

# Skylights

Newsletter of the Astronomical Society of Northern New England



**AUG 2019**



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

**T**he month of August is named after Augustus Caesar. This is the last full month of summer already and the heat has finally caught up with us, but you should not let that deter you from enjoying and learning more about the many wonders of the night sky as long as it is at least partly clear.

There are several good highlights to look for this month. These will include Jupiter and Saturn continuing to rule the evening and night sky, Mercury making a nice appearance in the morning sky, the peak of the Perseid meteor shower, 3 asteroids at opposition, and the first in a string of fairly bright comets that will last for more than a year.

Jupiter now rises 2 hours before sunset, so it is already nice and high in the southwestern sky by the time it gets dark. The king of the planets was at its best two months ago, and it will end its retrograde or westward motion towards Antares, the red super giant star in Scorpius, on August 11, just one day before the Perseid meteor shower will peak. Then it will continue on its normal, direct or eastward motion against the fixed background of stars for the next 8 months.

When looking at this brilliant planet in our sky, remember that we sent a mission up there named Juno that started orbiting the planet 2 years ago in highly elliptical 53-day orbits. Juno has taken thousands of amazing pictures that help us to understand this giant gas planet a little better. We learned that Jupiter has about 5 times the oxygen that the sun has and that Jupiter has liquid water above its deepest clouds. It also has an interior magnetic field that changes over time. Juno is scheduled to complete 37 orbits, which should happen in July of 2021, just a few months after the James Webb space telescope is finally scheduled to launch after setting it back many times. This telescope will have to work perfectly the first time since it will be going into orbit at the L 2 Lagrangian point about 1.5 million miles away from Earth. There are five areas where the

gravitational influence of the sun-earth-moon system balances out perfectly.

Saturn was at its best last month and is also very visible in the southern evening sky 30 degrees or one constellation to the east or left of Jupiter by the time it gets dark. The ringed planet will remain in retrograde motion until the middle of next month. Notice that it appears to glow with a soft golden light and is about 10 times fainter than Jupiter.

Through a telescope you will see that Saturn's rings are tilted at 25 degrees to our line of sight and that the north Polar Regions appear dusky gray and that the temperate regions appear more yellowish. You should be able to see at least 5 of its 62 moons in an average telescope. Titan is the largest one, and it is bigger than both Mercury and Pluto. You can see the four large Galilean moons of Jupiter's 79 moons just with a good pair of binoculars. Pluto is just 6 degrees, or 3 fingers at arm's length to the east of Saturn, but it is 400,000 times fainter and requires a 10-inch telescope to see it.

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

The only other planet that is visible now is Mercury. It will make a good appearance in the morning sky after the first week of this month. Notice that it will form a nearly straight line with Castor and Pollux in Gemini, not too far from where it was when Mercury was still an evening planet located very close to Mars. At only 3,000 miles in diameter, our first planet is a dynamic and interesting cratered world that has the most iron in its molten core of any planet and also the largest temperature range of over 1,000 degrees between day and night of any planet in our solar system. It will reach 800 degrees F on the side facing the sun and -300 deg. F on the night side, because it has no atmosphere, unlike Venus which is just a steady 800 degrees everywhere.

One year on Mercury lasts 88 days and one day lasts 59 days, meaning that it rotates very slowly, only 6 miles per hour, or a comfortable jogging speed. Only Venus rotates slower at 4 mph. Our moon also rotates quite slowly, at 10 mph and one day lasts a full month.

When you look at this little planet in our morning sky that is smaller than two of our solar system's moons, Ganymede and Titan, be aware that we launched a mission there last October named BepiColombo after the Italian scientist who first figured out how to use gravity assist for interplanetary maneuvering. It will not arrive there until December of 2025 due to complicated orbital mechanics and the strong gravitational force of the sun.

The Perseid meteor shower will peak on Monday night the 12<sup>th</sup> into Tuesday morning the 13<sup>th</sup>. Unfortunately the full moon is only two days later so you will only have a small window of one hour before dawn after the moon sets. Caused by Comet Swift-Tuttle, this shower usually produces at least 60 meteors per hour, but you won't see that many this year. However, it will still be worth it to try catch some bright bolides streaking through our sky.

An asteroid named 15 Eunomia will reach opposition in Aquarius the same night that the Perseids will peak. It will reach 8.2 magnitude, or about 7 times fainter than anything that you could see without optical aid. Two other asteroids, Psyche and Laetitia will also reach opposition this month, on the 6<sup>th</sup> and the 16<sup>th</sup> respectively.

We had a lucky string of 6 or 7 fairly bright comets, about one per month that ended earlier this year. Now we will start a new string of 9<sup>th</sup> magnitude or brighter comets starting next month and lasting for more than a year. This month we can see 11<sup>th</sup> magnitude comet Africano near the Big Dipper with a good telescope.

As if it were helping us to draw attention to it and to celebrate the 50<sup>th</sup> anniversary of one of humankind's greatest achievements, the new moon caused a total solar eclipse over South America and then our shadow was projected onto the moon to create a partial lunar eclipse on July 16, exactly 50 years after we successfully launched to the moon and 4 days before we actually landed there for the first time.

Aug. 1. Maria Mitchell was born on this day in 1818. She was America's first female astronomer and the first American scientist to discover a comet. Maria also did a lot for the advancement of women in science.

Aug. 3. The Messenger spacecraft was launched to Mercury on this day in 2004.

Aug.4. The Phoenix mission was launched to Mars to land near its North Pole on this day in 2007.

Aug.6. The Curiosity Rover was launched to Mars on this day in 2012.

Aug. 7. First quarter moon is at 1:31 p.m. EDT.

Aug. 9. The moon passes two degrees north of Jupiter this evening.

Aug. 12. The moon passes less than one degree south of Saturn this morning.

Aug. 13. The Perseid Meteor shower peaks this morning.

Aug. 14. Venus is in superior conjunction with the sun and will not become visible again for 2 more months.

Aug. 15. Full moon is at 8:29 a.m. This is also known as the Sturgeon, Green Corn, or Grain Moon.

Aug. 23. Last quarter moon is at 10:56 a.m.

Aug. 25. Mars is at aphelion or farthest from the sun this evening. It will not be visible again for a couple more months. The Spitzer infrared telescope was launched on this day in 2003. This was one of the family of four space telescopes that cover a large spectrum of light from gamma ray to infrared.

Aug.30. New moon is at 6:37 a.m.

## Moon Phases

**Aug 7**  
First Quarter

**Aug 15**  
Full

**Aug 23**  
Last Quarter

**Aug 30**  
New

## Moon Data

**Aug 2**  
Moon at perigee

**Aug 9**  
Jupiter 2° south  
of Moon

**Aug 12**  
Saturn 0.04° north  
of Moon

Pluto 0.1° south of  
Moon

**Aug 17**  
Moon at apogee

Neptune 4° north of  
Moon

**Aug 21**  
Uranus 5° north  
of Moon

## OBSERVER'S CHALLENGE\* – August, 2019

*By Glenn Chaple*

### Messier 11 (NGC 6705) – Open Cluster in Scutum (Mag: 5.8 Size: 14')

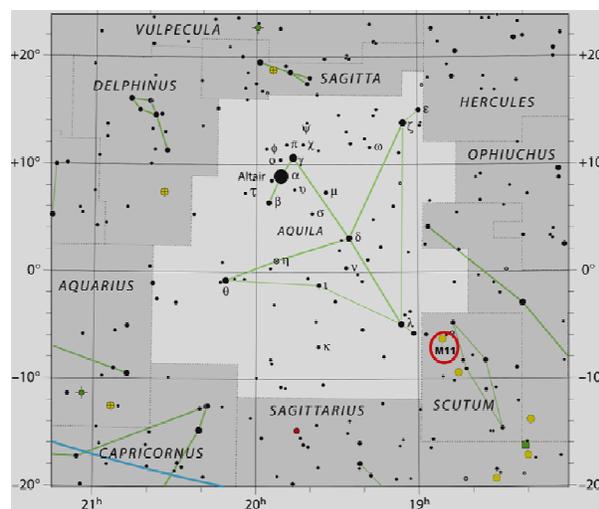
If prolonged squinting at our recent spate of Observer's Challenge 11<sup>th</sup> magnitude galaxies has left you with a severe case of eye strain, you'll appreciate this month's "eye-opener" - the open cluster Messier 11. Slightly brighter than 6<sup>th</sup> magnitude, M11 is visible to the unaided eye from dark-sky locations.

M11 is a small (only about ¼ degree in diameter) but rich stellar assemblage. It contains nearly 3000 stars, 500 of which are magnitude 14 or brighter.

Using 10X50 binoculars on a hazy and humid summer evening, I had no trouble spotting M11 just southwest of a sleigh-shaped asterism comprised of the stars 14, 15, lambda (λ), and 12 Aquilae, plus eta (η) and beta (β) Scuti. It took on a grainy appearance when viewed with my 4.5-inch f/8 reflector – especially when averted vision was used. No need for averted vision when I turned my 10-inch f/5 reflector on M11! A grainy haze became a splash of dozens of stars brighter than 12<sup>th</sup> magnitude. A 9mm Nagler wide-field eyepiece, which yielded 139X and a 0.6 degree field, provided the best view

So what sort of challenge would a naked eye cluster offer? Where M11 is concerned, I'd focus on its nick-name, the "Wild Duck" Cluster. The moniker arises from the cluster's supposed V shape, reminiscent of a flock of migrating ducks. I just don't see it, and the images by Mario Motta and Doug Paul bring to mind a circular flock of starlings or blackbirds. What do you see?

M11 was discovered by the German astronomer Gottfried Kirch in 1681 and catalogued by Messier in 1762. It lies about 6200 light years away.



[www.messier-objects.com](http://www.messier-objects.com), IAU, and *Sky and Telescope*

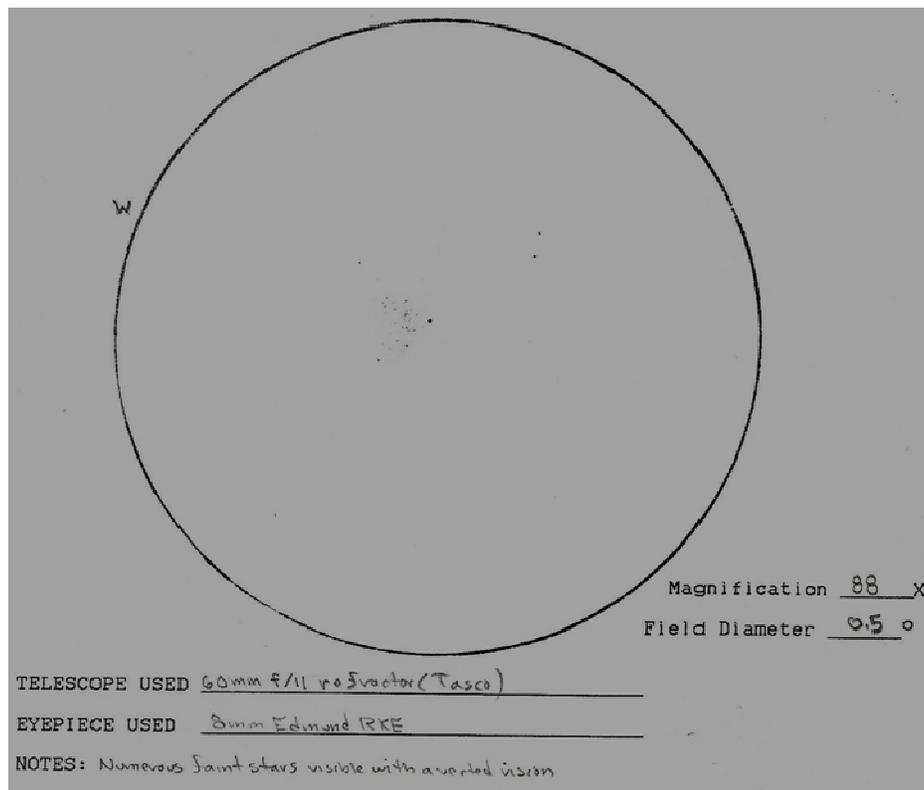
*"Continued on page 4"*



Mario Motta, MD (ATMoB)



Doug Paul (ATMoB)



Sketch by Glenn Chaple (ATMoB)

\*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing and is open to everyone who is interested. Contributed notes, drawings, or photographs will be published in a monthly summary. Submit them to Roger Ivester (rogerivester@me.com). To access past reports, log on to [rogerivester.com/category/observers-challenge-reports-complete](http://rogerivester.com/category/observers-challenge-reports-complete).

## Principal Meteor Showers in 2019

**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

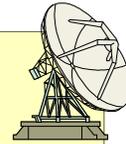
**November 26**  
Andromedids

**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 [dbianchi@metrocast.net](mailto:dbianchi@metrocast.net) 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!

## **Chill Out: Spot an Ice Giant in August**

By David Prosper

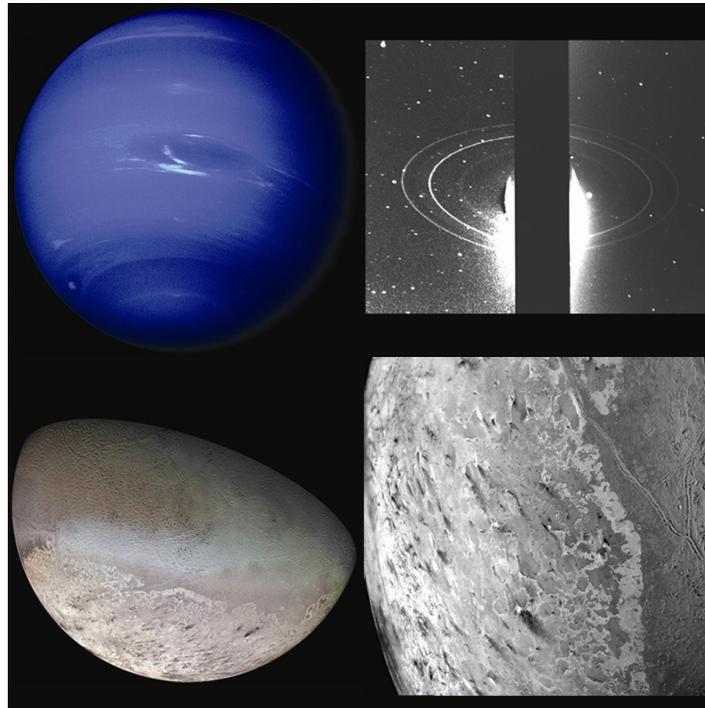
Is the summer heat getting to you? Cool off overnight while spotting one of the solar system's ice giants: **Neptune!** It's the perfect way to commemorate the 30th anniversary of Voyager 2's flyby.

Neptune is too dim to see with your unaided eye so you'll need a telescope to find it. Neptune is at opposition in September, but its brightness and apparent size won't change dramatically as it's so distant; the planet is usually just under 8th magnitude and 4.5 billion kilometers away. You can see Neptune with binoculars but a telescope is recommended if you want to discern its disc; the distant world reveals a very small but discernible disc at high magnification. Neptune currently appears in Aquarius, a constellation lacking in bright stars, which adds difficulty to pinpointing its exact location. Fortunately, the Moon travels past Neptune the night of August 16<sup>th</sup>, passing less than six degrees apart (or about 12 Moon widths) at their closest. If the Moon's glare overwhelms Neptune's dim light, you can still use the its location that evening to mark the general area to search on a darker night. Another Neptune-spotting tip: Draw an imaginary line from bright southern star Fomalhaut up to the Great Square of Pegasus, then mark a point roughly in the middle and search there, in the eastern edge of Aquarius. If you spot a blue-ish star, swap your telescope's eyepiece to zoom in as much as possible. Is the suspect blue "star" now a tiny disc, while the surrounding stars remain points of white light? You've found Neptune!

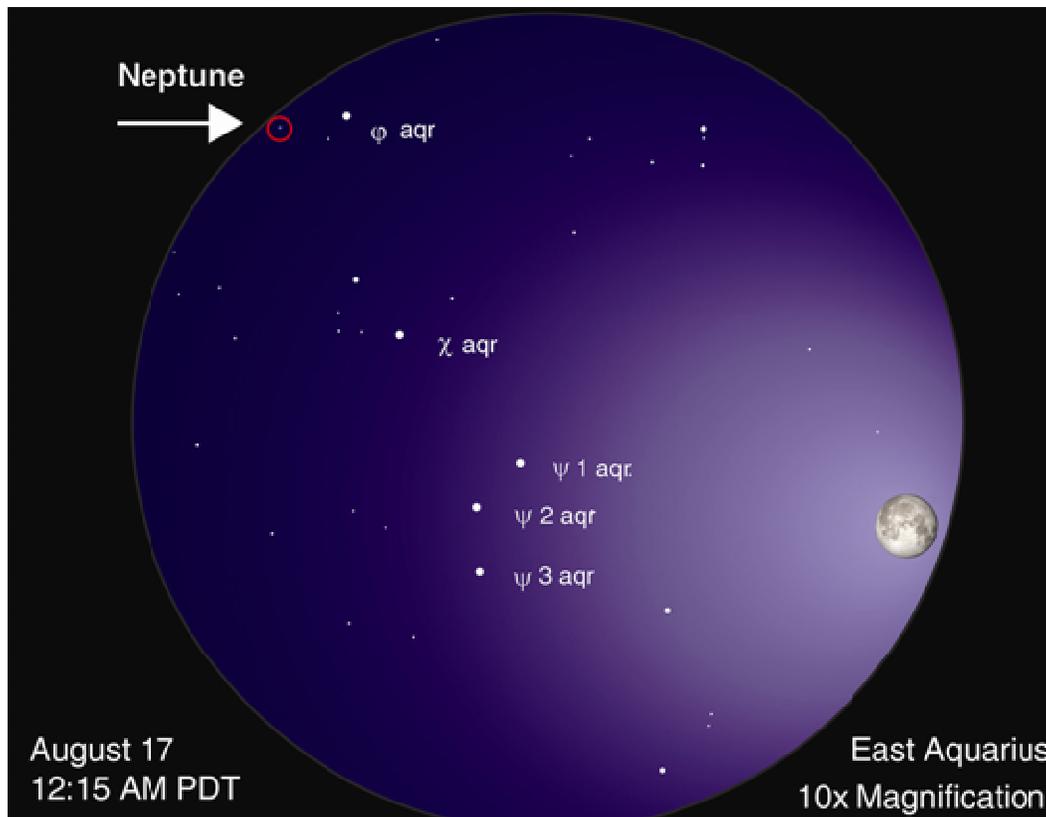
Neptune and Uranus are ice giant planets. These worlds are larger than terrestrial worlds like Earth but smaller than gas giants like Jupiter. Neptune's atmosphere contains hydrogen and helium like a gas giant, but also methane, which gives it a striking blue color. The "ice" in "ice giant" refers to the mix of ammonia, methane, and water that makes up most of Neptune's mass, located in the planet's large, dense, hot mantle. This mantle surrounds an Earth-size rocky core. Neptune possesses a faint ring system and 13 confirmed moons. NASA's Voyager 2 mission made a very close flyby on August 25, 1989. It revealed a dynamic, stormy world streaked by the fastest winds in the solar system, their ferocity fueled by the planet's surprisingly strong internal heating. Triton, Neptune's largest moon, was discovered to be geologically active, with cryovolcanoes erupting nitrogen gas and dust dotting its surface, and a mottled "cantaloupe" terrain made up of hard water ice. Triton is similar to Pluto in size and composition, and orbits Neptune in the opposite direction of the planet's rotation, unlike every other large moon in the solar system. These clues lead scientists to conclude that this unusual moon is likely a captured Kuiper Belt object.

Discover more about Voyager 2, along with all of NASA's past, present, and future missions, at [nasa.gov](https://nasa.gov)

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Clockwise from top left: Neptune and the Great Dark Spot traced by white clouds; Neptune's rings; Triton and its famed icy cantaloupe surface; close up Triton's surface, with dark streaks indicating possible cryovolcano activity. Find more images and science from Voyager 2's flyby at [bit.ly/NeptuneVoyager2](https://bit.ly/NeptuneVoyager2) Image Credit: NASA/JPL



Finder chart for Neptune. This is a simulated view through 10x50 binoculars (10x magnification). Please note that the sizes of stars in this chart indicate their brightness, not their actual size. Moon image courtesy NASA Scientific Visualization Studio; chart created with assistance from Stellarium.

## Point and Shoot Camera Astroimaging

### Canon Powershot SX50 HS

*Image & write-up submitted by Paul Kursewicz*

M16 (Eagle Nebula)

Specs: RAW, f/3.5, FL 1200mm, 4 x 2 min, ISO 1250, 7-6-19



**The Eagle Nebula**, also known as Messier 16, consists of a star cluster, many emission nebulae, and dark nebulae. It's located in the constellation Serpens the Serpent. The dark nebula in the central part of M16 are the "Pillars of Creation," made famous by the Hubble Space Telescope. In the late 18th century, only the star cluster could be seen and became known as the "Snow Queen Cluster." The advent of astrophotography revealed a large area of glowing hydrogen gas (emission nebula) that was invisible to the unaided eye, and that looked somewhat like an eagle with outstretched wings, giving rise to the current common name of Eagle Nebula. Higher resolution imaging began to reveal more and more features, particularly the dark patches (aka *dark nebulae*), and many distinct features within the Eagle Nebula were given individual names. Like, the "Pillars of Creation," and "Stella Spire" which is located on the left side of the Eagle. The nebula is about 7,000 light years away and measures around 70 light years by 55 light years. I was very surprised as to how much detail I could pick up with my Point and Shoot camera with a total exposure time of eight minute. This picture was taken on the night of our July 2019 club picnic.

# JULY'S ASNNE Club Picnic



*"Continued on page 10"*



**Above:**  
**Ian assembling his rocket.**

**Right:**  
**We have lift-off.....**



All photos were taken with my Canon PowerShot SX620 HS pocket camera. The two pictures of Jupiter (one showing three of its moons) and the picture of Saturn were taken by me holding the camera in front of an eye-piece of the club's Zeiss refractor. For the close-ups of Jupiter and Saturn, I zoomed in my camera lens. I also tweaked the two close-up pictures in Photoshop.



**Editor: The following is an edited version of Carl Gurtman's Press Release**

At our August Meeting, ASNNE is proud to present Professor Mark McConnell. The title of his talk is: ***"Gamma-Ray Bursts – A Scientific Detective Story"***



Dr. McConnell is a full Professor in the Physics Department of New Hampshire (UNH). His research in gamma-energetic processes that take place in the Universe. Students, both graduate and undergraduate, participate

partment and Space Science Center at the University ray astronomy offers an insight into some of the most Students are an integral part of McConnell's research. in all aspects of his work.

His academic career started at Case Western Reserve University, where he completed his undergraduate work in 1980. Coming to UNH for graduate work, he obtained his PhD in 1987. For his PhD thesis, he worked on the development of a balloon-borne gamma-ray telescope. Post-doctorate work at the Max Planck Institute for Extraterrestrial Physics in Munich followed, where Dr. McConnell worked on the COMPTEL instrument for the Compton Gamma Ray Observatory (CGRO) mission. Returning to UNH in 1989, he continued his involvement in CGRO, which was launched by the Space Shuttle in 1991. His scientific studies with CGRO focused on research involving the accretion of matter onto compact objects (such as neutron stars and black holes), studies of gamma-ray bursts, and studies of high energy radiations from solar flares.

Dr. McConnell's recent career has focused on the development of new detectors for gamma-ray astronomy, some of which have flown on high-altitude balloons, with a focus on measuring the polarization of gamma rays in gamma-ray bursts and solar flares. He is currently working with colleagues at NASA to place a gamma-ray burst polarimeter on the International Space Station (ISS).

After having spent five years as chair of the UNH Physics Department, Dr. McConnell is now serving as Director of a branch of office of Southwest Research Institute (SwRI) on the UNH campus. SwRI is the organization that, among other accomplishments, leads both the New Horizons and Juno missions.



*Preparations for a high altitude balloon flight of the Gamma-Ray Polarimeter Experiment (GRAPE) at NASA's Columbia Scientific Balloon Facility in Ft. Sumner, NM.*

## Club Meeting & Star Party Dates

| Date              | Subject  | Location  |
|-------------------|--|---|
| <u>Aug 2</u>      | <p><b><u>ASNNE Club Meeting:</u></b><br/> <b>Business Meeting</b> 6:30 PM</p> <p><b>Beginners Class</b> 6:30 - 7:30 PM<br/>           Bernie Reim will conduct the class.</p> <p><b>Regular Meeting</b> 7:30-9:30 PM</p> <p><b>Professor Mark McConnell</b> from the University of New Hampshire will be our guest speaker this month. His talk is titled: <i>"Gamma-Ray Bursts – A Scientific Detective Story."</i> For more details about Professor Mark McConnell and his presentation see page 11.</p> <p><b>Bernie Reim</b> - What's UP</p> <p><b>Astro Shorts:</b> (news, stories, reports, questions, photos)</p> | <u>The New School, Kennebunk, Me.</u>                   |
| <u>Last Month</u> | <p><b>Club Picnic at Talmage Observatory at Starfield.</b><br/>           We had a good turn-out and much enjoyment despite those pesky mosquitoes. Even though it was mostly cloudy early on, we were still able to look at the Moon, Jupiter and Saturn. Later on around 12:00 am the night sky did clear up which allowed for astroimaging &amp; deep sky observing. There were several scopes set up in the field also.</p>  |   |
| <u>TBD</u>        | <p><b>Club/Public Star Party:</b> If skies are clear members may go to the observatory after the meeting/picnic.</p>   | Talmage Observatory at Starfield<br>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

**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 \_\_\_\_\_

