

Skylights

Newsletter of the Astronomical Society of Northern New England



OCT 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 October

By Bernie Reim

October is the first full month of autumn in the northern hemisphere and this is usually a great month to get outside under the night sky and enjoy a few of its many wonders before it gets considerably colder.

Our landscape on earth is being transformed by the wonderful foliage now just as our celestial landscape above us marches on inexorably towards another winter. We will soon lose some summer constellations like Scorpius and Sagittarius, where Jupiter and Saturn are currently dwelling, and to replace them we will gain Auriga and Taurus, the top part of the Winter Hexagon. All of Orion will not rise until midnight, but by next month it will be prominent by 10 pm, and you will know that winter is once again right on our doorstep.

There are many interesting highlights this month including 6 planets being visible in the evening sky, the return of both of our celestial next door neighbors, Venus and Mars, several nice conjunctions of the moon with the planets, and two meteor showers.

Two of those six planets will require binoculars or a telescope, but it is nice to know where they are. Uranus is at opposition on the 27th in the constellation of Aries. It will get as bright as 5.7 magnitude, and the limiting magnitude of an object to be visible without optical aid is 6.0. I have never seen this planet without optical aid, but it is technically possible from a dark sky site. Discovered on March 13 of 1781 by William Herschel, this was the first planet discovered with a telescope and it was originally named Planet George, after King George III. It was soon renamed to Uranus, after the Greek god of the heavens and the father of the Titans of Greek mythology.

It takes 84 years for Uranus to complete one orbit around the sun and it is tilted on its side 90 degrees with respect to the ecliptic plane. It also rotates the opposite way of all the other planets except for Venus, which also rotates from east to west which means the sun would rise in the

west on those two planets. It has 27 moons and 13 distinct rings, which are different from the rings of all the other gas planets. Some of its rings are 77 Kelvin, or minus 321 degrees F, which is the boiling point of nitrogen, when it turns from a liquid into a gas. The surface of this gas giant planet is even colder, only 47 Kelvin. Its rings were only discovered recently, in March of 1977, nearly 200 years after the planet itself was discovered.

The other faint planet now visible in the evening sky is Neptune, our eighth and last planet, at least for now. Neptune is in Aquarius and was at opposition last month. It takes 165 years to complete one orbit and it was discovered on Sept. 23 of 1846 by three different people. It has only completed a little more than one orbit since it was first discovered.

Jupiter continues to set a little earlier and travel a little further away from us each evening. The king of the planets will set just 2 and half hours after sunset by the end of this month.

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What's Up "Continued from page 1"

It is still in Scorpius and is moving in its normal, prograde or eastward motion against the background of stars. Watch the waxing crescent moon pass just to the left of Jupiter on the evening of October 3rd.

Saturn is about two hours behind Jupiter and one constellation to the east, or left of Jupiter. The ringed planet will reach about 30 degrees high in our South-Southwestern sky 45 minutes after sunset. It will reach eastern quadrature on the 7th, which means that its shadow is cast farthest to the side, giving it its most three-dimensional appearance. It is also moving in direct motion now and it will set around 10 pm by the end of the month. The first quarter moon will be just to the left of Saturn on the evening of the fifth.

Venus will finally reappear in our evening sky after a long absence. We last saw it on July 21 in the morning sky before it went to superior conjunction with the sun when it is fully illuminated but farthest away at the same time. Look for it low in the western sky right after sunset. Even by the end of the month, Venus will only set one hour after sunset. Mercury will be near Venus in the evening sky all month and it will reach its greatest eastern elongation of 25 degrees from the sun on the 19th. It will transit the sun next month, so I will write much more about it then.

Then Mars is reappearing in our morning sky in the constellation of Virgo after an equally long absence from our evening sky since the middle of July. The red planet will rise nearly two hours before the sun by the end of the month. Mars is quite far away right now, over two and a half times our average distance to the sun, but by next year at this time when Mars reaches opposition; its disk will appear 6 times larger in our sky. The northern hemisphere of Mars will experience its summer solstice on October 7th.

The Southern Taurid meteor shower will peak on the 10th. It is a minor shower caused by Comet Encke, which has the shortest period (3.3 years) of any known periodic comet. Even at its peak, it will only reach 5 meteors per hour, but it is known to generate some brilliant fireballs which can get brighter than the full moon.

Then the more famous Orionids will peak on the 21st. Those are caused by the earth passing through the debris trail of Halley's

Comet. That comet also creates the Eta Aquarid Meteor Shower every May when we pass through this famous comet's inbound path. The moon will be full on the 13th of this month, so that means that the moon will be last quarter and rising around midnight to spoil the rest of this show on Monday the 21st. You can expect about 20 meteors per hour at its peak, all emanating from the constellation of Orion, which will rise by 11 pm that night.

Oct. 1. The Yerkes Observatory in Wisconsin was dedicated on this day in 1897. Designed by George Ellery Hale, its 40-inch refractor was the largest telescope in the world at the time, and is even now the largest refractor in the world. Right now the largest telescope in the world is a reflector on the Canary Islands which measures 34 feet or 409 inches in diameter. Three much larger reflecting telescopes are being designed right now, one of which will be nearly 40 meters across, over 3 times larger. Maria Mitchell, the first professional female astronomer in the U.S., discovered a comet on this day in 1847.

Oct.3. The moon and Jupiter will be just one and a half degrees apart this evening.

Oct.4. The Russians launched Sputnik on this day in 1957, essentially beginning the space age and the space race.

Oct. 5. The moon and Saturn are just 2 degrees apart this evening. First quarter moon is at 12:48 pm.

Oct. 10. The Southern Taurid Meteor shower will peak tonight.

Oct. 13. Full moon is at 5:09 p.m. EDT. This is also called the Hunter's Moon.

Oct. 16. The moon will pass below the Pleiades and above Aldebaran in Taurus tonight.

Oct. 21. The Orionid Meteor Shower will peak tonight. Last quarter moon is at 8:40 a.m. Watch the moon pass below Castor and Pollux in Gemini one hour before sunrise.

Oct. 26. A very thin waning crescent moon will pass just above Mars half an hour before sunrise this morning.

Oct. 27. New moon is at 11:40 p.m.

Oct. 31. On this day in 2005 the Hubble Space Telescope discovered Nix and Hydra, two more moons of Pluto. Then it would discover Kerberos in 2011 and Styx in 2012. All 4 of those moons are only 20 to 30 miles across and they tumble chaotically around Pluto and Charon, which are 1500 miles and 750 miles in diameter.

Moon Phases

Oct 5
First Quarter

Oct 13
Full

Oct 21
Last Quarter

Oct 27
New

Moon Data

Oct 3
Jupiter 1.9° south
of Moon

Oct 5
Saturn 0.3° north of
Moon

Oct 6
Pluto 0.08° south
of Moon

Oct 10
Moon at apogee
Neptune 4° north of
Moon

Oct 14
Uranus 4° north
of Moon

Oct 26
Moon at perigee

Oct 29
Mercury 7° south
of Moon

Venus 4° south
of Moon

OBSERVER'S CHALLENGE* –OCTOBER, 2019

by Glenn Chaple

NGC 7448 – Spiral Galaxy in Pegasus (Mag: 11.4 Size: 2.7' X 1.2')

As promised last month, we leave the relatively easy Messier stuff behind and return to the realm of the faint fuzzies – in this case the spiral galaxy NGC 7448 in Pegasus. When William Herschel discovered it on October 16, 1784, he assigned it the Herschel Catalog designation H251² – his 251st Class II entry. The Class II category was reserved by Herschel for what he considered to be “Faint Nebulae”. As such, it is a visual challenge for owners of modest-sized telescopes.

Viewed with my 10-inch f/5 reflector under magnitude 5 skies, NGC 7448 was a ghostly presence – a rather faint averted vision sight. I sensed an oval shape with a NW/SE orientation – an impression verified by descriptive notes in Volume 1 of Kepple and Sanner's *Night Sky Observer's Guide* and images sent by Doug Paul and Mario Motta.

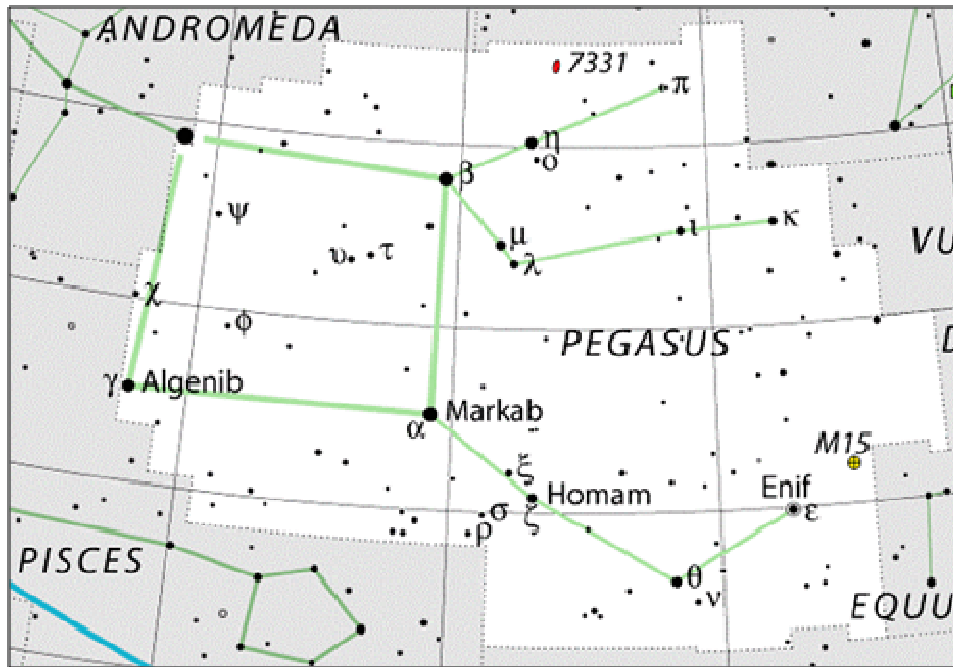
Motta's image shows bright detached segments surrounding the inner disk. Because of these, Halton Arp included NGC 7448 in his *Atlas of Peculiar Galaxies* with the designation Arp 13.

The 2000.0 coordinates for NGC 7448 are 23h00m, +15°59'. Star-hoppers can work with the finder charts below, which show its location 1 ½ degrees WNW of Markab (alpha [α] Pegasi). NGC 7448 is approximately 80 million light years from Earth and is about 60,000 light years in diameter.

**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.*

“Continued on page 4”

Finder charts for NGC 7448



www.constellation-guide.com (from IAU and *Sky & Telescope*)

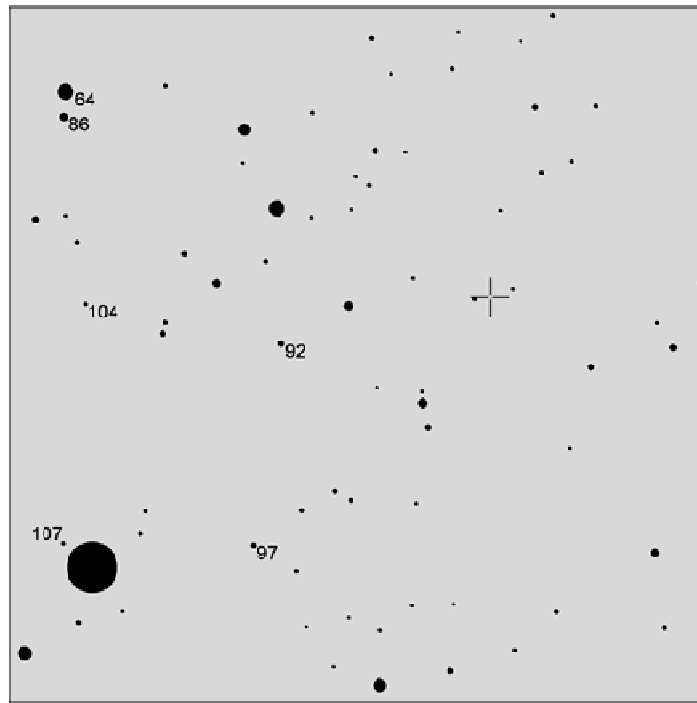


Chart created using AAVSO's Variable Star Plotter (VSP). North is up on a 2-degree field; limiting magnitude 11. Numbers indicate magnitudes of field stars (decimals omitted). Bright star at lower left is Markab (alpha [α] Pegasi). The location of NGC 7448 is shown with a "+".

"Continued on page 5"



NGC 7448 (Image by Mario Motta, MD)

Taken with 32 inch scope SBIG STL 1001E camera, 5 min subs, 60 min total.



NGC 7448 (Image by Doug Paul)

**Cannon 80D, 600mm f4.0 lens (150mm aperture), iso 800,
71x30 sec = 35.5 minutes, plate scale 1.3 arc-sec/pixel, north up.**

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

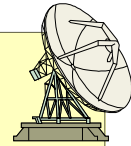
November 26
Andromedids

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



*ALL money raised goes to our operating fund.
Any design can be put on any item.*

Contact David Bianchi 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 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!

Find Strange Uranus in Aries

By David Prosper

Most of the planets in our solar system are bright and easily spotted in our night skies. The exceptions are the ice giant planets: Uranus and Neptune. These worlds are so distant and dim that binoculars or telescopes are almost always needed to see them. A great time to search for Uranus is during its opposition on October 28, since the planet is up almost the entire night and at its brightest for the year.

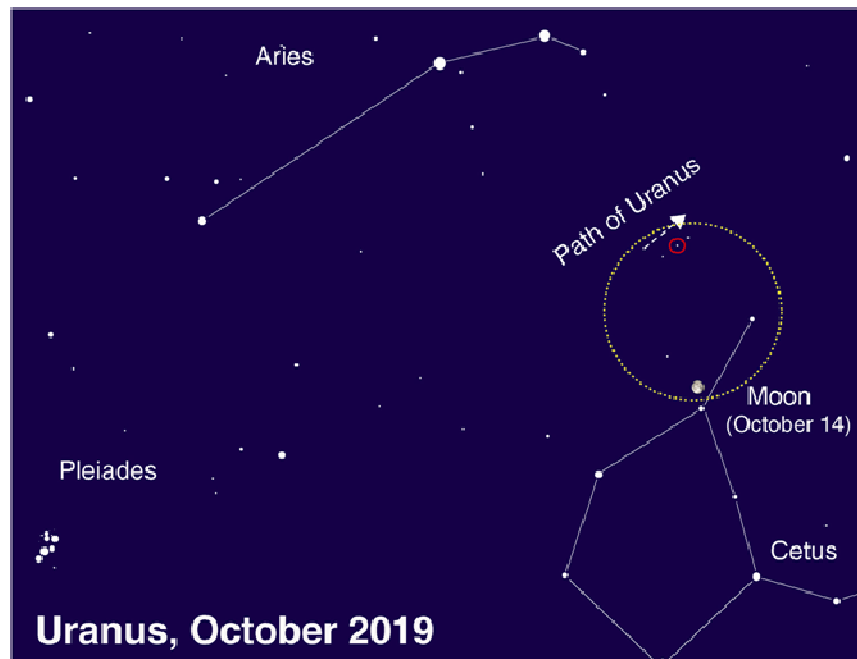
Search for Uranus in the space beneath the stars of Aries the Ram and above Cetus the Whale. These constellations are found west of more prominent Taurus the Bull and Pleiades star cluster. You can also use the Moon as a guide! Uranus will be just a few degrees north of the Moon the night of October 14, close enough to fit both objects into the same binocular field of view. However, it will be much easier to see dim Uranus by moving the bright Moon just out of sight. If you're using a telescope, zoom in as much as possible once you find Uranus; 100x magnification and greater will reveal its small greenish disc, while background stars will remain points.

Try this observing trick from a dark sky location. Find Uranus with your telescope or binoculars, then look with your unaided eyes at the patch of sky where your equipment is aimed. Do you see a faint star where Uranus should be? That's not a star; you're actually seeing Uranus with your naked eye! The ice giant is just bright enough near opposition - magnitude 5.7 - to be visible to observers under clear dark skies. It's easier to see this ghostly planet unaided after first using an instrument to spot it, sort of like "training wheels" for your eyes. Try this technique with other objects as you observe, and you'll be amazed at what your eyes can pick out.

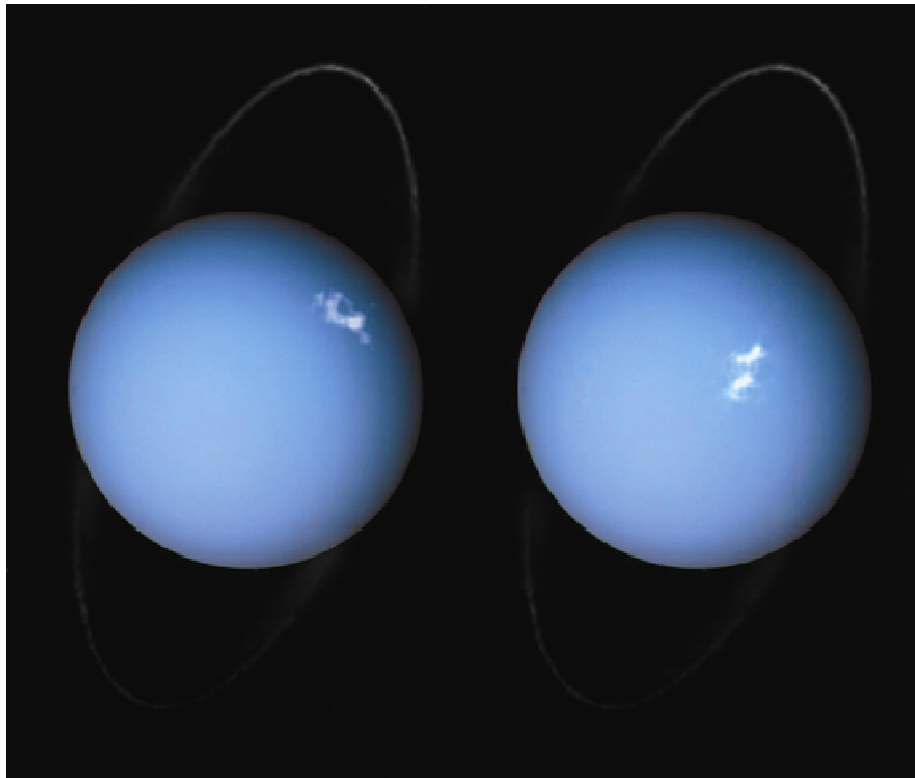
By the way, you've spotted the first planet discovered in the modern era! William Herschel discovered Uranus via telescope in 1781, and Johan Bode confirmed its status as a planet two years later. NASA's Voyager 2 is the only spacecraft to visit this strange world, with a brief flyby in 1986. It revealed a strange, severely tilted planetary system possessing faint dark rings, dozens of moons, and eerily featureless cloud tops. Subsequent observations of Uranus from powerful telescopes like Hubble and Keck showed its blank face was temporary, as powerful storms were spotted, caused by dramatic seasonal changes during its 84-year orbit. Uranus's wildly variable seasons result from a massive collision billions of years ago that tipped the planet to its side.

Discover more about NASA's current and future missions of exploration of the distant solar system and beyond at nasa.gov

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Caption: The path of Uranus in October is indicated by an arrow; its position on October 14 is circled. The wide dashed circle approximates the field of view from binoculars or a finderscope. Image created with assistance from Stellarium.



*Caption: Composite images taken of Uranus in 2012 and 2014 by the Hubble Space Telescope, showcasing its rings and auroras. More at bit.ly/uranusauroras
Credit: ESA/Hubble & NASA, L. Lamy / Observatoire de Paris*

Point and Shoot Camera Astroimaging

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

Witch's Broom Nebula (NGC 6960)

Specs: RAW, f/3.5, FL 721mm, 8 x 3 min 30 sec, ISO 1200, 8-2-19



Since Halloween occurs this month I thought it would be fitting to make the **Witch's Broom** my picture of the month. NGC 6960 is actually the Western part of the Veil Nebula - a supernova remnant that spans 3 degrees in the constellation Cygnus. NGC 6960 is known as the "**Witch's Broom**" a delicate filamentary structure which resembles its shape. This portion of the Veil Nebula appears to pass through the bright 4th magnitude binary star 52 Cygni and is how many people locate this very faint nebula. The entire complex of the Veil (Eastern & Western part) is also known as the Cygnus Loop. A remnant of a powerful supernova explosion which occurred 5,000 to 10,000 years ago. It lies at a distance of about 1400 ly.

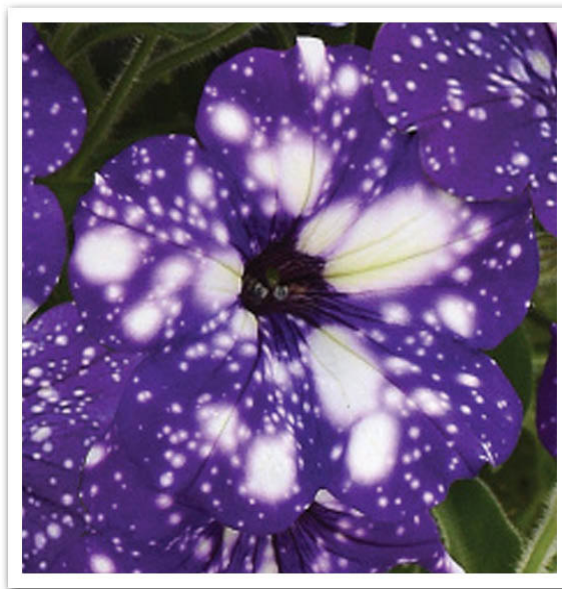
As an aside, there is also a **Witch's Broom** that can be found in the woods.....see the next page.

"Continued on page 10"

Witch's Broom



In August my wife and I went on a 5-day birding trip up in Pittsburg, NH with the intent of finding Boreal Birds. These birds don't come down South where we live. Our guide was not only good in knowing birds, but plants, butterflies and moths. He pointed out the **Witch's Broom** on one of our outings, so I definitely had to take this picture seeing how I was show-casing a **Witch's Broom** for my October *astroimage*. **Witch's Broom** is a deformity in a woody plant, typically a tree, where the natural structure of the plant is changed. A dense mass of shoots grows from a single point, with the resulting structure resembling a broom or a bird's nest.



I would like to share this natural wonder with all of you also (my wife made me aware of this). **Petunia Night Sky, Galaxy Petunia. The Most Distinctive Blooms In The Universe.** Night Sky Galaxy Petunia grows 10-16" tall and spreads 24-36" wide. A member of the Headliner Petunia series. **Galaxy Petunias boldly go where no Petunias have gone before...Light years from usual!** The overall effect resembles a starry night, bright with celestial objects.

OCTOBER'S GUEST SPEAKER

Submitted by Chase Delaney

Dr. Andrew Jordan, Research Scientist at the University of New Hampshire's Institute for the Study of Earth, Oceans and Space, will be speaking at the next club meeting, Oct. 4, 7:30pm.

Dr. Andrew Jordan is a Research Scientist at the University of New Hampshire's Institute for the Study of Earth, Oceans, and Space. He is also a Co-Investigator on NASA's Lunar Reconnaissance Orbiter (LRO) mission, which carries a UNH instrument: the Cosmic Ray Telescope for the Effects of Radiation (CRaTER). He works to understand how space radiation interacts with the lunar surface by using CRaTER data to search for water ice in the Moon's polar regions and by determining how solar storms may cause electrical breakdown--or "sparking"--in lunar soil.

"NASA's Lunar Reconnaissance Orbiter (LRO) has been at the Moon for 10 years. The University of New Hampshire has played a key role in this mission by operating one of LRO's instruments, the Cosmic Ray Telescope for the Effects of Radiation (CRaTER). I'll summarize how the spacecraft was built and tested and then give an update about how it has changed our view of the Moon and its radiation environment."

Starfest 2019



“Continued on page 13”

[Astronomical Society of Northern New England \(ASNNE\) Meeting Minutes of 21 September 2019 - Starfest 2019](#)

Submitted by Carl Gurtman

Record Note: Each year, the ASNNE September Meeting takes place at our annual Starfest; a three-day astronomical extravaganza, held at Talmage Observatory at Starfield. This year, Starfest went from Friday, 20 September, 2019, through Sunday, 22 September, 2019. There was not a formal Meeting on Saturday, 21 September, but we had a Speaker and other events. These notes are provided so as to have a record of Starfest 2019.

ASNNE Members & Guests Present: All ASNNE Officers were present. There were approximately 42-46 people present. [People came & went, came later, etc. Although I attempted, and others helped me, to make an accurate count; that was not possible.]

The Weekend: As of Saturday afternoon, there were several tents set up at Starfield Observatory. On Saturday, several scopes were set up for solar observing, but no sunspots or prominences were visible.

Barbeque: The Barbeque had been publicized as starting at 2:00 pm Saturday. By 2:30 pm, barbequing had started. There were hamburgers, hot dogs (with sauerkraut!), bratwurst, veggie burgers, and lots of grilled corn. There were condiments, chips, soda, pie, and several dessert bars. Water, plates, cups, napkins, and cutlery were provided by ASNNE. I may have missed some of the food that had been brought; sorry. There was more food than last year, and that's saying a lot!

There was live music at the Barbeque. People had brought chairs, blankets, and there were some existing chairs and the two picnic tables. A \$6.00 donation was asked to defray costs of the Barbeque. Many thanks to Alyson Durham for keeping the matrix of who brought & was bringing what, and thanks to the folks who brought food and did the grilling!

Business Meeting: There was no Business Meeting. and no "Astronomy 101."

Raffle: There was an exciting raffle at 7:50, with prize-winning tickets being pulled from bags placed by each donated item. All proceeds from the Raffle to ASNNE. Thanks to those who donated the items!!

"What's Up": At about 7:10 pm, Bernie Reim gave his usual thorough, comprehensive, and complete discussion of what's in store for us in the skies of September. He covered the coming of the summer highlights, and planetary positions, meteor showers, and conjunctions. Bernie covered the upcoming Autumnal Equinox, phases of the moon, meteor showers, and the names of this month's full moon. Bernie then covered "What Happened on this Day . . ."

Presentation: Chase Delaney had arranged for Seth Lockman, to speak to us again, and introduced him. Seth's talk was about the (first-time-ever) imaging of a Black Hole - the super-massive one at the heart of the super-massive elliptical galaxy M87.

In her introduction, Chase referred to Seth's position as a Solar System Ambassador and provided his background. Seth has lived all over the state of Maine, and earned his high school diploma from the Maine School of Science and Mathematics.

Shortly after graduating from the University of Maine, Seth created a weekly half-hour talk show about the night sky and the universe. During its four-year run the panel interviewed some amazing guests, presented at STEM functions across the State, and became the first radio show to join the NASA Museum Alliance.

Currently Seth manages social media for bluShift Aerospace, a startup in Brunswick, Maine.

What do black holes look like? Seth discussed this herculean endeavor and explained how imaging M87's Black Hole was a massive achievement for science. In compositing the image, the [Event Horizon Telescope](#)- a global network of radio telescopes - was supported by NASA's [Chandra X-ray Observatory](#), [Nuclear Spectroscopic Telescope Array](#) (NuSTAR), [Neil Gehrels Swift Observatory](#), and [Fermi Gamma-ray Space Telescope](#); radio observatories as far apart as possible. The separate observations were time stamped by super accurate atomic clocks to enable the data to be time coordinated. Enormous amounts of data were gathered, and put together, using in large part, a computer program developed by Dr. Katie Bouman, a young woman who had been working on that program for three years.

The scientists ran the data in many ways to see that the different possible constructions of the data were "reasonable", so that the final result was accepted as of high quality, and to a high standard.

This was a very well-presented lecture, accompanied by appropriate slides.

“Continued on page 14”

Other: A bonfire was started for warmth and comfort

Observing: The roof of the Observatory had been rolled back, and Jupiter & Saturn in good position for observing.

Respectfully submitted,

Carl Gurtman

Starfest from a more poetic prospective:

Our friend Peter Gillette - posted the following e-mail. I'm glad to re-post it in its entirety, for a different viewpoint of ASNNE's Starfest.

My friends!

I don't know how we do it, but each year seems to somehow top the last.
 Visits by an alien flying saucer....better with added air
 Tweaking the Meade...2032 to the rescue
 Breakfast(s) with Bern...More coffee?
 Busting chops with Joyce...I'm still not sure who's better at it
 Seth's talk, with "spice" provided by enough of a PA system to
 beat the crowd noise
 Potluck dinner with Wes's excellent lasagna and Ian's
 thoughtful veggie burgers
 Two clear nights, even with a less-than-obtrusive moon Coyote serenade
 The march of the Monarchs
 Guitar, banjo, and harp concert
 The oohs and aahs and cell-phone photos on Saturday night, at
 the impromptu Rev. Im. Theatre
 Seeing Paul's exciting final photo product, after all the diligent struggles
 First flight of a drone (for me)... very low-key, I wasn't sure
 how well I could control it in a crowd....Sorry, Bernie!
 Tim's fire , late Saturday night.... or should I say early Sunday morning?
 Fleeting glimpses of Chase
 Bern, and Ron, and Joyce, and Wes.....Hold this for
 me.....Thought I was going to die!!!!
 Wayne's double set-up, and knowing that he and Paul are going
 to collaborate on further work with the SX50
 The generosity of you all, toward the public, with all your
 outreach, and to me.....Is it too much, to say I love you all?
 Here's to those who have left us, and to those who wished
 they were there this weekend, and to those who made this year so
 special, yet again.

-P-

Club Meeting & Star Party Dates

Date	Subject	Location
<u>Oct 4</u>	<p><u>ASNNE Club Meeting:</u></p> <p>Business Meeting 6:30 PM Beginners Class 7:00 - 7:30 PM (TBD) Regular Meeting 7:30-9:30 PM</p> <p>Guest speaker/topic - Dr. Andrew Jordan. Dr. Jordan's presentation will be about NASA's Lunar Reconnaissance Orbiter (LRO). See page 11 for more details about his talk.</p> <p>Bernie Reim - What's UP</p> <p>Astro Shorts: (news, stories, reports, questions, photos)</p>	<u>The New School, Kennebunk, Me.</u>
<u>Last Month</u>	<p>Last month was Starfest 2019. We had clear skies each night. Our guest speaker for Saturday night was Seth Lockman. His presentation was on Black Holes.</p> <p>For more details about Seth's talk, pictures of Starfest 2019, and notes, see pages 12-14.</p>	
<u>TBD</u>	Club/Public Star Party: TBD	Talmage Observatory at Starfield West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunk [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great. http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

Directions to Talmage Observatory at Starfield [Alewife Road, Kennebunk, ME]

From North:

Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for the ASNNE sign on the pole.

From South:

Get off the turnpike at exit 25 in Kennebunk. After toll both turn right on Rt 35. Go up over the turnpike and immediately turn right on Rt 35. About 4 miles along you will crest a hill and see a large field on your right. Continue until you reach the end of the field. Turn right into the Starfield Observatory site at the last telephone pole along the field. Look for the ASNNE sign on the pole. If you come to a very sharp 90 degree right turn you have just passed the field.

To join **ASNNE**, please fill out the below membership form. *Checks should be made payable to: Astronomical Society of Northern New England (A.S.N.N.E).* For more details, please visit our website: <http://www.asnne.org>



Astronomical Society of Northern New England
 P.O. Box 1338
 Kennebunk, ME 04043-1338

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 _____

