

# Skylights

Newsletter of the Astronomical Society of Northern New England



**JULY 2018**



Member of NASA's



**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 July

By Bernie Reim

**T**he month of July was named for Julius Caesar and was once the fifth month of the year. July is the first full month of summer for us in the northern hemisphere and this year July will bring us a major highlight that will not happen again until September of 2035.

That highlight is a rare perihelic opposition of Mars on July 27. That is when a planet is at its closest point to the sun at the same time that is directly opposite the earth from the sun. The last time that happened for Mars was back on August 27 of 2003, when the red planet was at its closest to earth in nearly 60,000 years, about the time that modern humans first started migrating out of Africa, leaving behind genetic footprints that are still visible today. They were probably forced out during a sudden cooling period during the last ice age. That was a very dangerous time for humans because their numbers may have declined to as low as 10,000 on the entire Earth.

We have now sprung back to 7.5 billion, just over a billion people more than were around to see the last perihelic opposition just 15 years ago. Mars was only 1 million miles closer to Earth 15 years ago at 34.7 million miles than it will be this time. However, this time Mars will be lower on the ecliptic in Capricorn than it was 15 years ago, so the views of many of its remarkable features through a telescope will not be as easy to see.

Challenge yourself to see as much detail as you can over the course of this entire summer while Mars is still big and bright, since it will be 17 years until the red planet gets this close again, allowing us to see it in some detail even without the use of a large professional telescope. Both of its icecaps, many of its dark markings, and some of its thin atmosphere should be fairly easy to see in a good amateur telescope, but more exciting features like Olympus Mons, the biggest volcano in the whole solar system at 3 times the height of Mt. Everest with a base the size of the state of Arizona and a 50-mile-wide caldera at the top will present more of a

challenge. The volcanoes on Mars have been erupting for billions of years, and may have erupted as recently as only 25 million years ago.

Another good challenge would be to try to find one or both of its moons, Phobos and Deimos, named for fear and terror. Phobos, at 14 miles in diameter is the closer one to Mars and Deimos, at about half of that is the one farther out, making it slightly easier to find with a good telescope and a method to block out most of the light from brilliant Mars.

You would only weigh a few ounces on Deimos and its escape velocity is 12 miles per hour, so you could run yourself into orbit around this tiny moon like superman. On Phobos you could throw a baseball into orbit, since you only need to throw it at about 24 miles per hour.

Being the inner moon, Phobos is actually spiraling inward towards the Martian surface at the rate of about 6 feet per century, which is about half the distance that our own moon is drifting farther away from us every century.

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

At that rate, Phobos will finally crash into Mars in about 40 million years and our own moon will be too far from Earth to create any more total solar eclipses in about 100 million years.

So enjoy this summer exploring the brilliant golden orange neighbor of ours which still harbors many mysteries even as many more of its secrets are being revealed. We have already known that there was liquid water on Mars at one time, but we have just recently discovered concrete evidence for large organic molecules just below its surface and possible microbial activity farther below its surface causing seasonal variations in methane release. Mars could still be an active planet below its surface, hovering on the knife-edge of habitability.

The stories of the other planets will pale in comparison to the exciting possibilities of Mars this month, but they will provide a nice supporting cast and they are always interesting to look at with or without a telescope and to continue to learn more about them, since we really know very little about any of our 7 other planets.

Venus is setting a little earlier again in our western evening sky, about an hour after sunset. However, it is still getting larger and brighter as it is catching up with us in our orbits. It will be two magnitudes, or over 6 times brighter than Mars. Venus will appear like a waning gibbous moon through a telescope, shrinking from 70% to just 57% illuminated by the sun.

Venus will participate in two excellent close conjunctions this month, one with a planet and the other one with a star. Venus will be just one degree above and to the right of Regulus in Leo on the 9<sup>th</sup>, very close to where the sun was back on August 21 of last summer when it was eclipsed by the moon. Then Venus will be less than one degree to the left of a thin waxing crescent moon on July 15 with Mercury below and to the right of the pair about 45 minutes after sunset.

Jupiter continues to fade a little this month as we leave it farther behind in space in our respective orbits. The king of the planets will end its retrograde or western motion in Libra on July 11. Jupiter will not even get as bright as Mars this month, which is very unusual.

Saturn was at opposition last month, so it is now rising just before sunset and still

visible all night long. Its golden glow is slowly fading, but it is still brighter than usual and its rings are tilted open at 26 degrees, which is near its maximum. The ringed planet is still in retrograde in Sagittarius near the Lagoon and Trifid nebulae along an arm of our Milky Way galaxy.

Pluto is even at opposition this month, in the teaspoon in Sagittarius. Orbiting the sun once every 248 years, Pluto spends nearly 21 years in each zodiac constellation. It will only reach 14.8 magnitude this time, which is fully 2.5 million times fainter than Mars.

July 4. Henrietta Swan Leavitt was born on this day in 1868. She was an American astronomer at Harvard who discovered the period-luminosity relationship of Cepheid variable stars that allowed us to measure the universe and establish a distance scale.

July 5. On this day in 1687 Isaac Newton published his Principia Mathematica.

July 6. Earth is at aphelion, or farthest from the sun today at 94.2 million miles. Last quarter moon is at 3:52 a.m. EDT.

July 9. Venus will be just one degree above Regulus and 15 degrees above and to the left of Mercury tonight half an hour after sunset.

July 10. The slender waning crescent moon will be very close to Aldebaran in Taurus just before sunrise this morning. It will occult this red giant star in parts of Canada.

July 11. Mercury will be at its best low in the western evening sky after sunset tonight.

July 12. New moon is at 10:49 p.m.

July 14. The moon is just above Mercury this evening.

July 15. The moon will be very close to Venus this evening 45 minutes after sunset.

July 16. On this day in 1994 the first of 21 pieces of Comet Shoemaker-Levy 9 slammed into Jupiter, leaving a large black mark that lasted for a few weeks. I saw up to 5 of these marks at once over the course of 6 days as another piece descended into Jupiter's atmosphere about every 6 hours.

July 19. First quarter moon is at 3:53 p.m.

July 20. The moon is just above Jupiter tonight. On this day in 1969 the first humans, Neil Armstrong and Buzz Aldrin, set foot on the moon, just 66 years after the first primitive airplane was flown by the Wright Brothers.

July 24. The moon is just above Saturn this evening.

July 27. Full moon is at 4:22 p.m. This is also called the Hay or Thunder Moon.

July 30. Mars will be at its closest to Earth in 15 years tonight.

Moon Phases

**July 6**  
Last Quarter

**July 12**  
New

**July 19**  
First Quarter

**July 27**  
Full

Moon Data

**July 3**  
Neptune 3° north  
of Moon

**July 7**  
Uranus 5° north  
of Moon

**July 13**  
Moon at perigee

**July 14**  
Mercury 2° south  
of Moon

**July 15**  
Venus 1.6° south  
of Moon

**July 20**  
Jupiter 4° south  
of Moon

**July 25**  
Saturn 2° south  
of Moon

**July 27**  
Moon at apogee

Mars 7° south  
of Moon

Submitted by Glenn Chaple



## Sky Object of the Month – July 2018

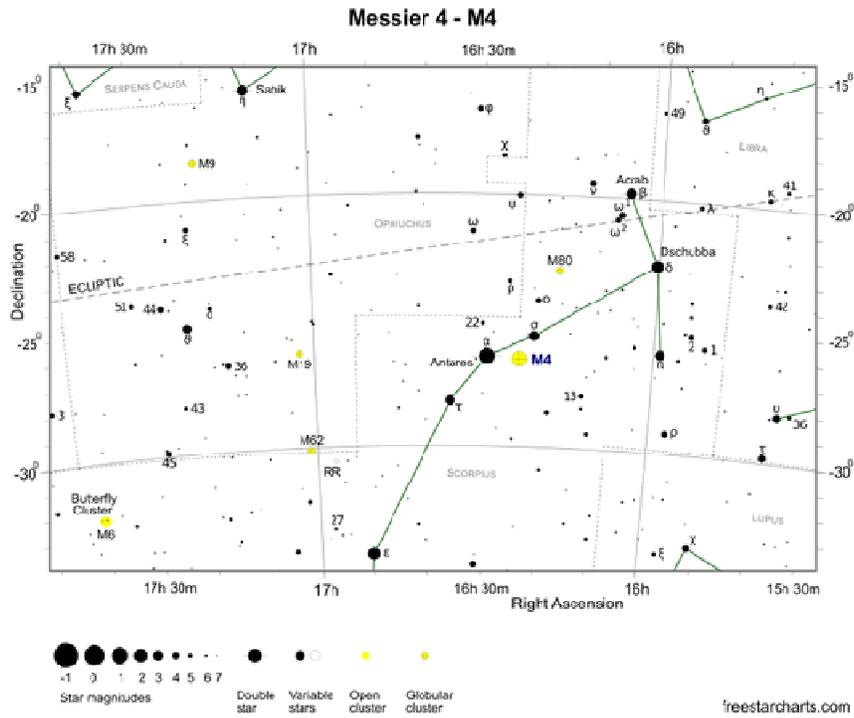
(Courtesy LVAS Observer's Challenge\*)

**Messier 4 – Globular Cluster in Scorpius (Mag. 5.8; Size 26')**

For the second straight month, the Las Vegas Astronomical Society's Observer's Challenge is a Messier object – this time, the globular cluster M4 in Scorpius. M4 is bright and easy to find (it's visible in binoculars just 1.3 degrees west of Antares), so where is the challenge? For starters, M4 is rather sparse as globular clusters go. What is the smallest aperture that resolves its stars? Secondly, William Herschel reported "a ridge of stars running through the middle from south preceding to north following." This spindle of 10<sup>th</sup> to 12<sup>th</sup> magnitude stars appears in the Mario Motta image below. Can you see it visually, and with what aperture and magnifying power? Herschel also noted that these stars were red. Can you detect any color?

At a distance of approximately 7200 light years, M4 is one of the nearest globular clusters. It was discovered by the Swiss astronomer Jean-Philippe Loys de Chéseaux in 1746 and was catalogued by Messier 18 years later.

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Mario Motta, MD

## Principal Meteor Showers in 2018

**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*

### 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!



The latest issue of the Space Place Newsletter: News and Notes for Formal and Informal Educators can be found at: <http://spaceplace.nasa.gov/en/educators>.

Space Place is a NASA website for elementary school-aged kids, their teachers, and their parents.

### Check out our great sites for kids:



The Space Place website (<http://spaceplace.nasa.gov>)



The SciJinks Weather Laboratory at <http://scijinks.gov>



NASA Climate Kids at <http://climate.nasa.gov/kids>

### Our Club has Merchandise for Sale at: [www.cafepress.com/asnne](http://www.cafepress.com/asnne)



*ALL money raised goes to our operating fund.*

*Any design can be put on any item.*

*Just let our club member, David Bianchi, know.*

**This article is provided by NASA Space Place.**  
With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit [spaceplace.nasa.gov](http://spaceplace.nasa.gov) to explore space and Earth science!



## A Close-Up View of Mars

By Jane Houston Jones and Jessica Stoller-Conrad

In July 2018, skywatchers can get an up close view of Mars—even without a telescope! In fact, on July 31, Mars will be closer to Earth than it has been in 15 years.

Why is that?

Like all the planets in our solar system, Earth and Mars orbit the Sun. Earth is closer to the Sun, and therefore it races along its orbit more quickly. Earth makes two trips around the Sun in about the same amount of time that Mars takes to make one trip.

Sometimes the two planets are on opposite sides of the Sun and are very far apart. Other times, Earth catches up with its neighbor and passes relatively close to it. This is called Mars's closest approach to Earth, and it's happening this year on July 31. The Moon will be near Mars on that night, too!

Keep in mind that even during its closest approach, Mars is still more than 35 million miles away from Earth. That's really far. So, Mars won't appear as big as the Moon in the sky, but it will appear bigger than it usually does.

July and August will be a great time to check out Mars. Through a telescope, you should normally be able to make out some of the light and dark features of the Red Planet—and sometimes even polar ice. However, a huge Martian dust storm is obscuring these features right now, so less planetary detail is visible.

There is another important Mars date in July: Mars opposition. Mars opposition is when Mars, Earth and the Sun all line up, with Earth directly in the middle. This event is happening on July 27 this year.

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Although you may see news focusing on one of these two dates, Mars will be visible for many months. For about three weeks before and three weeks after opposition and closest approach, the planet will appear the same size to a skywatcher.

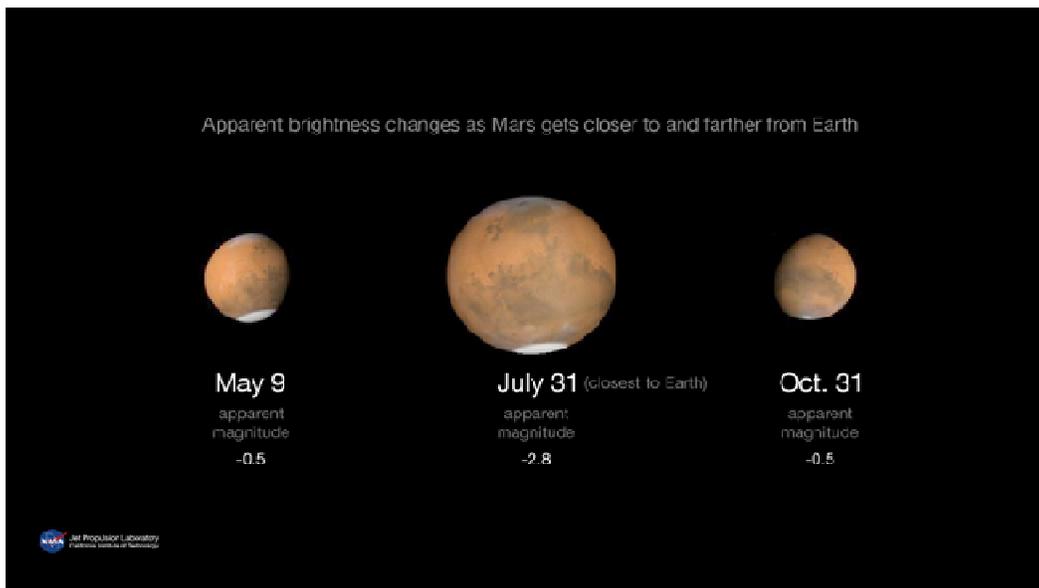
From July 7 through September 7 Mars will be the third brightest object in the sky (after the Moon and Venus), shining even brighter than Jupiter. The best time to view Mars during this time is several hours after sunset, when Mars will appear higher in the sky.

Mars will still be visible after July and August, but each month it will shrink in size as it travels farther from Earth in its orbit around the Sun.

In other sky news, there will be a partial solar eclipse on July 13, but it will only be visible from Northern Antarctica and southern Australia. On July 27 (beginning at 20:21 UTC), a total lunar eclipse will be visible in Australia, Asia, Africa, Europe and South America. For those viewers, Mars will be right next to the eclipsing Moon!

If you're wanting to look ahead to next month, prepare for August's summer Perseid meteor shower. It's not too early to plan a dark sky getaway for the most popular meteor shower of the year!

You can catch up on NASA's missions to Mars and all of NASA's missions at [www.nasa.gov](http://www.nasa.gov)



*Caption: In 2018, Mars will appear brightest from July 27 to July 30. Its closest approach to Earth is July 31. That is the point in Mars' orbit when it comes closest to Earth. Mars will be at a distance of 35.8 million miles (57.6 million kilometers). Credit: NASA/JPL-Caltech*

## Astroimaging

### Nikon D100 DSLR

*Image and write-up submitted by Paul Kursewicz*

#### Mars:

Using the club's Zeiss Refractor, I took these images of Mars on the below dates. Six images each were taken then stacked and edited in Photoshop. Besides getting great images, myself and another club member were fortunate to observe both of Mars moons (Phobos and Deimos) through one of the club's telescopes.



During August 2003 the Red Planet made its closest visit to us in nearly 60,000 years (34.6 million miles from Earth). On July 31, 2018 Mars will make another close approach only being 1.2 million miles further away. It will be located in the constellation Capricornus. July and August will be the best times to view Mars. Hopefully the dust storm that is occurring on Mars right now will be done before closest approach.

*Submitted by Chase Delaney*

**TIDES author, Jonathon White, will be presenting a talk in a combined ASNNE~SMA event, August 3rd, at USM, Portland**

**Talk Title: TIDES: THE SCIENCE AND SPIRIT OF THE OCEAN**

**Author: Jonathon White**

**Talk Description:**

After nearly losing his 65' wooden schooner in a large Alaskan tide, writer, sailor, and surfer Jonathan White vowed to understand the tide. He knew the moon had something to do with it, but what exactly? He read a book, then two. Ten years later, he had read three hundred books and criss-crossed the seven seas to see the largest, fastest, scariest, and most amazing tides in the world. In China he confronted the Silver Dragon, a twenty-five foot tidal bore that races eighty miles up the Qiantang River; at London's Royal Society, he dug into the earliest Western tide science, which preoccupied thinkers from Da Vinci to Galileo to Newton; and in the Arctic he followed an Inuit elder down a small hole through thick winter ice to gather fresh blue mussels in the cavities left by low tide. With photographs, stories, and short readings, Jonathan takes his audiences on an enthralling journey into the surprising and poetic workings of the tide.

**Event location: Southworth Planetarium, USM Science Building, Room 165, 70 Fal-mouth Street, Portland ME. Date and time: Friday, August 3<sup>rd</sup>, 7:30 pm.**

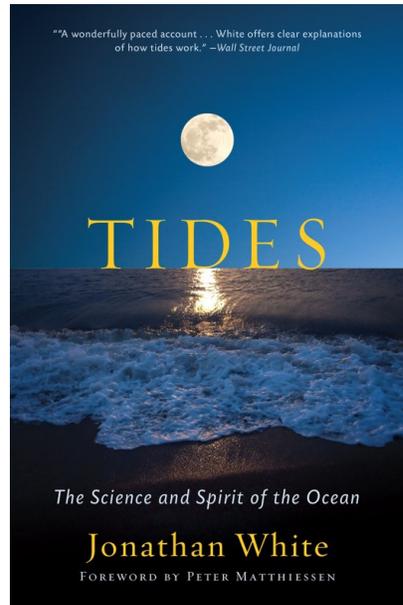
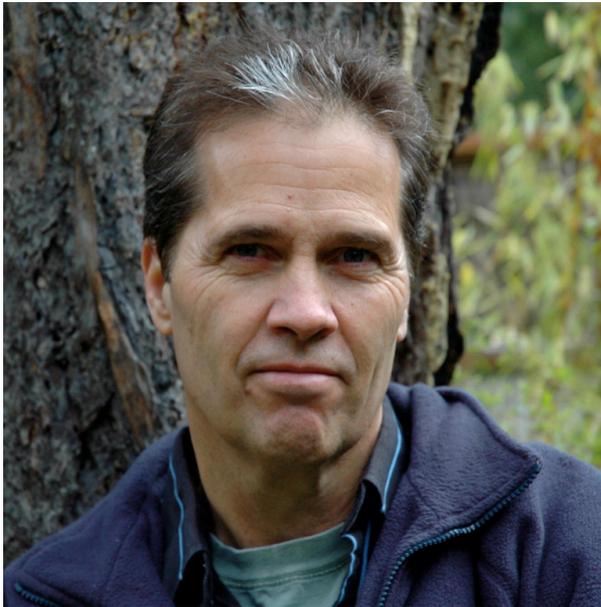
**About the Author** (also available on website [Jonathan White](#)):

Jonathan White has written for the *Christian Science Monitor*, *Sierra*, *The Sun*, *Surfer's Journal*, *Orion*, and other publications. His first book, *Talking on the Water* (Sierra Club Books), is a collection of interviews exploring our relationship with nature. White is an active marine conservationist, holds an MFA in creative nonfiction, and lives with his wife and son on a small island in Washington State.

Please see the following link for more in depth info on Jonathon's background and his award winning book, TIDES.. <http://jonathanwhitewriter.com/>

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## *A TALK & BOOK SIGNING*



*JONATHAN WHITE*

**TIDES**

*The Science and Spirit of the Ocean*

Author, sailor and surfer Jonathan White  
takes readers across the globe to discover the science  
and spirit of ocean tides

[www.jonathanwhitewriter.com](http://www.jonathanwhitewriter.com)

Southern Maine Astronomers & Astronomical Society of Northern New England  
Southworth Planetarium, USM Science Bldg 165, 70 Falmouth Street, Portland ME

7:30 pm - Friday, August 3

**Ethan Dorr attended a Star Party at our club observatory. His science teacher, Mr. Laich told him that his visit could be used for school credit. He had to write an essay following the visit to describe what he saw and learned. His essay appears below as well as some pictures. — Editor**

*My name is Ethan Dorr. I am a student at Massabesic High School and my class has been learning about astronomy lately. Ron Burk from the A.S.N.N.E (Astronomical Society of Northern New England) took his own time to meet up with me at the Laboratory for a private session star gazing through their massive telescopes. During my session I got to see Venus, Jupiter and its rings and 3 of its 67 moons, The International Space Station which moves at a speed of 17,000 MPH, red stars, a Nebula ring, satellites and the M-13 globular cluster which is a cluster of a bunch of stars. What I saw was an incredible experience and I would highly recommend everyone taking astronomy courses to go and check this Laboratory out; they truly do an amazing job! Down below are some of the pictures I captured during my time there.*



## Club Meeting & Star Party Dates

Date	Subject	Location
July 6	<p><b><u>ASNNE Club Meeting:</u></b></p> <p><b><u>Meeting Agenda</u></b></p> <p><b>Picnic and observing session (weather permitting) at Starfield Observatory. Start time 6:00 PM.</b></p> <p>Bring your own food, beverage and lawn chair. Gas grills will be HOT. All dessert donations will Be appreciatively eaten!</p> <p>If rained out, just a regular July meeting at The New School (TNS).</p> <p><b>Bernie Reim</b> - "What's UP"</p> <p><b>Astro Shorts:</b> (news, stories, jokes, reports, questions, photos, observations etc.)</p>	Starfield Observatory, West Kennebunk, Me.
July 20	<p>Club/Public Star Party</p> <p><i>Check List-serve / website for updates and or cancellations</i></p>	Starfield Observatory, 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 Starfield Observatory** [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

**2018 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 \_\_\_\_\_

