

# SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England



**JUNE 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.*

## **What's Up In June**

*By Bernie Reim*

**T**he month of June always marks the beginning of summer for us in the northern hemisphere. The summer solstice will happen on Monday, June 21st at 7:28 am. The word solstice means "sun stands still" which is what it is appearing to do as it pauses for a day at the very apex of its yearly journey through our sky.

The figure eight that the sun traces through the sky each year is called the analemma, and you will usually see a depiction of this on a globe of the earth. You could create one for yourself if you photographed the sun every few days with a fixed camera in a fixed location at noon time throughout the entire year. The vernal and autumnal equinoxes occur at the cross over points, and the winter solstice happens at the lowest point of this figure eight.

The nights will be getting warmer now, but they are also getting shorter. The summer triangle will have completely cleared the eastern horizon by 10 pm and only the top of the winter hexagon will still be visible low in the western sky. The summer Milky Way is also visible low in the southeast. Follow it across the sky right through the middle of the summer triangle and on into Cepheus the King, Cassiopeia the Queen, and Perseus the Hero. The summer Milky Way is much brighter than the winter one in Orion, because we are looking directly into the center of our galaxy in Sagittarius. When we see the very faint Orion arm of our galaxy in winter, we are looking out towards the edge of our galaxy, where there are far fewer stars than in the rich center.

To better experience the majesty and power of this vast, slowly swirling conglomeration of over 200 billion stars that we call the Milky Way Galaxy, our celestial home in which we travel the much vaster universe, just picture yourself looking down into the sky instead of up at the sky. Up and down have no meaning off the surface of the earth because the sky is always all around us and we are just moving through it. Then simply imagine what

would happen if your gravitational bond with the earth would be cut along with that of the sun. The next strongest source of gravity is the center of our galaxy, so you would immediately begin falling into this center. It would take nearly 30,000 years at the speed of light to actually get there, but the point is to begin to sense the more subtle aspects of gravity throughout our solar system and galaxy.

Gravity is by far the weakest force in the universe, but it is the most all-pervasive force, keeping the whole universe together. Our mass is always the same, but we would experience very different weights depending which planets or moons we would go to. You would weight one sixth of your weight in the weaker gravity well of our moon, two and a half times your weight on Jupiter, and only a couple of ounces on Phobos or Deimos, the two moons of Mars, which are only about 10 miles across.

Our sun and whole solar system are constantly traveling around the center our vast, 100,000 light-year-across galaxy at 140 miles per second. So if you stood outside just three minutes to better experience our galaxy, you would already have traveled 25,000 miles through it which is once around the earth.

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## **Club Contacts**

### **Officers:**

President:  
Ron Burk  
rdavidburk@yahoo.com

Vice President:  
Joan Chamberlin  
starladyjoan@yahoo.com

Secretary:  
Alan Goff  
alangoff@computer.org

Treasurer:  
TBD  
See Ron Burk for now

### **Board of Directors:**

Albert Heinrich  
aheinrich42001@yahoo.com.au

David Bianchi  
dbianchi@verizon.net

Adam Amara  
amara.adam@juno.com

### **Star Party Co-ordinator:**

TBD

### **Skylights Editor:**

Paul Kursewicz  
pkursewicz@myfairpoint.net

### **Website Manager:**

Jim Hatch  
nerdfulthings@earthlink.net

### **NASA Night Sky Network**

#### **Co-ordinator:**

Joan Chamberlin  
starladyjoan@yahoo.com

### **JPL Solar System Ambassador:**

Joan Chamberlin  
starladyjoan@yahoo.com

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

Even at that enormous speed, it still takes us nearly a quarter of a billion years just to make one orbit around our Milky Way, which is called one galactic year. Our sun and earth have already completed 18 of these orbits in the 4.6 billion years that we have been here.

All the major planets are well placed for viewing this month. Brilliant Venus will be the first one you will notice in the sky. It can be seen in the West-Northwest and sets about 2 hours after sunset. Venus is slowly getting even brighter as it gets closer to us, but less illuminated by the sun. Notice that our sister planet will form a straight line with Castor and Pollux in Gemini around the middle of June.

Then follow the ecliptic eastward into the next constellation, which is Leo the Lion. You will see Mars very close to Regulus, the brightest star in Leo which marks the bottom of the sickle or backwards question mark which constitutes the head of the lion. Be sure to notice the nice color contrast of blue-white Regulus, the 21st brightest star in the sky, and the slightly brighter orange of Mars.

Then continue east into the very next constellation, which is Virgo. You will see Saturn glowing there with a soft golden light. The ringed planet is slowly getting fainter in our sky because it is getting farther away and its rings are very thin, only two degrees from horizontal. Notice that both Mars and Venus are catching up with slower moving Saturn, and they will form a nice triple conjunction in early August.

Jupiter doesn't rise until 2 in the morning in the constellation of Pisces. The waning crescent moon will pass right above the king of the planets one hour before sunrise on the mornings of the 5th and 6th. Then Mercury will also make a good appearance in our morning sky during the first half of June.

There should even be a comet visible low in the morning sky by the middle of June. Named Comet McNaught, it was discovered last year by Robert McNaught from Australia, and is only one of 54 comets that he discovered. It should easily be visible in binoculars and it might even become with just the naked eye if we are lucky.

The largest asteroid, Ceres, which is now a "dwarf planet" since Pluto was reclassified, will be visible in binoculars passing right through the Lagoon Nebula in Sagittarius early this month.

June 4. Last quarter moon is at 6:13 p.m. EDT. The Compton Gamma Ray telescope, launched one year after the Hubble Space telescope in 1990, was allowed to reenter our atmosphere on this day in the year 2000.

June 6. Mars is less than one degree to the right and above Regulus tonight.

June 12. New moon is at 7:15 a.m.

June 14. The thin waxing crescent moon will pass just below Venus this night and the next.

June 16. Mars, Regulus, and the moon form a tilted triangle tonight.

June 18. The dwarf planet Ceres, which is the largest asteroid and by itself contains about one third of the mass of the entire half million asteroids orbiting in the belt between Mars and Jupiter, will be at opposition tonight, shining at its brightest for the year.

June 19. First quarter moon is at 12:29 a.m.

June 20. Venus is less than one degree from the Beehive star cluster in Cancer tonight. Mars passed right over this same cluster two months earlier, on April 16.

June 21. The summer solstice is at 7:28 a.m., marking the longest day of the year for the Northern Hemisphere.

June 26. Full moon is at 7:30 a.m. This is also called the Flower, Rose, or Strawberry Moon.

June 30. On this day in 1908, a comet or asteroid exploded about 5 miles over Tunguska, Siberia with a force of 10 megatons, or 200 times the power of the Hiroshima atomic bomb. The immense explosion leveled 80 million trees, but no crater was ever found.

Moon Phases

**June 4**  
Last Quarter

**June 12**  
New

**June 19**  
First Quarter

**June 26**  
Full

Moon Data

**June 3**  
Moon at apogee

Neptune 5° south  
of Moon

**June 6**  
Jupiter 7° south  
of Moon

Uranus 6° south  
of Moon

**June 10**  
Mercury 5° south  
of Moon

**June 15**  
Venus 4° south  
of Moon

Moon at perigee

**June 17**  
Mars 6° north  
of Moon

**June 19**  
Saturn 8° north  
of Moon

## Sky Object of the Month – June 2010

### Izar ( $\epsilon$ Bootis)

by Glenn Chaple

Most of us are familiar with the novel *Moby Dick*, whose protagonist Captain Ahab relentlessly hunts a great white whale. I can sympathize with the obsessive Captain. For several years back in the late 1970s, I pursued an astronomical white whale- the double star epsilon ( $\epsilon$ ) Bootis. Instead of the Pequod, my vessel of pursuit was a 3-inch f/10 reflector.

Trying to capture Izar with a 3-inch reflector is like attempting to harpoon a whale from a rowboat. The difficulty lies in the magnitude difference between the components (2.6 and 4.8) and their closeness (2.9 arc-seconds). On numerous evenings I tried to resolve Izar's component stars without success. Notching this stellar duo became an overpowering obsession. On the evening when I at last split Izar, skies were remarkably steady and I used the highest practical magnification (120X) my little reflector could handle. Even then, the companion played hide-and-seek in the diffraction ring of the primary.

A larger telescope and magnifying power of 200X will readily split Izar and reveal a striking color contrast between the golden yellow primary and its bluish companion. The Russian astronomer Wilhelm Struve, who conducted a double star survey in the late 1820s and early 1830s (Izar became  $\epsilon$ 1877 in his double star catalog), nick-named it "Pulcherrima" (The Most Beautiful).

But Izar is more than just a close pair of stellar specks. The main component is a K0 spectral class giant 30 times as large as the sun. Its A2-type companion is twice the sun's size – a virtual twin to Sirius. Separated by 180 Astronomical Units, the two undergo a slow gravitational dance, their orbital cycle encompassing perhaps a thousand years.

Imagine that Izar were moved from its current location 250 light-years away to a distance equal to that separating us from Sirius. The star would be a dazzling sight, rivaling Venus in brilliance. Viewed with even the smallest telescopes, the magnitude -3.6 and -1.4 components, separated by 85 arc-seconds, would be an absolutely magnificent sight.

Your comments on this column are welcome. E-mail me at [gchaple@hotmail.com](mailto:gchaple@hotmail.com)

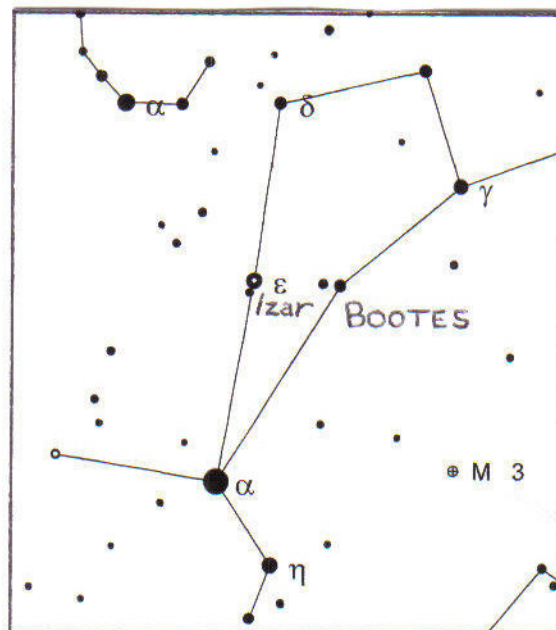


Chart for  $\epsilon$  Bootis (Izar)  
From Cartes du Ciel

## 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*

### A New Life for SciJinks!

If you think you've seen the SciJinks Weather Laboratory at [SciJinks.gov](http://SciJinks.gov), look again. It's got a whole new persona to make its exciting content, games and multimedia more accessible than ever. SciJinks still has its Picture and Cool Fact of the day. It has "Wild Weather Adventure," "Bad Weather Joke Machine," and other fun and games. SciJinks explains the reasons for the seasons, the tides, and other mysteries in colorful "now I get it!" pages. There are more images than ever and now videos too, and lots of help for teachers. Looking for information on hurricanes? SciJinks also shows you its content by topic: clouds, tides, oceans, atmosphere, seasons, satellites—you name it. Visit or revisit [SciJinks.gov](http://SciJinks.gov) and discover the treasures you missed before.

Laura K. Lincoln  
Outreach Coordinator  
Jet Propulsion Laboratory M/S 606-100  
California Institute of Technology



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> .

## Club Items For Sale



Our club has merchandise for sale at:  
[www.cafepress.com/asnne](http://www.cafepress.com/asnne)

*ALL money raised goes to our operating fund.*

Any design can be put on any item.  
Just let our Director, David Bianchi, know.



## Ancient Supernova Riddle, Solved

By Dr. Tony Phillips

*Australopithecus* squinted at the blue African sky. He had never seen a star in broad daylight before, but he could see one today. Was it dangerous? He stared for a long time, puzzled, but nothing happened, and after a while he strode across the savanna unconcerned.

Millions of years later, we know better.

That star was a supernova, one of many that exploded in our corner of the Milky Way around the Pliocene era of pre-humans. *Australopithecus* left no records; we know the explosions happened because their debris is still around. The solar system and everything else within about 300 light-years is surrounded by supernova exhaust—a haze of million-degree gas that permeates all of local space.

Supernovas are dangerous things, and when one appears in the daytime sky, it *is* cause for alarm. How did Earth survive? Modern astronomers believe the blasts were too far away (albeit not by much) to zap our planet with lethal amounts of radiation. Also, the Sun's magnetic field has done a good job holding the hot gas at bay. In other words, we lucked out.

The debris from those old explosions has the compelling power of a train wreck; astronomers have trouble tearing their eyes away. Over the years, they've thoroughly surveyed the wreckage and therein found a mystery—clouds of hydrogen and helium apparently too fragile to have survived the blasts. One of them, whimsically called "the Local Fluff," is on the doorstep of the solar system.

"The observed temperature and density of the Fluff do not provide enough pressure to resist the crushing action of the hot supernova gas around it," says astronomer Merav Opher of George Mason University. "It makes us wonder, how can such a cloud exist?"

NASA's Voyager spacecraft may have found the answer.

NASA's two Voyager probes have been racing out of the solar system for more than 30 years. They are now beyond the orbit of Pluto and on the verge of entering interstellar space. "The Voyagers are not actually inside the Local Fluff," explains Opher. "But they are getting close and can sense what the cloud is like as they approach it."

And the answer is ...

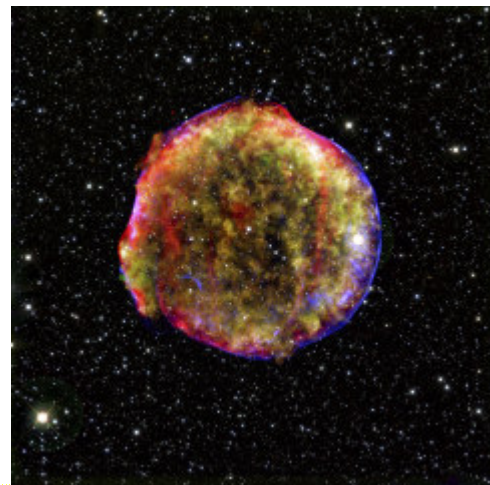
"Magnetism," says Opher. "Voyager data show that the Fluff is strongly magnetized with a field strength between 4 and 5 microgauss. This magnetic field can provide the pressure required to resist destruction."

If fluffy clouds of hydrogen can survive a supernova blast, maybe it's not so surprising that we did, too. "Indeed, this is helping us understand how supernovas interact with their environment—and how destructive the blasts actually are," says Opher.

Maybe *Australopithecus* was on to something after all.

Opher's original research describing Voyager's discovery of the magnetic field in the Local Fluff may be found in *Nature*, **462**, 1036-1038 (24 December 2009). The Space Place has a new Amazing Fact page about the Voyagers' Golden Records, with sample images and sounds of Earth. Just in case one of the Voyager's ever meets up with ET, we will want to introduce ourselves. Visit <http://spaceplace.nasa.gov/en/kids/voyager>.

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



**Caption:**

*Left-over cloud from the Tycho supernova, witnessed by Tycho Brahe and other astronomers over 400 years ago. This image combines infrared light captured by the Spitzer Space Telescope with x-rays captured by the Chandra X-ray Observatory, plus visible light from the*

## ASNNE Business Meeting

May 8, 2010

Present: Adam Amara, Dave Bianchi, Ron Burk (president), Bob Conley, Alan Goff(secretary),  
Br. Albert Heinrich, Eugene Dolley

Secretary's Report: April minutes were approved.

Star Parties: Starfield Observatory - or as noted

Club/public:

May 14	Public, Kennebunk Land Trust
June 11	new moon 6/12
July 09	new moon 7/11
August 10	new moon 8/13
September 11-12	Starfest
September 14, Tuesday	Wells Reserve Equinox walk, Thursday, 16th as cloud date
October 8	new moon 10/7
November 12	new moon 11/6
December 10	new moon 12/5

Meeting programs:

May 19-22 Middle Atlantic Planetarium Society meeting at Eastland Hotel in Portland  
ASNNE is scheduled for a presentation by Bernie Reim

June 4 Steve Walters PHD, Engineer & Astrophotographer on Quasars

July 2 Jim Hatch - start at monthly meeting site, then continue at observatory

August 6 TBD

Sept 11-12 Starfest Short member presentation by, Brad Irish, Ron Burk and others

October 1 Steve Innes

Meetings are scheduled for 11/5 and 12/3 - programs to be determined

Observatory/Equipment & Facility

After the business meeting, Bernie Reim reported that The New School in Kennebunk is available as a meeting site. Ron will coordinate evaluation of this option.

Adam Amara will coordinate inventory of ASNNE materials at York Lodge meeting site.

Installation of the "Dew Buster" controller on the Meade is in progress.

Jim Hatch is coordinating Meade repair (see messages in ASNNE yahoo group)

Installation of heat tape on the 80 millimeter finder scope is in progress.

Ron will send out proposed ASNNE Book plate design.

Ron will contact Wes Brann regarding evaluation of ASNNE observatory road.

Finance/Legal:

ASNNE has \$2,499.00 in its bank account.

PO Box payment of \$200.00 was made in April.

Annual payment of 47.88 was made to Godaddy for website hosting.

Annual payment of about 190.00 will be made to Astronomical League in May

Tax filings are being prepared - Ron is waiting for confirmation.

Web Sites and associated organizations:

Links from ASNNE website to NSN website need to be updated.

Further discussion of how ASSNE wishes to utilize web sites needs to take place.

Respectfully submitted,

Alan Goff

## Barlow Bob's Corner LHRES III Spectrograph

By Barlow Bob

Lhires III is a spectrograph optimized for high-resolution spectroscopy with amateur-sized telescopes. LHRES is an acronym for Littrow High Resolution Spectrograph. A spectroscope is used to observe spectra, while a spectrograph is used to image spectra.

This spectrograph can be connected to popular SCT of 200mm to 300mm diameter. It can also be connected to most other standard types of telescopes, including refractors and Newtonians, provided that these instruments are slower than  $f/8$ , in order to collect enough light. It has a grating with 2400 grooves per mm. A neon calibration lamp is also integrated in the spectrograph for referencing emission line comparison. You can also attach any type of imaging camera and a second guide camera.

This sophisticated product is easy to use visually, when observing the spectra of the Sun. On a sunny day, I observed the thick dark Fraunhofer absorption lines of H-alpha in the red, sodium in the yellow and magnesium in the green portion of the solar spectrum. There were also hundreds of thin lines of different solar elements, and additional elements in the atmosphere of the Earth.

This summer, I shared my Lhires III spectrograph at several local northeast amateur astronomy star parties. There was an extremely positive response from the amateur astronomers, who observed the solar spectra through this product.

Spectroscopy is like archeology or a criminal case study. With clues included in spectra, an astrophysicist tries to go back to the root of the phenomena. Before the discovery of spectroscopy, stars were just points of light. Almost all professional observations are done today in spectroscopy. Large telescopes are equipped with powerful spectrographs to analyze celestial objects. Now spectroscopy is evolving within the amateur astronomy community. High resolution spectroscopy, the message from the stars, is now accessible to you through a Lhires III Spectrograph.

The Lhires III Spectrograph is used to take images of the spectra of stars and other celestial objects with a camera. You can determine the chemical composition and metallicity of stars. Population I stars like the Sun are rich in metal (i.e. non hydrogen or helium atoms). Population II stars are poor in metal and very old. You can show evidence of the Doppler effect of red shift expansion movement, temperature, stellar density / pressure, spectral double stars, carbon stars and Wolfreyet stars. When you take an image of a planet or star that rotates quickly, you will notice that the Fraunhofer lines are slanted instead of perpendicular. Several amateur astronomers held their digital cameras over the eyepiece and took images of the solar spectra. This is not your father's spectrograph!

I have owned several grating and prism spectroscopes since 1990. I started with a Fred Flintstone product, and advanced to a Pebbles Flintstone, George Jetson and Elroy Jetson. The Lhires III is a Great Grandson of Elroy Jetson!!!

Ralph Marantino and Chuck Higgins told me about a French astronomy club that was selling a spectrograph kit several years ago. However these kits were sold out, when Chuck decided to buy the kit. Last year, they told me that this Lhires III product was now being manufactured by Shelyak instruments in France. I picked up my Lhires III Spectrograph at the NEAF, Northeast Astronomy Forum 2008. NEAF is co sponsored by Sky and Telescope and the Rockland Astronomy Club ([www.rocklandastronomy.com](http://www.rocklandastronomy.com)). NEAF is the world's largest trade show of amateur astronomy products. At NEAF 2008, I met and spoke with Olivier Thizy ([Olivier.thizy@shelyak.com](mailto:Olivier.thizy@shelyak.com)), of Shelyak Instruments (<http://www.shelyak.com>).

Shelyak instruments also manufactures the "Lhires Lite" spectroscope. This is a less expensive, sturdy educational spectrograph for safely observing the solar absorption spectra. Educators can also use this product to observe the emission spectra of street lights and Geisler tubes filled with various gas elements. You can attach a video camera or other imaging camera to the Lhires Lite.

You can purchase the Lhires III for \$3,295.00, or the Lhires Lite for \$1,395.00, from Adirondack Astronomy [www.astrovid.com](http://www.astrovid.com)

Toll Free: 1 877 348 8433  
Info Line: 1 518 747 4141  
FAX Line: 1 518 747 4422.

With the Lhires III Spectrograph I observed the bright emission spectra of street lights. Unfortunately, I have not yet observed the spectra of a star at night through this product. So far, I haven't been able to find an opportunity to attach this spectrograph to an SCT at a star party. A photon-deprived amateur astronomer, who travels long distances to attend a star party at a dark site, usually has an observing agenda previously set up.

If I visit Hawaii, I will bring my Lhires III to the Keck Telescopes and ask the professional astronomers if I can attach this "ultimate spectrograph" to their "ultimate telescope".

-Barlow Bob

## Club Meeting & Star Party Dates

Date	Subject	Location
June 4	<b>ASNNE Club Meeting</b> <b>7:00 -7:30PM:</b> Social Hour and Joan's Beginner Astronomy Class (Public walk-ins welcome). <b>7:30-9:30PM:</b> Club Meeting: *Bernie Reim's "What's Up." *Astro Shorts & Astro News. <b>Guest Speaker:</b> Steve Walters PHd Engineer and Astrophotographer will join us for a talk on Quasars. Steve has been fascinated by Quasar 3C273 for over 25 years.	Masonic Hall West Kennebunk, Me.
TBD	Club/Public Star Party. (Visit website for updates and or cancellations).	Starfield Observatory, West Kennebunk, Me.
Postponed Postponed July 2 August 6	James Standerfer PhD.- Physicist and new ASNNE member will give a talk on General Relativity. Steve Innes - Will share his 2009 China Eclipse experience with us. (1 hr later start) Jim Hatch on the Starfield Telescopes and Dark Sky Outreach efforts. We will meet first at our meeting location in case of rain - then travel to Starfield. Club member shorts - a collection of short presentations from interested members who would like to share their interests. Like: -Brad Irish and his solar interest, images & scope. -Ron Burk on Moon Risings. Anyone else have a short to share? We have room for more - let Ron know.	

### 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

**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 \_\_\_\_\_

