfest* is on the books (as well as a *Fall Starfest*).

## Club Meeting & Star Party Dates

Date	Subject	Location
<u>Oct 2</u>	<p><b><u>ASNNE Club Meeting:</u></b></p> <p><b>Our Oct Club meeting at The New School has been cancelled due to the Coronavirus.</b></p> <p><b>I assume the plan for the October meeting is to have our Club Meeting while staying at home by using ZOOM.</b></p> <p>So, a computer or a phone will be required. Ian Durham will likely organize all of this. And as we get closer to Friday, Ian will post a connection link to join Zoom.</p> <p><b><u>Topic:</u> TBD.</b> Bernie Reim will do "What's Up." Astro Shorts</p>	<u>The New School, Kennebunk, Me.</u>
<u>Last Month</u>	<p>Last month we had a scaled down version of Starfest. The plan for next year is to have Starfest in the Spring and in the Fall. Hopefully things will be normal again by Springtime.</p>	
<u>TBD</u>	<p><b>Club/Public Star Party: <b>Cancelled due to the Coronavirus.</b></b></p>	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](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 \_\_\_\_\_

