# SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England

Apr. 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.***

"In order to make an apple pie from scratch, you must first create the universe."
-- Carl Sagan *Submitted by Ron Burk*

## What's Up In April

*by Bernie Reim*

The word April is derived from Aprilis, which means to open. That is exactly what the buds and flowers will do this month as our hemisphere turns more and more towards the sun, causing steadily increasing daylight during this first full month of spring.

This month is notoriously unpredictable, as T.S. Eliot says in his famous poem, "The Wasteland", "April is the cruelest month." We can count on what constellations will be visible, but not the conditions. Notice that the brightest stars of winter in the winter hexagon are now slipping lower into the western horizon even as the top of the summer triangle is beginning to rise over the eastern horizon.

The later you stay up in spring, the more of a summer sky reveals itself. The whole sky appears to shift eastward at the rate of two hours per month. So if you look at the sky at 10 pm in the middle of April that is the same sky you would see at 8 pm during the middle of May. That is because a star will rise 4 minutes earlier each day, which amounts to 120 minutes or 2 hours earlier each month. The sidereal day is only 23 hours and 56 minutes long. The earth rotates in the same direction on its axis as it revolves around the sun, which is counterclockwise as seen from the northern hemisphere. Since we are revolving around the sun at the rate of 67,000 mph or 18.6 miles per second, the sun appears to move eastward at the rate of about one degree per day against the fixed background of stars. The rotation rate of earth varies based on your latitude. At the equator it is just over 1,000 mph (25,000 miles divided by 24 hours) and at this latitude of about 43 degrees north, it rotates at around 750 mph, which also happens to be about the speed of sound.

The highlights this month include nice conjunctions of the moon and Jupiter in the morning sky, the moon and Saturn in the evening sky, and the Pleiades, the moon and Venus in the western sky at dusk.

The king of the planets will rise around 11 pm by the end of April. Look for Jupiter in the morning sky one hour before sunrise about 10 degrees above and to the left of Antares, the brightest star in Scorpius and, at 700 times the diameter of our sun, one of the largest stars in our whole galaxy of around 200 billion stars. The waning gibbous moon will pass just below Antares and Jupiter on the mornings of the 7th, 8th, and 9th.

As the moon continues to fade, it will pass near Mars low in the east southeastern morning sky about 45 minutes before sunrise on the mornings of April 13 and 14.

Then we switch to the evening sky to watch the slender waxing crescent moon pass near the Pleiades, the Hyades, and Venus on the evenings of April 18, 19 and 20. The best

***"Continued on page 3"***

## *Inside This Issue*

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### Astronomical Society of Northern New England

Located in Kennebunk, Maine, the Astronomical Society of Northern New England (ASNNE) is an all-volunteer non-profit educational organization founded in 1982 to promote public awareness of astronomy. Whether you are a beginner or an experienced amateur astronomer, enjoyment and challenges await you as a member of ASNNE. Our activities include teaching the basics of recognizing the constellations, observing the stars and planets with telescopes of all sizes, presenting monthly discussions on a wide variety of astronomy related topics, and organizing outings to special events.

### Starfield Observatory

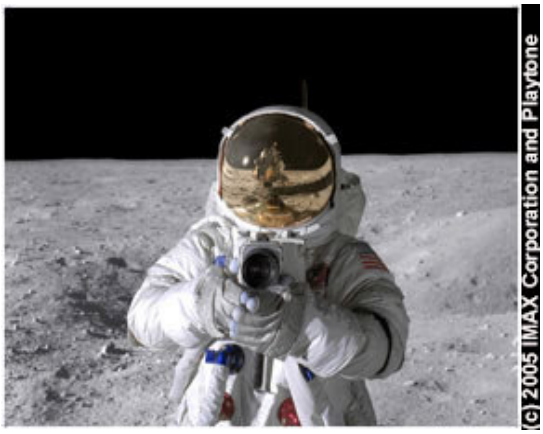
Starfield Observatory in Kennebunk, with its 16' x 32' roll-off roof design, now houses two large telescopes. One is an 8" f/15 Zeiss-Jena refractor and the other is a 16" Meade LX200 GPS Schmidt-Cassegrain. Follow this link to more information on the Starfield Observatory.

### Outreach and Community Involvement

ASNNE encourages schools, scout troops and other community groups to contact us for presentations, observing sessions and slide shows. We design all programs to fit the particular group. These programs cost nothing and the speakers are not paid. However, all donations to ASNNE are welcomed. Meetings are held the first Friday of each month at 7:30 p.m. at the Masonic Temple in Kennebunk, Maine.

# Magnificent Desolation: Walking on the Moon

***By Paul Kursewicz***




***Magnificent Desolation: Walking on the Moon*** is a 2005 IMAX 3D documentary film about the first humans on the moon (the Apollo program). The film includes historical NASA footage as well as re-enactments and computer-generated imagery. Tom Hanks is the narrator, co-writer and co-producer.

I saw the movie in Natick, MA at Jordan's Furniture's IMAX theater. The title of the movie comes from Buzz Aldrin's description of the lunar landscape:

> **Aldrin:** *Beautiful view!*
> **Armstrong:** *Isn't that something! Magnificent sight out here.*
> **Aldrin:** *Magnificent desolation*

Only 12 people have walked on the moon. **You're next!** That is, if you haven't already seen this movie. It offers the most realistic moon visit that Earthbound people have ever seen (you have to wear 3D glasses). You're in the space capsule with the astronauts, then transported to the lunar surface. You'll be in awe as the door opens to let you climb down the steps that will take you onto the moon's rocky environment. You walk alongside the astronauts and experience what they saw, heard, felt, thought and did.

The movie is rather short, only 50 minutes. The film's content is based on "*The Lunar Surface Journals*," a massive archival database compiled over the last decade by Dr. Eric Jones, which chronicles the moon walks as recounted by the astronauts.

## Moon Phases

**April 2**
Full

**April 10**
Last Quarter

**April 17**
New

**April 24**
First Quarter

## Moon Data

**April 3**
Moon at apogee

**April 8**
Jupiter 6° north of Moon

**April 12**
Neptune 2° north of Moon

**April 13**
Mars 0.5° south of Moon

**April 16**
Mercury 5° south of Moon

**April 17**
Moon at perigee

**April 20**
Venus 3° south of Moon

**April 25**
Saturn 1.1° south of Moon

**April 26**
Regulus 1° south of Moon

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

night will be Thursday night the 19th, when the crescent moon will be just a few degrees above the Pleiades and a few degrees below brilliant Venus.

The Pleiades, or the Seven Sisters, also known as Subaru in Japanese, are a related cluster of about 500 young stars located around 400 light years away. That means that the light you are seeing from that cluster left there just as Galileo started looking through his first telescope in 1609 and began making many great, earth-shaking discoveries that forever changed the way humans perceived their solar system and effectively launched the scientific age.

The average age of those 500 young stars is around 100 million years. That may seem old, but that is nearly 50 times younger than our own earth and sun. The earth was certainly a very different place when those stars in the Pleiades were born. That was during the height of the Jurassic Period when dinosaurs reigned supreme.

We end this celestial tour with the waxing gibbous moon passing near Saturn and Regulus in Leo on the evenings of April 24 and 25. Saturn will end its retrograde or westward motion in the sky away from Leo on April 19. Through a telescope you will notice that its rings are tilted at 15 degrees, but they are closing more and more and will not be that far open again for five years. Now 2 months past opposition, Saturn is fading out and getting smaller in our sky again. At 0.3 magnitude, it is about 10 times fainter than Jupiter and about 50 times fainter than Venus.

April 2. The full moon is at 1:15 p.m. This is also called the Pink, Seed, Grass, or Egg Moon.

April 3. The moon is at apogee, or farthest from the earth at 406,329 km.

April 5. Jupiter ends its prograde, or direct, eastward motion today. It will begin its retrograde loop today, which will not end until August 7th. Jupiter will reach opposition in 2 months, on June 5, when it will rise at sunset.

April 6. Pioneer 11 was launched on this day in 1973. It took great pictures of Jupiter in 1974 and Saturn in 1979. By 1995, when we lost contact, it was already 6.5 billion km away, which is about the number of people living on Earth today. Both Pioneer 10 and 11 carry a plaque which contains a message from humankind. It is heading out of our solar system towards the constellation of Aquila the Eagle, but it will take 4 million years to get there.

April 7. The Compton Gamma Ray Observatory was deployed on this day in 1991. This highly successful mission ended in June of 2000 as the telescope reentered the atmosphere. It saw about one highly energetic gamma ray burst per day during its 9 years of observations.

April 10. Last quarter moon is at 2:04 p.m.

April 15. Wilbur Wright was born on this day in 1867. The Wright brother's first flight was in December of 1903, less than 66 years before we went to the moon.

April 17. New moon is at 7:36 am. The moon is at perigee at 357,135 km today.

April 19. The waxing crescent moon will be just below and to the right of Venus and above and to the left of the Pleiades this evening.

April 22. The Lyrid Meteor Shower peaks this Sunday morning. Caused by Comet Thatcher, you can expect 15 to 20 meteors per hour to emanate from the sky near Vega in the constellation of Lyra this morning. This bright, zero magnitude star was our North Star 13,000 years ago and will once again be our North Star in 13,000 more years. Our polar axis is continually changing because the earth is wobbling like a top as its spin rate slows down. This process is called precession of the equinoxes. In just 2000 years, Gamma Cephei, the star at the bottom of the upside down house that is Cepheus the King, will be our North Star. By coincidence, Gamma Cephei happened to be one of over 100 stars discovered so far that have planets orbiting around them. When Vega once again becomes our North Star, the sky will look quite different at this latitude, since we will gain some southern constellations including the Southern Cross. In turn, we will lose the lower half of Orion and the Winter Hexagon.

April 24. First quarter moon is at 2:36 a.m.

## 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

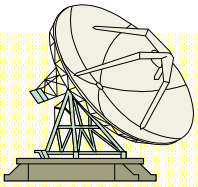
**November 18**
Leonids

**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.**

**SHOP CATEGORIES**

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

NASA's Space Place

# Martian Devils

*By Dr. Tony Phillips*

Admit it. Whenever you see a new picture of Mars beamed back by Spirit or Opportunity, you scan the rocks to check for things peeking out of the shadows. A pair of quivering green antennas, perhaps, or a little furry creature crouched on five legs…? Looking for Martians is such a guilty pleasure.

Well, you can imagine the thrill in 2004 when scientists were checking some of those pictures and they *did* see something leap out. It skittered across the rocky floor of Gusev Crater and quickly disappeared. But it wasn't a Martian; Spirit had photographed a dust devil!

Dust devils are tornadoes of dust. On a planet like Mars which is literally covered with dust, and where it never rains, dust devils are an important form of weather. Some Martian dust devils grow almost as tall as Mt. Everest, and researchers suspect they're crackling with static electricity-a form of "Martian lightning."

NASA is keen to learn more. How strong are the winds? Do dust devils carry a charge? When does "devil season" begin-and end? Astronauts are going to want to know the answers before they set foot on the red planet.

The problem is, these dusty twisters can be devilishly difficult to catch. Most images of Martian dust devils have been taken by accident, while the rovers were looking for other things. This catch-as-catch-can approach limits what researchers can learn.

No more! The two rovers have just gotten a boost of artificial intelligence to help them recognize and photograph dust devils. It comes in the form of new software, uploaded in July and activated in September 2006.

"This software is based on techniques developed and tested as part of the NASA New Millennium Program's Space Technology 6 project. Testing was done in Earth orbit onboard the EO-1 (Earth Observing-1) satellite," says Steve Chien, supervisor of JPL's Artificial Intelligence Group.

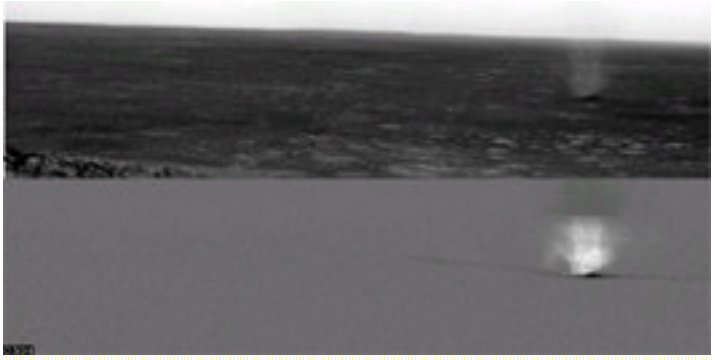
Scientists using EO-1 data were especially interested in dynamic events such as volcanoes erupting or sea ice breaking apart. So Chien and colleagues programmed the satellite to notice change. It worked beautifully: "We measured a 100-fold increase in science results for transient events."

Now that the techniques have been tested in Earth orbit, they are ready to help Spirit and Opportunity catch dust devils-or anything else that moves-on Mars.

"If we saw Martians, that would be great," laughs Chien. Even scientists have their guilty pleasures.

Find out more about the Space Technology 6 "Autonomous Sciencecraft" technology experiment at **nmp.nasa.gov/st6/TECHNOLOGY/sciencecraft_tech.html** and the use of the technology on the Mars Rovers at **nmp.nasa.gov/TECHNOLOGY/infusion.html** . Kids can visit **spaceplace.nasa.gov/en/kids/nmp_action.shtml** and do a New Millennium Program-like test at home to see if a familiar material would work well in space.

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



**Caption:**
*The top half of this image is part of a series of images of a passing dust devil on Mars caught by Spirit. In the bottom half, the image has been filtered to remove everything that did not change from one image to the other. Notice the faint track left by the dust devil. Credit NASA/JPL/Mark T. Lemmon, Univ. of Arizona Lunar and Planetary Laboratory.*

## Club Meeting & Star Party Dates

| Date | Subject | Location |
|---|---|---|
| Apr. 06, 7:30 PM **(see note)** | The club meeting will be held at 7:30pm. Topic: Club Member **Joyce Brann** will show a video titled: "Cosmic Collisions." | Masonic Hall West Kennebunk, Me. |
| Apr. 20, Dusk | Open Observing Session with rain/cloud date of Apr. 21. New Moon 4/17 | Starfield Observatory, West Kennebunk, Me. |
| Apr. 25, 7:00 PM | Business Meeting. All are welcomed. | Masonic Hall West Kennebunk, Me. |
| | | |
| | | |
| | | |

**NOTE: Before the club meeting, a beginner class will be held from 6:30 PM to 7:15 PM.**

# 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_____