SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England

NOV. 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.

NEWS FLASH: ERUPTING COMET. Comet 17P/Holmes is undergoing (and or, has had) a spectacular eruption. Now in our night sky...check it out.

What's Up In November

By Bernie Reim

This can be a bleak and cold month for this part of the earth, but the skies above will exhibit plenty of action to keep us interested. All seven other planets are on display this month, with Mars becoming the star of the show as it approaches its Christmas Eve opposition. A nice little meteor shower, called the Leonids, will top off the highlights this month.

The brilliant orange radiance of Mars rises at 8:30 p.m. beginning this month and it will rise at 6:30 p.m. by the end of November. As the Red Planet rises 4 minutes earlier each evening, notice that it also gets rapidly brighter as we are catching up with the slower moving planet in our orbits around the sun. Mars will double in brightness from minus 0.6 magnitude starting this month to minus 1.3 magnitude by the end of the month. That is only one tenth of a magnitude shy of Sirius in Canis Major, which is the brightest star in the whole sky.

Sirius, at the bottom of the famous Winter Hexagon, will rise by 10 p.m. by the middle of this month. The seven stars that mark this hexagon that will be with us now until spring, are, clockwise from the top, Capella in Auriga, Aldebaran in Taurus, Rigel in Orion, Sirius in Canis Major, Procyon in Canis Minor, and Castor and Pollux in Gemini. Reddish Betelgeuse is in the middle, marking the right shoulder of Orion as the mighty hunter faces us from the heavens.

Watch Mars closely each evening as this colorful sojourner cuts through the upper part of the hexagon this month and the next. It was in Taurus last month and you might expect it to pass right through Gemini this month, but it will actually stop its direct or eastward motion on Thursday the 15th and begin its retrograde loop back towards Taurus. Its opposition on Christmas Eve falls right in the middle of its retrograde loop. It will end its loop on January 30 of next year. That is only an optical illusion since we all orbit the sun in the same plane. If you could look down on our solar system from above its plane, you would see all 8 planets nicely orbiting the sun in a counterclockwise direction. So this brilliant interloper will slightly change the look of the fixed winter hexagon every night all winter long.

As our distance to our neighboring planet shrinks from 71.6 million miles down to 57.6 million miles, its size will also grow from 12 to 15 arc seconds, which is nearly the size of Venus and Saturn and half the size of Jupiter. This means that Mars is now revealing some excellent detail on its surface through a telescope. As long as no major dust storms enshroud the planet, you will be able to see many dark markings, similar to what Percival Lowell saw when he conjured up the canals and an entire civilization that created them. You will also see the north polar ice cap,

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THE DAILY ASTRONOMER
October 10, 2007
Many Months

From the USM Southworth Planetarium
"Portland's Underground Universe"

Submitted by Joyce Brann
Permission by Edward Gleason USM

Moon admirers shall rest well tonight. The Moon is new and is not visible. The new moon brings about an entirely new lunation number. Today, we enter lunation cycle number 1049, which ends on November when, curiously, we shall begin lunation cycle number 1050. That we call the time span separating successive new moons a month is hardly surprising. It is known as a synodic month and is approximately equal to 29.530588 days. This cycle was known throughout human history. The term "month" is a contraction of "MOONTH," a length of time required or the completion of one phase cycle.

Yet, months are not only measured in terms of the phase cycle. The moon has other cycles, the completion times of which are not equal to that of the phase cycle. Astronomers, being naturally complicated and convoluted, have a few different definition of months

A Sidereal Month is the time required for the Moon to return to the same position in relation to the background stars. Approximately equal to 27.321661 days, the Sidereal month has also been duly noted and observed by many cultures throughout human history, particularly those in Asia Minor.

A Tropical Month measures the amount of time the Moon requires to complete one orbit with respect to the Vernal Equinox: the point in the sky the Sun occupies on the first day of Spring. Equal to 27.321582 days, the Tropical Month is almost equal to a Sidereal Month. The difference is due to the precessional wobbling of Earth, causing an extremely minute displacement of the equinox point in relation to the stars.

An Anomalistic Month is 27.554551 days long. Like the planetary orbit, the Moon's orbit is not a circle. It is an ellipse. Along any satellite along an elliptical orbit there is a point that brings it closest to the parent body, a point called "perigee," and a point that is at the greatest distance, known as "apogee." The orbit shifts over an 18.6 year period, causing the gradual movement of these two apsis points along the orbit. The Anomalistic Month is the time period the Moon requires to return to its perigee point. During each cycle, the perigee point has moved a bit farther along the orbit, so the Anomalistic month is slightly longer than the Tropical month.

The Draconic Month, like the Anomalistic Month but unlike the Synodic month, is not one that is readily observable. The Moon's orbit is tilted with respect to the Earth-Sun plane. We call it "inclined," in relation to the Ecliptic plane. This inclination is about five degrees. Think of a pencil that is lifted slightly above the plane of a desk with the graphite tip still in contact with the desk surface. The desk is the Earth-Sun plane and the pencil is the lunar orbit. The point at which the pencil tip touches the desk is called a "node, "the intersection point between planes. As the Moon completes one orbit, it contacts both nodes: the descending node, when it moves "below" the and the ascending node, when it moves "above" the plane. The Draconic Month is the time period the Moon requires to return to the ascending node. A Draconic month is 27.212220 days long.

Even in astronomy, a month has more than one face.

Moon Phases

Nov 1
Last Quarter

Nov 9
New

Nov 17
First Quarter

Nov 24
Full

Moon Data

Nov 3
Saturn 1.8° north of Moon

Nov 5
Venus 3° North of Moon

Nov 8
Mercury 7° north of Moon

Nov 9
Moon at apogee

Nov 11
Antares 0.4° north of Moon

Nov 12
Jupiter 5° north of Moon

Nov 17
Neptune 1° north of Moon

Nov 23
Moon at perigee

Nov 27
Mars 1.7° south of Moon

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

made mostly of water ice, and a little of the south polar cap, made mostly of carbon dioxide, or dry ice. You can even watch the north polar ice cap start breaking up next month as spring arrives in the northern hemisphere on Mars.

Mars is only half the size of Earth and spends most of its time far away. We only pass Mars once every 26 months, which creates a couple of months of good viewing. After this opposition we have to wait 9 years for another good opposition. Even at opposition the distance varies considerably. Our closest approach to Mars in 60,000 years happened on August 27 of 2003, which was around 34 million miles. Mars covered over 25 arc seconds of the sky that night, which made it nearly as large as Jupiter. The October 2005 opposition was also pretty good at 20 arc seconds. This time Mars will only reach 15.9 arc seconds, but it will be fairly high in the sky along the ecliptic, which means its light has to pass through less of our distorting atmosphere.

We will lose Jupiter by the end of this month as the King of the Planets slowly and irretrievably sinks into the southwestern horizon. Watch as the slender waxing crescent moon passes just below Jupiter on Monday evening the 12th.

Neptune and Uranus are still nicely placed for viewing in the evening sky in Aquarius and Capricornus about one hour after sunset, but you will need a telescope to see them.

The other 3 bright planets are all in the morning sky this month. Mercury will climb into view below Venus and Saturn in the east-southeastern morning 1 hour before sunrise. It will not disappear again until the middle of the month. Look for the star Spica in Virgo just to the right of Mercury. Brilliant Venus will be about another 20 degrees above the pair and then Saturn will be about the same distance above Venus. Watch as a waning crescent moon passes right by Regulus in Leo, then Saturn, then Venus, and then Mercury on the mornings of Saturday the 3rd through Wednesday the 7th.

Comet Loneos, discovered back in March of this year, when it was 300,000 times fainter than it is now, by an automated telescope searching for asteroids that could hit the earth, named the Lowell Observatory Near Earth Object Search, could still be visible in binoculars in Libra very low in the western sky early this month.

The Leonid meteor shower will peak on Sunday morning the 18th. Even though the first quarter moon will have set around midnight, you can only expect about 10 meteors per hour. It will be nothing like the great Leonids of 2001. I saw over 2000 Leonids in about 3 hours. I watched them with a group of other appreciative observers from the Starfield Observatory in Kennebunk, where we have a wide open field to catch the whole sky. Even though it was very cold that memorable night, I hardly noticed that as I was spellbound by this cosmic display. I saw as many as 7 meteors in one second and there was not a single lull over 8 seconds long. The occasional bolide lit up the whole sky and then its luminous trail twisted in the upper atmosphere winds for many minutes afterwards. That was the first time I had a sense of Earth's constant 18.6 mile-per-second motion around the sun as we were plowing through these tiny pieces of Comet Tempel-Tuttle like the asteroid fields on Star Wars.

Nov.1. Last quarter moon is at 5:18 p.m. EDT.

Nov. 6. The Taurid meteor shower peaks this morning.

Nov. 8. Mercury is at greatest elongation 19 degrees west of the sun. Edmund Halley was born on this day in 1656.

Nov. 9. New moon is at 6:03 p.m. EST.

Nov. 15. Mars begins its retrograde motion, which will last until January 30, 2008.

Nov. 17. First quarter moon is at 5:32 pm. The Leonids peak this morning and the next.

Nov. 20. Edwin Hubble was born on this day in 1889. He first proved that all the galaxy clusters were receding away from each other, which means that the whole universe is expanding. That rate is known as the Hubble Constant. The Hubble Space Telescope, which is still operating well, is named after him.

Nov. 23. The moon is at perigee, or closest to Earth today.

Nov. 24. Full moon is at 9:30 a.m. This is also called the Tree, Beaver, or Frosty Moon. The tides will be higher than a normal full moon since it also occurs near perigee.

Nov.26. The moon passes just over one degree above Mars this Monday 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

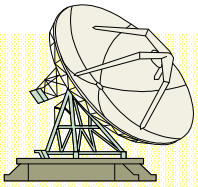
November 18
Leonids

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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The Red (Hot?) Planet

by Patrick L. Barry

Don't let Mars's cold, quiet demeanor fool you. For much of its history, the Red Planet has been a fiery world.

Dozens of volcanoes that dot the planet's surface stand as monuments to the eruptions that once reddened Mars's skies with plumes of glowing lava. But the planet has settled down in its old age, and these volcanoes have been dormant for hundreds of millions of years.

Or have they? Some evidence indicates that lava may have flowed on Mars much more recently. Images of the Martian surface taken by orbiting probes show regions of solidified lava with surprisingly few impact craters, suggesting that the volcanic rock is perhaps only a million years old.

If so, could molten lava still occasionally flow on the surface of Mars today?

With the help of some artificial intelligence software, a heat-sensing instrument currently orbiting Mars aboard NASA's Mars Odyssey spacecraft could be just the tool for finding active lava flows.

"Discovering such flows would be a phenomenally exciting scientific finding," says Steve Chien, supervisor of the Artificial Intelligence Group at JPL. For example, volcanic activity could provide a source of heat, thus making it more likely that Martian microbes might be living in the frosty soil.

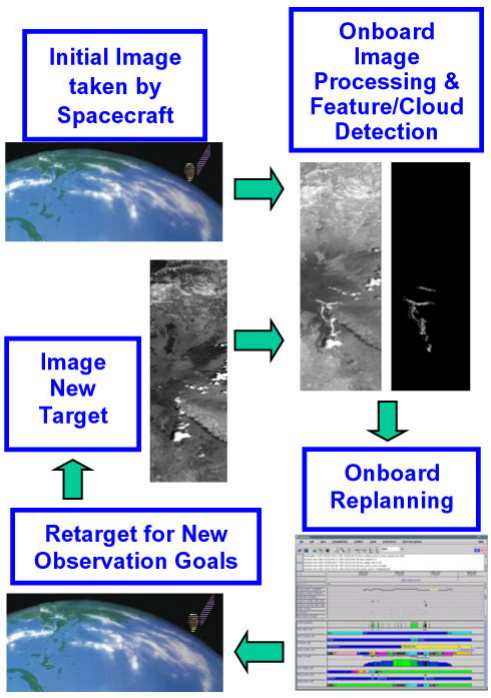
The instrument, called THEMIS (for Thermal Emission Imaging System), can "see" the heat emissions of the Martian surface in high resolution—each pixel in a THEMIS image represents only 100 meters on the ground. But THEMIS produces about five times more data than it can transmit back to Earth.

Scientists usually know ahead of time which THEMIS data they want to keep, but they can't plan ahead for unexpected events like lava flows. So Chien and his colleagues are customizing artificial intelligence software called ScienceCraft to empower THEMIS to identify important data on its own.

This decision-making ability of the ScienceCraft software was first tested in Earth orbit aboard a satellite called Earth Observing-1 by NASA's New Millennium Program. Earth Observing-1 had already completed its primary mission, and the ScienceCraft experiment was part of the New Millennium Program's Space Technology 6 mission.

On Odyssey, ScienceCraft will look for anomalous hotspots on the cold, night side of Mars and flag that data as important. "Then the satellite can look at it more closely on the next orbit," Chien explains.

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:
Just as changing cloud patterns on Earth were identified using Earth Observing-1's Advanced Land Imager along with ScienceCraft software, the THEMIS instrument with ScienceCraft on the Mars Odyssey spacecraft can avoid transmitting useless images.

Club Meeting & Star Party Dates

Date	Subject	Location
Nov. 2, 7:30 PM	The *regular club* meeting will be held at 7:30pm. Topic: **Seeing In The Dark In HDTV.** 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.**
Nov. 9, Dusk	Open Observing Session with rain/cloud date of Nov. 10. New Moon 11/9	Starfield Observatory, West Kennebunk, Me.
Nov.20, 7:00 PM	ASNNE business meeting. Anyone is invited.	Dunkin Donuts near the Jackson Corner store on Rt 111.
Dec 7, 7:30 PM	The *regular club* meeting will be held at 7:30pm. ASNNE will also hold it's **Christmas party**.	Masonic Hall West Kennebunk, Me. **NOTE: Beginner classes will be held from 6:30 PM to 7:15 PM.**
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**

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_____