

SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England



DEC. 2009



Member of NASA's
Night Sky Network



Astronomical League
Member

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.



ASNNE'S ANNUAL CHRISTMAS PARTY...
DEC 4TH... POT LUCK (BRING AN ENTREE OR A DESSERT)

What's Up In December

By Bernie Reim

Winter will start for us in the northern hemisphere on Monday, December 21st at 12:47 p.m. That is the lowest point in our sky that the sun will reach for the year and also marks the longest night and shortest day. After that point, the days will already be getting longer, but the weather will continue to get colder on the average for 6 more weeks, which is half way into winter. That is because the cooling of the earth and oceans lags behind, just as it takes about 6 weeks for the hottest days to occur after the beginning of summer on June 21st.

Even though this month will be much colder than the mild November we just enjoyed, there will be several interesting celestial events for us to watch. These include another good meteor shower and the steady brightening of our neighboring planet, Mars.

The Geminid Meteor Shower will peak on Sunday night, December 13th into Monday morning the 14th. This is less than a month after a fairly good Leonid Meteor Shower that we enjoyed last month. Even at its peak, the Leonids only produced 20 meteors per hour, but the Geminids will produce 3 to 4 times that many meteors this month. The moon will again be favorable, since it will be in the waning crescent phase and will not rise until 4:30 am on the morning of the 14th.

You can start looking for Geminids as soon as it gets dark on Sunday the 13th, because the constellation of Gemini will already be up in the eastern sky. The radiant, which is the area of the sky from which all the meteors in a particular shower appear to originate, is a smaller area than for the other meteor showers, because the Geminids are a much younger shower, first observed only 150 years ago.

The Geminids are also different from all the other meteor showers in several other aspects. They are the only shower caused by an asteroid instead of a comet, so their particles are several times denser than the usual comet dust and the Geminids will enter our upper atmosphere at only half the speed of other showers, or around 20 miles per second. This leads to brighter meteors that will create slightly longer streaks on the average than all the other comet dust showers.

The asteroid which creates the Geminids is called 3200 Phaethon. It is named after a character in Greek mythology who is the son of the sun god Helios. 3200 Phaethon has the closest orbit to the sun of any of the numbered asteroids. It is one of the Apollo, or near-earth asteroids. Most of the asteroids are out in the asteroid belt between Mars and Jupiter. This asteroid is probably the dead nucleus of a comet that burned out long ago.

Try to catch as many of these mysterious meteors as you can. Bundle up warmly and

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What's Up "Continued from page 1"

make sure you give your eyes enough time to fully dark adapt, which is 10 to 15 minutes, so you will be able to see the fainter meteors. You don't even need binoculars for this event. You may see meteors anywhere in the sky, but if you trace the streak back mentally it will go right back to Gemini. If it doesn't, then you saw a stray meteor. You will usually see about 3 to 4 stray meteors per hour on any given night even without an actually meteor shower taking place.

The other highlight this month is the continual brightening of Mars. Look for its wonderful and steady orange glow in the constellation of Leo, which is just east of Cancer the Crab, which is right below Gemini the twins. Mars begins this month rising just before 10 pm, but ends the month rising before 8 pm. The red planet will double in brightness this month and get 20 million miles closer to earth. There will be only two light sources brighter than Mars in our evening sky this month. Those points are Jupiter in Capricorn, which is about 6 times brighter than Mars, and the brightest star in the whole sky, which is Sirius in Canis Major just below Orion, which is about twice as bright as Mars.

Mars will begin its retrograde or westward motion on December 21st, on the winter solstice. Mars is getting so bright now because it is rapidly approaching opposition, when it is directly opposite the earth from the sun. That will happen on January 29 of next year. All the superior planets go through opposition, which is when they rise at sunset and set at sunrise. They trace a retrograde loop through the sky for a month or two on either side of their opposition. This is strictly an optical illusion, because all the planets continually orbit the sun in a counter-clockwise fashion. You could prove this if you could get above the plane of our solar system. They only appear to trace out this loop because the earth orbits faster around the sun in our elliptical orbits, thereby passing each of the superior planets at some point. This happens every 26 months for Mars.

Sirius rises about 45 minutes before Mars and Jupiter sets about half an hour after Mars rises. Jupiter now sets a little earlier each evening as it gets imperceptibly smaller and fainter in our sky as it continues to drop farther behind us in its orbit. Look for the King of the Planets four large Galilean moons with just a pair of binoculars.

We are celebrating Galileo's great discoveries with his telescopes 400 years ago during this entire year, which is also called the International Year of Astronomy. This was a very successful way of making many more people across the earth aware of the importance of astronomy in our everyday lives as we begin to see the bigger picture. Many aspects of astronomy were addressed this year including more effective and widespread education and dealing with light pollution to keep our beautiful skies dark for future generations to enjoy and learn their many mysteries.

Mercury makes a brief appearance low in our southwestern evening sky half an hour after sunset around the middle of this month.

Saturn will rise just before midnight by the end of this month. Its rings are continuing to slowly open again, and they will reach 5 degrees open by the end of this year. Venus now rises just 45 minutes before the sun and it will sink into the bright dawn by the middle of the month.

Dec.2. Full moon is at 2:30 a.m. EST. This is also called the Cold or Long Night Moon.

Dec.6. Mars will be near the waning gibbous moon this evening around 10 pm.

Dec.8. Last quarter moon is at 7:13 p.m.

Dec.13. The Geminid meteor shower peaks tonight into the 14th.

Dec.14. Tycho Brahe was born on this day in 1546. He was the greatest observational astronomer of his day and worked with Kepler who proved that all the planets orbits in ellipses.

Dec.16. New moon is at 7:02 a.m.

Dec.17. On this day in 1903 the first powered flight by the Wright brothers took place. We went all the way to the moon just 66 years later.

Dec.21. The winter solstice is at 12:47 p.m.

Dec.22. The Ursid meteor shower peaks tonight.

Dec.24. First quarter moon is at 12:36 p.m.

Dec.25. Isaac Newton was born on this day in 1642.

Dec.31. The second full moon this month is 2:13 p.m. This is called the blue moon.

Moon Phases

- Dec 2**
Full
- Dec 8**
Last Quarter
- Dec 16**
New
- Dec 24**
First Quarter
- Dec 31**
Full (Blue Moon)

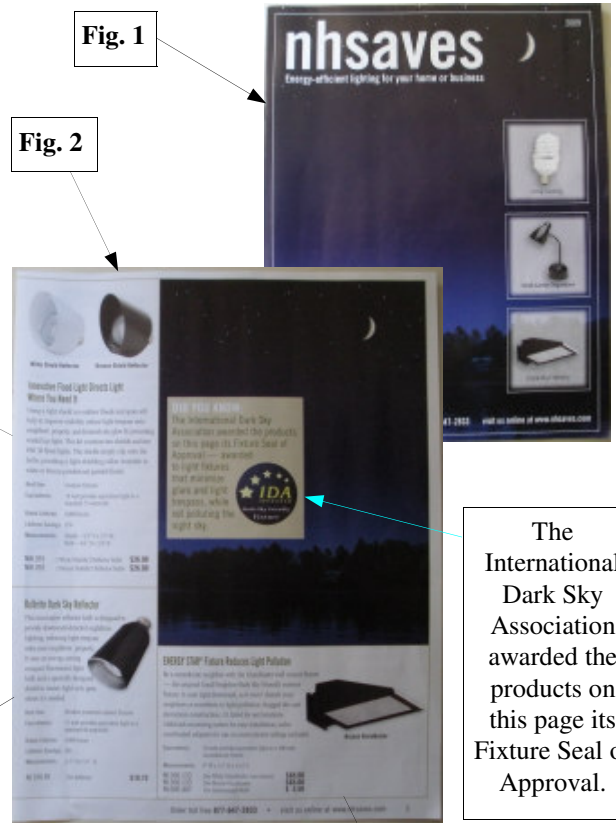
Moon Data

- Dec 4**
Moon at perigee
- Dec 6**
Mars 6° north of Moon
- Dec 10**
Saturn 8° north of Moon
- Dec 18**
Mercury 1.4° south of Moon
- Dec 20**
Moon at apogee
- Dec 21**
Jupiter 4° south of Moon
- Neptune 4° south of Moon
- Dec 23**
Uranus 6° south of Moon

nhsaves Catalog

Submitted by Paul Kursewicz

Several months ago I was surprised to see this catalog in my mail box. It's issued by **Public Service of New Hampshire (PSNH)**. Apparently, everyone in NH received one. **nhsaves** catalog features ENERGY STAR® and other energy efficient products. The mission of the **nhsaves** catalog is to advance the efficient use of energy, while caring for the environment and promoting economic development in New Hampshire. In this 2009 issue, the publication highlights **light pollution!** On the lower right of the cover (Fig.1), the caption under the GlareBuster photo reads: "*Dark-Sky Friendly.*" Page 5 (Fig.2), has an entire page devoted to light fixtures that don't pollute the night sky.



Principal Meteor Showers in 2009

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*

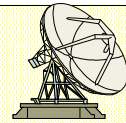
MEMBERSHIP DUES

Membership fees are for the calendar year beginning in January and ending in December. Dues (see page 8 for prices) are payable to the treasurer during the last quarter of each year (October- December) for the upcoming 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 8.

Additional Notice

Dues have to be paid before the December meeting or the members cannot vote or run in the elections for officers for 2010. This is in the By-laws.

Got any News?
Skylights welcomes your Input.



Here are some suggestions:

*Book reviews -- Items for sale -- New equipment --
Ramblings -- Star parties -- Observing -- Photos.*

Club Items For Sale



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.
Just let our Director, David Bianchi, know.

Sky Object of the Month - December 2009

Ursid Meteor Shower

By Glenn Chaple

You're quite likely familiar with the Geminid meteor shower. One of the year's most prolific, with hourly rates often exceeding 100 meteors, the Geminids reach peak activity on the evening of December 13-14. With the moon close to new phase, the 2009 Geminid display should be spectacular.

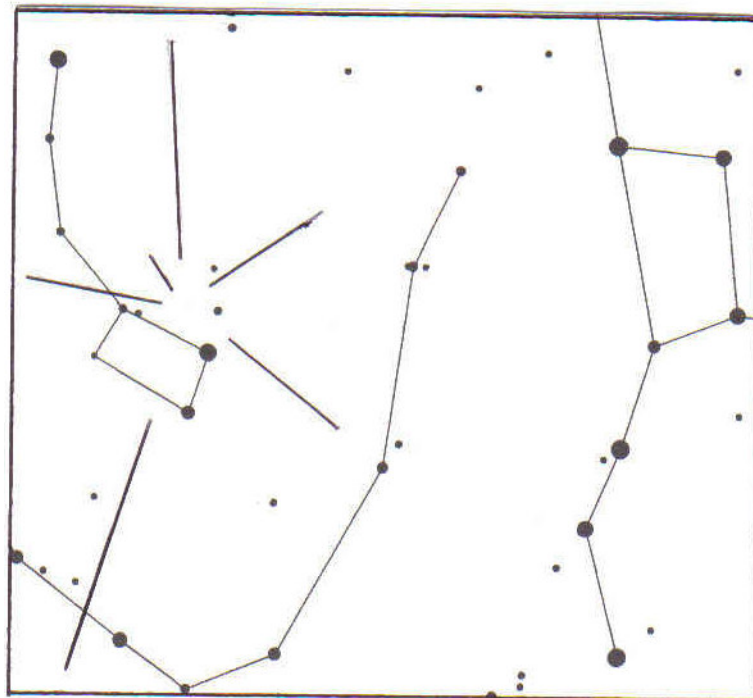
Less known is a meteor shower that occurs about a week later - the Ursids. Discovered a little over a century ago, the Ursids are associated with the comet P8/Tuttle. There are two reasons why this meteor shower is so little observed. For one thing, it's rather sparse. Although there have been reports of short outbursts of 100 Ursids per hour, the hourly rate rarely reaches double figures. Couple that with the fact that the Ursids climax near the peak of the Holiday season (predicted maximum activity is scheduled for the evening of December 21-22), and you have a meteor shower few backyard astronomers have ever observed.

That includes me. In years when I've made plans to view the Ursids, either clouds or a bright moon got in the way. Other times, I got so wrapped up in Holiday hysteria, I either forgot or was too tired to bother. On the one clear, moonless evening I did give the Ursids a try, I saw virtually nothing for 15 minutes, got bored, and went back inside - behavior NOT worthy of a so-called avid amateur astronomer!

Here's my game plan for Ursids 2009 - one that I encourage you to try. Some time towards the middle of the night when the waxing crescent moon has set, I'll bundle up and go outside with a thermos of hot chocolate. Since the Ursids appear to radiate from the vicinity of the star Kochab (â Ursae Minoris) I'll set up a lawn chair in a part of my back yard that affords a clear view of the northern sky. Then I'll sit and wait. No copping out after a quarter hour! I'll watch for at least an hour, or until I've spotted 5 or 6 Ursids, which ever comes first. Who knows - I might be fortunate enough to catch one of those rare Ursid outbursts. It's the uncertainty of meteor showers that makes them so fascinating.

Want to know more about the Geminids and Ursids? Check out Gary Kronk's www.meteorshoweronline.com. And don't forget the section on meteor showers in Guy Ottewell's annual publication *Astronomical Calendar*.

Your comments on this column are welcome. E-mail me at gchaple@hotmail.com.



Radiant for Ursid Meteors
From Cartes du Ciel



A Cosmic Crash

by Patrick Barry and Dr. Tony Phillips

Two small planets hurtle toward each other at 22,000 miles per hour. They're on a collision course. With unimaginable force, they smash into each other in a flash of light, blasting streams of molten rock far out into space.

This cataclysmic scene has happened countless times in countless solar systems. In fact, scientists think that such collisions could have created Earth's moon, tilted Uranus on its side, set Venus spinning backward, and sheared the crust off Mercury.

But witnessing such a short-lived collision while pointing your telescope in just the right direction would be a tremendous stroke of luck. Well, astronomers using NASA's Spitzer space telescope recently got lucky.

"It's unusual to catch such a collision in the act, that's for sure," said Geoffrey Bryden, A cosmic Crashspitzer_an astronomer specializing in extrasolar planet formation at NASA's Jet Propulsion Laboratory and a member of the science team that made the discovery.

When Bryden and his colleagues pointed Spitzer at a star 100 light-years away called HD 172555, they noticed something strange. Patterns in the spectrum of light coming from nearby the star showed distinctive signs of silicon monoxide gas — huge amounts of it — as well as a kind of volcanic rock called tektite.

It was like discovering the wreckage from a cosmic car crash. The silicon monoxide was produced as the high-speed collision literally vaporized huge volumes of rock, which is made largely of silicon and oxygen. The impact also blasted molten lava far out into space, where it later cooled to form chunks of tektite.

Based on the amount of silicon monoxide and tektites, Bryden's team calculated that the colliding planetary bodies must have had a combined mass more than twice that of Earth's moon. The collision probably happened between 1,000 and 100,000 years ago — a blink of an eye in cosmic terms.

The scientists used the Spitzer space telescope because, unlike normal telescopes, Spitzer detects light at invisible, infrared wavelengths.

"Spitzer wavelengths are the best wavelengths to identify types of rock," Bryden says. "You can pin down which type of rock, dust, or gas you're looking at." Bryden says the discovery provides further evidence that planet-altering collisions are more common in other star systems than people once thought. The "crash-bang" processes at work in our own solar system may indeed be universal. If so, Spitzer has a front row seat on a truly smashing show.

See Spitzer Space Telescope's brand new Web site at <http://spitzer.caltech.edu/>. Kids can learn about infrared light and see beautiful Spitzer images by playing the new Spitzer Concentration game at <http://spaceplace.jpl.nasa.gov/en/kids/spitzer/concentration>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Caption:

Artist's rendering of cosmic collision involving two objects whose combined mass was at least twice that of our Moon. Discovered using the Spitzer Space Telescope in the planetary system of a star called HD 172555 100 light-years away.

Club Meeting & Star Party Dates

Date	Subject	Location
Dec. 4	ASNNE'S Club Meeting and Annual Christmas Party (Bring your own entree or dessert). 5:30-6:30 PM: Business Meeting 6:40-7:30PM: Social Hour and Joan's Beginner Astronomy Class (Topic TBD). 7:30-9:30PM: Club Meeting: * 2009 NASA NSN Theme *Bernie Reim's "What's Up." *Astro Shorts & Astro News. *NASA Night Sky Network Activity.	Masonic Hall West Kennebunk, Me.
Dec. 18	Club/Public Star Party <i>(Visit website for updates and or cancellations).</i>	Starfield Observatory, West Kennebunk, Me.

Directions to ASNNE event locations

Directions to Masonic Hall

From I-95:

If coming southbound, take Exit 25 off of I-95. Come out to Rte. 35. Turn left at stop sign and turn right at next stop sign. Proceed straight ahead and you will see a variety store on the left and the Masonic Hall will be on the right.

If coming northbound, take Exit 25 off of I-95. Turn right at the stop sign and cross over I-95. Proceed straight for about 1/2 mile. There will be a variety store on the left and the Masonic Hall will be on the right.

Directions to Starfield Observatory

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

2010 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 _____

Sky & Telescope (\$32.95) _____ Astronomy (\$34) _____

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 _____

