

Skylights

Newsletter of the Astronomical Society of Northern New England



APR 2020



Member of NASA's
Night Sky Network



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 April

By Bernie Reim

The month of April is named for Aprilis, which means aperture or opening. That is what nature is beginning to do once again in our hemisphere as the great cycles of life continue despite of what is going on globally now.

Most of us will have more time now to get out under the beautiful spring skies to gather inspiration in these unusual times and to learn more about our greater selves and what we are all part of in the bigger picture.

As it continues to get warmer this month, several interesting highlights present themselves along with a couple of challenges should we decide to accept them.

Venus continues and amplifies its best appearance in 8 years as it climbs through the Pleiades and Hyades star clusters in Taurus and reaches its greatest brilliancy for the year towards the end of the month. Jupiter, Saturn, and Mars continue their majestic and close celestial dance in the morning sky, the third-largest asteroid, Vesta, is in Taurus now very close to Venus. Mercury will appear low in the morning sky, the first good meteor shower of the season, the Lyrids, peaking on the 22nd, and not one but two comets not far from each other near the Big Dipper, named PanSTARRS, and Atlas.

Our brightest planet and the third brightest object in the sky after the sun and the moon, Venus, will put on a great show this month as it quickly cruises by both the famous Pleiades and the less famous Hyades star clusters in Taurus the Bull. On Friday the 3rd, Venus passes right through the lower part of the Pleiades open star cluster, just 16 arc seconds below Alcyone, the brightest star in the cluster. With a little imagination, you can see this event forming a cosmic engagement ring, sparkling with a radiance far beyond any mere terrestrial jewels. An even more dramatic celestial ring is the diamond ring effect during the first second of a total eclipse and the last second of that same

eclipse as the sun suddenly reemerges from the moon's shadow. You can never reach out to touch these events physically nor can you ever possess them, but you can photograph them and see and understand them for the enormous celestial beauty that they all hint at and the fact that these and many other incredible events always going on in the wider and deeper cosmos are all examples of our true inheritance that really do belong to all of us.

A waxing gibbous moon will be near Venus and the Pleiades on the first of April. The Pleiades, or Seven Sisters, or Subaru in Japanese, are a very interesting open star cluster consisting of about 500 stars. You can see about 50 of them with binoculars. They are located about 400 light years away, which is a very significant number in astronomy since it relates to the time that Galileo improved the telescope and used it for astronomy to begin to discover the completely unknown secrets of the nearby solar system and universe.

So keep that in mind when you next look

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What's Up "Continued from page 1"

at this wonderful little star cluster with brilliant Venus planted right in it. Those photons of light that will be entering your eyes left that relatively nearby cluster about the same time that Galileo first pointed the first telescope to the heavens in the 200,000-year history of modern humans. What he discovered simply by looking at it in plain sight through his not very powerful telescope was so earth-shaking that the church excommunicated him in 1633 and did not reinstate him until 1992, over 350 years later. It is very difficult to change accepted and limiting theories. Einstein had a great quote concerning this "everything has changed except man's way of thinking". He was referring to his great discoveries in relativity, which was a huge leap beyond Galileo and Newton. What will the next great leap be beyond Einstein?

The rest of the action is in the morning sky. Mars has now passed both Jupiter and Saturn and is continuing to move eastward into Capricorn. All three are still in their direct or eastward motion. Notice that the distance between Jupiter and Saturn will not change much for the rest of the year, since those planets are far away and don't move very fast around the sun, but Mars is a different story. The red planet is always moving at 15 miles per second around the sun, just a little slower than our own speed of 18.6 miles per second. A year on Mars is 687 earth days and it reaches opposition every 26 months. The next one will not be until October 13 of this year. Notice that Mars and Saturn are the same brightness now, but Jupiter is about 10 times brighter. Mars starts the month just to the left of Saturn. Compare the rust color of Mars to the soft golden glow of Saturn. Try to photograph them to track their progress and better appreciate them.

The asteroid named Vesta is tracking through Taurus now, very close to Venus. Vesta is our second-largest asteroid behind Ceres and is about 300 miles in diameter. It is potato-shaped since it isn't quite large enough to spin itself into a round shape naturally. Vesta, along with some other large asteroids, is also the source of most of the meteorites that hit the earth.

The Lyrid meteor shower will peak on Wednesday morning the 22nd. It will also be new moon that day, so this is perfect timing for a meteor shower. You can expect up to 20 meteors per hour from a dark sky site in the direction of Lyra, which is part of the summer triangle, which already starts rising around 11 pm in early April. Caused by Comet Thatcher, this shower has been observed for the past 2600 years.

There are two comets visible now with binoculars near the Big Dipper. One is comet PanSTARRS which will be closest to the sun in early May when it might even become visible without binoculars. It is in Camelopardalis the Giraffe now. Then there is Comet Atlas nearby in Ursa Major near the galaxies named M 81 and M82. Atlas may also

become visible without binoculars soon, so keep watching and photographing them as a challenge.

April 1. First quarter moon is at 6:21 a.m. EDT.

April 2. Asteroid Juno is at opposition.

April 7. The moon is at perigee, or closest to the earth today at 221,771 miles. Full moon is at 10:35 p.m. This is also called the Grass, Egg, Pink, or Fish Moon.

April 8. Here is a future event, which I have never listed here before. On this day exactly 4 years from now in 2024, a total solar eclipse will occur in Maine as the moon's shadow cuts a narrow path through north-central Maine from Bethel to Houlton and Caribou, passing right over Mt. Katahdin. This eclipse will last over 3 minutes and carve a wider path than the one I saw on August 21 of 2017 over Idaho, which only lasted a little over 2 minutes but was well worth every second. I highly recommend that everyone make the effort to see at least one total solar eclipse in their lifetime. You can experience and learn more about the inner workings of our solar system and universe and the life of stars in those two fleeting minutes than you could in a whole lifetime of studying astronomy and physics. You could experience the whole universe coming alive and gain a better understanding of the huge scale and power and motions always occurring everywhere, not just in our nearby solar system.

April 11. Halley's Comet passed closest to Earth on this day in 1986.

April 12. On this day in 1961 Yuri Gagarin became the first human to orbit the earth. John Glenn became the first American to accomplish that feat on February 20 of 1962.

April 14. Last quarter moon is at 6:56 p.m. The moon will be near Jupiter, Saturn, and Mars this morning and the next.

April 16. Wilbur Wright was born on this day in 1867. In 1903 he and his brother Orville launched the first heavier-than-air craft that could actually fly on its own. It only flew for a minute and covered less than 3 football fields on that beach near Kitty Hawk, NC. Just 65 and half years later we flew all the way to the moon, 3 days and 240,000 miles away.

April 22. The Lyrid meteor shower peaks this morning. New moon is at 10:26 p.m. EDT.

April 23. Max Planck was born on this day in 1858. He was one of the founders of quantum mechanics along with Neils Bohr and Werner Heisenberg and Wolfgang Pauli and many more.

April 25. On this day in 1990, the Hubble Space Telescope was deployed.

April 27. Venus is at its greatest brilliancy at minus 4.7 magnitude.

April 30. First quarter moon is at 4:38 p.m.

Moon Phases

Apr 1
First Quarter

Apr 7
Full

Apr 14
Last Quarter

Apr 22
New

Apr 30
First Quarter

Moon Data

Apr 7
Moon at perigee

Apr 14
Pluto 1.2° north
of Moon

Jupiter 2° north
of Moon

Apr 15
Saturn 2° north
of Moon

Apr 16
Mars 2° north
of Moon

Apr 19
Neptune 4° north
of Moon

Apr 20
Moon at apogee

Apr 26
Venus 6° north
of Moon

OBSERVER'S CHALLENGE* –April, 2020

by Glenn Chaple

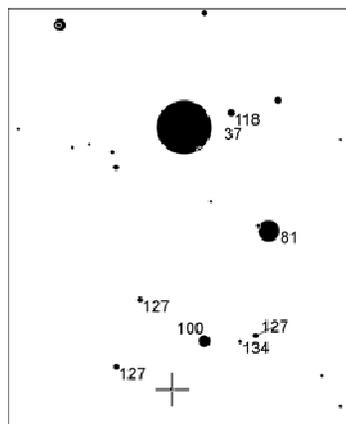
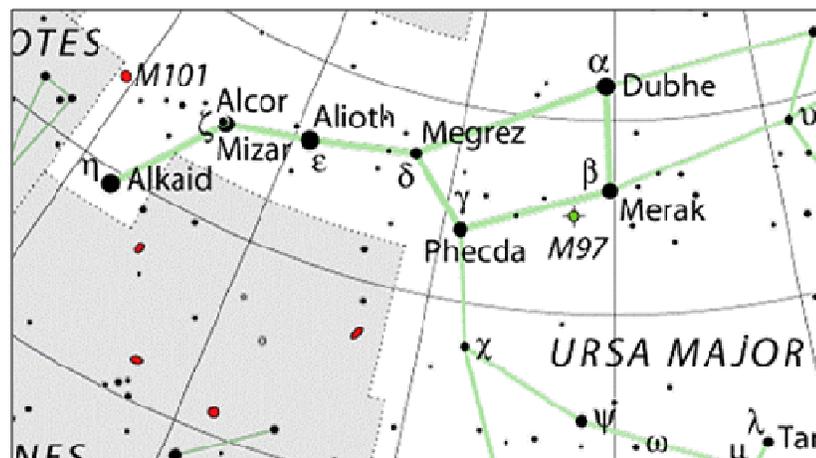
NGC 3877 – Spiral Galaxy in Ursa Major (Mag: 11.0 Size: 5.5' X 1.3')

The best star-hops are those that require no hopping at all. Such is the case with this month's Observer's Challenge, the near edge-on spiral galaxy NGC 3877. Center the magnitude 3.7 star Chi (χ) Ursae Majoris in the field of your scope's finder and then peer into the eyepiece. If your eye is properly dark-adapted, you should see an oval haze just $\frac{1}{4}$ degree to the south.

In March of 1998, a supernova appeared in NGC 3877, quickly reaching 12th magnitude. It was visible in my 4-inch f/4 rich-field reflector (Edmund Scientific's Astroscan), as was the galaxy itself. To see NGC 3877 with such a small aperture demands dark-sky conditions. In Vol. 2 of *The Night Sky Observer's Guide*, authors George Kepple and Glen Sanner note that an 8 to 10-inch scope will reveal the galaxy's central condensation, while scopes with twice the aperture should bring out the mottled appearance of its outer regions.

NGC 3877 was discovered by William Herschel on the night of February 5, 1788. Along with M 109, it belongs to the Ursa Major Galaxy Cluster. Its distance is variously recorded as 42 to 50 million light years. If at the latter distance, NGC 3877 would span some 80,000 light years.

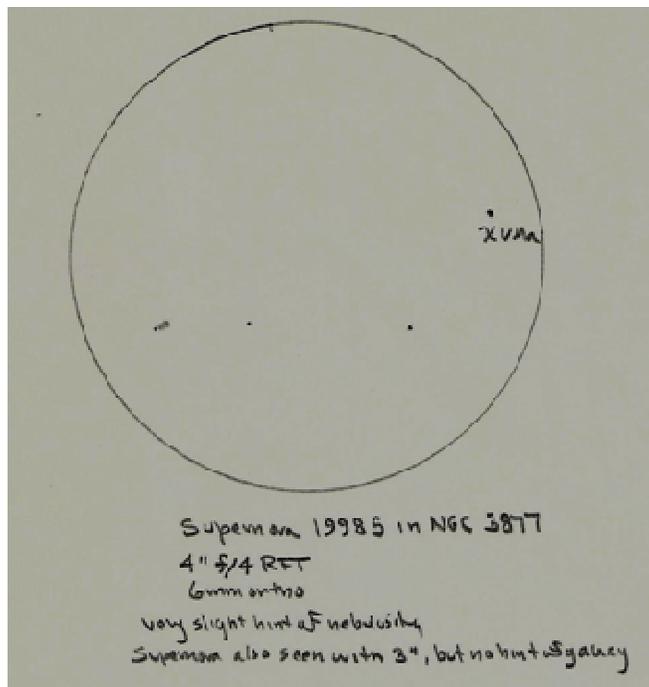
Finder charts for NGC 3877. Bright star in right-hand chart (from AAVSO Variable Star Plotter) is chi (χ) Uma. Numbers refer to magnitudes of field stars. North is up in this 25' by 30' field.



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Image by Mariio Motta MD (ATMoB) Taken 3/27/2020 through 32 inch telescope.
5 min subs, total 60 minutes integration time. Camera is ZWO ASI6200. Processed in PixInsight



NGC 3877 and supernova 1998S, March 25, 1998. Magnification 74X FOV 20'. North is to the right.
Sketch by Glenn Chaple (ATMoB)

*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to either Roger Ivester (rogerivester@me.com) or Fred Rayworth (queex@embarqmail.com or fred@fredrayworth.com). To find out more about the Observer's Challenge or access past reports, log on to rogerivester.com/category/observers-challenge-reports.

Principal Meteor Showers in 2020

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

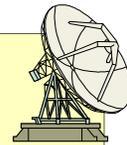
November 26
Andromedids

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.*

Our Club has Merchandise for Sale at: www.cafepress.com/asne



*ALL money raised goes to our operating fund.
Any design can be put on any item.*

Contact David Bianchi dadsnorlax@yahoo.com for further details.

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!



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Hubble at 30: Three Decades of Cosmic Discovery

By David Prosper

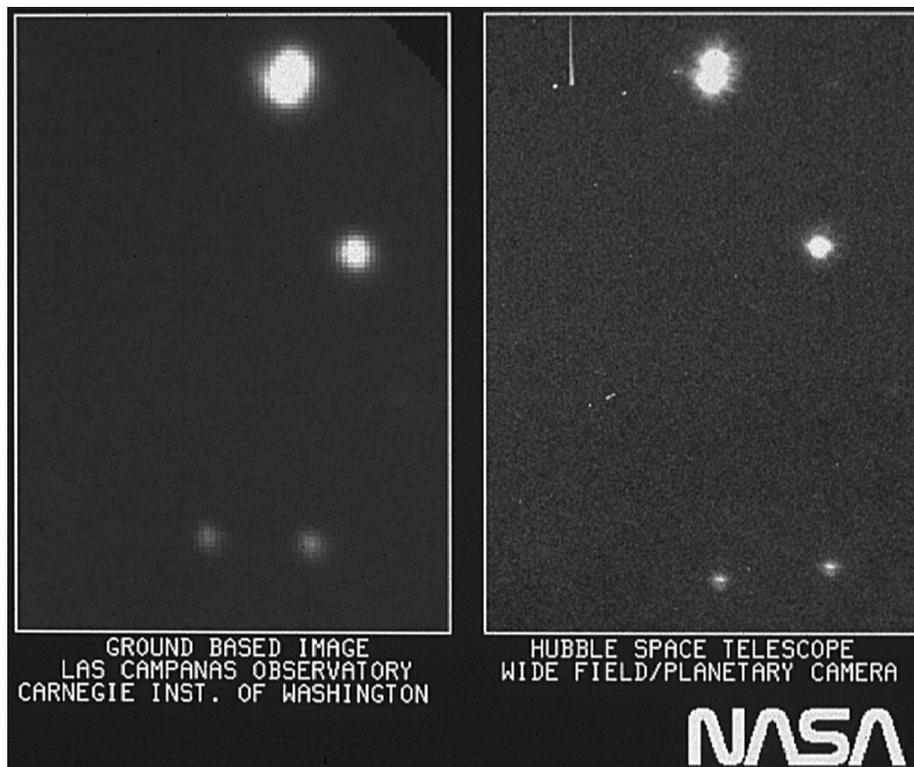
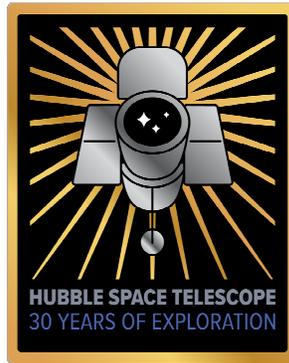
The **Hubble Space Telescope** celebrates its 30th birthday in orbit around Earth this month! It's hard to believe how much this telescope has changed the face of astronomy in just three decades. It had a rough start -- an 8-foot mirror just slightly out of focus in the most famous case of spherical aberration of all time. But subsequent repairs and upgrades by space shuttle astronauts made Hubble a symbol of the ingenuity of human spaceflight and one of the most important scientific instruments ever created. Beginning as a twinkle in the eye of the late Nancy Grace Roman, the Hubble Space Telescope's work over the past thirty years changed the way we view the universe, and more is yet to come!

We've all seen the amazing images created by Hubble and its team of scientists, but have you seen Hubble yourself? You actually can! Hubble's orbit -- around 330 miles overhead -- is close enough to Earth that you can see it at night. The best times are within an hour after sunset or before sunrise, when its solar panels are angled best to reflect the light of the Sun back down to Earth. You can't see the structure of the telescope, but you can identify it as a bright star-like point, moving silently across the night sky. It's not as bright as the Space Station, which is much larger and whose orbit is closer to Earth (about 220 miles), but it's still very noticeable as a single steady dot of light, speeding across the sky. Hubble's orbit brings it directly overhead for observers located near tropical latitudes; observers further north and south can see it closer to the horizon. You can find sighting opportunities using satellite tracking apps for your smartphone or tablet, and dedicated satellite tracking websites. These resources can also help you identify other satellites that you may see passing overhead during your stargazing sessions.

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NASA has a dedicated site for Hubble's 30th's anniversary at bit.ly/NASAHubble30. The Night Sky Network's "Why Do We Put Telescopes in Space?" activity can help you and your audiences discover why we launch telescopes into orbit, high above the interference of Earth's atmosphere, at bit.ly/TelescopesInSpace. Amateur astronomers may especially enjoy Hubble's images of the beautiful objects found in both the Caldwell and Messier catalogs, at bit.ly/HubbleCaldwell and bit.ly/HubbleMessier. As we celebrate Hubble's legacy, we look forward to the future, as there is another telescope ramping up that promises to further revolutionize our understanding of the early universe: the James Webb Space Telescope!

Discover more about the history and future of Hubble and space telescopes at nasa.gov.



Hubble's "first light" image. Even with the not-yet-corrected imperfections in its mirror, its images were generally sharper compared to photos taken by ground-based telescopes at the time. Image Credit: NASA

Point and Shoot Camera Astroimaging

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

Comet 2019 Y4 (ATLAS)

Specs: RAW, f/3.5, FL 274mm, ISO 1200, 3 x 3 min, 3-15-20



Comet C/2019 Y4 is nicknamed ATLAS as it was discovered by the telescope array system of the same name. Its greenish color is due to carbon and cyanide gas within the comet, it is ionised as it approaches our host star. Experts are unsure whether it will burn to dust or whether it will produce a spectacular display of explosions as it approaches the Sun. Comet ATLAS was first discovered in December 2019 and is known as a hyperbolic comet. This means it has an exaggerated orbit which can go way out into the cosmos before swinging back round. Astronomers have estimated that Comet could pass within 25 million miles of the Sun on May 31, 2020. It may brighten significantly along the way. The orbit of this body of ice and dust appears very similar to that of C / 1844 Y1, more famously known as the "Great comet of 1844" which was then visible in broad daylight. For me however, the comet was so dim I could not visually see it using 12x36 and 8x56 binoculars. And I tried to see it on three different nights (March 13, 15 & 21) with no success. But I did get this picture of it (it's very dim) on the 15th, which I framed using M81 and M82 (and a couple of fainter NGC galaxies which can easily be mistaken for the comet). When I took this picture ATLAS was in the constellation Ursa Major. I took another picture of the comet on the 21st using the same focal length and exposure. But, no sign of the comet. That told me that the comet was getting dimmer than brighter. Hoping that it will brighten up again.

Club Meeting & Star Party Dates

Date	Subject	Location
<u>Apr 3</u>	<p><u>ASNNE Club Meeting:</u></p> <p>Our April Club meeting at The New School has been cancelled due to the Coronavirus.</p> <p>There are plans in the making to still have our Club Meeting while staying at home by using ZOOM.</p> <p>So, a computer or a phone will be required. Ian Durham has volunteered to organize all of this. As we get closer to Friday, Ian will post a connection link to join Zoom.</p>	<u>The New School, Kennebunk, Me.</u>
<u>Last Month</u>	<p>At our meeting last month Bernie Reim gave his "What's Up" talk. Following Bernie, Carl Gurtman gave us a wonderful presentation on Corona Borealis, the Northern Crown (Constellation of the Month). The rest of the meeting was devoted to astro-shorts.</p>	
<u>TBD</u>	Club/Public Star Party: Canceled due to the Coronavirus.	Talmage Observatory at Starfield West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunk [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 Talmage Observatory at Starfield [Alewife 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>



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 Kennebunk, ME 04043-1338

2020 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 _____

