

SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England



Nov. 2006



Member of NASA's
Night Sky Network

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.



Important Notice:
Membership dues are due...more details on page 2.

What's Up In November

by *Bernie Reim*

There will be two major highlights this month that will make up for the cold and bleak days of November. A fairly rare transit of our first planet, Mercury, across the face of the sun will occur on November 8th. The annual Leonid Meteor Shower has a good chance of a possible outburst on November 18th, tripling its usual rate of about 30 meteors per hour.

A transit of Mercury happens 13 times every century. The last one was on May 7, 2003 and the next one will be on May 9, 2016. Transits of Venus are much rarer, occurring in pairs 8 years apart with a gap of 121.5 years and then another pair 8 years apart with a subsequent gap of 105.5 years. The Earth-Venus-Sun plane is not usually aligned when Venus is at inferior conjunction, passing between the sun and Earth. That is the same reason we don't experience lunar and solar eclipses every month. They only occur twice a year as the Earth-Moon plane aligns perfectly.

Transits of Venus are so rare that only 6 of them have occurred since the invention of the telescope in 1610. Kepler predicted the December 6, 1631 transit and the next four were carefully studied to figure out the exact solar parallax angle. The June 8, 2004 transit of Venus was the first one observed with our modern telescopes. That was an amazing event, with the unexpected bonus of seeing the thin, silvery arc of the atmosphere of Venus outlined against the blackness of space for a few minutes as Earth-sized Venus was exiting the surface of the sun. If you missed that one, you can see another one on June 6, 2012, but then you will have to wait until December 10, 2117. Notice that these transits can only occur in June or December and that they always alternate.

This transit of Mercury will be a miniature and less dramatic version of the June 8 event. Mercury is only 3000 miles in diameter, smaller than Ganymede, the largest moon of Jupiter and Titan, the largest moon of Saturn. Mercury is also our smallest planet now that Pluto has been demoted to a dwarf planet.

We will not be able to see the whole transit of Mercury here in the Northeast. It will end after sunset. The west coast will be able to see the whole event. The transit will start for us in this time zone at 2:12 pm and end nearly 5 hours later, at 7:08 pm. However, the sun will set at 4:24 pm that day, so we will only be able to see about half of this transit. You will need a telescope with a good solar filter to safely view this event. The tiny round dot of Mercury crawling across the surface of the sun will be smaller than many of the sunspots we can see with binoculars and solar filters.

The other major highlight for this month will be an excellent Leonid Meteor Shower. It is predicted that the earth will pass through a

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Regarding Dark Skies

Dear Friends of Dark Skies,

As you may know, I've been very involved in dark sky efforts for the past twelve years. I've dedicated most of my efforts to dreaming up the best tools that help bring light pollution awareness/action into mainstream society.

Here's some news on one of those tools...

After selling out of a short paperback run, my children's book 'There Once Was a Sky Full of Stars' (Sky Publ.), has been re-introduced as a beautiful, large format hardcover. This book is the first, lyrical children's book that teaches kids about the stars AND fixing light pollution. The story's environmental message is simple, educational and unforgettable for young readers (listeners and parents, too!)

This hardcover release now has expanded distribution, which means that There Once Was a Sky Full of Stars is available to Barnes & Noble, Borders, and any other national book chain or local book store. However, because Sky is a smaller publisher, many stores have not heard of the book. This book can't deliver it's important message if it is sitting in boxes in a warehouse.

YOU CAN HELP GREATLY to get this book on the store shelves, into libraries, into schools, etc. Please encourage your club members, friends and family members to ask for it at your local book stores, libraries (the more places that stock it, the more LP awareness gets spread!) Consider it as a gift to children, nieces, nephews, grandchildren, great grandchildren, etc. for the holidays.

We might just change the world!

Sincerely,
Bob Crelin, author
bob@bobcrelin.com

<http://bobcrelin.com/author.html>

'There Once Was a Sky Full of Stars'
by Bob Crelin, Sky Publishing Corp.
ISBN# 1931559376

"Bob Crelin's enchanting, educational tale explains how light pollution steals the stars and how children can lead the way to restore the nighttime sky for the enrichment of future generations."

**-Robert F. Kennedy, Jr., President,
Waterkeeper Alliance**

"What a beautiful job of communicating the dark sky issue to the next generation. I enjoyed reading it myself, and very much appreciated the tone of voice. It's such a lovely telling that I think it will have a wide appeal."

**-Award-winning & NY Times Best
Selling Author Dava Sobel of Longi-
tude, Galileo's Daughter**



MEMBERSHIP DUES

Membership fees are for the calendar year beginning in January and ending in December. Dues are payable to the treasurer during the last quarter of each year (October-December) for the upcoming year. Checks should be made payable to the Astronomical Society of Northern New England (A.S.N.N.E). If you would like to mail in your dues, use the form on page 7.

Moon Phases

November 5
Full

November 12
Last Quarter

November 20
New

November 28
First Quarter

Moon Data

November 1
Uranus 0.5° north
of Moon

November 3
Moon at perigee

November 12
Saturn 1.6° south
of Moon

November 15
Moon at apogee

November 17
Spica 0.6° north
of Moon

November 19
Mercury 6° north
of Moon

November 26
Neptune 3° north
of Moon

November 28
Uranus 0.3° north
of Moon

What's Up "Continued from page 1"

relatively dense ribbon of dust and debris shed by Comet Tempel-Tuttle back in 1932. We last passed through this particular part of the comet's debris trail in 1969, but it only took us half an hour, since we are always moving right along at 18.6 miles per second around the sun. This year that could happen at 11:45 pm, Saturday evening, November 18th. We could see about 100 meteors per hour, or nearly 2 per minute. So bundle up and get ready for this possibility, since this could well be the last outburst from this shower until its parent comet returns in 2032. The moon will not interfere with any of these great potential meteors since it will be new on the 20th.

In any case, these Leonids will not be as good as that memorable shower on November 18, 2001, right after the last return of its parent comet. I saw over 2000 Leonids in 3 hours that morning, right up until dawn. Its peak rate around 5 in the morning was 1000 per hour, which is defined as a meteor storm. That is one meteor every 3.5 seconds. I saw as many as 7 meteors in one second raining from the sky by its radiant in Leo. That gave me a real sense of the earth's rapid motion through space for the first time. As a bonus, we even saw about 15 bolides that bathed the entire night in brilliant light for a split second as they exploded high in our atmosphere, leaving dust trails that lasted for several minutes.

There will not be much planetary activity this month, since most of the planets will be too close to the sun. Saturn will be the only planet to grace our night skies until the end of the month, when Mars and Jupiter will be reappearing very low in the morning sky. Saturn rises around 11 pm, but it will be less bright than usual because the angle of rings is tilting to less than 15 degrees now. Through a telescope, the best view of Saturn's shadow on its rings will occur this month. The waning crescent moon will pass near the ringed planet around 1 in the morning on Monday, November 13. The pair will be near Regulus, the brightest star in Leo the Lion.

Nov.3. The moon is at perigee, or closest to Earth at 360,596 km.

Nov.5. Full moon is at 7:58 a.m. EST. This is also called the Hunter's or Frosty Moon.

Nov.6. The Taurid Meteor Shower peaks.

Nov.8. A transit of Mercury occurs today, starting at 2:12 p.m. EST. This also happened to be Edmund Halley's birthday in 1656, exactly 350 years ago.

Nov.12. Last quarter moon is at 12:45 p.m.

Nov.13. The moon will be near Saturn and Regulus tonight.

Nov.15. The moon is at apogee at 405,194 km today.

Nov.18. The Leonid meteor shower peaks tonight.

Nov. 19. Mercury will rise one and a half hours before the sun and remain visible in the morning sky until the first week of December.

Nov.20. New moon is at 5:18 p.m. Edwin Hubble was born on this day in 1889. He was the first to prove that the entire universe is expanding and the Hubble Space Telescope is named in his honor.

Nov.21. Jupiter is in conjunction with the sun.

Nov.28. First quarter moon is at 1:29 a.m. EST.

Got any News?
Skylights
welcomes your
input.

Principal Meteor Showers in 2006

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*

Starfest Wrapup



Starfest 2006 was a long planned event that unfortunately has one glitch, bad weather. Our usual guest from Vermont, Pete Gillette, came and we were happy to have him along.

We were washed out for Friday night's viewing, but we had a good time talking astronomy and getting the Meade ready to go.

Saturday was a busy day. We set up for the BBQ early and a fine meal of chicken, corn on the cob and potatoes with a yummy dessert that was prepared by Wesley Brann with help from a few others. Paul Howell gave an interesting and informative talk on exoplanets and how they are found and even how he has helped with that search (even with the balky projector!).

Then after his speech, we noticed that the skies were partially clearing! We had to draw for telescope first, and club secretary Joan Chamberlin won a raffle for the first time in her life (so she claimed)!

Congratulations to her. The rest of the prizes went to a variety of people, including the Galactic Jacket to Joyce Brann's sister in law.

We then had a short window of relatively clear patches of sky to point the telescopes to the heavens. We had the company of several people who showed up to join in and have their first look through the club's scopes. Many oohs and ahhs could be heard while the skies were clear. Unfortunately, they did not remain clear for long and an early retirement was in store. Jim Hatch did stay late to work on the Meade and we thank him for his efforts.

So while the Messier marathon did not take place, a successful Starfest week was put on. Many thanks to Wesley and Joyce Brann, Tim Brown, Paul Howell, Ron Burk and every who showed up to enjoy the festivities. Starfest 2007, here we come!

By David Bianchi



STARGAZER

By Fred Watson
2004

Review By Richard Beaulieu

This book is a history of the telescope from 1608 in Holland to the present; it opens with a report on a symposium in Munich in 2000 on the telescope.

The big news at that conference, attended by 1300 astronomers and engineers, was of the proposed overwhelmingly large telescope (OWL) which would be 100 m in diameter. The mirror would be the size of a football field. Moreover, with the advanced adaptive optics that it would have, it would have a resolution of a milli-arcsecond. A good telescope today struggles with a resolution of from 1 to 3 arcseconds.

This means that when you look at a star, you see a patch of light from 1 to 3 arcseconds in diameter,

A quarter seen from a distance of 5 km (8mi) is one arcsecond.

They are talking and planning on OWL, but there are no definite plans yet to build it.

The second chapter is on 1608. It seems that in that year, within a few months time, several opticians in Holland had come up with a telescope. They all had concave eyepieces and convex objectives.

But the first to present such a telescope to an authority was Hans Lipperhey. He showed it to the head of the Dutch army, which was fighting Spain for possession of Holland at the time. But within a few days, he also presented this new device of strategic importance to the Spaniards.

It seems that he never got in trouble for the betrayal of his country.

Galileo heard about these inventions from Holland and quickly made his own.

The first telescopes were all refractors and were long and narrow.

Isaac Newton was the first to make a successful reflecting telescope. The mirror was made of an alloy of copper, tin and arsenic and was spherical in cross-section.

Metal mirrors gave a dull image while the

refractor's image was brighter.

The metal didn't have much reflectivity.

Accounts are given of Gregory and Cassegrain and their designs.

Around the middle of the nineteenth century, Foucault created a reflector with a silvered, glass mirror. This gave a much brighter image.

An obscure lawyer, Chester Moor Hall, created the achromat, an eyepiece that gives an image without colored halos, by using two lenses with a different index of refraction. But he had so little ambition that he hardly told anyone about it.

John Dollond came along later and got a patent for it.

The American telescope maker Alvan Clark created large diameter telescopes in the nineteenth century.

Our observatory used to house a Clark.

He sold an eight inch objective lens to an amateur in England named William Huggins, who built a telescope and attached two prisms to it and was the first to see the spectra of stars.

Huggins proved that the stars were made of the same elements that are found on earth, such as carbon, oxygen and iron etc. And he also proved that some nebulae are made of gas and not stars. When he looked at the gaseous nebulae, he saw only one color, only one line.

A star gives off a continuous spectrum.

There are more stories of the old-time astronomers and their devices in the book, more than I can summarize here.

The final chapter is set one hundred years from now and gives the author's speculation on what will be going on then. We will have found bacteria on Mars, a live scum on Europa and the earthlike planets near us will show no signs of emitting intelligent radio signals.

It is a good book and well worth reading. My thanks go to Ron Burke who lent it to me.

Mercury Transit and the Public

Submitted By Joan Chamberlin

Publicize your November 8th Mercury Transit event with this helpful press release that can be personalized for your club. Send it to newspapers, TV and radio stations. This is a perfect opportunity to get the word out about astronomy. Download the easy to use form here:

http://nightsky.jpl.nasa.gov/docs/MercTransit_NS_N_PressRels.doc

What to do when the crowds arrive? Keep them entertained and teach them something new. Bone up on your transit background information and hear about new science with this article by Shadows and Silhouettes Toolkit sponsor, the SETI Institute:

http://www.space.com/searchforlife/seti_mercury_transit_061005.html

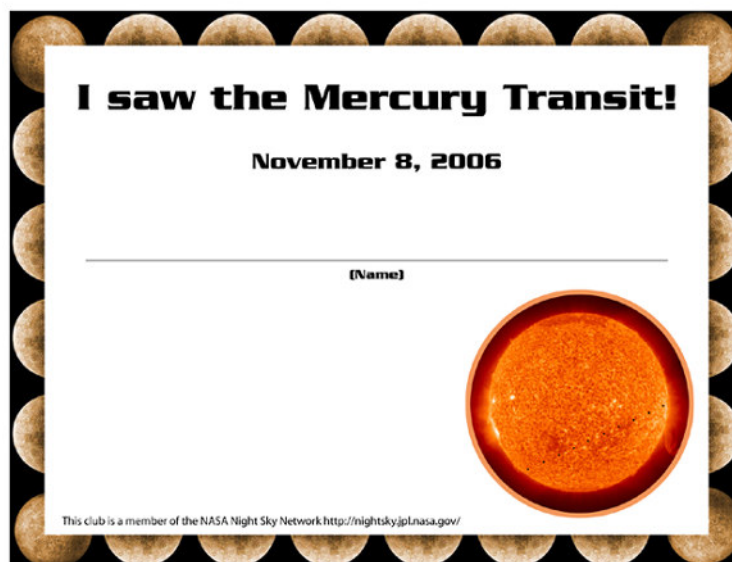
Of course use the Night Sky Network's newest toolkit, Shadows and Silhouettes, to demonstrate the process of transits and engage visitors with the current science of the search for extrasolar planets using transits. Download the I Saw the Mercury Transit certificate to pass out to your audience at the transit viewing. It is available from the NSN Toolkit

Download site under Tele-Conferences or right here: <http://nightsky.jpl.nasa.gov/docs/CertMercTransitBW.jpg> (black and white) or <http://nightsky.jpl.nasa.gov/docs/CertMercTransit.jpg> (color)

The SETI Institute is also looking for high resolution photos from your club's Mercury transit outreach for an upcoming article in Explorer, their quarterly science magazine. Clubs whose pictures are chosen will be recognized nationally in an article on astronomy outreach and on the Kepler website as well. Please email pictures of your event or really great photos of the transit itself to SETI Explorer (edevore@seti.org). Get a photo release signed by the people in your photo and earn a SETI t-shirt or mug if your photo is used!

And in case the weather doesn't cooperate in your area, check out the Exploratorium's webcast of the entire event with feeds from Kitt Peak and other sources:

<http://www.exploratorium.edu/transit/>



Certificate (color version)

Club Meeting & Star Party Dates

Date	Subject	Location
Nov. 03, 7:30 PM	The <i>regular club</i> meeting will be held at 7:30pm. Topic TBD. NOTE: Beginner classes will be held from 6:30 PM to 7:15 PM.	Masonic Hall West Kennebunk, Me.
Nov. 17, Dusk	Open Observing Session with rain/cloud date of Oct. 21. New Moon 11/20	Starfield Observatory, West Kennebunk, Me.
Dec. 01, 7:30 PM	The monthly Club Meeting. Topic TBD.	Masonic Hall West Kennebunk, Me.
Dec. 22, Dusk	Open Observing Session with rain/cloud date of Dec. 23. New Moon 12/20	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 _____

