SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England

SEP 2010

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 STARFEST WEEKEND AND CLUB MEETING. SEE PAGE 8 FOR DETAILS.

What's Up In September

By Bernie Reim

This month always marks the beginning of autumn for us in the northern hemisphere. The autumnal equinox will occur at 11:09 p.m. on Wednesday the 22nd. Three other interesting events will happen within just one day of the equinox. Both Jupiter and Uranus will reach opposition the day before and the famous full Harvest moon will occur just 6 hours and 8 minutes after this equinox.

The spring and fall equinoxes are the only two days each year when the sun rises due east and sets due west for everyone on Earth expect at the poles. If you live near the ocean, try to see how much the position of sunrise varies each day. You will find that it averages nearly half a degree per day, which is the width of our sun in the sky.

The sun reaches its northernmost point in our sky at the summer solstice when it rises about 40 degrees north of due east and sets about 40 degrees north of due west, tracing a high arc through the sky. By contrast, notice that the sun rises about 40 degrees south of due east and sets about 40 degrees south of due west and traces a very low arc through our sky on the winter solstice.

Within a few days of the equinoxes are also the only two days each year that the days and nights are exactly of equal length for everyone on Earth except for the poles. This serves as a unifying event showing us how much more the 7 billion of us have in common than our minor differences exhibit when we look at the larger astronomical context within which we live and constantly travel through the universe aboard spaceship Earth.

Both Jupiter and Uranus will reach opposition on Sept.21. They are located only one degree apart, which can be measured by holding up one finger at arm's length. You will need a telescope to see Uranus just to the upper right of Jupiter because it is 13 times smaller and 2000 times fainter than the King of the Planets. They will both rise at sunset that day and remain in the sky all night long, not setting until sunrise. They can be seen just below the great square of Pegasus in Pisces the fish in the eastern sky.

Discovered in 1781 by William Herschel, Uranus is named after the ancient Greek deity that is the father of Saturn and the grandfather of Jupiter. All eight members of our family of planets are unique, but Uranus exhibits more extreme differences. It is tilted completely on its side, so it seems to roll around the sun as it orbits. Half the planet experiences a 42-year-long night and the other half a 42-year-long day before it reverses for the next 42 years to complete its 84-year orbit around the sun. There are several good theories as to what may have caused this strange condition, but they don't really know yet.

Located 2 billion miles away or three

"Continued on page 2"

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

hours at the speed of light, or about twice the distance of Saturn, Uranus is our third largest planet after Jupiter and Saturn. It has rings like all 4 of the gas planets have, but it has only 27 moons instead of 63 for Jupiter and Saturn. Most of its moons are named for characters in Shakespeare's plays. One of its five largest moons, named Miranda, is one of the strangest moons in our solar system, seemingly made of a combination of features of other moons stitched together. About 300 miles in diameter, Miranda has a giant chevron etched on one side and it looks like at least 2 different moons sandwiched together. There was a tremendous collision that tore this moon apart a long time ago, and it has since coalesced itself back together.

Uranus shows as a very interesting pale greenish-blue dot through a telescope. That is because the methane in its very cold atmosphere absorbs all the red light. At 32,000 miles in diameter, it is 4 times the size of Earth and it has an earth-sized solid core that may be highly compressed carbon, which is the substance of a diamond.

While Jupiter was hiding below the horizon this winter and early spring, it went through a great change. It re emerged missing a stripe. Jupiter has two distinct bands visible in small telescopes, called the north and south equatorial band. The south equatorial band is now missing, veiled by a thick deck of cirrus clouds composed of tiny crystals of frozen ammonia. What is even more interesting is exactly how this band will revive itself. This band has already faded and revived itself 15 times since 1919, but not on a regular basis. The last time was in 2007. It could revive itself anytime starting now up to a couple of years from now.

An extremely dark spot will appear near the southern edge of this band and immediately encounter tremendous wind shear in the form of 200 mph winds blowing in one direction around Jupiter and the 300 mph south equatorial belt jet stream blowing in the other direction. This dark upwelling material will then quickly spread out in both directions and several more sources of this dark material will probably occur. After just 2 or 3 months, the entire south equatorial belt will be restored to its original darkness. Hopefully this will happen while Jupiter is well placed in our sky to watch all this action through an amateur telescope. Try to get a better sense of the tremendous forces always at work deep within Jupiter as we get a better insight into its inner workings during this event.

Our neighbors Venus and Mars continue to distance themselves from Saturn. Look low in the west-southwestern sky half an hour after sunset and you will see brilliant Venus and orange Mars 5 degrees apart forming an ever-elongating triangle with Saturn 10 degrees to their lower right. The star Spica in Virgo will be directly between Venus and Mars on the first of the month. Venus is 250 times brighter than Mars and 200 times brighter than Saturn. The ringed planet will sink below the horizon by the middle of the month, just as Mercury becomes visible in the morning sky half an hour before sunrise in Leo the lion.

Sept.1. Last quarter moon is at 1:22 p.m. EDT.

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

Sept.8. New moon is at 6:30 a.m.

Sept.10 & 11. Watch the slender waxing crescent moon pass directly below Spica, Mars, and Venus these two evenings half an hour after sunset.

Sept.13. The moon passes near Antares, the brightest star in Scorpius one hour after sunset this evening.

Sept. 20. Jupiter and Uranus are closest to the earth tonight.

Sept.21 Jupiter and Uranus are at opposition tonight.

Sept.22. Jupiter and Uranus are 6 degrees below the nearly full moon tonight. Autumn begins in the Northern Hemisphere at 11:09 p.m.

Sept.23. The full Harvest Moon is at 5:17 am. This is called the Harvest Moon because it only rises about half an hour later each night instead of the usual 50 to 60 minutes later, giving the farmers more consistent light to harvest their crops well into the night for several nights.

Sept.27. The Pleiades in Taurus will rise around 9 p.m. tonight two degrees to the left of the waning gibbous moon.

Sept.30. Last quarter moon is at 11:52 p.m.

Moon Phases

Sept 1
Last Quarter

Sept 8
New

Sept 15
First Quarter

Sept 23
Full

Moon Data

Sept 7
Moon at perigee

Sept 9
Saturn 8° north of Moon

Sept 11
Venus 0.3° north of Moon

Mars 5° north of Moon

Sept 20
Neptune 5° south of Moon

Sept 21
Moon at apogee

Sept 23
Uranus 6° south of Moon

Jupiter 7° south of Moon

Sky Object of the Month – September 2010
The Milky Way
by Glenn Chaple

This month, we explore the galaxy most of us are familiar with – the Milky Way. Many astronomers regard the Milky Way, viewed with the unaided eye on a dark, moonless night, as the most awe-inspiring heavenly sight of all. During late summer, it arches overhead, from Cassiopeia to our north, through Cygnus above, then down to Sagittarius on the southern horizon.

Studying the Milky Way with a standard telescope is akin to exploring the Mississippi River by placing a drop of its water under a microscope. You'll do better by sailing the Milky Way with the most practical vessel possible – binoculars.

On an evening and location (preferably one that affords an open sky) where dark skies prevail, set up a reclining lawn chair or lay down a blanket. Relax and direct your binoculars towards Cassiopeia, the departure point for your "cruise." Take your time and enjoy the scenery. Maintain a course through Cygnus and onward to Sagittarius. Along the way, you'll encounter a dazzling cosmic vista – myriads of stars interspersed with an occasional cluster or nebula.

When finished, begin again. Unlike a traditional ocean cruise, this one doesn't cost a penny and the scenery is far more spectacular.

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

ASTROPOETRY

A Perseid

Slamming into the atmosphere
In a slap-smacking belly flop
A tiny grain of meteoroid sand
Dives through space
Vaporizing
Lighting the sky until
It slips into the water
of dark night

by Joan Chamberlin

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

by Joan Chamberlin

Principal Meteor Showers in 2010

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

Now available at *Space Place en español*, the new Ozone Trap-n-Zap game tells us why we should have mixed feelings about ozone, and gives us the chance to put it in its rightful place. Ozone is fickle. Sometimes it's good to us, sometimes it isn't. It all depends on its altitude in the atmosphere. Close to the ground—it's harmful pollution. A little higher, in the mid-troposphere—it help clean pollution out of the air. Higher still at the top of the troposphere—it's a greenhouse gas. And high up in the stratosphere—it absorbs harmful ultraviolet light. Play Ozone Trap-n-Zap *en español* at http://spaceplace.nasa.gov/sp/kids/tes/ozone.

Best wishes,

The Space Place Team

NOTE: In addition to The Space Place website, there are two other fun and educational websites for kids? The *SciJinks Weather Laboratory* targets middle-schoolers. It explains the reasons for the seasons, the tides, and other weather and Earth science mysteries in colorful "Now I get it!" pages. *NASA Climate Kids* demystifies the "Big Questions" about global climate change using 4-6th-grade-level language, colorful illustrations, humor, interactivity, and games.

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**

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 .

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.

The Turbulent Tale of a Tiny Galaxy

by Trudy Bell and Dr. Tony Phillips

Next time you hike in the woods, pause at a babbling stream. Watch carefully how the water flows around rocks. After piling up in curved waves on the upstream side, like the bow wave in front of a motorboat, the water speeds around the rock, spilling into a riotous, turbulent wake downstream. Lightweight leaves or grass blades can get trapped in the wake, swirling round and round in little eddy currents that collect debris.

Astronomers have found something similar happening in the turbulent wake of a tiny galaxy that is plunging into a cluster of 1,500 galaxies in the constellation Virgo. In this case, however, instead of collecting grass and leaves, eddy currents in the little galaxy's tail seem to be gathering gaseous material to make new stars.

"It's a fascinating case of turbulence [rather than gravity] trapping the gas, allowing it to become dense enough to form stars," says Janice A. Hester of the California Institute of Technology in Pasadena.

The tell-tale galaxy, designated IC 3418, is only a hundredth the size of the Milky Way and hardly stands out in visible light images of the busy Virgo Cluster. Astronomers realized it was interesting, however, when they looked at it using NASA's Galaxy Evolution Explorer satellite. "Ultraviolet images from the Galaxy Evolution Explorer revealed a long tail filled with clusters of massive, young stars," explains Hester.

Galaxies with spectacular tails have been seen before. Usually they are behemoths—large spiral galaxies colliding with one another in the crowded environment of a busy cluster. Tidal forces during the collision pull gas and stars of all ages out of these massive galaxies to form long tails. But in IC 3418, the tail has just young stars. No old stars.

"The lack of older stars was one tip-off that IC 3418's tail isn't tidal," says Hester. "Something else must be responsible for these stars"

Hester and eight coauthors published their findings in the June 10, 2010, issue of The Astrophysical Journal Letters. The team described the following scenario: IC 3418 is speeding toward the center of the Virgo cluster at 1,000 kilometers per second. The space between cluster galaxies is not empty; it is filled with a gaseous atmosphere of diffuse, hot hydrogen. Thus, like a bicyclist coasting downhill feels wind even on a calm day, IC 3418 experiences "a stiff wind" that sweeps interstellar gas right out of the little galaxy, said Hester—gas that trails far behind its galaxy in a choppy, twisting wake akin to the wake downstream of the rock in the babbling brook. Eddy currents swirling in the turbulent wake trap the gas, allowing it to become dense enough to form stars.

"Astronomers have long debated the importance of gravity vs. turbulence in star formation," Hester noted. "In IC 3418's tail, it's ALL turbulence."

To many astronomers, that's a surprising tale indeed.

See other surprising UV images from the Galaxy Evolution Explorer at http://www.galex.caltech.edu. Kids (and grownups) can play the challenging new Photon Pileup game at http://spaceplace.nasa.gov/en/kids/galex/photon/ .

Caption:
In the ultraviolet image on the left, from the Galaxy Evolution Explorer, galaxy IC 3418 leaves a turbulent star forming region in its wake. In the visible light image on the right (from the Sloan Digital Sky Survey), the wake with its new stars is not apparent.

Padded Picnic Table
Deep Dark Dome
Magnificant Milky Way
Scratched Sky
Perseid's Peak

That's it in a nutshell, but anyone could look at the meteors given Maine's great weather that weekend. However, here's what you'd learn if you'd driven the 260 miles to Cobscook Bay State Park and counted sky scratches with Downeast Amateur Astronomers at their 2010 Maine State Star Party.

There is actually an international flavor to the club. Michael Hiland drove across the bridge and through US customs to attend. He traveled with his first place winner, a handsome 10" F5 Dob. This scope (see photo) took the junior-category design and construction prize at Stellaphane 2003.

"When I first started thinking of buying a telescope, Charlie (Sawyer) encouraged me to make my own," Hiland said. "My dad is a carpenter and helped with the woodwork. I bought the lense and used pipe insulation to cover the supports. The counterweights are "found" weightlifting leads." Hiland went on to demonstrate his scope's ability by separating and showing the distinctive color of the two stars in Alberio. I've heard that Australian shepards have eyes of different colors, just like the swan. More about that later.

When Park Ranger Tom showed up to see how the party was going, I learned that Sawyer is a former park ranger at Cobscook Bay. Being well connected didn't hurt when Charlie realized (on short notice) that Downeast Astronomers would again host the Maine State Star Party.

On Saturday, the after dark crowd (perhaps 30) were more family and friends than campers. That made for an intimate hot dog, ice cream and cake celebration for Robi ----------'s 17th birthday.

Like any great party, there was a gate crasher. A young porcupine came to see if there were any leftovers that would interest an herbivore.

That Australian Shepard? As I left the park early Sunday, I turned the wrong way and came upon a roadblock of sheep being herded by a lanky bearded man with an Australian shepard dog at his command. You never know what you'll find when you go hunting with Perseus.

By Sara C. Dinyari

More of Sara's photos of the 2010 Maine State Star Party are seen on the following page

Canadian Downeast Amateur Astronomer member, Michael Hiland, denied any trouble getting his cannon-shaped homemade telescope through US customs.

The guys with all the answers at the 2010 Maine State Star Party. Downeast Astronomy's Charlie Sawyer (left) and Dwight Lanpher of Island Astronomy

Joe Rosebush accompanied by wife, Anna, (on the right) wowed the crowed of about 50 campers and visitors with a laptop display of Joe's astro photos on Friday night.

The official 2010 Maine State Star Party photo.. Top row: Michael Hiland, Robi----------, Wade Smith from Penobscot Valley Stargazers, Paul Butler and son, Dwight Lanpher
Second row: Bob ----------, ASNNE's Sara Dinyari, George ----------with "Blue" and Charlie Sawyer.

Guest Speaker, Gordon Smith, former NASA employee and Apollo Program history buff shows headlines celebrating the first man on the moon.

This shepard's voiced commands directed his superbly trained dog to clear the road of sheep and then "Lie Down!"

Club Meeting & Star Party Dates

Date	Subject	Location
N/A	**Because of Starfest, there will be no ASNNE Club Meeting at The New School.**	The New School, Kennebunck, Me.
September 10-12	**ASNNE's 9th annual Starfest weekend.** Star Party: Friday night through Sunday afternoon. Friday 5-7pm tent setup - volunter help welcomed. Friday night observing. **Saturday Events:** Solar viewing - Astro games - Barbecue - Raffle table - Evening tent talks. 2-5pm Hot Dog/Hambuger BBQ $6 5-9pm Evening talks. Saturday night thru Sunday morning: Observing.	Starfield Observatory, West Kennebunk, Me.
Oct 1	Steve Innes - Will share his 2009 China Eclipse experience with us. (Meetings scheduled for 11/5 and 12/3 – programs to be determined).	

Directions to ASNNE event locations

Directions to The New School in Kennebunck [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

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_____