

Skylights

Newsletter of the Astronomical Society of Northern New England



NOV 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 November

By Bernie Reim

The month of November marks the last full month of fall as our brilliant foliage slowly fades out and our hemisphere prepares for winter. The days will soon seem very short as daylight saving time ends and night will seem to have sprung upon us quickly, plunging us into much earlier sunsets. This is a great time to get out under the colder, drier and longer nights to enjoy a few of their myriad mysteries.

The highlights this month include the dramatic return of Venus into our morning sky, the loss of another planet from the great evening planetary line-up of this past summer, several nice lunar conjunctions, a bright asteroid at its best, another good comet that may even get bright enough to see without optical aid, and a meteor shower called the Leonids.

As we all keep orbiting the sun, our evening sky is continuing to lose planets. Just as we lost Venus early last month, we will lose the next one in the sequence, Jupiter, early this month. The king of the planets will be in conjunction with the sun towards the end of this month, but it will get too low to observe in Libra by the first week of November. As you catch the last glimpses of this great planet before it reemerges into our morning sky again next month, remember that our intrepid little spacecraft named Juno is still orbiting this gas giant planet every 53 days and making new discoveries and sending home incredible images of both of its poles as it dives down to just 2000 miles above its ever shifting surface.

Mercury will make a short appearance low in our evening sky near Jupiter early this month. When you look at our smallest planet, only 3000 miles in diameter, which is smaller than Ganymede, Jupiter's largest moon, and Titan, Saturn's largest moon, remember that we just launched a spacecraft named BepiColombo, in honor of the Italian scientist with that name, very recently. It will not arrive there until December of 2025, over 7 years from now.

The very successful New Horizons mission

only took a little longer to get all the way to Pluto, nearly 100 times farther away than Mercury at only 48 million miles away. The reason for this is the proximity of this rapidly orbiting planet to the powerful gravity of the sun, making it very difficult to get into a stable orbit around this swift and tiny planet. This is a similar problem to what the Parker Solar Probe is facing. Just launched this summer in August, this probe will also take 7 years to get to the sun, which is only 93 million miles away. They will both make several orbits around Venus and the Earth on their way to their destinations. That really gives you a better sense of the physics behind these orbits and how powerful the gravity of the sun really is, making it very difficult to slow down enough to place our spacecraft exactly where we want them to be.

Venus will make a very dramatic entrance into our morning sky early this month. Starting at just 6 degrees above the horizon and rising only 35 minutes before sunrise on the first of the month, Venus will be fully 34 degrees above the horizon and remain up until

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over 3 hours after sunset by the end of November. It will nearly double in brightness in the process as it continues its rapid ascension this month, along with transforming itself from being a huge sliver just one percent lit by the sun to being much smaller and fully one quarter lit. Venus just passed us in its faster orbit last month even as Mars is falling further behind Earth in its slower orbit.

Saturn is still visible in the evening sky in Sagittarius, setting about 2 hours after sunset by the end of the month.

Mars continues to get smaller and fainter as we are pulling farther ahead of it in our orbit around the sun. Over the course of this month, Mars will lose about half of its brightness again, fading to about zero magnitude, or about 5 times fainter than Jupiter. To show how quickly Mars is fading now, it was actually brighter than Jupiter from July through early September of this year.

An asteroid named 3 Juno will be at opposition on the 17th of this month, the same day that the Leonid Meteor shower will peak. Juno is only the 11th largest asteroid at 144 miles in diameter, but it is one of the brightest. It could reach a magnitude of 7.5 that day, only about 5 times fainter than what you could see without any optical aid. It can be seen in Eridanus the River, just below Taurus this month, which also happens to be very close to where this month's comet, 46P/Wirtanen, will be located. Juno orbits the sun every 4.4 years and will not be this close again until 2031.

This month's featured comet, 46P/Wirtanen, could reach naked-eye visibility this month, but most likely it will only get as bright as Juno or even less bright. Discovered in 1948 by the American astronomer Carl Wirtanen, this comet orbits the sun every 5.4 years and has a nucleus less than one mile across.

The annual Leonid Meteor shower will peak on the night of the 17th into the 18th. Since the moon will be waxing gibbous that night and not setting until after midnight, many of the meteors will be washed out. Caused by Comet Temple-Tuttle, this shower usually only produces about 20 meteors per hour. However, this comet returns every 33 years, which can create far better numbers. The last time that happened was in 2001, when I actually saw nearly 1000 Leonids per

hour for 3 hours that memorable morning. That averaged one meteor every 4 seconds. There was not a single lull over 10 seconds long that entire night, and I saw up to 7 meteors emanating from Leo in just one second. For the first time ever, I could get a sense of the earth's motion as we are always orbiting the sun at 67,000 mph. We also saw about 15 brilliant bolides that night which lit up the whole sky as they exploded and left long, dusty trails through which many other meteors passed as they slowly dissipated.

Nov.3. On this day in 1957 Russia launched Sputnik 2, the first satellite to carry a creature into space. It was a dog named Laika.

Nov. 4. Mars will be less than one degree away from a star in Capricorn one hour after sunset tonight. Daylight- saving time ends at 2 am.

Nov. 6. On this day in 1572 Tycho Brahe discovered a supernova in Cassiopeia without a telescope.

Nov.7. New moon is at 11:03 a.m. EST.

Nov. 8. Edmund Halley was born on this day in 1656. I first saw his comet on this day in 1985.

Nov. 9. Carl Sagan was born on this day in 1934.

Nov. 10 and 11. The waxing crescent moon will pass near Saturn on these two evenings low in the southwestern sky one hour after sunset.

Nov. 15. The moon will pass near Mars in Capricorn this evening one hour after sunset. First quarter moon is at 12:40 a.m.

Nov. 17. Venus will be just over one degree below and to the left of Spica in Virgo this morning one hour before sunrise. The Leonid Meteor shower peaks tonight into the next morning. Asteroid 3 Juno is at opposition today in Eridanus the River just below Taurus in the Winter Hexagon.

Nov. 23. Full moon is at 12:40 a.m. This is also called the Frosty or Beaver Moon. The moon will be near Aldebaran in Taurus tonight.

Nov. 29. The moon will be very close to Regulus in Leo this morning 1 hour before sunrise. Last quarter moon is at 7:20 p.m.

Moon Phases

- Nov 7**
New
- Nov 15**
First Quarter
- Nov 23**
Full
- Nov 29**
Last Quarter

Moon Data

- Nov 5**
Venus 10° south
of Moon
- Nov 9**
Mercury 7° south
of Moon
- Nov 11**
Saturn 1.5° south
of Moon
- Nov 12**
Pluto 0.9° south
of Moon
- Nov 14**
Moon at apogee
- Nov 15**
Mars 1.0° north
of Moon
- Nov 17**
Neptune 3° north
of Moon
- Nov 20**
Uranus 5° north
of Moon
- Nov 26**
Moon at perigee



LVAS Observer's Challenge* – November 2018

By Glenn Chaple for the LVAS

NGC 147– Dwarf Galaxy in Cassiopeia Magnitude: 9.5 Size: 13' X 8'

This month's Observer's Challenge, the dwarf elliptical galaxy NGC 147 in Cassiopeia, has been glimpsed with 7X35 binoculars yet can be a challenge for a 10-inch scope. Its 9.5 visual magnitude sounds promising, but the light is spread over an area 13 by 8 arc-minutes in size. The situation is similar to that of Barnard's Galaxy (NGC 6822), briefly mentioned last September and featured as the August, 2014, Observer's Challenge.

Save NGC 147 for the clearest, darkest night possible and be sure your eyes are adequately dark-adapted. Begin by training your scope on 4th magnitude omicron (o) Cassiopeiae, located in the extreme southern part of the Queen and just 7° above the Andromeda Galaxy. Once you've centered omicron in the eyepiece field, work your way slowly westward. Just a degree from omicron, you should spot a slightly oval smudge of light. Don't put a notch in your telescope tube yet! This is NGC 185, also a dwarf galaxy and similar in brightness and size to NCG 147. However, it's more concentrated and has a higher surface brightness. NGC 147 is far less accommodating! Continue onward another degree and, if you're lucky, you should spot an extremely faint and elongated glow. **This** is NGC 147! Now you can make your notch (or preferably make an entry in your observing logbook).

If you fail to see NGC 147, don't give up. Conditions might prove more favorable on the next clear night. You can take solace in knowing that William Herschel surveyed this area in 1787. He spotted NGC 185 but failed to see NGC 147. His son, John, found the latter 42 years later.

NGC 147 and NGC 185 are satellites of the Andromeda Galaxy and, as such, are part of the Local Group. They are located 2.0 and 2.3 million light years away, respectively.

"Continued on page 4"



astronomyconnect.com (image created with SkyX by Software Bisque) North is to the left



NGC 147 (top) and NGC 185 (lower) omicron Cassiopeiae is at bottom, center. North is to the left (www.astosurf.com)

*The purpose of the LVAS 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, the LVAS will be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to either Roger Ivester (rogerivester@me.com) or Fred Rayworth (queex@embarqmail.com). To find out more about the LVAS Observer's Challenge or access past reports, log on to lvastronomy.com/index.php/observer-s-challenge

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

MEMBERSHIP DUES

Membership fees are for the calendar year beginning in January and ending in December. Dues (see page 12 for prices) are payable to the treasurer during November for the upcoming year. New members who join during or after the month of July shall pay half the annual fee, for the balance of the year. Checks should be made payable to the Astronomical Society of Northern New England (A.S.N.N.E). If you would like to mail in your dues, use the form on page 12.

A Member who has not paid current dues by the January meeting will be dropped from membership, (essentially a two-month grace period.) Notice of this action shall be given to the Member by the Treasurer. Reinstatement shall be by payment of currently due dues.



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.

Our Club has Merchandise for Sale at: www.cafepress.com/asmne



***ALL money raised goes to our operating fund.
Any design can be put on any item.
Just let our club member, David Bianchi, know.***

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!

November's Dance of the Planets

By Jane Houston Jones and David Prosper

November's crisp autumn skies bring great views of our planetary neighbors. The Moon pairs up with Saturn and Mars in the evenings, and mornings feature eye-catching arrangements with dazzling Venus. Stargazers wanting a challenge can observe a notable opposition by asteroid 3 Juno on the 17th and watch for a few bright Leonid meteors.

Red **Mars** gleams high in the southern sky after sunset. **Saturn** sits westward in the constellation Sagittarius. A young crescent Moon passes near Saturn on the 10th and 11th. On the 15th a first quarter Moon skims by Mars, coming within 1 degree of the planet. The red planet receives a new visitor on November 26th, when NASA's InSight mission lands and begins its investigation of the planet's interior. News briefings and commentary will be streamed live at: bit.ly/landsafe

Two bright planets hang low over the western horizon after sunset as November begins: **Jupiter** and **Mercury**. They may be hard to see, but binoculars and an unobstructed western horizon will help determined observers spot them right after sunset. Both disappear into the Sun's glare by mid-month.

Early risers are treated to brilliant **Venus** sparkling in the eastern sky before dawn, easily outshining everything except the Sun and Moon. On November 6th, find a location with clear view of the eastern horizon to spot Venus next to a thin crescent Moon, making a triangle with the bright star Spica. The following mornings watch Venus move up towards Spica, coming within two degrees of the star by the second full week of November. Venus will be up three hours before sunrise by month's end – a huge change in just weeks! Telescopic observers are treated to a large, 61" wide, yet razor-thin crescent at November's beginning, shrinking to 41" across by the end of the month as its crescent waxes.

Observers looking for a challenge can hunt asteroid **3 Juno**, so named because it was the third asteroid discovered. Juno travels through the constellation Eridanus and rises in the east after sunset.

"Continued on page 7"

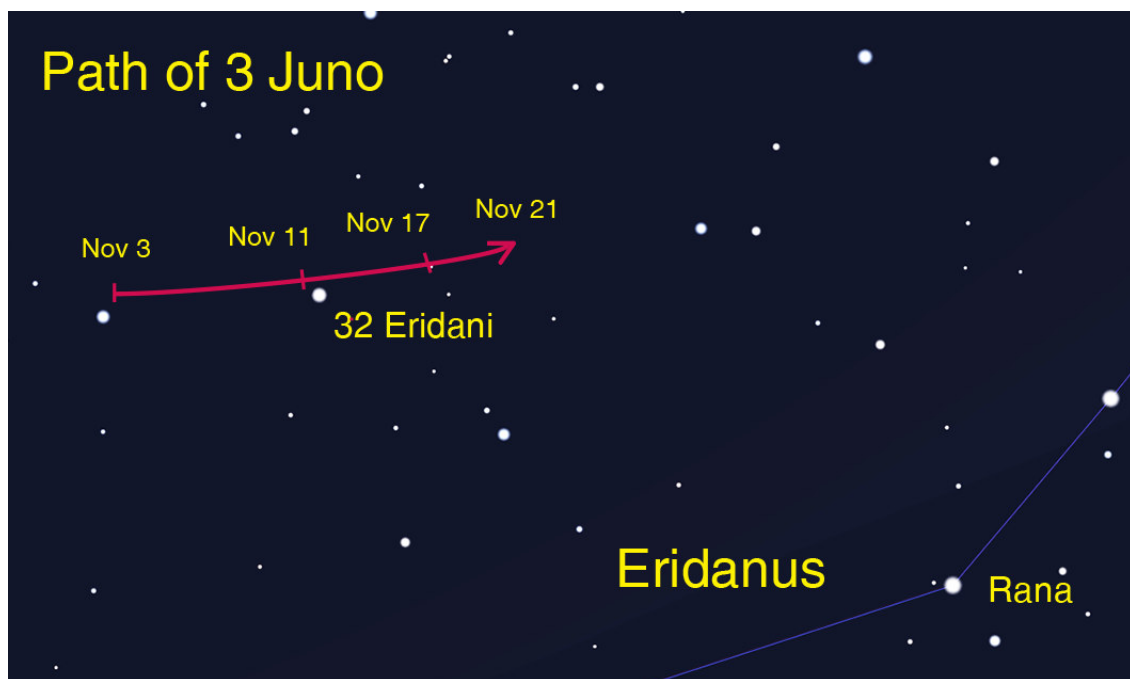
On November 17th, Juno is at opposition and shines at magnitude 7.4, its brightest showing since 1983! Look for Juno near the 4.7 magnitude double star 32 Eridani in the nights leading up to opposition. It is bright enough to spot through binoculars, but still appears as a star-like point of light. If you aren't sure if you have identified Juno, try sketching or photographing its star field, then return to the same area over the next several days to spot its movement.

The **Leonids** are expected to peak on the night of the 17th through the morning of the 18th. This meteor shower has brought “meteor storms” as recently as 2002, but a storm is not expected this year. All but the brightest meteors will be drowned out by a waxing gibbous Moon.

Stay warm and enjoy this month's dance of the planets!

You can catch up on all of NASA's current and future missions at [nasa.gov](https://www.nasa.gov)

With articles, activities and games **NASA Space Place** encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!



Caption: This finder chart shows the path of the asteroid 3 Juno as it glides past 32 Eridani in November 2018. The asteroid's position is highlighted for selected dates, including its opposition on the 17th. Image created in Stellarium for NASA Night Sky Network

Point and Shoot Camera Astroimaging

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

NGC 457 (Owl Cluster)

Specs: FL 1200mm, ISO 800, 8 x 1 min exposures, 10-09-18



In the lower left corner I included an insert. It shows a smaller version of the open cluster (NGC 457) with a transparent owl overlaid. This is the orientation and size of the owl which is center-right in my picture. The Owl Cluster resides in the constellation Cassiopeia and during this time of season it is inverted in our sky. So I rotated my picture 180 degrees to show the Owl in an upright position. At Starfest on Sunday morning (1:00 am), it was clear and the Owl Cluster was overhead. Using 12x56 image stabilization binoculars, I spotted the Owl although it was extremely small. Averted vision helped seeing some of the fainter cluster stars. After our October club meeting, a bunch of us went to the observatory. I used the Zeiss refractor to look at the Owl Cluster, it just fit inside the field of view, but the fainter cluster stars could not be resolved. No matter because the Owl's shape still could be seen with the brighter stars. The Owl Cluster is also known as the ET Cluster, or Caldwell 13 and lies over 7,900 ly away. NGC 457 has about 150 stars of magnitudes of 12-15.

MOONSCAPES

Submitted by Peter Talmage

I came across an October 2016 issue of Popular astronomy in my basement the other day and found this very interesting article. It seems that Russell Porter put his incredible skills at creating three dimensional drawings from two dimensional drawings to more than the Palomar telescope.

MOONSCAPES.

RUSSELL W. PORTER.

Astronomy, often considered the noblest of sciences, is usually viewed by the layman as an unbearably dry subject, and too rigorously exact to stir his imagination. This assumption is far from the truth. No sphere of research today offers more boundless fields of conjecture than the study of the heavens, aided by modern methods and instruments.

Our nearest neighbor, the moon, is a case in point. The writer, in viewing her surface through his sixteen inch reflector in the comfort of a closed observing room, has frequently caught himself transported to that body, and, in imagination, viewing her scenery from some crater lip or the vast expanse of one of her sea floors. Having himself spent many years above the Arctic Circle, he was struck by a strange likeness of the moon's general aspect to our own polar regions. The long reaches of the frozen polar ocean, traversed by immense pressure ridges and tidal cracks, the dazzling whiteness and clear cut shadows, the desolation and loneliness—all seemed to find a counterpart in the lunar appearance. The accompanying moonscapes were the natural outcome.

No great accuracy is claimed in their presentation. In fact they may be considered very much as flights of fancy, although the main feature and heights were plotted by the rules of perspective. The height of the eye has been assumed arbitrarily, as well as the direction and height of the sun. It is possible that, from one of the greater elevations, the curve of the horizon, or bulge of the moon, would be appreciable. And we are quite sure that it would cut sharp and clear against an intensely black sky.

One inevitable conclusion, at any rate, is always reached, after a prolonged journey over the ghastly whiteness of the moon's surface, and that is a more just appreciation of our own atmosphere, with its softening envelope of tints and haze, clouds and color.

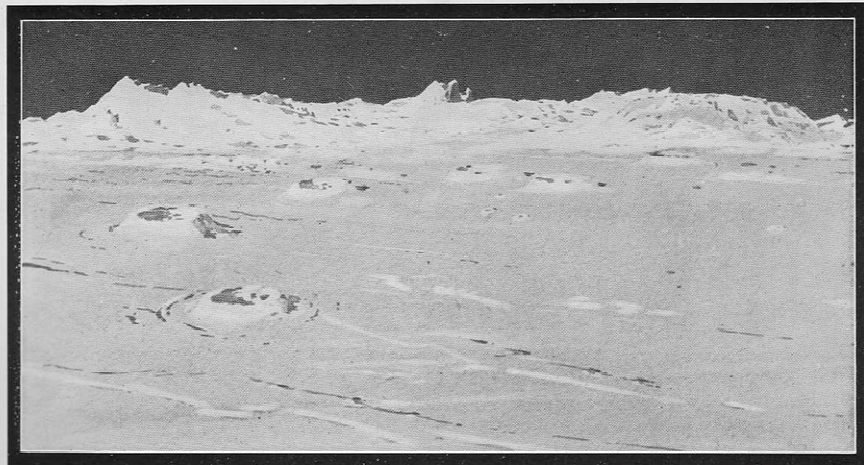
"Lands' End" Observatory.

Port Clyde, Maine.

June 1916.

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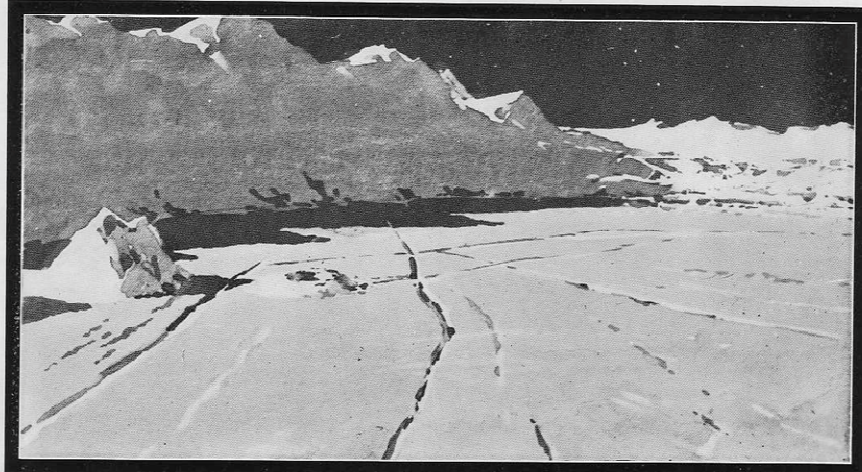
PLATE XXXI



APPROACH TO GASSENDI FROM THE MARE NUBIUM

A Moonscape drawn by Russell W. Porter, "Land's End" Observatory, Port Clyde, Maine.
POPULAR ASTRONOMY, No. 238.

PLATE XXXII



THE FLOOR OF GASSENDI, LOOKING SOUTH

POPULAR ASTRONOMY, No. 238.

A Moonscape drawn by Russell W. Porter.

PLATE XXXIII



LOOKING NORTH OUT OF GASSENDI
A Moonscape drawn by Russell W. Porter.

POPULAR ASTRONOMY, No. 238.

Club Meeting & Star Party Dates

Date	Subject	Location
November 2	<p><u>ASNNE Club Meeting:</u></p> <p>Business Meeting starts at 6:00PM</p> <p>7:30-9:30PM: Club Meeting</p> <p>Guest Speaker: Jerry LaSala Professor of Physics at USM will talk about "Pluto's Demotion."</p> <p>Bernie Reim - What's UP</p> <p>Astro Shorts: (news, stories, jokes, reports, questions, photos, observations etc.)</p> <p>NOTE: If skies are clear members may go to Starfield Observatory for an observing session.</p>	The New School, Kennebunk, Me.
TBD	<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

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

2019 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 _____

