

# Skylights

Newsletter of the Astronomical Society of Northern New England



APR 2017



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 April

By Bernie Reim

The month of April is named for aprilis, which mean opening, or aperture. That is what the northern hemisphere of the earth is now doing as this is the first full month of spring. The days are now getting longer and warmer even as the nights are getting shorter and warmer. That makes this a great time to get out under the stars and enjoy the early spring skies and the earth beneath those skies.

There are several good highlights this month, as there are every month. Mercury will be at its highest and brightest for the year in the evening sky during the first week of this month. Jupiter will reach opposition on Friday the 7<sup>th</sup>, Saturn will begin its westward, or retrograde motion one day before that on the way to its own opposition in June, Mars will pass between the Pleiades and Hyades star clusters in Taurus, and Venus will make a dramatic morning appearance rapidly climbing higher into our sky just as it rapidly dropped out of our evening sky towards the end of last month. The Lyrid Meteor Shower peaks on the 22<sup>nd</sup>. Then there will even be a couple of good comets, one of which may even become visible without binoculars. Another bonus this month will be two asteroids visible in Leo, but you will need a small telescope to visit with these primordial objects orbiting the sun between Mars and Jupiter.

Our first and fastest planet, Mercury, will be at its very best for the year during the first few evenings this month. It will reach its greatest eastern elongation from the sun (similar to a last quarter moon) at 19 degrees and it will not set until about 9 pm, which is much later than Mercury would usually set if it is visible at all in the evening sky. Look for it about 15 degrees below and to the right of Mars in the evening sky, in about the same location that Venus was last month.

Mars continues to slowly fade out and move eastward at the rate of one constellation per month, roughly keeping up with our own

progress around the sun. We will not lose Mars completely in our western sky until about one month after summer starts. Like a big cruise ship sailing through the newly opened Northwest Passage, watch closely as Mars cruises between two distinct and interesting star clusters in Taurus, the famous Pleiades or 7 sisters and the less famous Hyades. This will start on the 21<sup>st</sup> and the red planet will finish its remarkable passage (from our perspective) by the end of the month. In reality Mars is now over 200 million miles away, which is about as far away as it can get from us in our respective orbits around the sun. That is about 20 minutes at the speed of light. Mars could get as close as 33 million miles at opposition, which is about 7 times closer than its farthest distance from Earth. The next Mars opposition is not until July of 2018 and the last one was back in May of 2016, so the red planet will still continue to drift farther away from us until about the time summer starts this year.

The Hyades star cluster, which marks the face of Taurus the Bull, contains about 400

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

stars and is only 150 light years away, making it the closest star cluster to Earth. The bright orange star at one end of the Hyades, called Aldebaran, is not part of that cluster since it is only 65 light years away, along our line of sight to the Hyades. The Pleiades, the other cluster that Mars will soon be navigating around, is not related to the Hyades either. The 7 Sisters are about 400 light years away and contain about 500 stars.

The Hyades star cluster is related to the Beehive cluster in Cancer the Crab. Both of those clusters actually came from a common source in our Milky Way galaxy and have been migrating away from that location ever since. We know that based on the age of their stars, their metallicity, and their proper motion around the center of our galaxy.

Since we are always looking back into time as we are looking out into space, we are not seeing the Pleiades the way they look now, but we are seeing them the way they looked when Galileo first pointed a telescope to the sky and started to expand our awareness beyond Earth. Knowing the distance to any star or celestial object in space when you look at it through a telescope, directly ties you in to the history of what was happening on Earth at that time. When you look at the much closer Hyades cluster, be aware that the Civil War in our country was just ending about that time, 150 years ago.

Or you could go deeper into space and look at a galaxy in Leo that is 65 million light years away, remembering that is when the last dinosaur died on earth. A comet or asteroid hit the earth then and its 150-mile-wide crater is visible under the Gulf of Mexico just off the Yucatan Peninsula. They only found that crater less than 30 years ago since it is underwater.

If there is a highly intelligent civilization on a planet around a star in a galaxy that distance from us that can see the surface of Earth through some kind advanced telescope or other instrument, they could see, right now, this very second, exactly what happened to create that great mass extinction. The only problem would be that they could never get that message back to the current humans on Earth because we are now living 65 million years in the future from that critical moment in time.

Jupiter will reach its opposition on Friday, April 7<sup>th</sup>. That means that it will rise exactly at sunset, reach its highest point in our sky at midnight, and not set until sunrise. That is similar to a full moon, which reaches opposition every month while Jupiter and Saturn only reach that once every 13 months or so. That is the best time to view a planet since it will be at its closest and largest and brightest for the year at that time.

Saturn now rises about 1 am and will end its normal, eastward motion one day before Jupiter reaches opposition. Saturn will not reach opposition until June 15.

April 1. Mercury is near Mars in the evening sky.

April 3. First quarter moon is at 2:39 p.m. EDT.

April 6. Saturn is stationary in the sky, starting its retrograde motion the next day.

April 7. The moon passes very close to Regulus this morning. Jupiter is at opposition. The Compton Gamma Ray observatory was deployed on this day in 1991.

April 10. The moon passes near Jupiter this evening.

April 11. Full moon is at 2:08 a.m. This is also called the Grass, Egg, or Pink Moon. Halley's Comet was closest to Earth on this day in 1986.

April 12. Yuri Gagarin became the first human in space on this day in 1961.

April 16. Wilbur Wright was born on this day in 1867. The first flight of a powered aircraft was in 1903 and we flew all the way to the moon just 66 years later.

April 19. Last quarter moon is at 5:57 a.m.

April 22. The Lyrid meteor shower peaks this Saturday morning after midnight. You could see up to 15 meteors per hour, all emanating from the constellation of Lyra. These meteors are caused by the earth passing through the debris trail of Comet Thatcher. These tiny pieces of comet dust will be hitting our upper atmosphere at about 30 miles per second, leaving bright streaks. This is also Earth Day. The first one was in 1970, just after we all saw those great pictures of the earth from space from our first trip to the moon in July of 1969.

April 23. The moon passes near Venus this morning.

April 25. The Hubble Space Telescope was deployed on this day in 1990. It is still up there working great and having taken over a million images and completely transformed our view of the universe. It was a bigger leap in knowledge than we had when Galileo first looked up with his little telescope and discovered things we had never dreamed of, but are now completely taken for granted as obvious science.

April 28. The moon passes near Mars this evening. Jan Oort was born on this day in 1900. The Oort's cloud, the source of all of our comets, was named after him. It forms a huge ring at the very fringes of our solar system from 10,000 to 100,000 a.u. away, which is 10 trillion miles or more than one light year away.

April 29. Venus reaches its greatest brightness in the morning sky at minus 4.7 magnitude.

Moon Phases

**Apr 3**  
First Quarter

**Apr 11**  
Full

**Apr 19**  
Last Quarter

**Apr 26**  
New

Moon Data

**Apr 7**  
Regulus 0.7° north  
of Moon

**Apr 10**  
Jupiter 2° south  
of Moon

**Apr 15**  
Moon at apogee

**Apr 16**  
Saturn 3° south  
of Moon

**Apr 22**  
Neptune 0.2°  
north of Moon

**Apr 23**  
Venus 5° north  
of Moon

**Apr 27**  
Moon at perigee

**Apr 28**  
Mars 6° north  
of Moon

Aldebaran 0.5°  
south of Moon

Submitted by Glenn Chaple

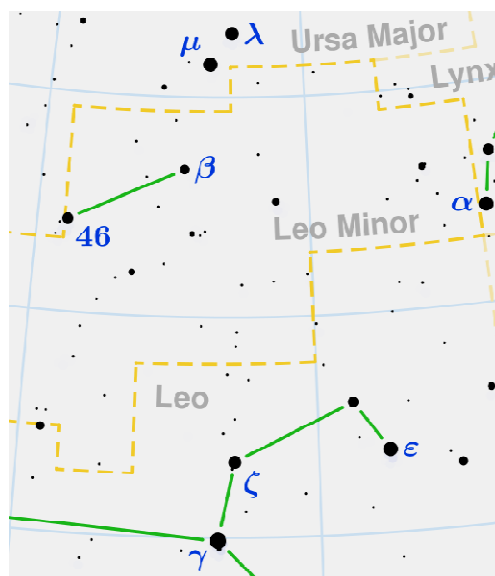


## Sky Object of the Month – April 2017 (Courtesy LVAS Observer's Challenge\*)

NGC 3395-96 – Interacting Galaxies in Leo Minor (Mags. 12.1/12.2; Sizes 1.9' X 1.2' / 2.8' X 1.2')

This month's LVAS Observer's Challenge is a true challenge. NGC 3395 and NGC 3596 are interacting galaxies (catalogued as Arp 270 in Halton Arp's *Atlas of Peculiar Galaxies*) located near the eastern edge of Leo Minor, 1½ degrees SW of the 4<sup>th</sup> magnitude star 46 Leo Minoris. The first challenge is in seeing them at all. Each galaxy is a 12<sup>th</sup> magnitude object and will require exceptionally dark skies if you choose to tackle them with a telescope of 6-inch aperture or less. For owners of medium-sized instruments (8 to 12 inches), the challenge is in picking out detail in each. In his "Deep Sky Wonders" column in *Sky and Telescope*, Walter Scott Houston wondered if the bridge between these galaxies might be picked up in a 30-inch scope. Can it be detected in a scope half that size? The challenge is yours!

NGC 3395 and NGC 3396 were discovered by William Herschel on December 7, 1785. Studies indicate a distance of anywhere from 72 to 85 million light years.

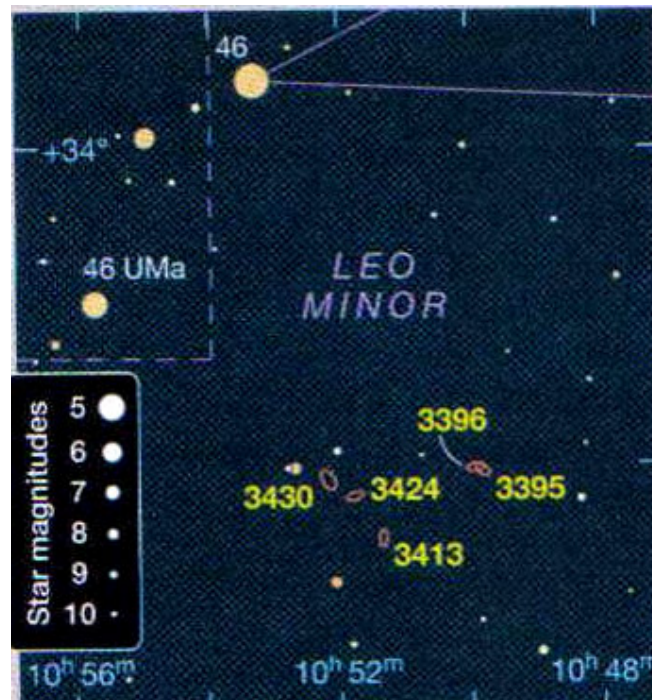


wikipedia.org

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Sky and Telescope



greggsastronomy.com



\*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).

**Principal Meteor Showers in 2017**

**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.**

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## What It's Like on a TRAPPIST-1 Planet

By Marcus Woo

With seven Earth-sized planets that could harbor liquid water on their rocky, solid surfaces, the TRAPPIST-1 planetary system might feel familiar. Yet the system, recently studied by NASA's Spitzer Space Telescope, is unmistakably alien: compact enough to fit inside Mercury's orbit, and surrounds an ultra-cool dwarf star—not much bigger than Jupiter and much cooler than the sun.

If you stood on one of these worlds, the sky overhead would look quite different from our own. Depending on which planet you're on, the star would appear several times bigger than the sun. You would feel its warmth, but because it shines stronger in the infrared, it would appear disproportionately dim.

"It would be a sort of an orangish-salmon color—basically close to the color of a low-wattage light bulb," says Robert Hurt, a visualization scientist for Caltech/IPAC, a NASA partner. Due to the lack of blue light from the star, the sky would be bathed in a pastel, orange hue.

But that's only if you're on the light side of the planet. Because the worlds are so close to their star, they're tidally locked so that the same side faces the star at all times, like how the Man on the Moon always watches Earth. If you're on the planet's dark side, you'd be enveloped in perpetual darkness—maybe a good thing if you're an avid stargazer.

If you're on some of the farther planets, though, the dark side might be too cold to survive. But on some of the inner planets, the dark side may be the only comfortable place, as the light side might be inhospitably hot.

On any of the middle planets, the light side would offer a dramatic view of the inner planets as crescents, appearing even bigger than the moon on closest approach. The planets only take a few days to orbit TRAPPIST-1, so from most planets, you can enjoy eclipses multiple times a week (they'd be more like transits, though, since they wouldn't cover the whole star).

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Looking away from the star on the dark side, you would see the outer-most planets in their full illuminated glory. They would be so close—only a few times the Earth-moon distance—that you could see continents, clouds, and other surface features.

The constellations in the background would appear as if someone had bumped into them, jostling the stars—a perspective skewed by the 40-light-years between TRAPPIST-1 and Earth. Orion's belt is no longer aligned. One of his shoulders is lowered.

And, with the help of binoculars, you might even spot the sun as an inconspicuous yellow star: far, faint, but familiar.

Want to teach kids about exoplanets? Go to the NASA Space Place and see our video called, “Searching for other planets like ours”: <https://spaceplace.nasa.gov/exoplanet-snap/>



*This artist's concept allows us to imagine what it would be like to stand on the surface of the exoplanet TRAPPIST-1f, located in the TRAPPIST-1 system in the constellation Aquarius. Credit: NASA/JPL-Caltech/T. Pyle (IPAC)*



## Astro Photo

**Canon Powershot SX50 HS**

**Photo Submitted by Editor**

### **Comet 41P Tuttle-Giacobini-Kresák**

*One 4 minute exposure, ISO 1600, 200mm lens focal length*

This a single image taken of the comet (lower center). The photo was enhanced in Photoshop to bring out its contrast. Not bad for a point-and-shoot camera. The comet was first discovered in 1858 by Horace Parnell Tuttle of the Harvard College Observatory, Cambridge, Massachusetts. Closest approach in 2017 will be on 01 April and will be the closest encounter with Earth for over a century at a distance of 0.14AU (13.67 million miles). The comet will be circumpolar (visible all night) throughout April spending much of its time in Draco.





## Club Meeting & Star Party Dates

Date	Subject	Location
April 7	<p><b>ASNNE Club Meeting:</b></p> <p><b>7:30-9:30PM</b></p> <p><b><u>Meeting Agenda</u></b></p> <p><b>Guest Speaker:</b> Gary Asperschlager. Astronomy Software — observing aids and star atlases.</p> <p>Bernie Reim - What's UP</p> <p>Astro Shorts - (news, stories, jokes, reports, questions, photos, observations etc.)</p>	The New School, Kennebunk, Me.
TBD	Club/Public Star Party ( <i>Check List-serve / website for updates or cancellations</i> )	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 \_\_\_\_\_

