Skylights

Newsletter of the Astronomical Society of Northern New England

FEB 2018

Member of NASA's

Astronomical League

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 February

By Bernie Reim

The month of February is named after the word Februa, which are the ancient Roman rites of purification. We can all do some of that this month as we look up into the cold mid-winter skies to ponder what is really out there beyond the earth.

Groundhog Day on the second of every February marks the half way point through winter. This is one of four cross quarter days each year. This one is also called Candlemas, which is a Christian holiday.

The highlights for this month include a plethora of planets in the morning sky and one lone planet, Venus, finally returning to our evening sky late this month. Then we have some nice lunar conjunctions with the planets and a partial solar eclipse on the 15th during new moon that will not be visible for us in this country.

Jupiter now rises around 2 in the morning, but it is rising about 4 minutes earlier each day, just like each individual star would do, so by the end of this month the King of the Planets will be rising around midnight.

Jupiter can be found in the constellation of Libra the Scales, just to the west or right of Scorpius with the bright orange supergiant star Antares marking the heart of the Scorpion. That is an incredible star that is about 400 light years away from us and about 700 times bigger than our sun. It name means "rival of Mars", since the Greek word for Mars is Ares. This star seems to be a rival because it is very similar in brightness and color to Mars. To give you a better sense of just how enormous this star really is, if you could place it where our own sun is in the sky, the surface of Antares would stretch all the way to Mars, thereby engulfing its own namesake!

Antares is similar in size and color and distance to another famous star which is very visible now right in the middle of the winter hexagon, called Betelgeuse. Notice the orange hue of all three of those bright celestial objects. Both Betelgeuse and Antares are fairly young at only around 10 million years and they are both near the end of their lives because of the prodigious rate that they are burning through their enormous amounts of fuel. Betelgeuse has already run out of Hydrogen and is now fusing helium into carbon. It is one of only a handful of naked eye visible stars that may actually already have exploded, but most likely it still has about 100,000 years to live.

Jupiter takes 12 years to orbit the sun one time, so it spends one year in each of the 12 zodiac constellations. However, it doesn't just make a smooth eastward trip along the ecliptic, because it goes through a retrograde loop every 13 months, appearing to stop, back up, and move westward for about 4 months before returning to its regular direct eastward motion. This is just and optical illusion since all the planets are nearly in the same plane so as the faster-moving earth catches up with them, they appear to stop moving and then they even move backwards for a while until we get far enough ahead of them again. Jupiter will go into retrograde in early March for its early May opposition this

"Continued on page 2"

Inside This Issue

Club Contacts

Officers:

President:
Ron Burk
rdavidburk@yahoo.com

Vice President:
Joan Chamberlin
starladyjoan@yahoo.com

Secretary:
Carl Gurtman
carlgurt@msn.com

Treasurer:
Ian Durham
idurham@anselm.edu

Board of Directors:

Gary Asperschlager
gasperschlager@gmail.com

Larry Burkett
larrybu32@yahoo.com

Chase Delaney
horsiedonkey@yahoo.com

Star Party Co-ordinator:

TBD

Skylights Editor:

Paul Kursewicz
pkursewicz@myfairpoint.net

Website Manager:

Nan Musgrave
mzgrvz@outlook.com

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*"

year, so watch it get a little higher and brighter and closer each morning.

Mars is slowly drifting farther away from Jupiter this month and closer to Antares in Scorpius. The red planet rises at about 2:30 am beginning the month and will only rise about half an hour earlier by the end of the month. It is moving eastward along the ecliptic at about the same rate that we are moving around the sun, so the net result is that it doesn't rise much earlier each morning. However, Mars is also getting a little brighter and closer and larger each morning, just like Jupiter is. Mars will have its best opposition in many years towards the end of July this year.

Notice that Mars will be only 5 degrees above Antares on February 11th and 12th. They will both be about 1st magnitude and the same color. Then keep watching as Mars slowly gets brighter than Antares by the end of the month and then it will just keep getting brighter and closer until the end of July. A waning crescent moon will pass near Jupiter and Mars and Antares one hour before sunrise during the mornings of 7th, 8th, and 9th.

Then Saturn is the last of the morning trio to rise. It now rises around 5 am and it will rise by 3 am by the end of the month. Just like Jupiter and Mars, the ringed planet is also getting a little brighter and closer each morning, but at a slower rate. It will be at its best towards the end of June, just after summer starts.

Saturn can now be found in Sagittarius, just east of Scorpius which harbors Mars and Libra which hosts Jupiter now. Notice that an even thinner waning crescent moon will pass right over Saturn on Sunday morning the 11th. This will make for some good pictures if you can capture it.

Venus is finally returning to our evening sky. Try to challenge yourself to see how early you can find it in our west-southwestern evening sky. You will probably need binoculars to spot it before the middle of this month. By Friday the 16th, Venus will be just below a very slender waxing crescent moon only 20 minutes after sunset. Then keep watching as the moon gets a little larger and 12 degrees farther above Venus each evening after that. Through a telescope you will see that Venus is close to fully illuminated by the sun because it just passed superior conjunction with the sun and was at its farthest from Earth on January 11.

Mercury is too close to the sun now. But you may be able to spot it in the evening sky near Venus during the last few days of the month.

Since we are in an eclipse season again, having just had a total lunar eclipse on the last day on January, we will also have a partial solar eclipse this month. Neither one of those will be visible for us, but there will be a chance to catch the very beginning of the lunar eclipse just as the sun rises and the moon sets on the last morning of January.

The solar eclipse will only be about a 70% partial or just a little more than what we could see here in Maine for the great American total solar eclipse last August. It will only be visible over the southern part of South America and parts of Antarctica on Thursday the 15th. It will pass just south of where the next two good total solar eclipses will be over Chile and Argentina. The first one is less than 2 years away on July 2 of 2019 and the next one is right behind it on December 14 of 2020.

Feb. 2-16. The zodiacal light can be seen in the western sky after sunset as a faint pyramid of hazy light from a dark sky site with no moon. This is caused by all the dust in the ecliptic plane of our solar system, made visible to us as it reflects sunlight back to us.

Feb. 4. Clyde Tombaugh was born on this day in 1906. He would discover Pluto just 24 years later on February 18 of 1930.

Feb.7. Last quarter moon is at 10:55 a.m. EST.

Feb.8. Jules Verne was born on this day in 1828. Notice that Antares, Mars, the waning crescent moon and Jupiter will form a celestial arc through Scorpius and Libra this morning.

Feb. 11. Mars will be closest to Antares this morning at just 5 degrees above it.

Feb. 15. Galileo was born in this day in 1564. New moon is at 4:06 p.m. There will be a partial solar eclipse today.

Feb. 19. Nicholas Copernicus was born on this day in 1473. The Russian MIR space station was launched on this day in 1986 and lasted 15 years in space.

Feb. 20. John Glenn became the first American to go into orbit on this day in 1962 and only the second human to do so after Yuri Gagarin on April 12 of 1961.

Feb. 23. The moon will occult Aldebaran in Taurus again this morning. Supernova 1987 A was discovered on this day in the Tarantula nebula in the Large Magellanic Cloud. Last quarter moon is at 3:10 a.m. Pioneer 11 left the solar system on this day in 1990.

Feb. 28. The nearly full moon will occult Regulus in Leo this morning.

Moon Phases

Feb 7
Last Quarter

Feb 15
New

Feb 23
First Quarter

Moon Data

Feb 1
Regulus 1.0° south of Moon

Feb 7
Jupiter 4° south of Moon

Feb 8
Mars 4° south of Moon

Feb 11
Moon at apogee

Saturn 2° south of Moon

Feb 20
Uranus 5° north of Moon

Feb 27
Moon at perigee

Submitted by Glenn Chaple

Las Vegas Astronomical Society
www.lvastronomy.org

Sky Object of the Month – February 2018

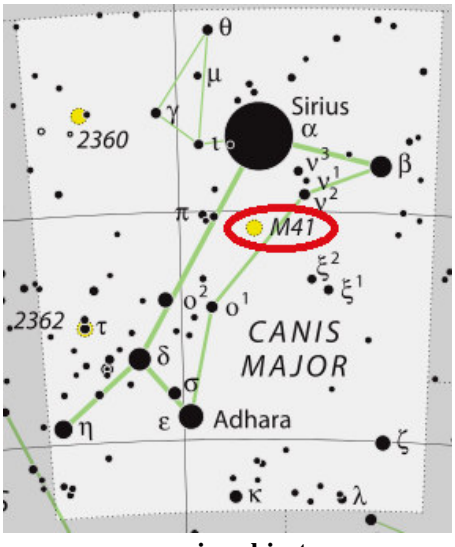
(Courtesy LVAS Observer's Challenge*)

Messier 41 – Open Cluster in Canis Major (Mag. 4.5; Size 40')

The open star cluster Messier 41 might not seem like much of an observer's challenge. It's bright enough (magnitude 4.5) to be seen with the unaided eye and is resolvable with binoculars. A small telescope magnifying just 30X will capture about two dozen cluster members scattered across an area slightly larger than a full moon. Large aperture scopes will capture upwards of 100.

One of the cluster's more interesting features is a ruddy star located near the center. I learned about it in William Tyler *Olcott's Field Book of the Skies* – my primary guide during my early days as a backyard astronomer in the mid 1960s and early 1970s. My earliest attempts with a 3-inch f/10 reflector proved disappointing. I expected a ruby red star to dominate the eyepiece field. No such luck, and it wasn't until 1977 that I saw what seemed to be a reddish star near the heart of M41. I wasn't positive this was the star Olcott referred to and wrote, "Bright star in center seems reddish, but this may be a result of prior knowledge." I re-observed M41 with a 4.5-inch f/8 reflector in 2004 and labeled the red star on a drawing I made (see below). Compare it with an image made by Mario Motta using a 6-inch scope.

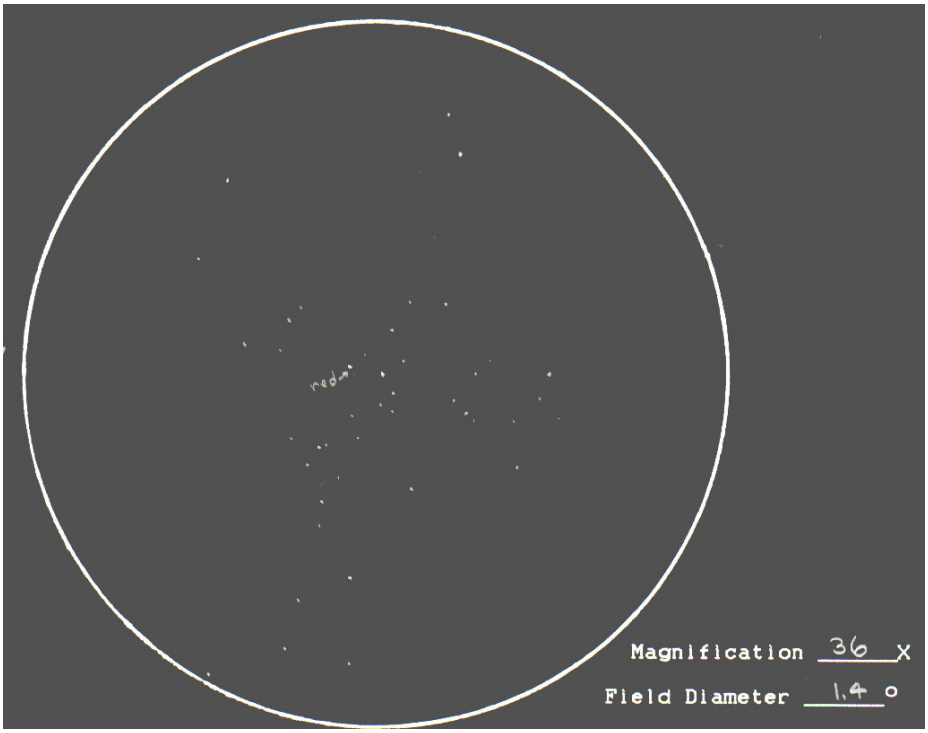
M41 is easily found just 4 degrees south of Sirius. It was possibly seen by Aristotle around 325 B.C and recorded by the Italian astronomer Giovanni Battista Hodierna around 1654. Situated about 2100 light years away, M41 spans some 25 light years.



www.messier-objects.com

"Continued on page 4"

Mario Motta, MD.



Glenn Chaple

Principal Meteor Showers in 2018

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

RED ALERT — Downward Pointing Lasers

NASA is planning to use (or is already using) downward pointing lasers which are mounted on their spacecrafts. For those of us who look at the night sky through a telescope, or a pair of binoculars, this is a potential hazard. If a laser beam enters our instrument at the very time we are viewing, eye injury or blindness could occur. Contact physicist, Dr. Jennifer Inman, jennifer.a.inman@nasa.gov and tell her your concerns about this perilous issue. Why should we have to live in fear each time we look into a telescope or a pair of binoculars? This is unacceptable!

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 .

Space Place is a NASA website for elementary school-aged kids, their teachers, and their parents.

Check out our great sites for kids:

The Space Place website (http://spaceplace.nasa.gov)

The *SciJinks Weather Laboratory* at http://**scijinks.gov**

NASA Climate Kids at http://**climate.nasa.gov/kids**

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 club member, David Bianchi, know.

This article is provided by NASA Space Place.
With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit **spaceplace.nasa.gov** to explore space and Earth science!

Sixty Years of Observing Our Earth

By Teagan Wall

Satellites are a part of our everyday life. We use global positioning system (GPS) satellites to help us find directions. Satellite television and telephones bring us entertainment, and they connect people all over the world. Weather satellites help us create forecasts, and if there's a disaster—such as a hurricane or a large fire—they can help track what's happening. Then, communication satellites can help us warn people in harm's way.

There are many different types of satellites. Some are smaller than a shoebox, while others are bigger than a school bus. In all, there are more than 1,000 satellites orbiting Earth. With that many always around, it can be easy to take them for granted. However, we haven't always had these helpful eyes in the sky.

The United States launched its first satellite on Jan. 31, 1958. It was called Explorer 1, and it weighed in at only about 30 pounds. This little satellite carried America's first scientific instruments into space: temperature sensors, a microphone, radiation detectors and more.

Explorer 1 sent back data for four months, but remained in orbit for more than 10 years. This small, relatively simple satellite kicked off the American space age. Now, just 60 years later, we depend on satellites every day. Through these satellites, scientists have learned all sorts of things about our planet.

For example, we can now use satellites to measure the height of the land and sea with instruments called altimeters. Altimeters bounce a microwave or laser pulse off Earth and measure how long it takes to come back. Since the speed of light is known very accurately, scientists can use that measurement to calculate the height of a mountain, for example, or the changing levels of Earth's seas.

Satellites also help us to study Earth's atmosphere. The atmosphere is made up of layers of gases that surround Earth. Before satellites, we had very little information about these layers. However, with satellites' view from space, NASA scientists can study how the atmosphere's layers interact with light. This tells us which gases are in the air and how much of each gas can be found in the atmosphere. Satellites also help us learn about the clouds and small particles in the atmosphere, too.

"Continued on page 7"

When there's an earthquake, we can use radar in satellites to figure out how much Earth has moved during a quake. In fact, satellites allow NASA scientists to observe all kinds of changes in Earth over months, years or even decades.

Satellites have also allowed us—for the first time in civilization—to have pictures of our home planet from space. Earth is big, so to take a picture of the whole thing, you need to be far away. Apollo 17 astronauts took the first photo of the whole Earth in 1972. Today, we're able to capture new pictures of our planet many times every day.

Today, many satellites are buzzing around Earth, and each one plays an important part in how we understand our planet and live life here. These satellite explorers are possible because of what we learned from our first voyage into space with Explorer 1—and the decades of hard work and scientific advances since then.

To learn more about satellites, including where they go when they die, check out NASA Space Place: https://spaceplace.nasa.gov/spacecraft-graveyard

This photo shows the launch of Explorer 1 from Cape Canaveral, Fla., on Jan. 31, 1958. Explorer 1 is the small section on top of the large Jupiter-C rocket that blasted it into orbit. With the launch of Explorer 1, the United States officially entered the space age. Image credit: NASA

Point and Shoot Camera Astroimaging for Valentine's Day (fall in love)

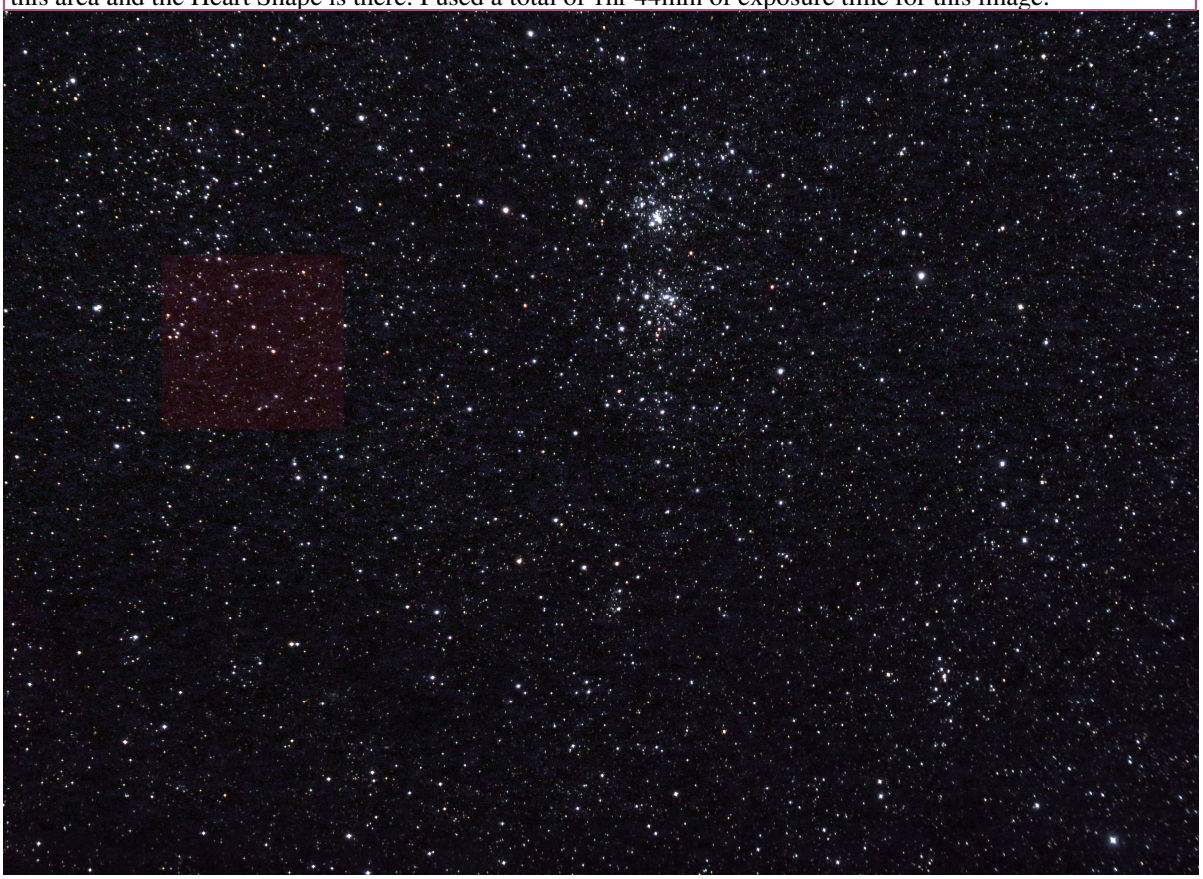
Canon Powershot SX50 HS

The **Heart Nebula** (IC 1805) lies just above the **Soul Nebula** (IC 1848) in the constellation Cassiopeia. The pair lies about 7,500 ly away. I took this picture on 12-14-17 and consists of 20 stacked images of 4 min each. The **Double Cluster** appears to their right. I found a "perfectly" ***Heart Shaped*** cluster of stars that lie half way between the Heart and the Double. It's a little hard to see in this image. But it can easily be seen in the image below this one.

This cropped picture was taken on 11-17-17. It's a closer image of the Double and the Heart. Going 2/3 the distance to the left of the lower portion of the Double Cluster, is the location of the **Heart Shaped** Cluster. Can you find it? The photos on the next page pinpoints the location.

"Continued on page 9"

The **Double Cluster** and **Paul's Heart Cluster**. A transparent red square encloses the Heart. It's tilted to the left about 30 degrees. I don't know if anyone else has ever noticed this cluster of stars. If they haven't, I'm calling it **"Paul's Heart Cluster."** The stars are real and not artifacts. I've searched other peoples images of this area and the Heart Shape is there. I used a total of 1hr 44min of exposure time for this image.



Close up of **Paul's Heart Cluster**. In 12x36 binoculars only the brighter stars can be seen. Larger binoculars or a telescope may be needed to reveal the fainter stars. In doing a web search, M50 (an open cluster) is known for having a "Heart Shaped" figure. Personally, I think mine is easier to see.

Club Meeting & Star Party Dates

Date	Subject	Location
Feb 2nd	**ASNNE Club Meeting:** **7:30-9:30PM:** Club Meeting **Meeting Agenda** **Guest speaker/topic - Sashank Aryal** will be presenting a talk entitled "Deep Learning in Astronomy." Deep learning, or "machine learning" allows computers to learn on their own. This emerging science/technology applies the complexities of neural networks, algorithms and data/pattern recognition to accelerate the speed of learning beyond human capacity. Business Meeting starts at 6pm Bernie Reim - What's UP Astro Shorts: (news, stories, jokes, reports, questions, photos, observations etc.)	The New School, Kennebunk, Me.
TBD	Club/Public Star Party (*Check List-serve / website for updates or cancellations*)	Starfield Observatory, West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunck [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great. http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

Directions to Starfield Observatory [Alewive Road, Kennebunk, ME]

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

2018 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_____

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_____