

Skylights

Newsletter of the Astronomical Society of Northern New England



FEB 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 February

By *Bernie Reim*

The month of February was named after the Roman festival of purification, named Februa. We are already half way through winter since Ground Hog Day on the second happens 6 weeks after the winter solstice. Winter is actually the shortest season each year, lasting about one day less than summer because the earth is now near its closest to the sun on its slightly elliptical orbit and therefor moving a little faster than in summer.

Our average speed around the sun is 18.6 miles per second or about 67,000 mph. At that speed you could get all the way out to California in just under 3 minutes. You could travel the circumference of the earth, which is about 25,000 miles in just 22 minutes. Travel time would never be a problem again and you could go anywhere on Earth almost instantaneously. That may seem fast, but it is still crawling compared to the speed of light, which is exactly 10,000 times faster than 18.6 miles per second. Then you could travel around the earth 7 and a half times every second, which is too fast to be practical for humans, but all of our data and our radio waves, are always traveling at that speed.

There are several interesting highlight to see and enjoy and understand this month if you are willing to spend some time under the stars and try to get a better sense of where we really are. Brilliant Venus dominates the evening sky, now shining at its brightest in 5 years. Look for shadows on the snow cast by this planet on a moonless night. Mars is close by and Jupiter now rises before midnight. There are several nice conjunctions with the moon and planets and Comet 45P Honda-Mrkos-Pajdusakova is still visible in binoculars in Aquarius, near Venus. We are also entering another eclipse season. We will experience a deep penumbral lunar eclipse which we can see and an annular eclipse that will be too far south for us to see two weeks later.

This will also be the last eclipse season before the great event of the August 21 total

solar eclipse, which will carve a narrow path all the way from the west coast to the east coast of our country. I will give you far more details on that eclipse, the first one in nearly 100 years to completely cross our country, within the next 6 months.

Venus will reach its brightest and highest point in our sky early this month when it will be 40 degrees above the horizon at sunset and not set until nearly 4 hours after the sun. Then our sister planet begins to decline again and it will set just under 3 hours after sunset by the end of the month. Through a telescope you will notice that its phases go through a dramatic change, from nearly half lit by the sun at the start of the month to being only 18% lit just 28 days later.

Mars can still be seen just to the left and above Venus. This pair of our closest neighboring planets will be only 5 degrees apart on the first of February. Then they will drift apart again, reaching a separation of 12 degrees by the end of the month. Orange Mars continues to fade a little as Earth keeps getting farther ahead of it in our faster orbit

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around the sun. On the other hand, Venus keeps getting closer to Earth and it will finally sink below our western horizon in late spring. Glowing with a soft orange light at a magnitude of 1.2, Mars is now fully 6 magnitudes or 250 times fainter than brilliant Venus in our evening sky.

Jupiter starts the month rising at 11 pm and ends it rising by 9 pm. The king of the planets will reach opposition by early April when it will rise at sunset. Watch as it brightens in our sky as it slowly gets closer and closer to us in its respective orbit. What is especially interesting about Jupiter now is that it will reach aphelion, or its farthest point from the sun, on the 17th. The king of the planets only does this once every 12 years, since that is how long it takes to complete one orbit around the sun. That allows it to spend exactly one year in each of our 12 zodiac constellations. That is not a smooth eastward path, since it makes a retrograde loop for about 4 months in one of these constellations each year. That will happen on the 6th of this month. Jupiter will appear stationary that day and the very next day it will be moving westward in the constellation of Virgo until it reverses direction once more in early June. That is just an illusion, since all of the planets are actually continuously orbiting counterclockwise around the sun all the time. They only appear to go retrograde at different times because we are in the same plane and moving faster than the superior planets and slower than the inferior planets of Mercury and Venus. The nearly full moon will be very close to Jupiter one hour before sunrise on the 15th.

Then Saturn rises about 3 hours before sunrise in Scorpius. It will be about 20 degrees to the left of orange Antares, which is about half a magnitude fainter than Saturn. A waning crescent moon will be close to the ringed planet on the 21st.

Mercury can be seen low in the morning sky for the first 3 weeks of this month.

There will be a deep penumbral eclipse on the evening of Friday the 10th, starting soon after the moon rises. Penumbral means that the moon will only pass through the less dense part of our shadow, so it will be hard to see unless you have binoculars or a telescope or a good telephoto lens to photograph the subtle shading. Our shadow always stretches about one million miles into space. Things

get really interesting when these shadows intersect with solid objects like the earth and the moon.

Just two weeks later there will be an annular eclipse of the sun, but you need to be in the right part of South America and Africa to see this one.

Feb.3. First quarter moon is at 11:19 p.m. EST.

Feb. 4. Clyde Tombaugh was born on this day in 1906. He would discover Pluto later that same month when he was only 24 years old.

Feb. 5. The moon will be near the Pleiades and Aldebaran in Taurus tonight.

Feb. 8. Jules Verne was born on this day in 1828.

Feb. 10. Full moon is at 7:33 p.m. This is also called the Snow or Hunger Moon. A penumbral lunar eclipse happens this evening as the full moon enters part of our shadow.

Feb. 11. The moon is near Regulus in Leo this evening.

Feb. 14. On this day in 1990 Voyager 1 took a portrait of the planets in our solar system from deep space.

Feb. 15. Galileo was born on this day in 1564. He was the first to turn a telescope to the heavens in 1609 and he discovered many things like rings of Saturn, phases of Venus, sunspots on the sun, moons of Jupiter, and many others.

Feb. 17. Venus is illuminated to its greatest extent for the year tonight.

Feb. 18. Last quarter moon is at 2:33 pm. Pluto was discovered in this day in 1930.

Feb. 19. Nicholas Copernicus was born on this day in 1473. He is sometimes called the father of modern astronomy because he figured out that all of the planets orbit around the sun and that we live in a heliocentric solar system and not a geocentric one, which was our mindset for nearly 1000 years before that time. The MIR space station was launched on this day in 1986. It would last 15 years in space.

Feb.20. On this day in 1962 John Glenn would become the first American to orbit the earth and only the second human after Yuri Gagarin accomplished this great feat with the help of many people on the ground on April 12 of 1961.

Feb. 23. Supernova 1987A exploded on this day in the Large Magellanic Cloud, a satellite galaxy of our own Milky Way. Pioneer 11 leaves our solar system on this day in 1990.

Feb. 26. New moon is at 9:58 p.m. Annular solar eclipse over South America and Africa today.

Moon Phases

Feb 3
First Quarter

Feb 10
Full

Feb 18
Last Quarter

Feb 26
New

Moon Data

Feb 2
Uranus 3° north
of Moon

Feb 5
Aldebaran 0.2°
south of Moon

Feb 6
Moon at perigee

Feb 11
Regulus 0.8° north
of Moon

Feb 15
Jupiter 3° south
of Moon

Feb 18
Moon at apogee

Feb 20
Saturn 4° south
of Moon

Feb 28
Venus 10° north
of Moon

Submitted by Glenn Chaple



Sky Object of the Month – February 2017 (Courtesy LVAS Observer’s Challenge*)

h3945 – Double Star in Canis Major (Mags. 5.0 + 5.8; Sep. 26.4”; P.A. 52° (2008)

What is the most colorful double star in the night sky? Most amateur astronomers would vote for Albireo (beta [b] Cygni. Others might cite gamma (g) Andromedae, iota (i) Cancri, xi (x) Bootis, or eta (η) Cassiopeiae. Sadly overlooked is a double star that might challenge them all – h 3945 in Canis Major. It is arguably the most colorful double star in the winter sky and, in fact, has been nick-named the “Winter Albireo.”

h3945 (aka 145 Canis Majoris) is one of more than 5500 double stars catalogued by John Herschel (William’s son) in the early 1800s. The magnitude 5.0 primary is accompanied by a 5.8 magnitude companion 26.4 arc-seconds away. Their spectral types (K3 and F0) give rise to a stunning color contrast. In her book *Double Stars for Small Telescopes*, Sissy Haas writes, “Showcase pair: A bright, wide, and easy pair with deep colors. The stars are bright citrus orange and royal blue; these colors are seen vividly and in strong contrast.” In early 2008, 3945 was the subject of a forum on the Cloudynights website. The general consensus was that this is one of the most beautiful double stars in the night sky. That was my thought when I included h3945 in a “Top 100 Doubles” series written for *Deep Sky Magazine* in 1983.

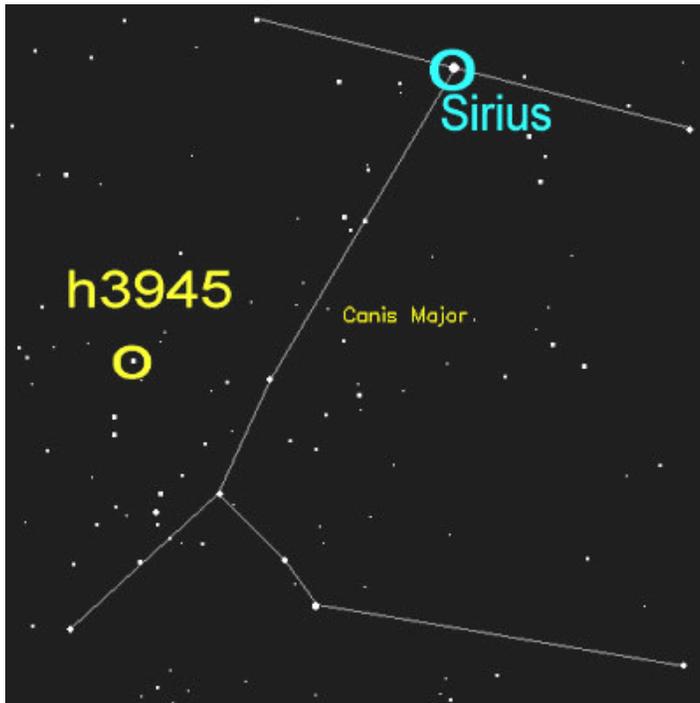
Despite these kudos, h3945 still gets the cold shoulder from most backyard astronomers. In the February, 1980, issue of *Deep Sky*, I described h3945 as “one of the most colorful, yet underrated, double stars in the heavens.” Richard Dibon-Smith, on his *Constellation Web Page* (www.dibonsmith.com) concurs, noting that, “h3945 is a gorgeous yet rather unknown binary.” In the *Cambridge Double Star Atlas*, co-author James Mullaney laments that h3945 is “Largely unknown & unobserved – a pity!”

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Why would such a beautiful double star be so grossly ignored? There are two parts to the answer - h3945 is in a southerly location, and it isn't as bright and easily located as Albireo or Almach. The first isn't a problem if your observing site affords a clear view of the lower half of Canis Major. Because h3945 is marginally visible to the naked eye from mildly light-polluted suburban skies, the accompanying finder chart will help you find it.

Sissy Haas, Richard Dibon-Smith, James Mullaney, your truly, plus a batch of backyard astronomers on the Cloudynights website have all raved about h3945. Now it's your turn to experience one of the night sky's true gems.



whassupinthemilkyway.blogspot.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.

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



***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.

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Comet Campaign: Amateurs Wanted

By Marcus Woo

In a cosmic coincidence, three comets will soon be approaching Earth—and astronomers want you to help study them. This global campaign, which will begin at the end of January when the first comet is bright enough, will enlist amateur astronomers to help researchers continuously monitor how the comets change over time and, ultimately, learn what these ancient ice chunks reveal about the origins of the solar system.

Over the last few years, spacecraft like NASA's Deep Impact/EPOXI or ESA's Rosetta (of which NASA played a part) discovered that comets are more dynamic than anyone realized. The missions found that dust and gas burst from a comet's nucleus every few days or weeks—fleeting phenomena that would have gone unnoticed if it weren't for the constant and nearby observations. But space missions are expensive, so for three upcoming cometary visits, researchers are instead recruiting the combined efforts of telescopes from around the world.

"This is a way that we hope can get the same sorts of observations: by harnessing the power of the masses from various amateurs," says Matthew Knight, an astronomer at the University of Maryland.

By observing the gas and dust in the coma (the comet's atmosphere of gas and dust), and tracking outbursts, amateurs will help professional researchers measure the properties of the comet's nucleus, such as its composition, rotation speed, and how well it holds together.

The observations may also help NASA scout out future destinations. The three targets are so-called Jupiter family comets, with relatively short periods just over five years—and orbits that are accessible to spacecraft. "The better understood a comet is," Knight says, "the better NASA can plan for a mission and figure out what the environment is going to be like, and what specifications the spacecraft will need to ensure that it will be successful."

The first comet to arrive is 41P/Tuttle-Giacobini-Kresak, whose prime window runs from the end of January to the end of July. Comet 45P/Honda-Mrkos-Pajdusakova will be most visible between mid-February and mid-March. The third target, comet 46P/Wirtanen won't arrive until 2018.

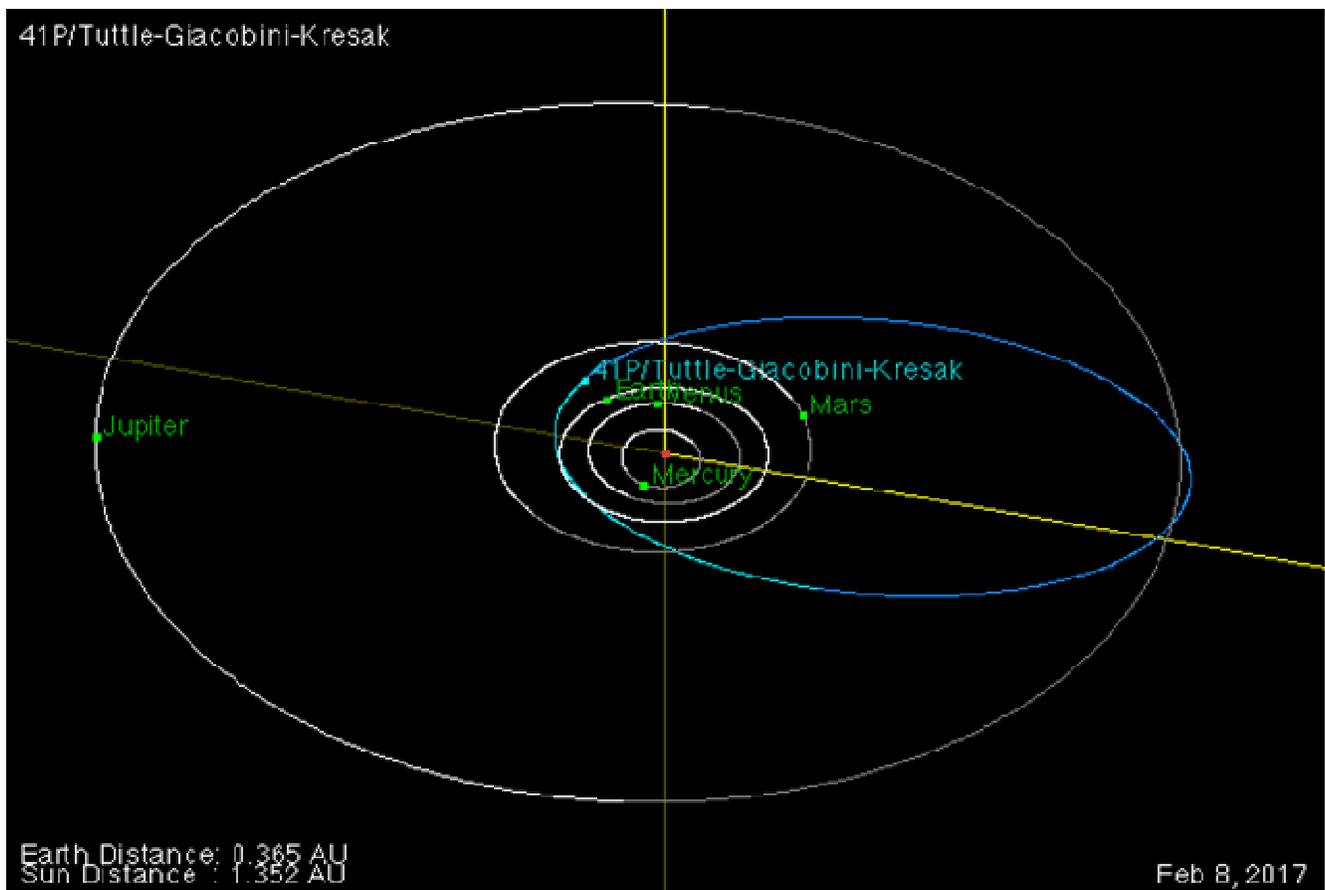
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Still, the opportunity to observe three relatively bright comets within roughly 18 months is rare. "We're talking 20 or more years since we've had anything remotely resembling this," Knight says. "Telescope technology and our knowledge of comets are just totally different now than the last time any of these were good for observing."

For more information about how to participate in the campaign, visit <http://www.psi.edu/41P45P46P>.

Want to teach kids about the anatomy of a comet? Go to the NASA Space Place and use Comet on a Stick activity! <http://spaceplace.nasa.gov/comet-stick/>



An orbit diagram of comet 41P/Tuttle-Giacobini-Kresak on February 8, 2017—a day that falls during the comet's prime visibility window. The planets orbits are white curves and the comet's orbit is a blue curve. The brighter lines indicate the portion of the orbit that is above the ecliptic plane defined by Earth's orbital plane and the darker portions are below the ecliptic plane. This image was created with the Orbit Viewer applet, provided by the Osamu Ajiki (AstroArts) and modified by Ron Baalke (Solar System Dynamics group, JPL). <http://ssd.jpl.nasa.gov/sbdb.cgi?orb=1;sstr=41P>

Astro Photos - Canon Powershot SX50 HS

Photos Submitted by Editor

Pleiades (11-1-16)

Four images stacked & edited - 4min each, ISO 1250, 600mm, cropped



M42 & NGC 1973 (1-1-17)

Four images stacked & edited - 4min each w/1-30sec mask, ISO 1600, 1000mm



Club Meeting & Star Party Dates

Date	Subject	Location
Feb. 3rd	<p>ASNNE Club Meeting:</p> <p>7:30-9:30PM: Club Meeting</p> <p><u>Meeting Agenda</u></p> <p>Guest Speaker: Joan Chamberlin - Night Sky Network Tool Kit Presentation.</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 (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

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 _____

