SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England

JUNE 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.

Visit the following website to see ASNNE's Starfield Observatory on WGME-TV, which aired on 5-16-07: http://www.wgme.com/Features/DOUG_new.shtml

What's Up In June

By Bernie Reim

Summer is returning once more to the Northern Hemisphere this month.This year the summer solstice will happen at 2:06 pm on Thursday the 21st. The word solstice means "sun stands still", which is what it appears to be doing at the apex of its yearly path through the sky on that day. For us at this latitude of around 43 degrees north, the sun will reach nearly 70 degrees high in the sky on that day, creating our longest day of the year. In contrast, the sun will not climb above 24 degrees into the sky on the winter solstice on December 21st, creating our shortest day of less than nine hours long.

Notice that your shadow will be very short on that day, only about one third of your height. If you live farther south where the sun climbs even higher into the sky, your shadow would be shorter. On the winter solstice your shadow is just over twice your height. This is definite proof that the earth's axis is tilted, which is the same fact that causes our seasons.

There are two major highlights this month, other than just having warmer nights during which to enjoy the heavens. Saturn is marching closer to brilliant Venus each evening this month, at the rate of nearly one degree per day. The pair begins the month 23 degrees apart and ends the month less than one degree apart. Both planets will fit into the same field of view of a telescope that evening, with Venus appearing nearly twice the size of Saturn and over 100 times brighter. As Venus continues to get closer to Earth, it is getting larger, but less illuminated by the sun. It will be down to a waning crescent, only 36% illuminated on the last day on this month. At nearly 1 billion miles distant, just over one hour at the speed of light, Saturn is 13 times farther away from the sun than Venus, but also nine times larger in diameter.

The other highlight is the opposition of Jupiter. That will happen on June 5, when the king of the planets will rise at sunset and remain visible all night long. It will get as bright as minus 2.6 magnitude, which is still two magnitudes or just over 6 times fainter than Venus.

Even though it is about half a billion miles away, Jupiter is slightly larger in a telescope than Venus. Jupiter is 11 times larger in diameter than Venus and Earth, which are sister planets in size, but certainly not in conditions. Venus has a constant surface temperature of nearly 900 degrees F., hot enough to melt some metals. This is caused by its runaway greenhouse effect in its dense carbon dioxide atmosphere at 90 times the pressure of our atmosphere on Earth's surface.

Jupiter began its retrograde or westward motion with respect to the background of stars on April 5. It will end its retrograde loop in

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Sphere

By Michael Crichton
1987

Review by Richard Beaulieu

This novel is a thriller, filled with horror and action.

The US military discovers a space ship one thousand feet below the surface of the water in the Pacific. Then a team of scientists is assembled to go down to a habitat set up next to it on the floor of the ocean, in order to explore the ship.

I won't give any more details, except to note that this is the first time I encounter an extraterrestrial in fiction that is not modeled after a human being.

In the movie "E. T.", the alien has two eyes, a nose, a mouth and two arms, etc. He may have been green, but he was still formed in human shape. A real extraterrestrial, if ever we meet one, is not likely to look like us.

Crichton is the author of "Jurassic Park" and the "Andromeda Strain", both of which I liked. However, horror and action is not for me.

I won't be reading anymore Michael Crichton.

If any club member would like it, I could give him or her my copy of "Sphere".

Websites of Interest

By Paul Kursewicz

http://www.astroshorts.com/

This website reminds me of "YouTube." The idea here, is to access and share video content that is related to astronomy and space. Since the website was only formed in March 2007, some may find it limiting. However, I think it will grow in time.

http://www.asod.info/

Many of you may already be aware of the above website. In the tradition of **APOD** (Astronomy Picture Of The Day) and **LPOD** (Lunar Picture Of The Day), there is now a relatively new website called **ASOD** (Astronomy Sketch Of The Day).

http://www.astronomy.com/asy/objects/mm/2005marsrotationdp.wmv

Awesome video of the rotation of Mars.

http://scienceworld.wolfram.com/astronomy/

On-line encyclopedia of astronomy.

http://www.neave.com/planetarium

Use your mouse to look around the sky. Point to stars to see their names, magnitudes, and constellation. Date, time, and location can be changed.

Moon Phases

June 8
Last Quarter

June 14
New

June 22
First Quarter

June 30
Full

Moon Data

June 1
Jupiter 6° north of Moon

June 6
Neptune 1.5° north of Moon

June 10
Mars 5° south of Moon

June 12
Moon at perigee

June 16
Mercury 6° south of Moon

June 18
Venus 0.6° south of Moon

June 19
Saturn 0.4° south of Moon

June 24
Moon at apogee

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

the sky on August 7. Opposition of a superior planet always occurs in the middle of its retrograde loop. Notice that Jupiter will edge a couple of degrees closer to Antares, the huge red super giant star in Scorpius, and one of the largest stars in our whole Milky Way Galaxy at about 700 times the diameter of our sun, during this month. The word Antares means "rival of Mars", since the Greek word for Mars was Ares. At first magnitude, Antares is often nearly the same brightness and color of Mars.

Mercury will still be visible very low in the west northwestern sky in the constellation of Gemini during dusk for the first week this month. That will be your last chance to see four of the five brightest planets nicely lined up in the evening sky for quite a while. Continue eastward along the ecliptic past Castor and Pollux a few degrees and you won't be able to miss Venus. Then keep going along the ecliptic until you run into golden Saturn in Leo. Then continue another 3 constellations into Scorpius to see Jupiter. Mars is the only planet we are missing, since it will not rise until a couple of hours before sunrise.

Venus is slowly losing its dominance of the night sky as it now slips a little lower in the sky each day on its way to its conjunction with the sun in the middle of August.

June 4. On this day in 2000, the Compton Gamma Ray Observatory, launched in April of 1991, one year after the Hubble Space Telescope, reentered our atmosphere, ending nearly a decade of great discoveries in our universe in the high-energy, short-wavelength light of gamma rays.

June 5. Jupiter reaches opposition

June 8. Last quarter moon is at 7:43 a.m. EDT. Venus reaches greatest eastern elongation from the sun today, making it appear exactly half lit.

June 12. The moon is at perigee, or closest to Earth today at 363,780 km.

June 14. New moon is at 11:13 p.m.

June 17. The waxing crescent moon will be near Venus this evening. It will actually occult Venus in the Middle East the next evening.

June 18. The moon will be between Venus and Saturn tonight, which are now just less than ten degrees apart, which can be measured by holding up one fist at arm's length.

June 19. The moon will occult Regulus for much of North America tonight, but not for us in the Northeast.

June 21. Summer starts at 2:06 p.m. Winter starts in the Southern Hemisphere.

June 22. First quarter moon is at 9:15 a.m.

June 24. The moon is at apogee today at 404,540 km.

June 26. Charles Messier was born on this day in 1730. He was a French comet hunter who developed a catalog of 110 celestial objects that he first thought could be comets but they didn't move through the sky. M 13 is the globular star cluster in Hercules and M 31 is the Andromeda Galaxy, a sister galaxy to our Milky Way, except that it is about twice our size at 200,000 light years across and containing about 400 billion stars. Both M 13 and M 31 are just visible to the unaided eye at 6th magnitude. M 13 contains about 1 million stars and is located 30,000 light years away near the center of our galaxy. M 31 is 2.5 million light years away, located between Cassiopeia and Pegasus, which makes it the farthest object you can see with the naked eye.

June 27. The waxing gibbous moon will be near Antares and Jupiter this evening and the next.

June 30. The full moon is at 9:49 a.m. This is also called the Strawberry, Flower, or Rose Moon. On this day in 1908 a small chunk of a comet or asteroid exploded about 5 miles above the ground over Tunguska, Siberia, with the force of 20 megatons, or 1000 times the energy of the Hiroshima bomb. No impact crater was ever found, but the shock wave from this explosion killed 80 million trees and leveled an area of nearly 1000 sq. miles. Events like this are predicted to happen once every 300 years or so. Venus and Saturn are less than one degree apart this evening.

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

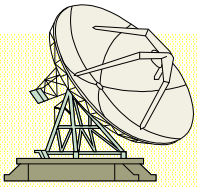
November 18
Leonids

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/asnne

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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NASA's Space Place

The Ions of Dawn

by Patrick L. Barry

This summer, NASA will launch a probe bound for two unexplored worlds in our solar system's asteroid belt—giant asteroids Ceres and Vesta. The probe, called Dawn, will orbit first one body and then the other in a never-before-attempted maneuver.

It has never been attempted, in part, because this mission would be virtually impossible with conventional propulsion. "Even if we were just going to go to Vesta, we would need one of the largest rockets that the U.S. has to carry all that propellant," says Marc Rayman, Project System Engineer for Dawn at JPL. Traveling to both worlds in one mission would require an even bigger rocket.

This is a trip that calls for the *un*conventional. "We're using ion propulsion," says Rayman.

The ion engines for the Dawn spacecraft proved themselves aboard an earlier, experimental mission known as Deep Space 1 (DS1). Because ion propulsion is a relatively new technology that's very different from conventional rockets, it was a perfect candidate for DS1, a part of NASA's New Millennium Program, which flight-tests new technologies so that missions such as Dawn can use those technologies reliably.

"The fact that those same engines are now making the Dawn mission possible shows that New Millennium accomplished what it set out to," Rayman says.

Ion engines work on a principle different from conventional rockets. A normal rocket engine burns a chemical fuel to produce thrust. An ion engine doesn't burn anything; a strong electric field in the engine propels charged atoms such as xenon to very high speed. The thrust produced is tiny—roughly equivalent to the weight of a piece of paper—but over time, it can generate as much speed as a conventional rocket while using only about 1/10 as much propellant.

And Dawn will need lots of propulsion. It must first climb into Vesta's orbit, which is tilted about 7 degrees from the plane of the solar system. After studying Vesta, it will have to escape its gravity and maneuver to insert itself in an orbit around Ceres—the first spacecraft to orbit two distant bodies. Dawn's up-close views of these worlds will help scientists understand the early solar system.

"They're remnants from the time the planets were being formed," Rayman says. "They have preserved a record of the conditions at the dawn of the solar system."

Find out about other New Millennium Program validated technologies and how they are being used in science missions at http://nmp/TECHNOLOGY/infusion.html . While you're there, you can also download "Professor Starr's Dream Trip," a storybook for grown-ups about how ion propulsion enabled a scientist's dream of visiting the asteroids come true. A simpler children's version is available at http://spaceplace.nasa.gov/en/kids/nmp/starr.

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 Dawn spacecraft, with asteroids. Largest are Vesta and Ceres. Credits: Dawn spacecraft—Orbital Sciences Corporation; background art—William K. Hartmann, courtesy UCLA.

Club Meeting & Star Party Dates

Date	Subject	Location
June 01, 7:30 PM	The *regular club* meeting will be held at 7:30pm. Topic: **Member Observatories**. Possible observing at Starfield Observatory after meeting.	Masonic Hall West Kennebunk, Me. **NOTE: Beginner classes will be held from 6:30 PM to 7:15 PM.**
July 15	Solar Sunday. Join us in viewing our daytime star! Incrediable live viewing of prominences, sunspots, magnetic fields and much more.	Starfield Observatory, west Kennebunk, Me.
August TBD	ASNNE Auction and Raffle drawing. Donate stuff to the auction! (No heavy furniture, TV's or major appliances.	Masonic Hall West Kennebunk, Me.
Sept. 14	ASNNE Starfest Weekend Begins	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

2007 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_____