

SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England



DEC. 2007



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.



MEMBERSHIP DUES... CHRISTMAS PARTY...
SEE PAGE 2 FOR MORE DETAILS

What's Up In December

By Bernie Reim

The seasons change once more this month as we will experience our longest night of the year. The winter solstice will happen on Saturday morning at 1:08 a.m. on the 22nd of December. That will be the start of a predicted colder-than-average winter.

Long nights are great for spending more time under the heavens if you can conquer the cold. There are three highlights this month that will make it well worth getting outside to observe some of nature's dramatic displays.

Mars will be this month's star attraction as it will be bigger and brighter than anytime in the next nearly nine years. Mars reaches opposition on Christmas Eve, when it will rise at midnight, stay in the sky all night long, and not set until sunrise. The moon does this once a month, but Mars only does this once every 26 months.

The red planet will reach a size of 15.9 arc seconds, which is nearly the size of Saturn or Venus, but only half the size of Jupiter. Mars will be nearly 55 million miles away at closest approach this month, which is farther away than it was during its last two oppositions, but it will be higher in our sky this time, which means its light has to pass through less of our distorting atmosphere, giving us excellent views through a telescope.

Mars now shines with a brilliant orange color in Gemini in the Winter Hexagon. Reaching minus 1.6 magnitude, it will be brighter than the brightest star in the sky, Sirius in Canis Major, just below Orion in the Winter Hexagon, for most of this month. When looking at this orange light in the sky, keep in mind that Mars is an incredible world. It is the most earth-like planet in our solar system, with temperatures that can approach 70 degrees, yet they average just above zero de-

grees F. Its atmosphere is only about one percent as dense as ours, and it is mostly carbon dioxide. Mars has seasons, two moons, polar icecaps, huge dust storms, and its day is only 40 minutes longer than ours. However, Mars also has giant extinct volcanoes 3 times the height of Mt. Everest and a vast canyon 6 miles deep and 100 miles wide that would stretch all the way across America.

Even with all the missions we have sent to Mars and all the knowledge we have gained about our neighboring planet, Mars still closely guards a myriad of mysteries including the open question if it ever harbored any form of life. As if to point out to everyone on Earth that Mars is at opposition, the full moon will pass just one degree above Mars on the 23rd. So look up and enjoy nature's bright celestial Christmas gift this month.

On an entirely different note, the Geminid meteor shower will peak on Thursday night the 13th into Friday morning the 14th. Along with the August 12 Perseids, the Geminids are the most prolific showers each year. You can

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MEMBERSHIP DUES

Membership fees are for the calendar year beginning in January and ending in December. Dues 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.

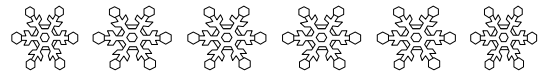
Additional Notice

Dues have to be paid before the December meeting or the members cannot vote or run in the elections for officers for 2008. This is in the By-laws.

Play "New and Improved" Space Place Trivia!

Covering everything from *asteroids* to *zodiac*, the Space Place Trivia game tests your acquaintance with just about every part of the extensive NASA kids website, The Space Place. Read the term in big red letters (with pronunciation guide), then pick the one sentence out of three in which the word makes sense (instead of nonsense). Recently updated to include newly added topics and activities on the site, the game links each term to the page or activity that explains or demonstrates it. So those "Oop-sies" can quickly be converted to "Right-o's!" Go to <http://spaceplace.nasa.gov> and click on "Games."

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Editor: Below is a slightly edited version of Tim's email in reference to our **Christmas Party**.

Hi everyone,

Just a quick reminder...our December Meeting will help get the Christmas Season off to a good start. Doors open as usual at 6:30 for socializing with hors d'oeuvres and beverages, dinner to follow at about 7:30 and at some point Nominations and Elections for new Officers and Board Members will take place.

Cost is [\$8.50 per person or 15.00 per couple, half price for kids.], you can pay at the door BUT you must let Dave know very soon if you have not already signed up. This is very important so we will have enough food for everyone. Ham, chicken or vegetarian are your choices. The purchase of a dinner ticket will enter you in a door prize drawing for that evening.

Prizes are:

\$100 Gift Certificate to The Kittery Trading Post

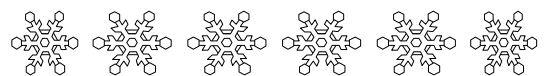
1 Year Free Membership to ASNNE, either Individual or Family

A New Release Astronomy Book Retail Value \$30.00 plus some more surprise items :-)

We also encourage people to bake their favorite dessert item and bring it to share. Any other contributions of food or beverage are welcomed and appreciated.

Regards,

Tim



Moon Phases

Dec 1
Last Quarter

Dec 9
New

Dec 17
First Quarter

Dec 23
Full

Moon Data

Dec 1
Saturn 2° north
of Moon

Dec 5
Venus 7° North
of Moon

Dec 6
Moon at apogee

Dec 12
Vesta 0.4° north
of Moon

Dec 14
Neptune 0.7° north
of Moon

Dec 15
Pallas 1° south
of Moon

Dec 16
Uranus 2° south
of Moon

Dec 22
Moon at perigee

Dec 28
Regulus 0.6° north
of Moon

What's Up "Continued from page 1"

expect over 100 meteors per hour from a dark sky site far away from any cities. The moon will not interfere, since it will set around 9 pm.

Most meteor showers are caused by comets, but the Geminids are the exception, since they are caused by an asteroid called Phaethon. This is a 3-mile chunk of rock that may have been a comet at one time. Most meteors are smaller than a grain of sand. Earth passes through the trail of dust and debris left by its parent comet each year at the same time. Even though they are so tiny and burn up so high in our atmosphere (about 60 miles up, where its density is one million times less than at the surface), meteors still create a bright flash of light because they are traveling so fast, over 20 miles per second.

You will see Geminids everywhere in the sky, but they will all originate at its radiant, a point in Gemini just above Castor and Pollux. That is close to where Mars is located, so it will look like Mars, the god of war, is throwing fiery darts at Earth. Or you could imagine passing through some Martian debris, though that is not its source. However, some of the meteorites found on Earth have been traced back to Mars!

The third major highlight this month is the continued bright appearance of Comet Holmes, which orbits the sun every 8 years. It underwent a remarkable transformation in late October when it suddenly brightened one million times in just a few hours. It has been easily visible without binoculars in Perseus, just below Cassiopeia along the Milky Way, ever since. Its coma continues to expand as it races away from us along our line of sight. At 200 million miles away, it is now about twice as far away as the sun. Its coma has expanded to about the size of the sun, which is 865,000 miles in diameter. The nucleus of Comet Holmes is a small chunk of loosely packed rock and ice only 2 miles in diameter. It may always remain a mystery as to why it brightened so suddenly and dramatically, but at least we can all enjoy the results and continue to wonder about the true nature of this cosmic sojourner.

Saturn begins the month rising around midnight in Leo, and ends the month rising by 10 pm. Venus remains resplendent in the southeastern morning sky. It is dimming a little as it races farther ahead of Earth and sinks a little lower in the sky. Watch the waning crescent moon pass directly below our other neighbor-

ing planet on the mornings of the 5th and 6th one hour before sunrise.

Dec.1. Last quarter moon is at 7:44 a.m. EST.

Dec.9. New moon is at 12:40 p.m.

Dec.13-14. The Geminid Meteor shower peaks.

Dec.17. First quarter moon is at 5:18 a.m. The first powered flight occurred on this day in 1903. It would only take another 66 years to get all the way to the moon.

Dec.18. Mars is at its closest to Earth at 54,783,000 miles or 88,165,000 km.

Dec.20. Saturn is stationary, ending its direct motion and beginning its retrograde, or westward motion through the sky in Leo.

Dec.21. The moon will have just occulted the Pleiades as it becomes visible at dusk. The Ursid Meteor shower peaks tonight.

Dec.22. Winter starts at 1:08 a.m. That also marks the beginning of summer in the Southern Hemisphere and their longest day.

Dec.23. Full moon is at 8:16 p.m. This is also called the Long Night, Cold, or Moon before Yule. The moon will be very close to Mars at 9 p.m. It will occult Mars from the Northwestern U.S., Canada and Alaska. Jupiter is in conjunction with the sun and is not visible until next month in the morning sky.

Dec.24. Mars is at opposition tonight.

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

Dec.26. The waning gibbous moon passes in front of the Beehive Star cluster this morning over western North America.

Dec.27. Johannes Kepler was born on this day in 1571. He first discovered that all planets and moons orbit in ellipses and not circles.

Dec.28. Comet 8P/Tuttle may become visible without binoculars tonight in Cassiopeia.



**Principal
Meteor
Showers in
2007**

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

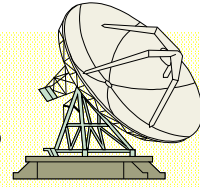
November 18
Leonids

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.*

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 President, David Bianchi, know.

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Hats & Bags · Stickers, Buttons & Magnets



Going My Way?

Not many endeavors require that you plan the mode of transportation before you even know what it is you are transporting. But weighing the physics and economics of getting any sort of cargo to space is a major part of designing a space mission.

It's one of the first issues that NASA's New Millennium Program (NMP) considers when planning a new mission. NMP has the forward-looking job to identify promising new technologies for space exploration. It then helps to mature the technology so it will be available to space missions of the future. If the technology cannot be tested adequately on Earth, the last part of this process is to actually send the technology into space. With carefully documented test results, future mission planners can confidently incorporate the new technology into their designs.

But where to begin? On call from the start, Linda Herrell is the New Millennium Program Architect. Given a list of proposed technologies, she has the job of figuring out the feasibility of wrapping a mission around them.

"We might be considering six or more technologies, anything from solar panels to imagers to masts for solar sails to more intelligent software. Of those, we may choose four. My job is to answer the question—can the selected technology be transported to and operated in space within the constraints of a low-cost technology validation project?"

Along with the list of possible mission payloads (the technologies), Linda also has a list of spacecraft to put them on, as well as a list of launch vehicle parameters. *All* she has to do is try them out in every possible combination (of which there are thousands) and see what might work.

"Fortunately, we have a software tool to help with this analysis," says Linda. When it comes down to it, her job is primarily to figure out how to get the technologies into space.

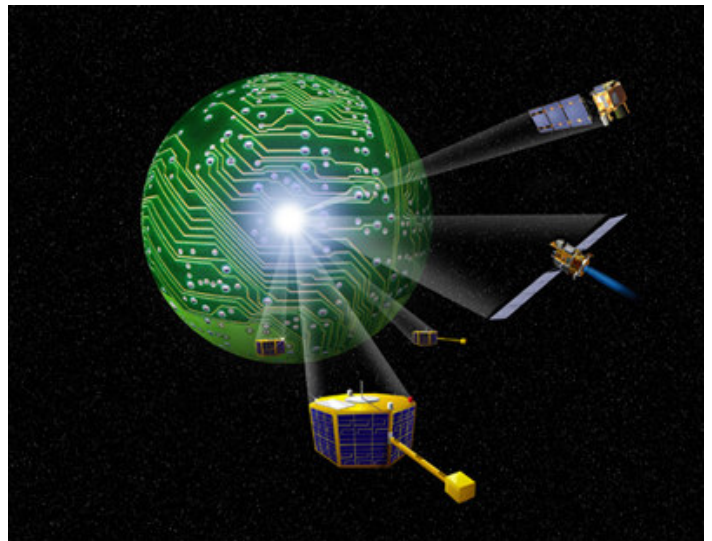
"Sometimes, it's like figuring out how to get across town when you don't have your own car. You have to get creative."

She keeps a database of all possible options, including riding piggyback on another spacecraft, hitching a ride on a launch vehicle as a secondary payload, or sharing a launch vehicle with other NASA, Department of Defense, or even commercial payloads.

Her assessment is but one of a gazillion factors to be considered in planning a mission, but it is indeed one of the very first "details" that forms the foundation for the rest of the mission.

Find out some of the technologies that NMP has already validated or is considering at nmp.nasa.gov/TECHNOLOGY/innovative-tech.html. Kids will enjoy watching Linda's cartoon alter-ego talk about her job at spaceplace.nasa.gov/en/kids/live.

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



Caption:

NASA's New Millennium Program selects breakthrough technologies that will be of the greatest use to future space and Earth science missions and that are perceived to be risky to the first user.

Club Meeting & Star Party Dates

Date	Subject	Location
Dec 7, 7:30 PM	Christmas Party. Doors will open at 6:30pm for socializing, hors d'oeuvres and beverages. Dinner to follow around 7:30pm. Also, nominations and elections for new Officers and Board Members will take place.	Masonic Hall West Kennebunk, Me.
Dec. 14, Dusk	Open Observing Session with rain/cloud date of Dec. 15. New Moon 12/9	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>

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

2008 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 _____

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