

Skylights

Newsletter of the Astronomical Society of Northern New England



MAY 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 May

By *Bernie Reim*

The month of May is named after Maia, the Roman goddess of the earth. Even though the official Earth Day was at the end of April, May is really the month when we become more aware of the earth once again here in the northern hemisphere as tender green leaves will soon be appearing on the trees. Our entire landscape will slowly transform itself as the earth awakens in response to more direct sunshine as this hemisphere tilts more and more towards our life-giving sun, like a giant plant seeking the light.

This will also be a great month to venture outside again to get reacquainted with the night sky as it is getting warmer consistently and the skies should be clearer than in the past few months. There are plenty of interesting highlights to enjoy and appreciate this month as you look up and take in the bigger picture of where all of us really are in space.

Four of the five brightest planets will all become evening planets by the end of May. All four of them are also getting higher and brighter and closer to Earth. Jupiter will be the first as it reaches opposition on the 8th, followed by Saturn in June, Mars in July, and finally greatest elongation for Venus in August. Mars will exhibit the most dramatic increase as it nearly doubles in brightness and gets one third larger by the end of May. The annual Eta Aquarid meteor shower peaks on May 6. None of the planets are really getting any closer this month, but the moon will pass very close to Saturn and Mars early this month, close to Venus on the 17th, and close to Saturn once again on the 31st.

When Jupiter reaches opposition on Tuesday, May 8, it will rise at sunset, reach its highest point in our sky at midnight, and not set until sunrise. It is directly opposite the sun in our sky, similar to the full moon each month. The King of the Planets is still in retrograde or westward motion in Libra, as it has been since March 9th. Opposition always marks the midpoint of a superior planet's retrograde loop. Jupiter will begin its normal, eastward motion through our

sky again in early July.

Look for the great red spot this month if you can manage a view through a telescope. Jupiter is 10 times larger than the earth, and this one spot can fit about two earths into it. Jupiter rotates very fast on its axis, completing one rotation in just 10 hours. This generates the incredible turbulence that we can see on its surface.

The Juno mission, launched in August of 2011 reached Jupiter on the 4th of July 2 years ago. It has since taken many astonishing images of this great planet as it continues to dive just 2700 miles above its cloud tops every 53 days in a highly elongated orbit to prevent its 8 sensitive instruments from getting fried by Jupiter's powerful radiation, second in strength only to the sun. Jupiter's South Pole turned out to exhibit far more turbulence than expected. It has 5 giant cyclones surrounded by hundreds of whitish swirls against a bluish surface, looking much more like an impressionistic painting or Van Gogh's "Starry Night" than just the normal surface of a giant gas planet.

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Club Contacts

Officers:

President:
Ron Burk
rdavidburk@yahoo.com

Vice President:
Joan Chamberlin
starladyjoan@yahoo.com

Secretary:
Carl Gurtman
carlgurt@msn.com

Treasurer:
Ian Durham
idurham@anselm.edu

Board of Directors:

Gary Asperschlager
gasperschlager@gmail.com

Larry Burkett
larrybu32@yahoo.com

Chase Delaney
horsiedonkey@yahoo.com

Star Party Co-ordinator:

TBD

Skylights Editor:

Paul Kursewicz
pkursewicz@myfairpoint.net

Website Manager:

Nan Musgrave
mzgrvz@outlook.com

NASA Night Sky Network

Co-ordinator:

Joan Chamberlin
starladyjoan@yahoo.com

JPL Solar System Ambassador:

Joan Chamberlin
starladyjoan@yahoo.com

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Jupiter's North Pole is equally astounding since it displays 8 evenly sized cyclones circling around a single 2500 mile-wide cyclone at its north pole. By contrast, Saturn only has one cyclone at each of its poles, but the one at the North Pole is a giant hexagon with each side measuring 8600 miles. Both Jupiter and Saturn have lightning and northern and southern lights near their poles. However, their auroras are not in sync as they are on Earth. The ones on Jupiter are brightest in X rays. Jupiter's magnetic field is 20,000 stronger than Earth's, so it makes sense that its aurora is also more powerful and intense.

Saturn starts the month rising around midnight, but it will rise two hours earlier by the end of May, approaching its own opposition on June 24, just after summer starts. The ringed planet falls a little farther behind Mars this month in Sagittarius, but they are still fairly close. Watch as a nearly full moon passes near Saturn on the 4th and 5th and then close to Mars on the 6th, the same day that the Eta Aquarids will peak.

Mars will rise around 1:30 am starting the month and around midnight by the end of the month. However, Mars will exhibit the greatest size and brightness increase of any of the planets due to its unique orbit. We are catching up with the red planet to create this effect, as we are with Jupiter and Saturn, but Mars is much closer than the other two planets. In the case of Venus, it is getting brighter and higher in our sky because it is catching up with us. Mars will get to a brilliant minus 1.2 magnitude, or about 4 times brighter than nearby Saturn by the end of the month. Mars will be at its best opposition in 15 years by the end of July, at just 35.8 million miles from Earth, or only 1.2 million miles farther than its closest opposition in August of 2003 in nearly 60,000 years.

Look for tiny, sand-grain-sized pieces of Halley's Comet to disintegrate high in our atmosphere during the first week of May, peaking on Sunday morning May 6. The nearly last quarter moon will rise around 1 am that morning to spoil the show after that, but it will be well worth catching what you can before then if it is clear. All these tiny pieces of Halley's Comet will appear to radiate out of the water jug asterism in Aquarius that night. That is a summer constellation, so it doesn't even rise until a few hours before dawn that morning, meaning that you will see fewer

meteors than if the radiant would have been higher in the sky.

May 2. Venus and Aldebaran in Taurus, 6 degrees apart, set together in the west around 9 p.m.

May 4. The moon is near Saturn this morning.

May 5. On this day in 1961 Alan Shepard became the first American in space aboard Freedom 7.

May 6. The Eta Aquarid Meteor Shower peaks this morning. The moon is near Mars.

May 7. Third quarter moon is at 10:10 p.m. EDT.

May 8. Jupiter reaches opposition this evening.

May 10. Cecelia Payne-Gaposchkin, British-born American astronomer was born on this day in 1900. She helped decode the complicated spectra of starlight along with the famous "Harvard Computers". She wrote one of the most brilliant papers in astronomy ever as she finally determined the true composition of all stars. She was also an excellent musician.

May 14. Our first space station, Skylab was launched on this day in 1973.

May 15. New moon is at 7:49 a.m.

May 17. A thin waxing crescent moon with earthshine joins Venus as they set just 6 degrees apart.

May 21. First quarter moon is at 11:50 p.m. It will be less than one degree from Regulus in Leo tonight, about where the sun was on August 21 of last year during the total solar eclipse.

May 25. Spica and the waxing gibbous moon will cross the sky in tandem separated by 6 degrees tonight.

May 28. On this day in 1959, Able and Baker became the first primates in space that returned to earth safely.

May 29. On this day in 1919, Arthur Eddington led a total solar eclipse expedition to Africa that proved Einstein's General Relativity correct by measuring the exact displacement of star behind the eclipsed sun. Full moon is at 10:21 a.m. This is the Planting, Milk, or Flower Moon.

May 31. The moon and Saturn rise just two degrees apart around 9 pm.

Moon Phases

May 7
Last Quarter

May 15
New

May 21
First Quarter

May 29
Full

Moon Data

May 4
Saturn 1.7° south
of Moon

May 5
Moon at apogee

May 6
Mars 3° south
of Moon

May 10
Neptune 1.9° north
of Moon

May 13
Uranus 5° north
of Moon

Mercury 2° north
of Moon

May 17
Venus 5° north
of Moon

Moon at perigee

May 27
Jupiter 4° south
of Moon

Submitted by Glenn Chaple



Sky Object of the Month – May 2018

(Courtesy LVAS Observer's Challenge*)

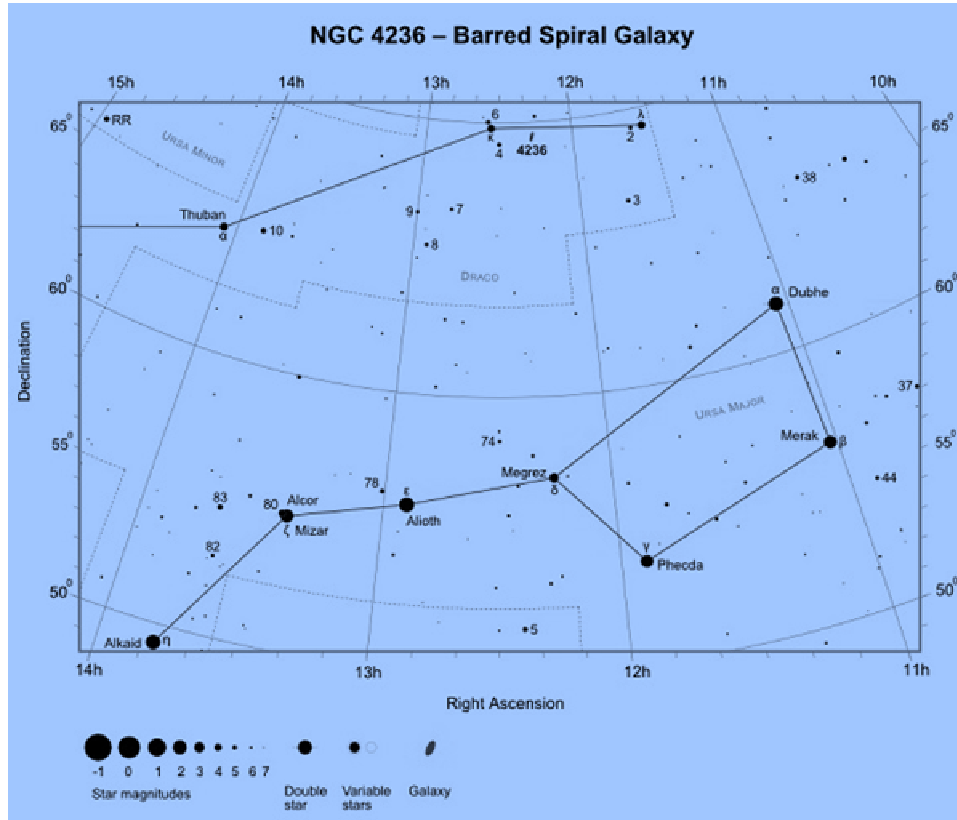
NGC4236 – Barred Spiral Galaxy in Draco (Mag. 9.7; Size 22' X 7')

A galaxy with a magnitude of 9.7 should be an easy telescopic target, right? Wrong! Not if the light of said galaxy is spread across an area 21 by 7.5 minutes of arc in size. This is the situation with the barred spiral NGC 4236 in Draco. Testimony to its faintness comes from none other than William Herschel, who discovered it in 1793. He catalogued it as H.V.51 – his 51st Class V (Faint Nebulae) entry.

Nevertheless, NGC 4236 is notable enough to have made it into Patrick Moore's Caldwell Catalog (it's designated as Caldwell 3). Under a truly dark sky, it may be glimpsed with a 4-inch scope. If, however, your observing location is beset with even a mild amount of light pollution, NGC 4236 will challenge a 10-inch instrument.

To locate NGC 4236, look 1 ½ degrees west-southwest of the 4th magnitude star kappa (κ) Draconis. Because of the galaxy's relatively large dimensions and low surface brightness, work with moderately low power. Be sure your eyes are well dark-adapted and use averted vision if nothing is visible with a direct view.

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freestarcharts.com



nightskypictures.com

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 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



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 to explore space and Earth science!



What's It Like Inside Mars?

By Jessica Stoller-Conrad

Mars is Earth's neighbor in the solar system. NASA's robotic explorers have visited our neighbor quite a few times. By orbiting, landing and roving on the Red Planet, we've learned so much about Martian canyons, volcanoes, rocks and soil. However, we still don't know exactly what Mars is like on the *inside*. This information could give scientists some really important clues about how Mars and the rest of our solar system formed.

This spring, NASA is launching a new mission to study the inside of Mars. It's called Mars InSight. InSight—short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport—is a lander. When InSight lands on Mars later this year, it won't drive around on the surface of Mars like a rover does. Instead, InSight will land, place instruments on the ground nearby and begin collecting information.

Just like a doctor uses instruments to understand what's going on inside your body, InSight will use three science instruments to figure out what's going on inside Mars.

One of these instruments is called a seismometer. On Earth, scientists use seismometers to study the vibrations that happen during earthquakes. InSight's seismometer will measure the vibrations of earthquakes on Mars—known as marsquakes. We know that on Earth, different materials vibrate in different ways. By studying the vibrations from marsquakes, scientists hope to figure out what materials are found inside Mars.

InSight will also carry a heat probe that will take the temperature on Mars. The heat probe will dig almost 16 feet below Mars' surface. After it burrows into the ground, the heat probe will measure the heat coming from the interior of Mars. These measurements can also help us understand where Mars' heat comes from in the first place. This information will help scientists figure out how Mars formed and if it's made from the same stuff as Earth and the Moon.

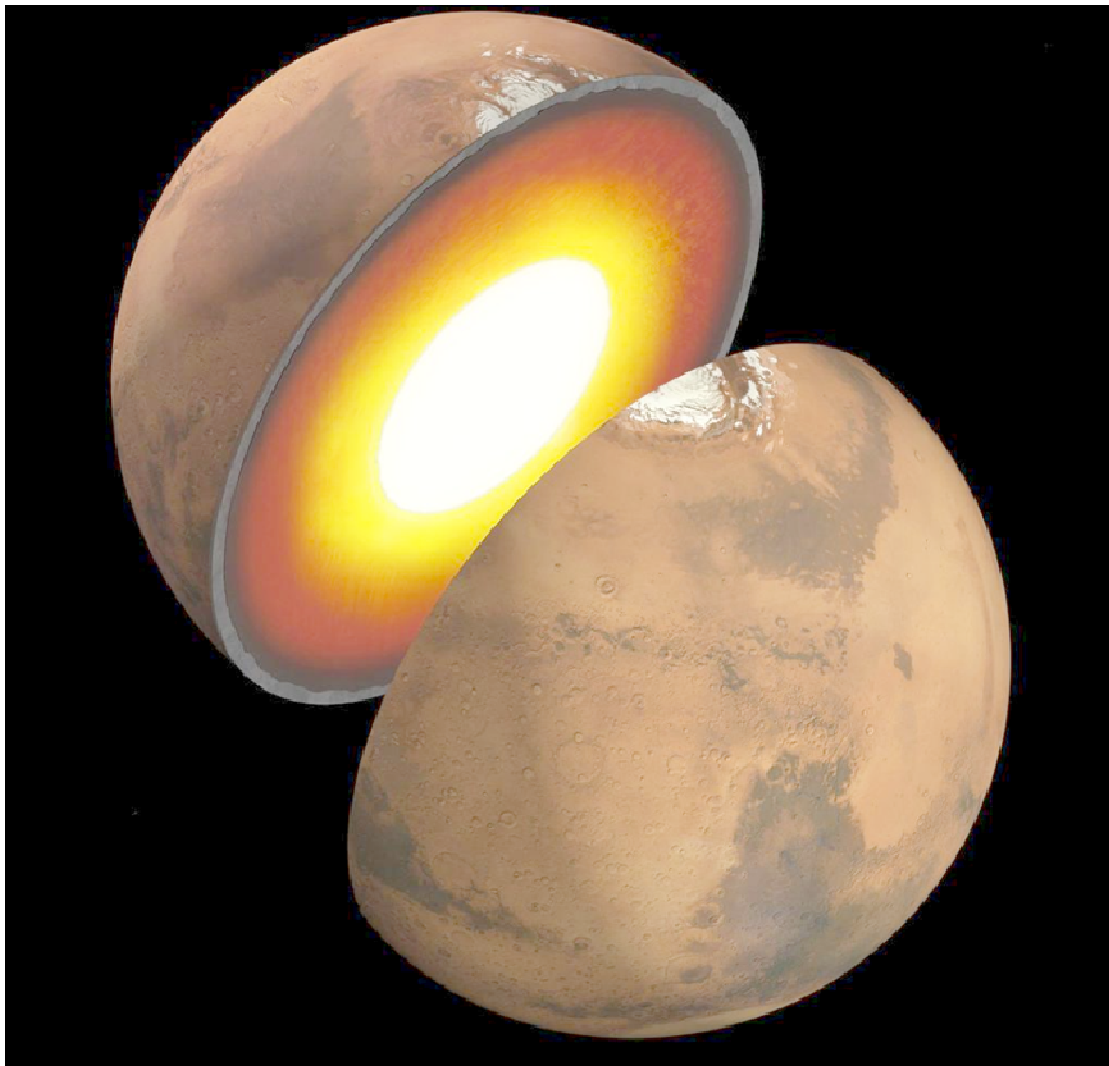
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Scientists know that the very center of Mars, called the core, is made of iron. But what else is in there? InSight has an instrument called the Rotation and Interior Structure Experiment, or RISE, that will hopefully help us to find out.

Although the InSight lander stays in one spot on Mars, Mars wobbles around as it orbits the Sun. RISE will keep track of InSight's location so that scientists will have a way to measure these wobbles. This information will help determine what materials are in Mars' core and whether the core is liquid or solid.

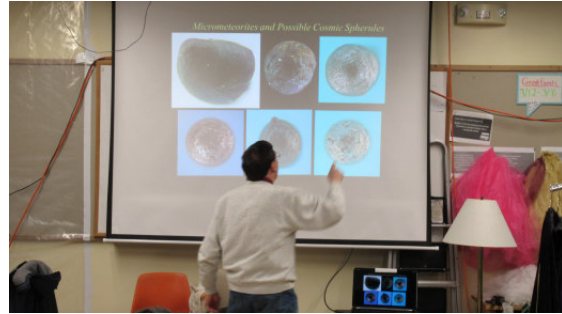
InSight will collect tons of information about what Mars is like under the surface. One day, these new details from InSight will help us understand more about how planets like Mars—and our home, Earth—came to be.

For more information about earthquakes and marsquakes, visit: <https://spaceplace.nasa.gov/earthquakes>



Caption: An artist's illustration showing a possible inner structure of Mars. Image credit: NASA/JPL-Caltech

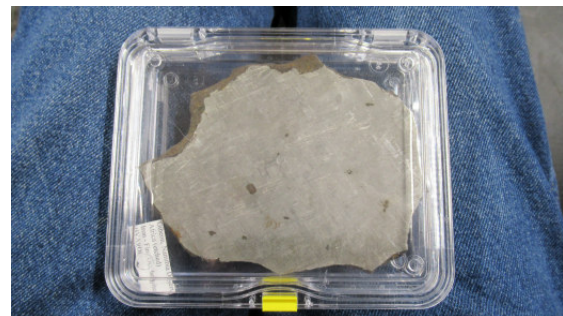
Jon Wallace's Presentation



Our guest speaker for April's club meeting was **Jon Wallace**. He gave an excellent presentation on **Meteorites—Hunting & Identification**. I took pictures of the meteorites that Jon brought with him. Several can be identified as coming from the Moon, Mars, an Asteroid, and maybe even from the planet Mercury.



Jon found this micro-meteorite (smaller than the width of a hair) the day before our meeting. He found it in his roof gutter.



This Iron meteorite was found in Africa's Namibia Desert.



This Iron meteorite was the only one that we could handle out of its protective case.

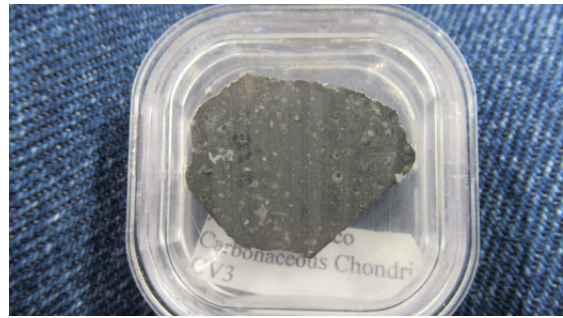


A beautiful stony iron meteorite. Comprised of iron and olivine silicate.

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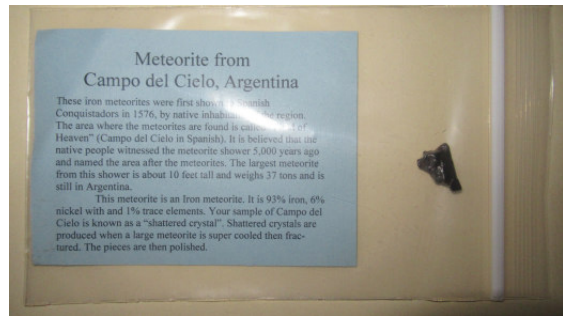
Chondrite, in general, any stony meteorite characterized by the presence of chondrules.



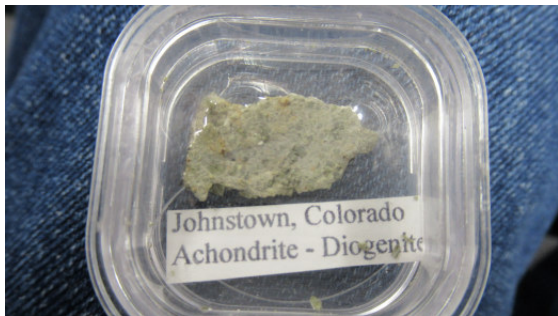
Carbonaceous chondrite, provides insight into the early history of the solar system.



Besednice Moldavite, a meteorite that looks delicate as a leaf. Sand, water, and time etched sharp spikes (known as “hedgehogs”).



Jon brought in a bunch of plastic bags. Each contained one meteorite fragment. He told us, find one that you like an keep it! This was my choice.



Diogenites are currently believed to originate from deep within the crust of the asteroid Vesta.



Luna Meteorite: Most lunar breccias are of a polymict nature.

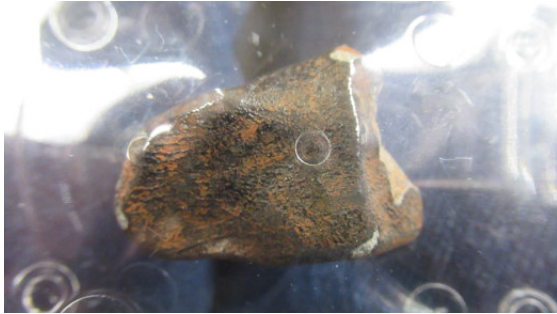


Possibly from the planet Mercury.



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More Meteorites.....



Club Meeting & Star Party Dates

Date	Subject	Location
May 4	<p><u>ASNNE Club Meeting:</u> Business Meeting starts at 6:00PM</p> <p>6:30-7:15PM: Starlady Joan Chamberlin conducts a basic astronomy class prior to the meeting.</p> <p>7:30-9:30PM: Club Meeting</p> <p>Guest Speaker: TBD</p> <p><u>Meeting Agenda</u></p> <p>Bernie Reim - What's UP</p> <p>Astro Shorts: (news, stories, jokes, reports, questions, photos, observations etc.)</p>	The New School, Kennebunk, Me.
May 25	<p>Club/Public Star Party <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

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 _____

