SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England

SEPT. 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.

What's Up In September

By Bernie Reim

September always marks the beginning of fall for us in the Northern Hemisphere. This year the autumnal equinox will happen on Tuesday the 22nd at 5:19 p.m. That event is farther defined by the sun on its path on the ecliptic crossing over the celestial equator on a downward path at that moment.

Both the fall and spring equinoxes serve as unifying events for everyone on Earth because those are the only two days each year that the sun rises and sets due east and west. Within a few days of the equinoxes are also the only two days each year that are exactly 12 hours long for everyone on Earth. When you think about it, all astronomical events are really unifying because everyone in the right place on Earth will see the same picture but interpret it a little differently based on their experience.

The sky above us and the special events we see periodically like meteor showers, comets, northern lights, and eclipses changed very little in the last 2000 years, but the way humans interpret them and our scientific understanding has changed drastically and continues to do so daily in an exponential curve. There is no limit to what we can learn.

There will be a couple of rare and unusual highlights this September. Even as the last remnants of the Earth-sized black spot on Jupiter dissipate and the giant planet heals itself from the impact of the comet or asteroid that smashed into it in the middle of July, another rare event will happen around the King of the Planets. All four of its large Galilean moons, first discovered by Galileo through his telescope 400 years ago, will disappear at the same time. That only happens a few times each century.

For nearly two hours, starting at 12:43 a.m. EDT on Thursday, September 3rd until 2:29 a.m., all four of Jupiter's largest moons will be hiding from our sight. Europa and Ganymede will pass in front and Io and Callisto will sneak around behind the planet. Through a telescope you should be able to see the double shadow transits inching their way across mighty Jupiter. You can usually see all 4 of these large moons with just a good pair of binoculars as long as the moons aren't directly behind or in front of the planet.

A bright waxing gibbous moon will be just three degrees north of Jupiter that evening before the great disappearing act will begin. Another waxing gibbous moon will be the same distance north of Jupiter again on Tuesday the 29th, but this time Jupiter's moons will not be in hiding.

Another interesting event this month will be the Aurigid meteor shower. This is not usually much of a shower, producing only about 5 meteors per hour, which is just above the background rate of 2 to 3 stray meteors you could see any clear night of the year. What makes the Aurigids special is the fact that they are caused by a long period comet named Kiess. Since this comet takes 2000 years to orbit the sun, it doesn't have a chance to create a wide debris trail similar to other comets

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What's Up "*Continued from page 1*"

like Halley's which only takes 76 years to orbit and creates more predictable and numerous meteors. The last time the Aurigids produced a good shower was in 2007. Many of the meteors had a strange blue-green color because people were seeing comet dust that was highly weathered by cosmic rays for 2000 years.

The comet itself hung out in the Oort's cloud for 4.5 billion years, which is the source of all our comets. Forming a giant sphere completely surrounding our solar system out to about 3 light years, there are an estimated 6 trillion comets in the Oort's cloud. They are at the very fringe of the gravitational effect of our sun, so they are only weakly bound together. Passing stars and other forces like giant molecular clouds and tidal forces from stars in our Milky Way's galactic disk and core can easily change their orbits, as they have done many times.

So next time you enjoy some brilliant meteors burning up high in our atmosphere, keep in mind where the comets came from that created those meteors and how sensitively balanced everything is in our solar system and galaxy and beyond.

Saturn has disappeared from our evening sky, but it will reappear in the morning sky late this month. We have now passed through Saturn's ring plane, so we will be seeing the rings from above for the first time since 1996, which was the last time Saturn's famous rings seemed to disappear from our line of sight.

Mars and Venus are still the morning planets, but they are rising a little earlier each day. Our first planet, Mercury, will join the pair towards the end of the month. Mars rises a little after midnight in Gemini. It will be a little brighter than Castor and Pollux, the famous twins in Gemini. Notice the color differences between white Castor, yellow-orange Pollux, and orange Mars. A waning crescent moon passes within a couple degrees of Mars on the morning of Sunday the 13th.

Venus begins the month just below the Beehive star cluster in Cancer the Crab. Our sister planet shines nearly 1000 times brighter than the combined light of the cluster's few hundred stars, which is just visible without optical aid. Through a telescope, notice that the diameter of Venus is getting smaller even as it is getting more illuminated by the sun as it travels farther from Earth.

Sept.2. The moon passes 3 degrees north of Jupiter.

Sept.3. Jupiter will appear to lose all 4 of its largest moons this morning for a few hours.

Sept.4. Full moon is at 12:03 p.m. This is usually called the Harvest Moon, but only if it is nearest the equinox, which happens two years out of three. This year the October full moon is nearest the fall equinox, so September's moon is called the full corn moon.

Sept. 5. Voyager 1 was launched on this day in 1977.

Sept. 9. Viking 2 was launched to Mars on this day in 1975.

Sept.11. Last quarter moon is at 10:16 p.m.

Sept.13. The moon passes one degree north of Mars this morning.

Sept.16. The moon is at perigee, or closest to the earth this morning at 226,212 miles. The moon passes just south of Venus today.

Sept.17. Saturn is in conjunction with the sun.

Sept.18. New moon is at 2:44 p.m. EDT.

Sept.20. Venus passes half a degree north of Regulus in Leo the Lion.

Sept. 21. The fourth largest asteroid, named Juno, is at opposition at 4 am today. You can see it with a pair of binoculars in Pisces.

Sept. 22. The autumnal equinox occurs at 5:19 pm.

Sept. 24. The moon passes less than one degree north of Antares, which is 700 times the diameter of our sun and one of the biggest stars in our whole galaxy of over 200 billion stars, this morning.

Sept.26. First quarter moon is at 12:50 a.m.

Sept. 27. The moon is at apogee, or farthest from the earth today at 251,302 miles.

Moon Phases

Sep 4
Full

Sep 11
Last Quarter

Sep 18
New

Sep 26
First Quarter

Moon Data

Sep 2
Jupiter 3° south of Moon

Sep 3
Neptune 3° south of Moon

Sep 5
Uranus 6° south of Moon

Sep 13
Mars 1.1° south of Moon

Sep 16
Venus 3° north of Moon

Moon at perigee

Sep 24
Antares 0.8° south of Moon

Sep 28
Moon at apogee

Astronomical Society
Of
Northern New England

Business Meeting

August 7, 2009

Present:
Richard Beaulieu (secretary), David Bianchi, Ron Burk (president), Jim Hatch, Bro. Albert Heinrich.

Secretary's Report:
We had no new members join in the last month.

Treasurer's Report:
The treasurer was absent.

Observatory & Equipment:
Jim used the CCD camera on the Mead and took pictures.
The finder on the Mead is not perfectly aligned since there are no adjustments on the mount.

Bad Astronomy:
Several members mentioned that they have received emails about Mars being the size of the full moon in August. This is a hoax that has been circulating on the internet since 2003.

Meetings:
Starfest will be September 18-20 at the observatory. The speaker is Walter McDougal, who is a Mason. He wall give a talk on something related to astronomy.
We will have a chicken barbecue Saturday night. If the weather is bad, we will meet at the Lodge and also cook and eat there.
The 18th is the new moon.
We will invite Southern Maine Astronomers.
We will plan for about 50 people to show up.

October 2	Jerry Lasala
November 6	Joan Chamberlin will talk on the study of the Auriga variable.
December 4	Xmas party.

A department of Boston University would be happy to provide us with speakers.

Galileoscopes:
There was nothing new to report.

The new moon globe that we won at a raffle was displayed.

Starparties:

August 21	club/public
September 18-20	observatory, club/public
October 23	
November 20	
December 18	

Silent Auction:
We are planning on one on October 17. The items are set out in lots. There is a folder in front of each. People write their bids on them. The bidding is 11 AM to 3 PM.
At the end of the day, the books are collected and the winners are found.
We will need to set up the night before.
After a bid, the guest can leave. She will be notified by telephone if she wins.

Website:
We would like to have a calendar, on our website, on which members could write if they have a password.

Respectfully submitted,
Richard Beaulieu

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

Club Items For Sale

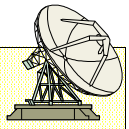
Our club has merchandise for sale at: www.cafepress.com/asnne

All money raised goes to our operating fund.

Any design can be put on any item.
Just let our Director, David Bianchi, know.

SHOP CATEGORIES

Postage · Apparel · Housewares
Hats & Bags · Stickers, Buttons & Magnets



Got any News?
Skylights welcomes your Input.

Here are some suggestions:

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

Sky Object of the Month - September 2009
Epsilon Pegasi – the "Pendulum Star"
By Glenn Chaple

This month, we're going to pay a visit to epsilon Pegasi (Enif), the "Pendulum Star." It's an optical double star comprised of magnitude 2.5 and 8.7 component stars separated by 144 seconds of arc. Pairs this wide usually don't merit much consideration, but wait! Epsilon Pegasi has a surprise for us.

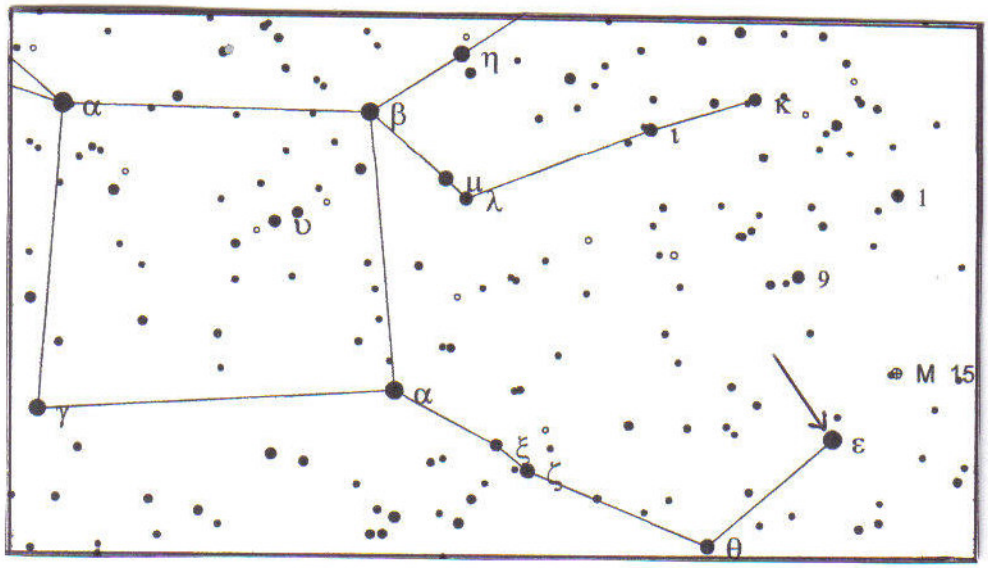
After centering this pair in the eyepiece field (60 – 100X is the recommended magnification), mentally trace a line between them. While keeping your eye at the eyepiece, gently jigglethe telescope back and forth so that the two stars move at right angles to the imaginary line. While the golden yellow primary (a K-type star) travels serenely back and forth, the little companion seems to swing wildly to and fro, like a clock pendulum. It's one of the most amazing telescopic optical illusions you'll ever witness.

What's happening? According to Sir John Herschel, who was among the first to describe the "Pendulum Star," the oscillations are due to the longer time it takes light from the faint star to affect the retina. We detect the motion of the primary a split second earlier, so the companion seems to lag behind. Rapid back and forth movement of the telescope generates the illusion of pendulum-like motion.

The Pendulum Star received plenty of recognition in astronomy guidebooks written in the late 19th and early 20th century – a time when double stars enjoyed tremendous popularity. Nowadays, with attention directed towards nebulae, clusters, and galaxies, epsilon Pegasi receives scant notice.

The finder chart shows the location of epsilon Pegasi. If you hunt down deep-sky objects by the star-hop method, you may recognize it as a pointer (with nearby theta Pegasi) to the globular cluster M15. Next time you plan to visit M15, take a moment to check out epsilon Pegasi. This star will put on a show that's sure to dazzle!

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



Finder chart for epsilon Pegasi
(From Cartes du Ciel)

NASA'S SPACE PLACE

SARSAT to the Rescue

If a plane crashes in the woods and nobody hears it, does it make a sound?

Never mind contemplating this scenario as a philosophical riddle. This can be a real life or death question. And the answer most of the time is that, even if no people are nearby, something is indeed listening high above.

That something is a network of satellites orbiting about 450 miles overhead. The "sound" they hear isn't the crash itself, but a distress signal from a radio beacon carried by many modern ships, aircraft, and even individual people venturing into remote wildernesses.

In the last 25 years, more than 25,000 lives have been saved using the satellite response system called Search and Rescue Satellite-aided Tracking (SARSAT). So what are these life-saving superhero satellites?

Why they are mild-mannered weather satellites.

"These satellites do double duty," says Mickey Fitzmaurice, a National Oceanic and Atmospheric Administration (NOAA) systems engineer for SARSAT. "Their primary purpose is to gather continuous weather data, of course. But while they're up there, they might as well be listening for distress signals too."

In February, NASA launched the newest of these Polar-orbiting Operational Environmental Satellites (or POES) into orbit. This new satellite, called N-Prime at launch and now dubbed NOAA-19, prevents a gap in this satellite network as another, aging NOAA satellite reached the end of its operational life.

"The launch of N-Prime was a big deal for us," Fitzmaurice says. With N-Prime/NOAA-19 in place, there are now six satellites in this network. Amongst them, they pass over every place on Earth, on average, about once an hour.

To pinpoint the location of an injured explorer, a sinking ship, or a downed plane, POES use the same Doppler effect that causes a car horn to sound higher-pitched when the car is moving toward you than it sounds after it passes by.

In a similar way, POES "hear" a higher frequency when they're moving toward the source of the distress signal, and a lower frequency when they've already passed overhead. It takes only three distress-signal bursts — each about 50 seconds apart — to determine the source's location.

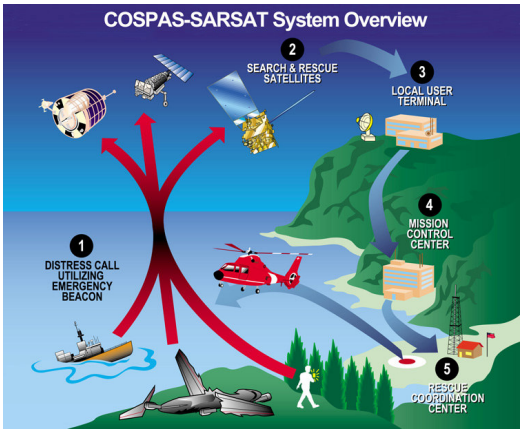
Complementing the POES are the Geostationary Operational Environmental Satellites (GOES), which, besides providing weather data, continuously monitor the Western Hemisphere for distress signals. Since their geostationary orbit leaves them motionless with respect to Earth below, there is no Doppler effect to pinpoint location. However, they do provide near instantaneous notification of distress signals.

In the future, the network will be expanded by putting receivers on new Global Positioning System (GPS) satellites, Fitzmaurice says. "We want to be able to locate you after just one burst." With GPS, GOES will also be able to provide the location of the transmitter.

Philosophers beware: SARSAT is making "silent crashes" a thing of the past.

Download a two-page summary of NOAA-19 at www.osd.noaa.gov/POES/NOAA-NP_Fact_Sheet.pdf. The Space Place gives kids a chance to rescue stranded skiers using their emergency rescue beacons. The Wild Weather Adventure game awaits them at spaceplace.nasa.gov/en/kids/goes/wwa.

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



Caption:
NOAA's polar-orbiting and geostationary satellites, along with Russia's Cospas spacecraft, are part of the sophisticated, international Search and Rescue Satellite-Aided Tracking System.

Club Meeting & Star Party Dates

Date	Subject	Location
Sept. 18, 19, 20	**ASNNE Starfest Starparty Weekend.**	Starfield Observatory, West Kennebunk, Me.

Friday 9/18: 2:00pm Starfield Observatory gates open. Facilities set up during the afternoon and evening. Observatory open for Solar viewing during daylight and open all night. Friday night Tent Talks: open discussions.

Saturday 9/19: 12-2 pm Astronomy Game. 2-5 pm Chicken BBQ. Chick/pot/corn/squash/chips/drink. BYO-Desserts. 6-10 Tent Talks. Raffle: TBD. What's Up - Bernie Reim. Night Sky Network Activity and discussion - Starlady Joan Chamberlin. Guest Speaker: **Walter M. Macdougall**, PhD, Dean of Academic Affairs and Instructor at Maine Masonic College, will give a talk on astronomy.

Open Discussions: Topics: Astro Shorts - viewing events and stories. Astronomy in the News. "You Know You're An Astronomer When…" Pluto updates. Wimps -Gravitons and Dark matter/energy.

10pm to Dawn Stargazing - Planets, Galaxies, Clusters, Nebula, and by Special request - Aurora Borealis @1am Special Targets - Neptune, mag 7.8 & Uranus, mag 5.7. 3am viewing targets Mars & Orion. Both rise 12-1am- at 3am +30 degree alt.

NOTE: Saturday's event will be held indoors at the Masonic Hall if the weather is bad.

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

2009 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_____