



THE LOS ANGELES ASTRONOMICAL SOCIETY

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THE BULLETIN

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Mare Imbrium is the dark lava filled area at the left of the image. It's surrounded by mountains that were created when an object struck the Moon. Mare Imbrium with its ancient lava flow is also thought to have been created by the same impact. The object could have been a meteor or comet.

Photo Credit: Ray Blumhorst

Upcoming Virtual Club Events

Board Meeting; Feb. 3, 2021
General Meeting; Feb. 8, 2021
Dark Sky Night—Cancelled

New Contact Info For 2021?

If you have recently moved, changed your email address or phone number, please contact our club secretary at

secretary@laas.org.

LAAS Election Results for 2021

President: Curtis Byrom

Cbyrom484@yahoo.com

Vice President: Alecia Hurst

hurst.alecia@gmail.com

Treasurer: John O'Bryan, Jr.

treasurer@laas.org

Secretary: Spencer Sohoo

secretary@laas.org

Board Members;

Yakerson, David (New)

Gonzalez, Ralph (New)

Dooley, Darrell

Phipps, Joe

Thompson, Tim

Hayford, Mike

Thompson, Greg

Gilchrist, Kevin

If you missed the last general meeting, you can watch it here, on Youtube:

Link: https://www.youtube.com/watch?v=r2JTepnC_n4



NSN Event: Perseverance Landing Watch Party

The NASA Night Sky Network community (if you're reading this, that's you!) will be gathering on **Thursday, February 18 at 11am PT (2pm ET)** for an interactive community watch party for the landing of the Perseverance rover on Mars.

Let's get together virtually to share the excitement of Mars exploration. While watching the landing unfold live on [NASA TV](#), we will gather to experience the occasion as a community. Not our usual monthly webinar, this interactive event features guest speakers, trivia, games, and hearing from Night Sky Network members about how we incorporate Mars into our outreach events, including imagery, see below.

Preliminary schedule, *more details to come!*

11am PT/2pm ET Welcome
 11:30 PT/2:30 ET Brian Day, Mars Trek
 12:30ish PT/3:30-ish ET Perseverance lands
 1pm PT/4pm ET Watch Party winds down (You don't have to go home, but you can't stay here...)

We will feature NSN member images of Mars. If you have an image of Mars you would like to share with the group, send it to us as a email attachment at nightskyinfo@astrosociety.org with the subject line **"Watch Party"**.

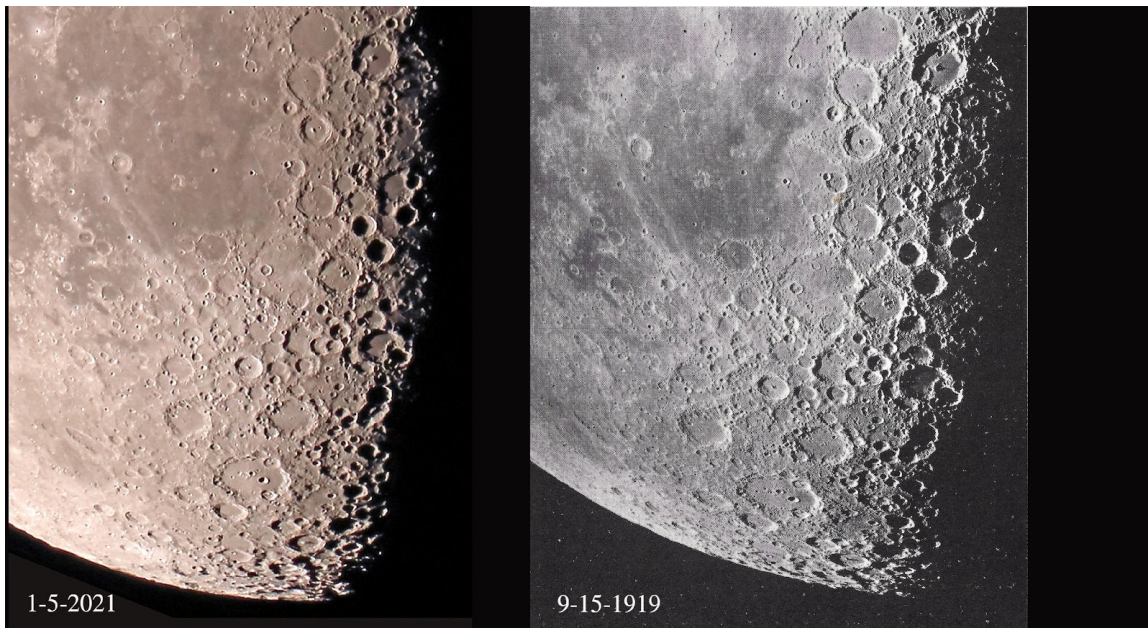
This event is intended for astronomy club members specifically, and is not a public event. It will be **interactive** and we can talk with each other. Join us for a few minutes or the whole time. Night Sky Network members can [preregister for this event on Zoom](#).

[Watch the landing on NASA TV](#)
[Perseverance Rover Mission Website](#)
[How to watch the landing](#)

How Much Has The Moon Changed In 101 Years?

By Ray Blumhorst

Well, there's no weather on the Moon so there's not much change at all. I was reading an old book by the founder of Mt. Wilson Observatory, George Ellery Hale titled "The New Heavens" and saw a picture on Pg. 28 of an area of the Moon that looked very similar to an image I took on January 5, 2021.



The image in the book was dated September 15, 1919 (over 101 years ago) and the book was published by Charles Scribner's Sons, 1920, 1921, 1922. The picture in the book was taken with the 100-inch telescope at Mt. Wilson Observatory and mine was taken with a 6-inch Explore Scientific refractor in my backyard. MWO used photographic technology available at that time. I used today's digital technology. As you can see by the position of the terminator line in both of these pictures, the phase of the moon at the time these two images were taken is the same, or very close to the same with around 60% illumination of the Moon.

I did observe that craters at the bottom of my image appear to be more tilted up than craters at the bottom of the old image, but I just attribute that to "lunar wobble." Yes, the Moon wobbles, but that's another story.

And as far as comparing my telescope's visual results to the 100-inch telescope at Mt. Wilson Observatory, well, that's about like comparing my performance in a sprint race to an Olympic Gold Medalist. We might be equal at the first step and there the comparison ends. The Moon is the closest and arguably the easiest object in our cosmos to image so more distant objects (with ideal seeing conditions) look a lot better in a bigger telescope.



If you're interested in purchasing the book, here's where to find it on Amazon.com.

<https://tinyurl.com/y3kcf4a4>

Lunacy In December

By Dave Nakamoto

All photos were taken using an Orion 7-inch f/15 Masutov telescope on a Skyview Pro mount. I used an Orion G10 camera for wide-angle views, and a Celestron NexImage10 camera for narrow-angle views. I took videos, then stacked several hundred frames of each through Registax v6 to produce the final image. I used Registax's wavelet filter, then used noise removal filters and unsharp masking in Paint Shop Pro.

Here is a stitch of two images taken on Dec 20th using the G-10 camera. Most of the exciting stuff is near the Terminator, the border between the lighted part of the moon on the right, and the lunar night on the left.



On Dec 21st, I used the NexImage-10 camera for these close-ups, sometime sampling a small part of the detector to get closer. Aristoteles is the large crater, with Euxodus below it. Love the splash pattern around Aristoteles, and the shadows everywhere.



Closeup of Aristoteles and Euxodus. This photo and those following are blurry because the air turbulence, called Seeing, was pretty bad at this magnification. This is why increasing magnification doesn't always produce a better view, and does not allow you to see more detail.



Closeup of the buried crater Posidonius, nestled between Mare Serenitatus to the left and south, and Lacus Somniorum to the north. Although blurry due to Seeing, there are wonderful details that can be seen here, although no more than can be seen at a lower magnification, and finer details are blurred out. Note the low ridges on Serenitatus on the left side.



Euxodus is the large crater to the right. Cassini is the large crater half in shadow at the edge of the Terminator, the border between the lighted part to the right, and lunar night to the left. I love the detail caused by the very shallow Sun angle here.



Photo Credit: Dave Nakamoto



Want to learn more about the Moon?

Resources:

Video: Tour Of The Moon 4K: <https://solarsystem.nasa.gov/news/812/10-things-what-we-learn-about-earth-by-studying-the-moon/>

Video: In Depth: Earth's Moon: <https://solarsystem.nasa.gov/moons/earths-moon/in-depth/>

Lunar Phases and Eclipses: <https://solarsystem.nasa.gov/moons/earths-moon/lunar-phases-and-eclipses/>

10 Things: Moon Photography Tips: <https://moon.nasa.gov/news/58/10-things-moon-photography-tips/oon:>

Teach Children About the Moon: <https://www.mensaforkids.org/teach/lesson-plans/the-moon/>

Landing On Mars: A Tricky Feat!

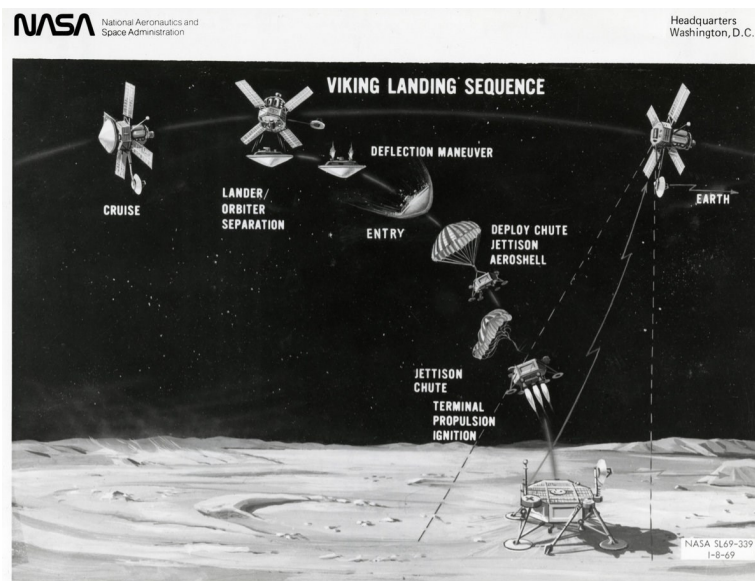
By David Prosper

The Perseverance rover and Ingenuity helicopter will land in Mars's Jezero crater on February 18, 2021, NASA's latest mission to explore the red planet. Landing on Mars is an incredibly difficult feat that has challenged engineers for decades: while missions like Curiosity have succeeded, its surface is littered with the wreckage of many failures as well. Why is landing on Mars so difficult?

Mars presents a unique problem to potential landers as it possesses a relatively large mass and a thin, but not insubstantial, atmosphere. The atmosphere is thick enough that spacecraft are stuffed inside a streamlined aeroshell sporting a protective heat shield to prevent burning up upon entry - but that same atmosphere is not thick enough to rely on parachutes alone for a safe landing, since they can't catch sufficient air to slow down quickly enough. This is even worse for larger explorers like Perseverance, weighing in at 2,260 lbs (1,025 kg). Fortunately, engineers have crafted some ingenious landing methods over the decades to allow their spacecraft to survive what is called Entry, Descent, and Landing (EDL).

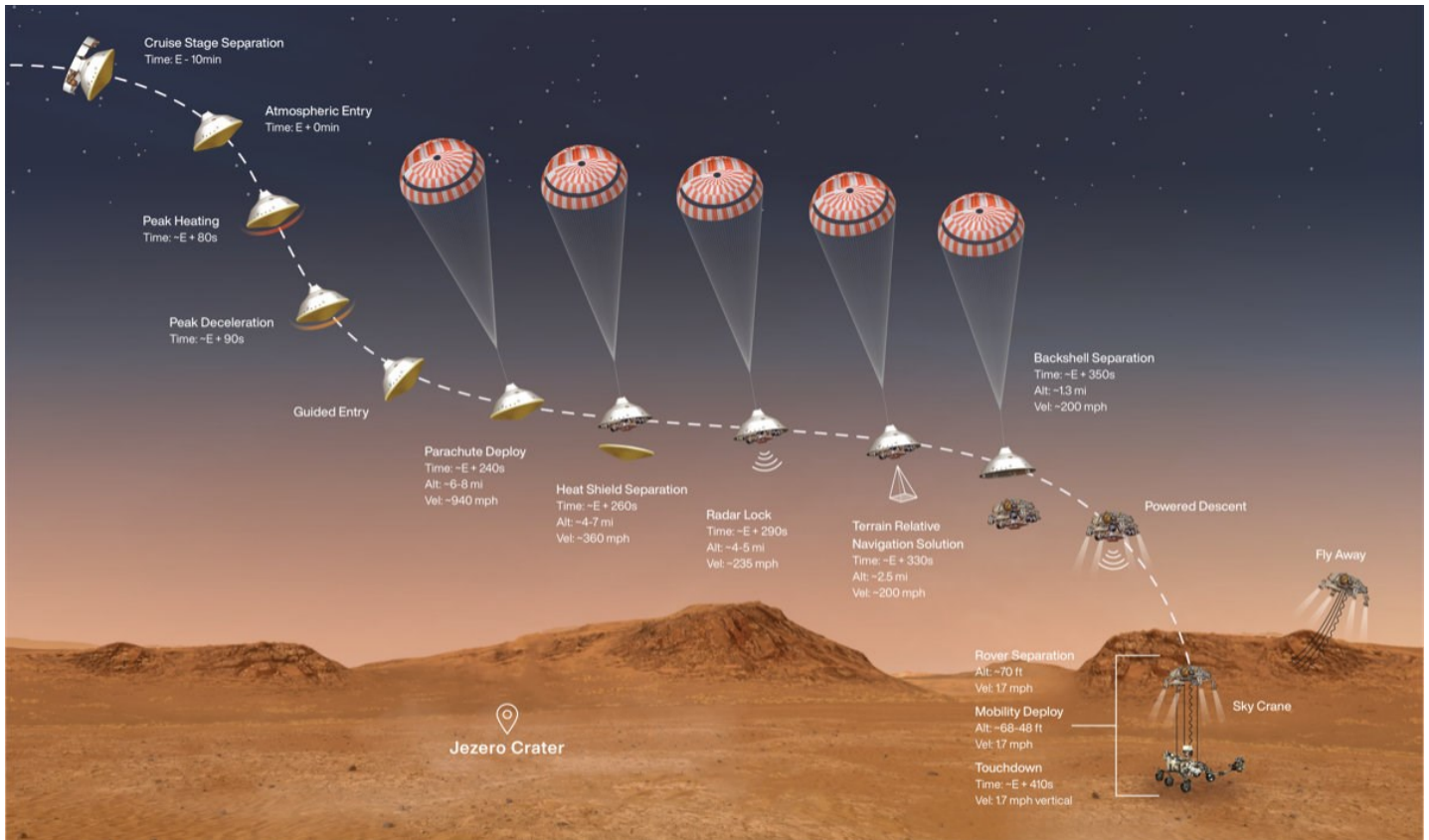
The Viking landers touched down on Mars in 1976 using heat shields, parachutes, and retrorockets. Despite using large parachutes, the large Viking landers fired retrorockets at the end to land at a safe speed. This complex combination has been followed by almost every mission since, but subsequent missions have innovated in the landing segment. The 1997 Mars Pathfinder mission added airbags in conjunction with parachutes and retrorockets to safely bounce its way to a landing on the Martian surface. Then three sturdy "petals" ensured the lander was pushed into an upright position after landing on an ancient floodplain. The Opportunity and Spirit missions used a very similar method to place their rovers on the Martian surface in 2004. Phoenix (2008) and Insight (2018) actually utilized Viking-style landings. The large and heavy Curiosity rover required extra power at the end to safely land the car-sized rover, and so the daring "Sky Crane" deployment system was successfully used in 2012. After an initial descent using a massive heat shield and parachute, powerful retrorockets finished slowing down the spacecraft to about 2 miles per hour. The Sky Crane then safely lowered the rover down to the Martian surface using a strong cable. Its job done, the Sky Crane then flew off and crash-landed a safe distance away. Having proved the efficacy of the Sky Crane system, NASA will use this same method to attempt a safe landing for Perseverance this month!

You can watch coverage of the Mars Perseverance landing starting at 11:00 AM PST (2:00 PM EST) on February 18 at nasa.gov/nasalive. Touchdown is expected around 12:55 PM PST (3:55 PM EST). NASA has great resources about the Perseverance Rover and accompanying Ingenuity helicopter on mars.nasa.gov/mars2020. And of course, find out how we plan to land on many different worlds at nasa.gov.



Illustrations of the Entry, Descent, and Landing (EDL) sequences for Viking in 1976, and Perseverance in 2021. (See next page.)

Despite the wide gap between these missions in terms of technology, they both performed their landing maneuvers automatically, since our planets are too far apart to allow Earth-based engineers to control them in real time! (NASA/JPL/Caltech)



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.gov to find local clubs, events, and more!



NASA leadership and members of the mission will discuss the agency's latest rover, which touches down on the Red Planet on Feb. 18.

NASA is hosting a media briefing on Wednesday, Jan. 27, at 4:30 p.m. EST (1:30 p.m. PST) to discuss the upcoming landing of the Mars 2020 Perseverance rover. The event will air live on NASA TV, the agency's [website](#), and [YouTube](#).

Perseverance lands Feb. 18, carrying new science instruments and technologies, including the Ingenuity Mars Helicopter on its belly. Perseverance will use a drill on the end of its robotic arm to capture rock and regolith (broken rock and dust) samples in metal tubes, which will be deposited on the surface of Mars for a future mission to collect and return to Earth. The rover will seek signs of ancient life on the Red Planet as a primary goal.

Source: <https://tinyurl.com/y5xxpage>

M42 - Orion Nebula

By Nasir Jeevanjee



Less than 2 hrs of narrowband (Ha/O3/S2) imaging from backyard. Processed with hubble palette color scheme.

The Orion Nebula, catalogued as Messier 42 or NGC 1976, is one of the brightest nebulae in the sky, and one of the nearest star-forming regions to Earth. It is rewarding in telescopes of every size, and is perhaps the most studied and photographed object in the sky. M 42 is visible to the naked eye as a hazy patch surrounding Theta Orionis, the middle star in the Sword of Orion, just south of Orion's Belt.

M 42 is the closest region of massive star formation to Earth. The youngest and brightest stars we now see in the Orion Nebula are thought to be less than 100,000 years old. Some of these newborn stars are particularly massive, and emit large quantities of ionizing ultraviolet radiation. The ultraviolet light of these hot stars causes the nebula to glow by fluorescence.

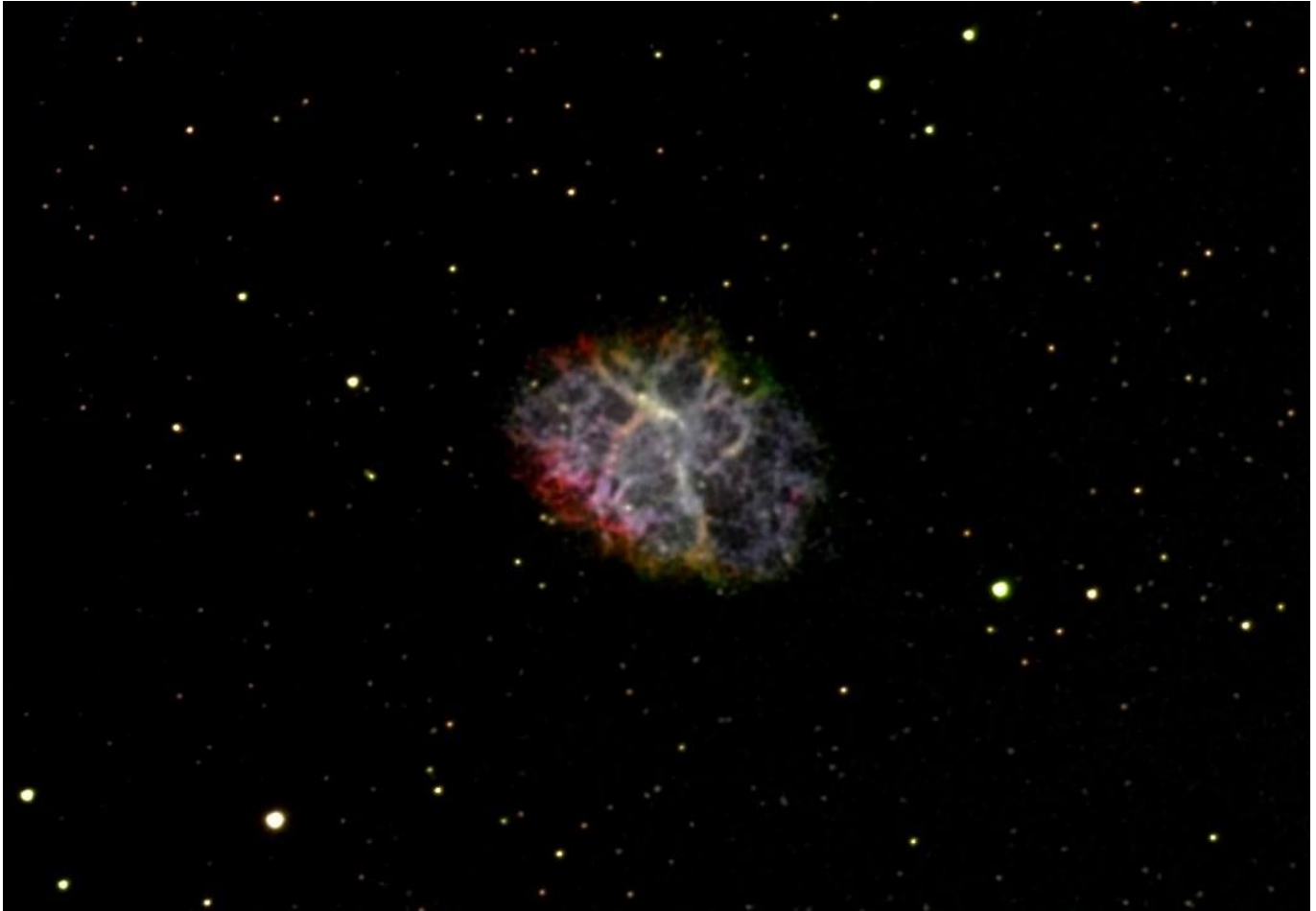
It is very easy to find the Orion Nebula. M 42 is visible to the naked eye under good conditions as a faint nebulosity surrounding Theta Orionis, the middle star in the sword of Orion.

The Trapezium multiple star complex is among the most recent products of star formation in the Orion Nebula.

Photo Credit: Nasir Jeevanjee

Crab Nebula - M1

By Nasir Jeevanjee



M1 Crab Nebula image from backyard using Ha/S2/O3 filters and using R/G/B colors for corresponding filters. Exposure length about 5 hours total for three filters.

Messier 1, the Crab Nebula, is the most famous and conspicuous supernova remnant in the sky. It is the centuries-old wreckage of a stellar explosion first noted by Chinese astronomers in 1054. The Crab Pulsar, a neutron star rotating 30.2 times per second, now lies the center of the nebula.

The supernova that created the Crab Nebula (SN 1054) was first noted as a "guest star" by Chinese astronomers on July 4, 1054 A.D. According to the Chinese records, it reached a peak magnitude of -6 (four times brighter than Venus!), was visible in the daylight for 23 days, and seen in the night sky for 653 days. Petroglyphs found in Navaho Canyon and White Mesa in Arizona and in the Chaco Canyon National Park in New Mexico appear to be depictions of the event by the Anasazi Indians.

Charles Messier independently found it in 1758, when he was looking for Halley's comet on its first predicted return. Messier first thought he had found a comet, but he soon recognized that it did not move. His discovery of this object led him to compile his famous catalog of comet-like objects, for preventing their confusion with comets. Messier catalogued the nebula as the first entry in his list

Photo Credit: Nasir Jeevanjee

M108 Galaxy and the Owl Nebula (M97)

By Brian Paczkowski



M108 Galaxy and the Owl Nebula (M97) in the constellation Ursa Major. The near edge-on galaxy M108 over 14 Megaparsec away, while the planetary nebula is a mere 600+ parsecs away. The 14th magnitude central white dwarf star can be seen in the center of the Owl Nebula. Taken over the past couple of months at my telescope's location in New Mexico. This is composite image is made from 35 hours of data.

Photo Credit: Brian Paczkowski

February Star Report

By Dave Nakamoto

Mars is still visible high in the western sky. However, the other four bright planets are not observable in February. Jupiter and Saturn are gone from the evening skies until the second half of 2021. Mercury is too close to the Sun and is thus unobservable. Venus is passing behind and beyond the Sun, making it unobservable. It won't appear in the evening skies until April.

Mars continues its prograde motion, moving west to east through the constellations of the Zodiac. It starts each night almost overhead and slightly west of the meridian, the imaginary line going north to south and passing overhead. Mars slowly shrinks from 7.8 arc-seconds to 6.4 arc-seconds. This small size means it will require a telescope capable of magnifications of 150x or more to see anything on its surface. Most observers consider that a size of less than 10 arc-seconds means most amateur telescopes will not see much on Mars. Only with the right camera/telescope combination can anything be seen. Once Mars shrinks to 5 arc-seconds or less, it'll be practically unobservable.

If you really need to see planets other than Mars in February, you'll need to get up an hour before the Sun does. Looking to the east-southeast, you might see very near the horizon, Jupiter, and to its right Saturn, and perhaps Mercury in-between, but the Sun rises less than an hour later, so the period of time you'll have to see them is very short. Looking through all that atmosphere will make the viewing very poor.

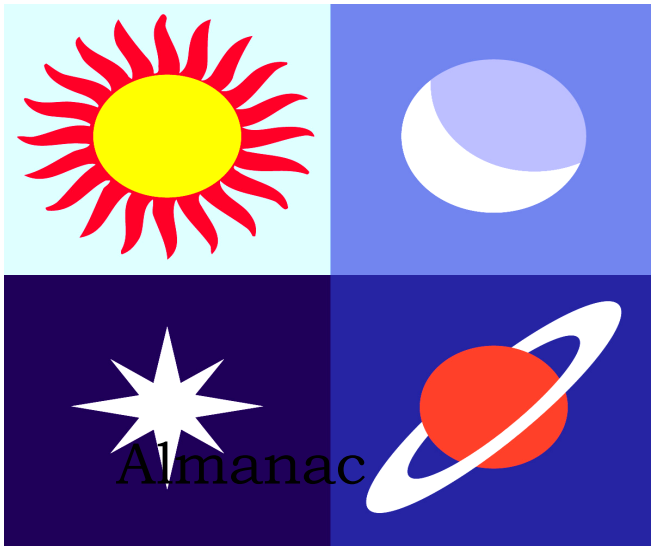
The Moon's phases in February are:

Last Quarter – 4th
New Moon – 11th
First Quarter – 19th
Full Moon – 27th

The author is a member of the Los Angeles Astronomical Society (LAAS), which operates the Garvey Ranch park observatory. Normally it is open to the public on Wednesday nights from 7:00 PM to 10:00 PM. However, due to concerns about the Covid-19 virus, the building housing the observatory is closed to the public at this time.

David Nakamoto has been observing the heavens through various scopes since he was in the 5th grade. You can contact Dave by email at: dinakamoto@hotmail.com.





Additional Links:

Moon Phases Chart for 2021

<https://www.mooninfo.org/moon-phases/2021.html>

Visibility of the Planets

<https://www.nakedeyeplanets.com/visibility.htm#2021>

Sky Report—Griffith Observatory

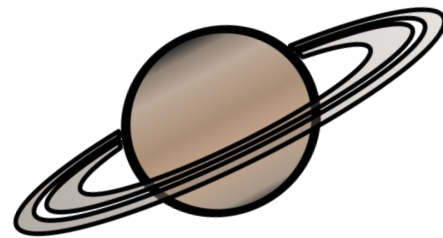
<http://www.griffithobservatory.org/sky/skyreport.html>

NASA News:

<https://www.nasa.gov/topics/solarsystem/index.html>

JPL News:

<https://www.jpl.nasa.gov/news/>



February 11 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 19:08 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

February 27 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 08:19 UTC. This full moon was known by early Native American tribes as the Snow Moon because the heaviest snows usually fell during this time of the year. Since hunting is difficult, this moon has also been known by some tribes as the Hunger Moon, since the harsh weather made hunting difficult.

Source:


<http://www.seasky.org/astronomy/astronomy-calendar-2021.html>

Outreach Event Advisory

Until further notice, all outreach and public event programs are cancelled due to the current pandemic.

The Garvey Ranch Observatory is closed to the Public.

February 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3 Board Meeting	4	5	6
7	8 General Meeting	9	10	11	12	13
14 	15	16	17	18 NSN Webinar 11AM PT	19	20
21	22	23	24	25	26	27
28						

Meet The New Members

Welcome to the LAAS!



Harold and Gloria Johnson
Brian Goldstein and Family
Kathy McWilliams
Nancy McGrain

Stamford and Marie Hill
Maya Loch
Robert Burns and Family
Ty and Matt Keennon

Michael Martin and Family
Christopher Turley and Family
Endre Balogh
Andrea Scarlett and Family
David Krider

LAAS Board Meetings

.Due to the pandemic, all Board Meetings are now held online, live on Zoom. Please check the information posted in the IO Group Forum for any current news related to these meetings. If you wish to attend a board meeting, please send a request to secretary@laas.org for a link to Zoom.

Volunteer Opportunities

Every LAAS member is a volunteer at some point. Some members volunteer to share telescopes with the public, while others tackle administrative duties, help out at our community and public events, or join a club committee. Taking photos at our events and writing articles about events for our club newsletter are great ways to volunteer and become more involved in the LAAS as a member.

HOWEVER, due to Covid-19 restrictions in our area, all outreach events have been cancelled until further notice.

Volunteers are still needed to write articles for our monthly newsletter or share images captured of the night sky. Members are also welcome to come up with new ideas and future activities for the membership which can be shared in Board meetings. If you are artistic and enjoy creating posters or flyers, or printable astro-educational handouts for further star parties, please let us know.

Time To Renew Your Membership?

Please remember to renew your membership once you receive notice from the Club Secretary in your email inbox.

Please send any new contact information to the club secretary at secretary@LAAS.org.



LAAS Outreach Program

The mission of LAAS is to promote interest in and advance the knowledge of astronomy, optics, telescope making and related subjects. In furtherance of its mission, LAAS conducts public star parties and other outreach events that are intended to enhance the public's understanding of astronomy and its enjoyment and appreciation of the beauty and wonders of our universe.



We provide outreach events at local schools, Griffith Observatory, Mt. Wilson Observatory, various state and county parks, and community events.

Join our Outreach team of volunteers today.

Contact Heven Renteria, our Outreach Coordinator at Outreach@LAAS.org



Want to include astronomy outreach at your school's science night or open house? Follow the link below to access the request form:

https://nightsky.jpl.nasa.gov/club-eventrequest.cfm?Club_ID=1344

LAAS Club Swag

LAAS T-SHIRTS, HOODIES, MUGS, AND MORE!

To find new merchandise from our store, please use the following link: <https://www.laas.org/store>

Please note all prices listed are subject to change and include all shipping and handling costs. All items will be shipped directly to the address you provide on your order form.



Please remember all LAAS Outreach activities are postponed due to the Covid-19 pandemic.

Amazon Smiles

The LAAS is now listed on Amazon Smiles. When you purchase any goods on Amazon.com, Amazon will donate a small percentage of the funds they receive from you, back to the LAAS. Here's some information to help bring in funds for our club projects:

What is AmazonSmile?

AmazonSmile is a simple and automatic way for you to support your favorite charitable organization every time you shop, at no cost to you, with the added bonus that Amazon will donate a portion of the purchase price to your favorite charitable organization., such as the LAAS!

Learn more by following this link:

<http://smile.amazon.com/>



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John O'Bryan, Jr.

Astronomy Magazine Discounts

Discounts for astronomy magazines can be found on the internet. Look for the best deals possible. Send a copy of your LAAS membership card with your check or payment to receive a club member discount.

Astronomy magazine

As a member of the Night Sky Network, you may use the above link to renew your Astronomy Magazine subscription (or enter a new subscription) at the club discount rate. If this is a renewal, Astronomy Magazine will match your entered name and address and extend your subscription. For inquiries, please contact Astronomy Magazine customer service & sales at 1-800-533-6644.

[Click here to subscribe to Sky and Telescope Magazine.](#)



Join the Astronomical Society of the Pacific and help support the cause of advancing science literacy through engagement in astronomy. Member benefits include a **subscription to the online Mercury Magazine**, published quarterly, and **Astronomy Beat**, a monthly on-line column written by "insiders" from the worlds of astronomy research and outreach.

Subscribe or renew to the McDonald Observatory's StarDate Magazine and receive a special discount. Go to this page and press "Add to Cart" under the kind of subscription you want: <http://stardate.org/store/subscribe> Then, on the Checkout form, enter "network" in the Coupon Code box.



Club Contact Information

President: Curtis Byrom

Cbyrom484@yahoo.com

Vice President: Alecia Hurst

hurst.alecia@gmail.com

Treasurer: John O'Bryan, Jr.

treasurer@laas.org

Secretary: Spencer Soohoo

secretary@laas.org

Outreach Coordinator: Heven Renteria

outreach@laas.org

Club Communications: Andee Sherwood

communications@laas.org

Mt. Wilson Coordinator: Darrell Dooley

mtwilsoncoordinator@laas.org

Bulletin Editor: Andee Sherwood

communications@laas.org

Club Contacts

Club Phone Numbers

LAAS Message Phone:

213- 673-7355 (Checked daily)

Griffith Observatory:

213-473-0800

Sky Report:

213-473-0880

Lockwood Site:

661-245-2106

Not answered, arrange
time with caller.

Outgoing calls – Collect or calling card only.



Follow us on social media by clicking
on one of the images below



Instagram



Find astronomy outreach activities by
visiting NASA's Night Sky Network:

<https://nightsky.jpl.nasa.gov/about.cfm>

YouTube

twitter

**The Los Angeles
Astronomical Society**
2800 E. Observatory Road
Los Angeles, CA 90027

Call us for more information
and
about our organization and
outreach program.
213-673-7355

Visit our web site at
www.LAAS.org

From:
The Los Angeles Astronomical Society (LAAS)
c/o Griffith Observatory
2800 E. Observatory Road
Los Angeles, CA. 90027

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To: