

SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England



Sept. 2006



Member of NASA's
Night Sky Network

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 September

by *Bernie Reim*

Summer ends this month as autumn returns once again to the northern hemisphere. We should have more crisp and clear nights now to enjoy the celestial treasures above. The autumnal equinox is at exactly 12:03 in the morning on Saturday the 23rd. That day, along with the vernal equinox, are the only two days each year that the sun rises due east and sets due west everywhere on earth except for the poles.

Just as the terrestrial seasons are changing now, we are also entering another eclipse season, which only happens twice a year. The last eclipse was a great total solar eclipse on March 29, visible in its entirety over parts of Northern Africa, Turkey, and Central Asia.

This month's eclipse, on Friday, September 22, will only be an annular solar eclipse, and visible only over three little countries in South America, Guyana, Surinam, and French Guiana. After that the eclipse heads out over the Atlantic Ocean and ends over the Indian Ocean without touching land again. Most of South America and parts of western Africa will see a partial solar eclipse.

The relatively few lucky people that will be in the right part of those three little countries will witness the sun rise as a brilliant, other-worldly ring of light. Annular means ring-shaped, which is what the sun looks like for a few minutes during annular solar eclipses. The moon will be at apogee, or farthest from Earth that day, making it a little too small to completely cover the sun, as it does when it is closer to perigee and then creates the far more dramatic and memorable total solar eclipses.

There are only two eclipse seasons per year because the moon orbits the earth up to 5 degrees above and below this plane. Eclipses can only happen when this Earth-moon plane is perfectly aligned. Total or partial lunar eclipses precede solar eclipses by two weeks. We will have a partial lunar eclipse during the

night of Thursday, Sept.7, but it will also not be visible over any part of North America.

Only about half of our solar eclipses are total, because they occur closer to perigee when the moon is large enough to completely cover the sun. If you are fortunate enough to be in the right place at the right time for that relatively rare event as the moon's shadow cone brushes across our home planet, you become the fourth body in that perfect Sun-moon-Earth syzygy as you bask in our only natural satellite's shadow for a few fleeting moments. If you don't plan to leave the country to go eclipse chasing, you will need to wait until August 21, 2017 to experience this great event.

Jupiter is the only remaining evening planet. The king of the planets is sinking lower into the southwestern sky, starting the month by setting around 10:30 pm, but ending the month by setting around 9 pm. Notice that Jupiter will spend part of this month within just one degree of the brightest star in the constellation of Libra, with the colorful Arabic name of Zubenelgenubi, which means the "southern claw".

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2002 2003 2004 2005 2006

ASNNE's 5th Annual Starfest Sept 22 - 24



Featuring Starfield Observatory's -
 8" Ziess-Jena refractor & 16" Meade LX200GPS
 -Solar viewing - H-Alpha & white light
 -Messier Marathon anyone?


- On site Camping
- no running water or electricity
- Porta potty on site
- TYO trash please

- Open Discussions
- Workshops
- Swop Tables
- Astronomy games

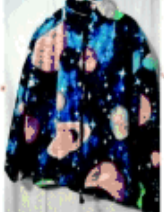
-Chicken BBQ meal on Sat - 5 pm - 7\$
RVSP if possible for planning

- Raffles - 8" Discovery Dobsonian - Hand made fleece "Galaxy Jacket"



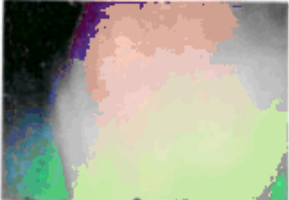
1st Prize



2nd Prize



At least 10 Constellation Prizes

-Also featuring our
Annual Northern Lights Display

Carl Tymonowicz 2002

www.asnne.org/starfest
The Astronomical Society of Northern New England

Moon Phases

September 7

Full

September 14

Last Quarter

September 22

New

September 30

First Quarter

Moon Data

September 5

Neptune 3° north
of Moon

September 7

Uranus 0.4° north
of Moon

Moon at perigee

September 18

Saturn 2° south
of Moon

September 22

Moon at apogee

September 24

Mercury 1.8° north
of Moon

Spica 0.5° north
of Moon

September 26

Jupiter 5° north of
Moon

September 28

Antares 0.5° north
of Moon

What's Up "Continued from page 1"

Saturn and Venus are the two morning planets this month. Saturn rises first, several hours before the sun, and then continues higher into the sky each morning even as Venus is sinking a little lower. By the end of this month, Venus will be rising just 35 minutes before the sun. It will be in conjunction with the sun on October 27. It is nearly fully illuminated by the sun now and it is about 50 times brighter than Saturn. The ringed planet is getting a little dimmer now because its rings are becoming less tilted; now reaching less than 15 degrees from edge-on for the first time in 8 years.

We may soon have a new definition of a planet, as leaders of the International Astronomical Union have proposed a draft resolution to be voted on by 2500 professional astronomers. Part of the definition states that two conditions must be met for an object to be called a "planet". "A planet is a celestial body that (a) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (b) is in orbit around a star, and is neither a star nor a satellite of a planet." The object would have to be at least 800 km in diameter to meet the first condition. Our moon, and the four large Galilean moons of Jupiter, which are all larger than our 2180 miles in diameter moon, would not qualify because their barycenters, or common center of gravity with which they orbit the sun, are below the surface of the original planet. In our case, the earth-moon barycenter is about 1000 miles below the surface of the earth.

This definition would not only save Pluto as a planet, but it would even give us three new planets, the asteroid Ceres, Charon, the largest moon of Pluto, and 2003 UB313, tentatively named Xena. This new definition still has some gray areas, but at least astronomers would now have a new standard as they continue the inevitable process of discovering hundreds of new planets both within and outside of our solar system as our instruments improve.

Sept.7. Full moon is at 2:42 p.m. EDT. This is the famous Harvest Moon. Notice that it will rise only about 25 minutes later each night, instead of the usual 55 minutes. That is because the angle of the ecliptic, which is the path that

the sun, moon, and planets appear to make, with our eastern horizon is very shallow this time of year. The moon is also at perigee, or closest to the earth tonight. That will make for higher than usual tides. A partial lunar eclipse also occurs today, but not for us in North America.

Sept. 11. Jupiter is only half a degree north of Zubenelgenubi tonight and tomorrow.

Sept. 14. Last quarter moon is at 7:15 a.m.

Sept. 18. Watch the dance of the waning crescent moon with Saturn, Regulus, and Venus over the next four mornings, 40 minutes before sunrise in the eastern sky. The slender moon will be just below Saturn on the 19th, below Regulus on the 20th, and right next to Venus on Thursday morning the 21st.

Sept. 22. New moon is at 7:45 a.m. An annular solar eclipse takes place today, mostly over the southern Atlantic Ocean.

Sept. 23. The fall equinox is at 12:03 a.m. This also marks the beginning of spring in the southern hemisphere.

Sept. 24. Look for a very thin waxing crescent moon next to Spica and Mercury, very low on the west southwestern horizon half an hour after sunset. You will need binoculars to spot this trio, but Jupiter, just above the group, will be easy to see.

Sept. 25. Watch as the waxing crescent moon passes below Jupiter and then the orange star Antares in Scorpius over the next four nights about 40 minutes after sunset.

Sept. 30. First quarter moon is at 7:04 a.m.

Got any News?
Skylights welcomes
your input.

**Principal
Meteor
Showers in
2006**

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*

Pluto

Poor little Pluto
Icy, round, and cute
The IAU demoted you!
They've given you the boot!

You haven't cleared your neighborhood.
Your orbit's off the plane.
You encroach on Neptune's orbit.
You're a naughty little pain.

But sill I think you're wonderful
Far out in lonely space
Cavorting with your Charon
You're a very special case!

Submitted by: Joan Chamberlin

Despite Planetary Downgrade, Pluto is Still Disney's 'Dog Star'
In reaction to news today that Pluto was demoted to the status of "dwarf planet," the Seven Dwarfs issued their own short statement:

"Although we think it's DOPEY that Pluto has been downgraded to a dwarf planet, which has made some people GRUMPY and others just SLEEPY, we are not BASHFUL in saying we would be HAPPY if Disney's Pluto would join us as an 8th dwarf. We think this is just what the DOC ordered and is nothing to SNEEZE at."

As Mickey Mouse's faithful companion, Pluto made his debut in 1930 - the same year that scientists discovered what they believed was a ninth planet. Said a white-gloved, yellow-shoed source close to Disney's top dog, "I think the whole thing is goofy. Pluto has never been interested in astronomy before, other than maybe an occasional howl at the moon."

By Howard Eskildsen

Submitted by: Paul Kursewicz



Who Wants to be a Daredevil?

By Patrick L. Barry and Dr. Tony Phillips

When exploring space, NASA naturally wants to use all the newest and coolest technologies—artificial intelligence, solar sails, onboard supercomputers, exotic materials.

But “new” also means unproven and risky, and that could be a problem. Remember HAL in the movie “2001: A Space Odyssey”? The rebellious computer clearly needed some pre-flight testing.

Testing advanced technologies in space is the mission of the New Millennium Program (NMP), created by NASA’s Science Mission Directorate in 1995 and run by JPL. Like the daredevil test pilots of the 1950s who would fly the latest jet technology, NMP flies new technologies in space to see if they’re ready for prime time. That way, future missions can use the technologies with much less risk.

Example: In 1999, the program’s Deep Space 1 probe tested a system called “AutoNav,” short for Autonomous Navigation. AutoNav used artificial intelligence to steer the spacecraft without human intervention. It worked so well that elements of AutoNav were installed on a real mission, Deep Impact, which famously blasted a crater in Comet Tempel 1 on July 4, 2005. Without AutoNav, the projectile would have completely missed the comet.

Some NMP technologies “allow us to do things that we literally could not do before,” says Jack Stocky, Chief Technologist for NMP. Dozens of innovative technologies tested by NMP will lead to satellites and space probes that are smaller, lighter, more capable and even cheaper than those of today.

Another example: An NMP test mission called Space Technology 9, which is still in the planning phase, may test-fly a solar sail. Solar sails use the slight pressure of sunlight itself, instead of heavy fuels, to propel a spacecraft. Two proposed NASA missions would be possible only with dependable solar

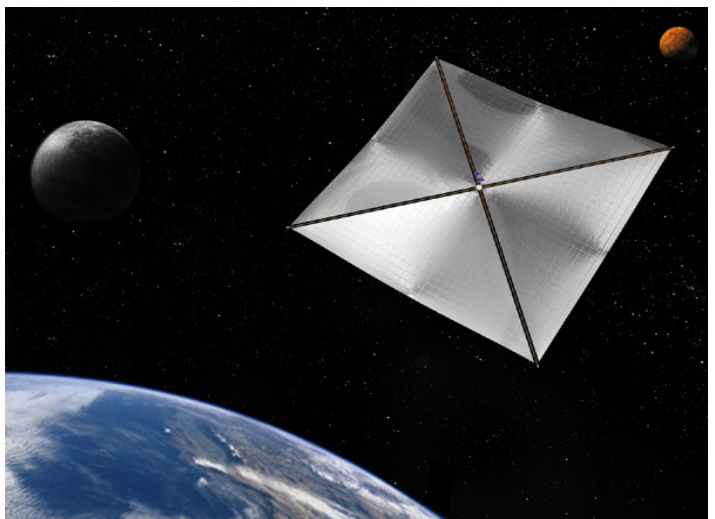
sails—L1 Diamond and Solar Polar Imager—both of which would use solar sails to fly spacecraft that would study the Sun.

“The technologies that we validate have future missions that need them,” Stocky says. “We try to target [missions] that are about 15 to 20 years out.”

A menagerie of other cool NMP technologies include ion thrusters, hyperspectral imagers, and miniaturized electronics for spacecraft navigation and control. NMP focuses on technologies that have been proven in the laboratory but must be tested in the extreme cold, vacuum, and high radiation environment of space, which can’t be fully recreated in the lab.

New NMP missions fly every year and one-half to two years, taking tomorrow’s space technology for a daredevil test drive.

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 a four-quadrant solar sail propulsion system, with payload. NASA is designing and developing such concepts, a sub-scale model of which may be tested on a future NMP mission.

Club Meeting & Star Party Dates

Date	Subject	Location
Sept. 01, 7:30 PM	The <i>regular club</i> meeting will be held at 7:30pm. Keynote speaker: club member Joyce Brann . She will show pictures of her recent trip to Greenbanks Observatory, plus other trips she has taken.	Masonic Hall West Kennebunk, Me. NOTE: Beginner classes will be held from 6:30 PM to 7:15 PM.
Sept. 23, 6:00 PM	Starfest Weekend. Keynote speaker: Paul Howell . His topic will be exo-planet discovery and the search for other planets.	Starfield Observatory, West Kennebunk, Me.
Oct. 06, 7:30 PM	The monthly Club Meeting. Topic TBD.	Masonic Hall West Kennebunk, Me.
Oct. 20, Dusk	Open Observing Session with rain/cloud date of Oct. 21. New Moon 10/22	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

2006 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 _____

