

# Skylights

Newsletter of the Astronomical Society of Northern New England



OCT 2016



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 October

By Bernie Reim

This is the first full month of autumn and it will bring with it a radical transformation of our lush green summer landscape into the dramatic and memorable flaming foliage of fall for which New England is so famous. This is also a great time to get outside under the night sky to experience more of its ongoing and completely natural wonders which are especially needed in today's hectic times on Earth. We sometimes forget that we are all important parts of this continually unfolding and changing natural drama of our greater environment about which we know so little.

We tend to have more clear nights this month than during other months and they tend to be cool and crisp as our summer humidity disappears and the great earth tilts farther away from the sun as our days get shorter and shorter and our night get longer and longer. There will be several interesting highlights this month that will be well worth watching for including the return of Jupiter and Mercury to our morning sky, Venus catches up with and crosses under Saturn in Scorpius, Uranus at opposition in Pisces along with the dwarf planet Ceres, the moon occults Aldebaran in Taurus, Comet 43P/Wolf-Harrington in Hydra, asteroid Parthenope in Cetus the Whale, and the Orionid Meteor Shower caused by Halley's Comet.

Jupiter returns to our morning sky after disappearing near the sun for a month. Look for the King of the planets just 1.6 degrees below Mercury on the morning of the 10<sup>th</sup>. The next morning they will be even closer together and then Jupiter climbs higher even as Mercury sinks lower again.

Venus continues to climb a little higher and move 1 degree east per day. Watch as a slender waxing crescent moon passes just above Venus on the evening of the 3<sup>rd</sup> half an hour after sunset. Then keep watching as Venus will shoot the gap between Saturn and Antares in Scorpius just like Mars did on the 23<sup>rd</sup> of August. Venus

will pass just 3 degrees below Saturn in this line-up on the 29<sup>th</sup> and 30<sup>th</sup> of this month. You can think of this like a giant sling shot in space. That only appears that way from our earth perspective, but it is a good chance to think more carefully about the motions of these 3 objects and what they are really like up close.

Venus is sometimes called our sister planet because it is nearly the same size and mass as we are, but that is where the similarities end. Venus exhibits the classic runaway greenhouse effect, with a surface temperature of 900 degrees F, hot enough to melt some metals, and a surface pressure of nearly 100 times greater than we experience on Earth. The pressure on the surface of Venus is equivalent to being 3,000 feet below the surface of our ocean. Venus orbits at 22 miles per second and takes 225 days to get around the sun. It spins so slowly that its day is longer than its year, at 243 earth days. It also spins in the opposite direction from earth since its axis is flipped over. The sun would rise in the west on this incredibly dangerous

*"Continued on page 2"*

## Inside This Issue

Club Contact List	pg 2
Moon Data	pg 3,4
Sky Object Of The Month	
<b>Club Membership Dues (pg's 3 &amp; 10)</b>	
NASA's Space Place	pg 5
Club Items For Sale	
Meteor Showers in 2016	
One Incredible Galaxy Cluster Yields	pg 6,7
Two Types of Gravitational Lenses	
Starfest 2016	pg 8
Club Meeting & Star Party Dates	pg 9
Directions ASNNE Locations	
Become a Member	pg 10

## **Club Contacts**

### **Officers:**

President:  
Ron Burk  
rdavidburk@yahoo.com

Vice President:  
Joan Chamberlin  
starladyjoan@yahoo.com

Secretary:  
Carl Gurtman  
cargurt@msn.com

Treasurer:  
Ian Durham  
idurham@anselm.edu

### **Board of Directors:**

Nan Musgrave  
mzgrvz@outlook.com

Gary Asperschlager  
gasperschlager@gmail.com

Larry Burkett  
larrybu32@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"**

planet.

There are several new missions now being proposed that will revisit this planet again and see it in much better detail to uncover a few more of its important mysteries that will also help us understand Earth better. NASA is in the process of deciding between VERITAS, which would remain in orbit around Venus like the Magellan spacecraft that arrived in 1990, and DAVINCI, which would drop a probe onto its surface.

If you have a good pair of binoculars you can find the planet Uranus in Pisces. It is at opposition on the 15<sup>th</sup> of this month. That means it rises at sunset and stays in our sky all night long and is at its closest and brightest for the year. Once you spot its eerie blue-green glow in your binoculars, you should be able to see it without them since it will glow at 5.7 magnitude. The faintest objects the unaided human eye can see in a dark sky are at 6<sup>th</sup> magnitude, which is a little fainter than 5.7 magnitude.

Ceres, the largest of all of our millions of asteroids is also at opposition now in Pisces. This 600-mile-wide dwarf planet will shine at 6.7 magnitude, so you would need binoculars or a telescope to see it. We recently found mysterious white spots in one of its craters.

The waning gibbous moon will occult Aldebaran, the brightest star in Taurus, on the night of the 18<sup>th</sup> into the 19<sup>th</sup>. Check the website on lunar occultations for more details. I have seen similar events several times and it is a great way to get a good sense of the moon's second-by-second eastward motion around the earth as it moves right in front of a bright star, causing it to disappear instantaneously not to reappear until one hour later.

Comet 43P/Wolf-Harrington will be visible in a telescope in Hydra this month. It should reach around 11<sup>th</sup> magnitude in our morning sky. It is part of Jupiter's family of periodic comets. We haven't had many bright comets lately, but that should end soon with brighter comets scheduled to visit us in December and January.

The asteroid named Parthenope, after a siren of the sea in Greek mythology, will be at its best in Cetus the Whale near Uranus and Ceres this month. This 100-mile-wide main-belt asteroid orbits between Mars and Jupiter at about 6 miles per second relative to Earth, which is about the speed that Saturn orbits the sun. It will only reach 9<sup>th</sup> magnitude, so you would need a telescope to see and appreciate this large chunk of metallic nickel-iron with magnesium and iron silicates. While looking at this asteroid in a telescope you could also see some of the geosynchronous satellites that always orbit the earth at 22,300 miles high. Some of them will reach 4<sup>th</sup> magnitude in October.

Once you find one, turn off the drive on the telescope and you can keep watching them since they always stay over the same spot above the earth as we spin on our axis at about 700 miles per hour at this latitude.

The Orionid meteor showers peaks on Friday night the 21<sup>st</sup> into Saturday morning. Unfortunately the last quarter moon will rise around midnight to spoil some of the show. Try to catch some meteors before that happens or face west in the sky to get away from the rising moon. You can expect about 15 meteors per hour, tiny sand grain-sized particles of Halley's Comet. These meteors are all caused by the earth moving through the debris trail of Halley's Comet. This famous comet also causes the Eta Aquarid meteor shower every May 4<sup>th</sup>. You could also look for a lesser shower, the Southern Taurids, caused by Comet Encke on the 10<sup>th</sup>.

Oct.1. On this day in 1897, the Yerkes 40-inch refractor was dedicated. Designed by George Ellery Hale it was the largest telescope in the world at the time. He also designed the next three large telescopes, each one the largest in the world at the time. His last one was the 200-inch reflector at Mt. Palomar in 1948.

Oct.3. The moon passes near Venus this evening.

Oct. 4. On this day in 1957 Sputnik 1 was launched marking the start of the space age.

Oct.6. The moon passes 4 degrees north of Saturn tonight.

Oct. 7. On this day in 1885 Niels Bohr was born. He was one of the pioneers in the quantum mechanics revolution, which made a lot of our modern technology possible.

Oct. 8. The moon passes near Mars tonight.

Oct. 9. First quarter moon is at 12:33 a.m.EDT. Kepler's supernova was seen on this day in 1604.

Oct. 15. The planet Uranus is at opposition in Pisces tonight, reaching 5.7 magnitude.

Oct. 16. Full moon is at 12:23 a.m. This is also called the Hunter's Moon.

Oct. 21. Dwarf planet Ceres is at opposition tonight in Pisces. The Orionid Meteor Shower peaks.

Oct. 22. Last quarter moon is at 3:14 p.m.

Oct. 25. Venus passes 3 degrees north of Antares tonight in Scorpius.

Oct. 28. The moon passes near Jupiter this morning.

Oct. 30 New moon is at 1:38 p.m.

Oct. 31. On this day in 2005 the Hubble Space Telescope discovered two new moons of Pluto.

Moon Phases

**Oct 9**  
First Quarter

**Oct 16**  
Full

**Oct 22**  
Last Quarter

**Oct 30**  
New

Moon Data

**Oct 3**  
Venus 5° south  
of Moon

**Oct 6**  
Saturn 4° south  
of Moon

**Oct 8**  
Mars 7° south  
of Moon

**Oct 13**  
Neptune 1.2° south  
of Moon

**Oct 15**  
Uranus 3° north  
of Moon

**Oct 16**  
Moon at perigee

**Oct 28**  
Jupiter 1.4° south  
of Moon

**Oct 31**  
Moon at apogee

Submitted by Glenn Chaple



## Sky Object of the Month – October 2016

(Courtesy LVAS Observer's Challenge\*)

### NGC 7479 – Barred Spiral Galaxy in Pegasus (Mag 11.0, Size 4' X 3')

NGC 7479 (the 44<sup>th</sup> entry in Patrick Moore's Caldwell Catalog) is a barred spiral galaxy located in the southwest corner of Pegasus. The accompanying finder chart shows its location about 2 ½ degrees south of the 2<sup>nd</sup> magnitude star Markab. It was discovered in 1784 by William Herschel, who described it as "Considerably bright, much extended, gradually brighter in the middle, 4' long and 2' broad."

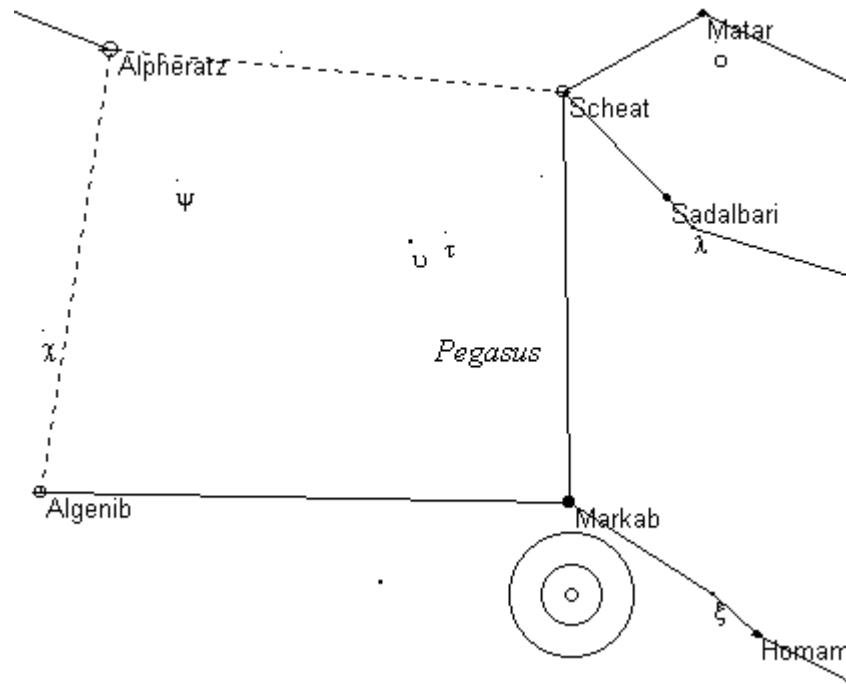
NGC 7479 presents us with a pair of challenges. What is the smallest telescope that can capture the galaxy, and what is the least aperture that will reveal its barred structure? In modern times, NGC 7479 has spawned two supernovae – SN 1990U and SN 2009jf. This huge barred spiral is located about 105 million light years away and is perhaps 20% larger than our Milky Way.



Fort Lewis (CO) College Observatory 16" Schmidt Cassegrain ([www.ftlewis.edu](http://www.ftlewis.edu))

*"Continued on page 4"*

*“Continued from page 3”*



www.star-shine.ch

\*The purpose of the LVAS Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone that is interested, and if you are able to contribute notes, drawings, or photographs, the LVAS will be happy to include them in our monthly summary. If you would like to contribute material, submit your observing notes, sketches, and/or images to either [Roger Ivester \(rogerivester@me.com\)](mailto:rogerivester@me.com) or [Fred Rayworth \(fred@fredrayworth.com\)](mailto:fred@fredrayworth.com). To find out more about the LVAS Observer's Challenge or access past reports, log on to [lvastronomy.com/observing-challenge](http://lvastronomy.com/observing-challenge).

## MEMBERSHIP DUES

Membership fees are for the calendar year beginning in January and ending in December. Dues (see page 10 for prices) 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 10.

### Additional Notice

Dues have to be paid before the December meeting or the members cannot vote or run in the elections for officers for 2017. This is in the By-laws.

**Principal Meteor Showers in 2016**

**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*



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](http://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](http://spaceplace.nasa.gov) to explore space and Earth science!



## One Incredible Galaxy Cluster Yields Two Types of Gravitational Lenses

By Ethan Siegel

There is this great idea that if you look hard enough and long enough at any region of space, your line of sight will eventually run into a luminous object: a star, a galaxy or a cluster of galaxies. In reality, the universe is finite in age, so this isn't quite the case. There are objects that emit light from the past 13.7 billion years—99 percent of the age of the universe—but none before that. Even in theory, there are no stars or galaxies to see beyond that time, as light is limited by the amount of time it has to travel. But with the advent of large, powerful space telescopes that can collect data for the equivalent of millions of seconds of observing time, in both visible light and infrared wavelengths, we can see nearly to the edge of all that's accessible to us.

The most massive compact, bound structures in the universe are galaxy clusters that are hundreds or even thousands of times the mass of the Milky Way. One of them, Abell S1063, was the target of a recent set of Hubble Space Telescope observations as part of the Frontier Fields program. While the Advanced Camera for Surveys instrument imaged the cluster, another instrument, the Wide Field Camera 3, used an optical trick to image a parallel field, offset by just a few arc minutes. Then the technique was reversed, giving us an unprecedentedly deep view of two closely aligned fields simultaneously, with wavelengths ranging from 435 to 1600 nanometers.

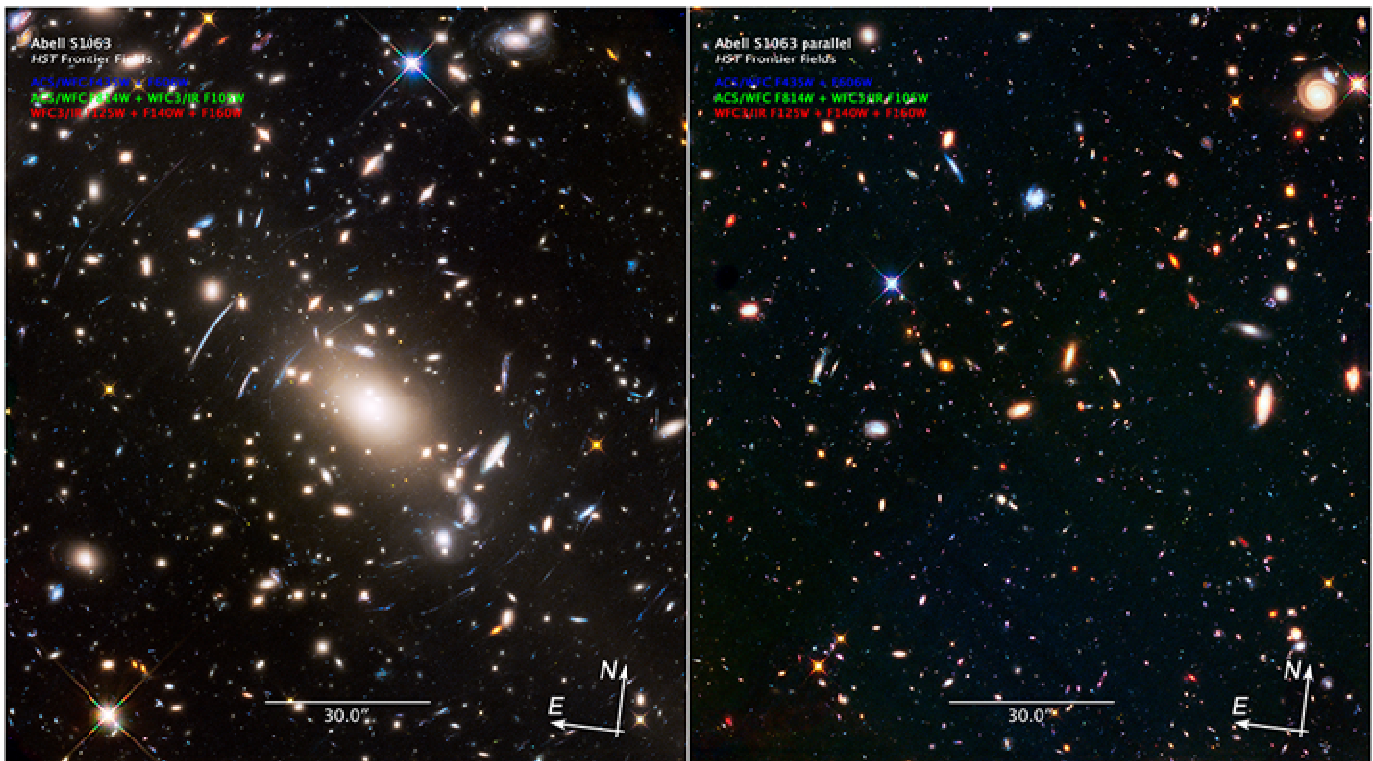
With a huge, towering galaxy cluster in one field and no comparably massive objects in the other, the effects of both weak and strong gravitational lensing are readily apparent. The galaxy cluster—over 100 trillion times the mass of our sun—warps the fabric of space. This causes background light to bend around it, converging on our eyes another four billion light years away. From behind the cluster, the light from distant galaxies is stretched, magnified, distorted, and bent into arcs and multiple images: a classic example of strong gravitational lensing. But in a subtler fashion, the less optimally aligned galaxies are distorted as well; they are stretched into elliptical shapes along concentric circles surrounding the cluster.

A visual inspection yields more of these tangential alignments than radial ones in the cluster field, while the parallel field exhibits no such shape distortion. This effect, known as weak gravitational lensing, is a very powerful technique for obtaining galaxy cluster masses independent of any other conditions. In this serendipitous image, both types of lensing can be discerned by the naked eye. When the James Webb Space Telescope launches in 2018, gravitational lensing may well empower us to see all the way back to the very first stars and galaxies.

*“Continued on page 7”*

*“Continued from page 6”*

If you’re interested in teaching kids about how these large telescopes “see,” be sure to see our article on this topic at the NASA Space Place: <http://spaceplace.nasa.gov/telescope-mirrors/en/>



*Galaxy cluster Abell S1063 (left) as imaged with the Hubble Space Telescope as part of the Frontier Fields program. The distorted images of the background galaxies are a consequence of the warped space due to Einstein's general relativity; the parallel field (right) shows no such effects. Image credit: NASA, ESA and Jennifer Lotz (STScI)*

## Starfest 2016

Photos Submitted by Editor





## Club Meeting & Star Party Dates

Date	Subject	Location
October 7th	<p><b>ASNNE Club Meeting:</b></p> <p><b>7:30-9:30PM:</b> Club Meeting</p> <p><u><b>Meeting Agenda</b></u></p> <p><b>Guest Speaker: Rick Stambaugh.</b> Rick's presentation will be Astronomy and Stamps.</p> <p>Bernie Reim - What's UP</p> <p>Astro Shorts: (news, stories, jokes, reports, questions, observations etc.)</p>	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 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](http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137)

#### Directions to Starfield Observatory [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>



Astronomical Society of Northern New England  
 P.O. Box 1338  
 Kennebunk, ME 04043-1338

**2017 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 \_\_\_\_\_

