

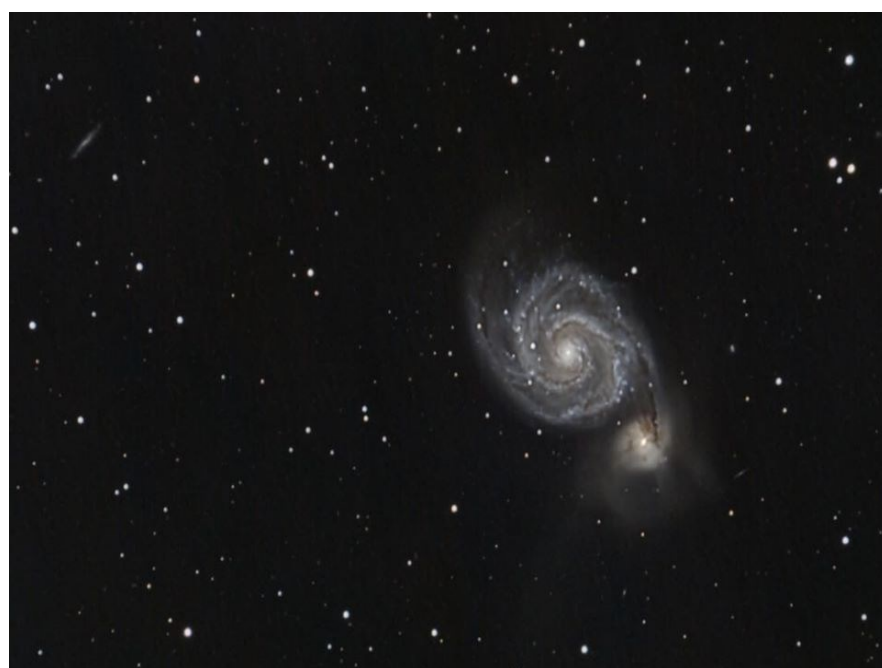


THE LOS ANGELES ASTRONOMICAL SOCIETY

THE BULLETIN

JULY 2020

VOLUME 94, ISSUE 7



The Whirlpool Galaxy M51 (and companion Galaxy NGC 5195). Located in the constellation Canes Venatici and close to the end of the Big Dipper's handle, these galaxies are about 23 million light years distant. Images Memorial Day weekend at the LAAS dark sky site in Lockwood Valley. Equipment: Takahashi TOA 150 at f/7.3, Canon EOS 80D at ISO 1600, 41 5' subs, post processing with PixInsight. .

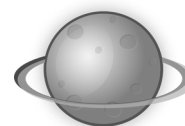
Photo Credit: Mike Hayford

Outreach Event Advisory

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

In This Issue

Ford Observatory	Pages 2-6
Family Night Report	Page 7
Mars' Latest Visitor	Pages 8-9
The Crescent Nebula	Pages 10-11
Monthly Star Report	Page 12
Almanac	Page 13
Meet the New Members	Page 14
Calendar of Events	Page 15
The LAAS Outreach & Club Swag.....	Page 16
Amazon Smiles & Astro Magazines.....	Page 17
Club Contacts & Social Media Links.....	Page 18
Mailer	Page 19



New Contact Info?

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

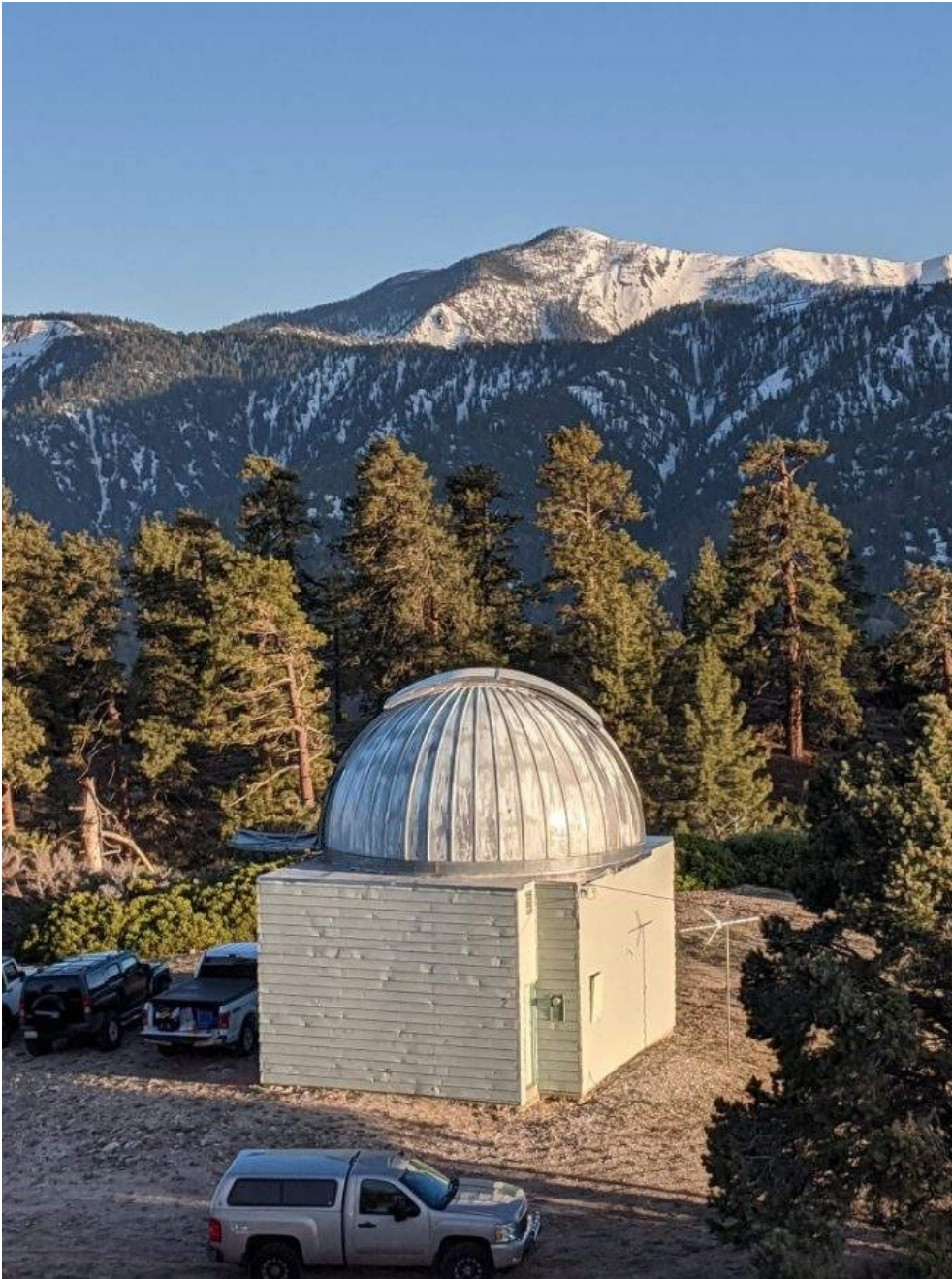
Membership Renewal Notices

Keep your eyes open for email from the club secretary so you don't miss your renewal notice. Once your membership expires, you may need to reapply.

Ford Observatory Moves Into the 21st Century

By Curtis Byrom and Dave Nakamoto

Almost 55 years ago a little observatory on a peak now known Mt. Peltier was dedicated into service. The observatory was named after Clinton B. Ford and for many years, was used by AAVSO (American Association of Variable Star Observers) to gather data on variable stars. A history of Ford Observatory written by our own Tim Thompson was featured in the October 2012 issue of the LAAS Bulletin.



Ford Observatory in the Spring time. Photo by Ed Dempsey

About 7 years ago the Ford Observatory was acquired by LAAS. Some minor maintenance needed to be done to the facility, but overall it was usable. At an elevation of over 7400' in the San Gabriel Mountains near JPL's Table Mountain Observatory, winter can be pretty brutal. It is, however in the glow of the Mt. High Ski area when they have skiing at night. So during the winter, access and the seeing environment puts the observatory essentially in hibernation. The last day the ski area can be open is usually Easter Sunday. I think the US Forest Service requires them to close at that time and generally any snow left is getting quite sparse at that time. Although this year a spring storm dropped about 3' of snow in the area around Easter time.

Some of the maintenance issues that needed to be done since we acquired the observatory included resealing the dome from the rain and snow, adjusting it so it would move more freely with minimal squeaks, repairing the roof leaks and replacing some of the aluminum siding. In general the facility is in decent shape.

One major improvement that needed to be done, about 2 years ago LAAS had the primary and secondary mirrors realuminized and a vast improvement was immediately noticed. Greg Thomas, our maintenance man and caretaker for the observatory, mentioned that the 18" mirror in the telescope was figured by the late Thomas R. Cave and he thought it was one of the best mirrors he ever figured. And by looking through the telescope on a good seeing night I can not dispute that.

It is an 18" f/7 Newtonian on a huge equatorial mount. There is a platform to climb up on the get to the eyepiece. The top eyepiece cage rotates around so you do not need to strain you neck too much to look through the eyepiece. There is also a nice feature, a turret eyepiece holder, so you can change the magnification from about 80x to 365x by just rotating the turret.

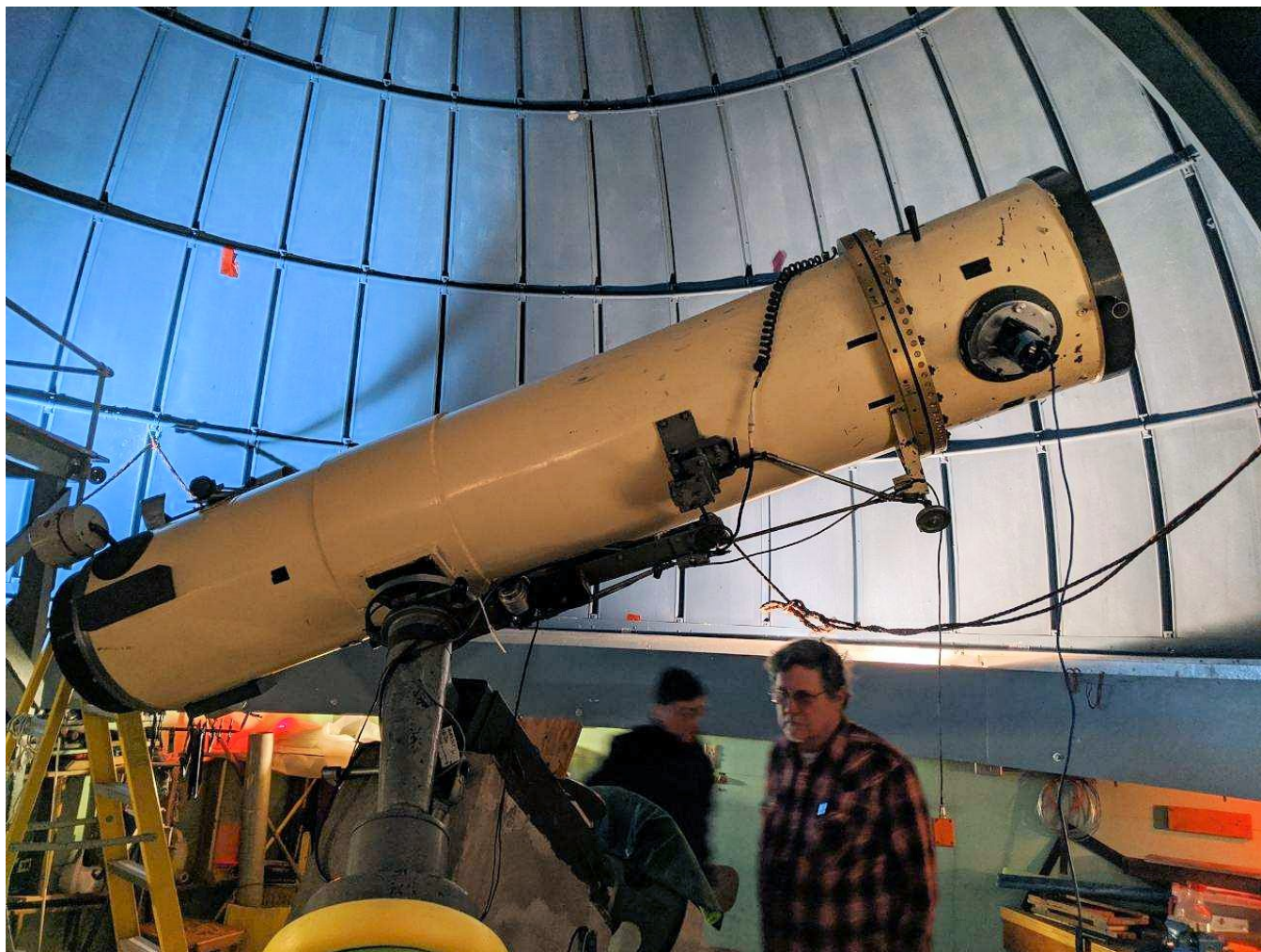


Photo courtesy of Ed Dempsey

During this time of lockdown and isolation in our homes because of the COVID-19 pandemic, I wanted to make some of the LAAS facilities available for members to use over the recent Memorial Day holiday weekend, so I asked the committee chairman for both Lockwood Valley and Ford Observatory to set guideline for use. Both facilities were open for the holiday weekend. Ford committee decided the observatory would be open on Saturday evening for viewing and Sunday evening to try imaging through the telescope with the new CCD and CMOS cameras. Saturday evening we had 7 guests, Jill Nakano, Tina Musto, Rob Komoto and his son Alan, James Rochford and his son Aidan and Sam Hughes. Seeing was quite good both nights. On Saturday night we looked at some double stars, globular star clusters and the Ring Nebula. M13 looked awesome at high magnification and both central stars of M57 were popping in and out. Overall a nice evening.

On Sunday evening we had 9 guests, Ron Komoto and his son Alan were around for the two nights along with Sam Hughes. We also had Dave Nakamoto, Ed Dempsey, Javier Colon, Aram Hacobian, and Greg Thompson and his son James. Not included in the lists were Greg Thomas and myself.



The group on Sunday night. Left to right, Javier Colon, Ed Dempsey, Greg Thompson, Curtis Byrom, Ed Dempsey, Alan Komoto, Rob Komoto, and David "sourpuss" Nakamoto. Photo courtesy of Greg Thomas.

The following was written by David Nakamoto, adopted from his journal entry for that night.

The goal for Sunday night was to see if modern astrophotographic cameras would focus in a telescope 55 years old.



Sunset on Sunday night. Photo courtesy of Ed Dempsey

The actual measurement, comparing the M13 and M57 images to an SDSS image, shows the field of view (FOV) is 20 x 15 arcmin.

We visually observed the crescent Moon, then a crescent Venus in almost the same phase, then Mercury which was at greatest eastern elongation and halfway between the Moon and Venus. We then switched the eyepiece holder for one that used to hold film cameras.

We tried my G-10 camera, using Procyon as a focus star. It needed to move closer to the secondary mirror to focus, but we ran out of travel on the focuser.

Next was Eddie Dempsey's ZWO ASI294MC color planetary camera. It needed both a thicker base plate and a 2-inch extender tube to reach focus. The sensor size was 21.6mm on the diagonal with a 4/3 aspect ratio. This means 17.3mm x 12.9mm.

We then tried Curtis' ZWO ASI178MC color planetary camera, and it came to focus. It had a much smaller sensor size at 7.43mm x 4.99mm

This got me thinking that perhaps the 0.5x reducer on my camera was the culprit, so I removed it, and the G-10 came to focus !

We focused all cameras using the diffraction spikes on the 18-inch, which worked well. My G-10 sensor size was 23.1mm on the diagonal with a 4/3 aspect ratio, so
 23.1mm x 4 / 5 by 23.1mm x 3 / 5
 18.5mm x 13.9mm



We left the G-10 on the 18-inch, then hunted down M13 in the opposite part of the sky. It was plainly visible in the 80mm finder, but I had a hard time seeing the reticles. At left is the result! For some reason, the colors are muted, probably some software setting in SharpCap, but PaintShop-Pro brought them out. North is to the upper right corner, and a comparison with an SSS image indicates the FOV is roughly 20' x 15'. 25 four second exposures were stacked using the Livestack feature on Sharpcap, the equivalent of a 100 second exposure, or 1 minute 40 seconds.

This view is close to the visual view, if you're looking through the Mt Wilson 60-inch! The yellowish stars dominate, with blue stars fainter and in

“the background”.

Then we went for Stephanson-1, an open cluster around delta Lyrae, but the FOV was too small to show all of it.



M57 was the final target of the night. Again, north is to the upper right corner. We didn't cool the camera, which explains the red spots due to thermal heating, but if I used a filter to get rid of them, the incredible detail in the nebula would have been lost. 159 two second exposures were stacked, for an equivalent exposure time of 318 seconds, or 5.3 minutes.

The central star was visible even in the single images, which shows the generous light gather power of the 18-inch, and the G-10 camera.

The position of the eyepiece meant that if we wanted to use the cooler, we'd have to tape the AC adapter to the side of the scope and use an extension cord.

We discussed trying for M51, but it was 11:20pm or so, and the entire group wanted to call it a night. The remaining half a dozen or so observers left at midnight.

Family Night Report - June 13-14

By Kevin Gilchrist

JUPITER was TWINKLING!

Well now- talk about a bad night for astrophotography. Thick particulates and turbo-turbulence but the visual people seemed to be having a great time nonetheless. There were a few loud whoops on the field. I don't know what the hub-bub was about as I was glued to my iPad screen learning how to use my new ASlair Pro. There were a few bright, fast meteors that caught my eye so I had a few moments of pleasure before crawling into my freezing-cold car to let my camera catch 100 frames of a blobby M51. It was so bad my stacking software couldn't identify but 7 stars at the most. Right now I have one frame displayed on my computer and the spiral structure is obvious, if in a disappointing way.

We had many more signups than we had on the field. Gee, I wonder what scared them away? Heven Renteria, newly minted Star member was there with his friend who was a first time visitor. Long-time member Phil Taylor was there with a new high tech Unistellar eVscope, in fact there were two of them that night. I was shown a photo of M51 direct off of the eVscope and I have to say I'm impressed. One is still out under the stars, freezing like everyone else, but the instant gratification more than makes up for it.

There were a few other familiar faces and it was nice to catch up but there were several not so new members that I've not met before as well as another new member who all braved the cold and lousy seeing. In spite of COVID we are still an active community and we are exploring ways to bring the night skies indoors to our members, even in times of uncertainty. Here's hoping for better conditions for our next Family Night on July 11.

Kevin Gilchrist—Lockwood Committee Chair



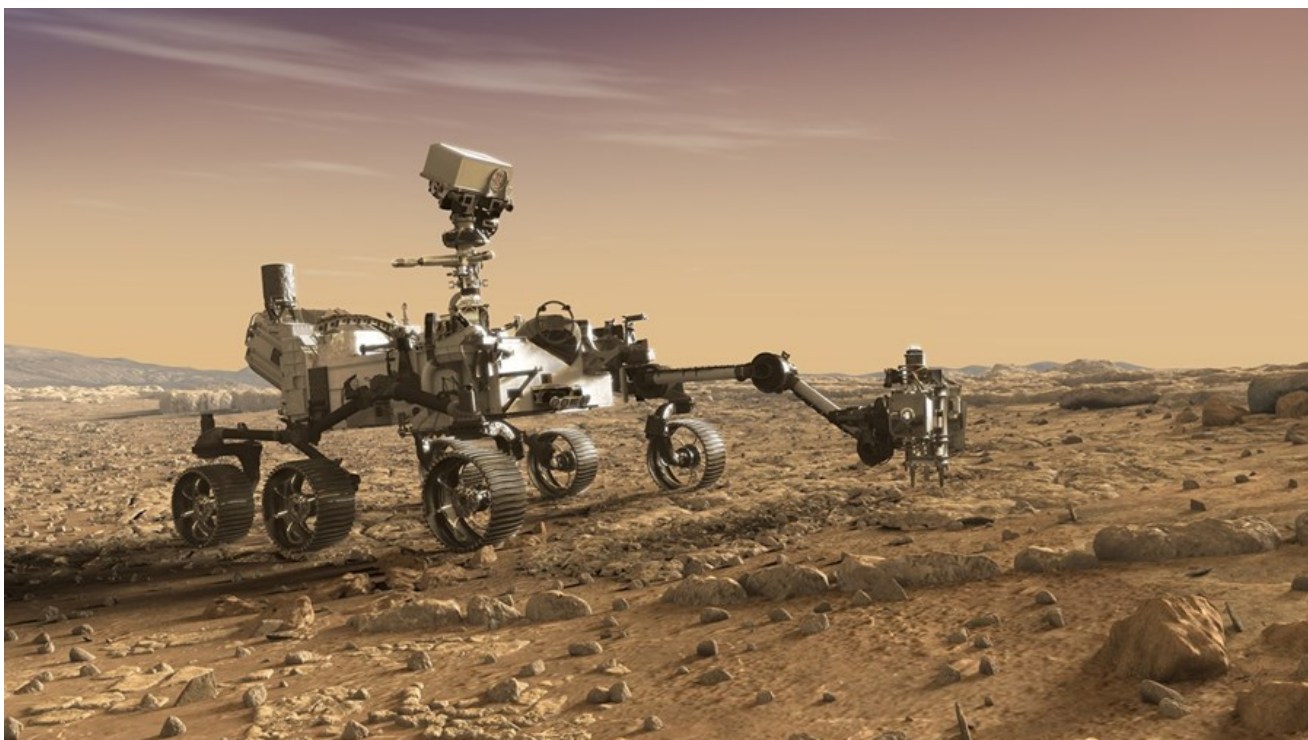
Here's an image that I took from the Lockwood family night. It was shot on my Canon Eos R with at 16mm, f/2.8, 20 second shots, Iso 4000 and then stacked with 10 images using Sequator.

Benny Sachdevs

Mars's Latest Visitor: NASA's Perseverance Rover

By David Prosper

NASA's latest Mars rover, Perseverance, is launching later this month! This amazing robot explorer will scout the surface of Mars for possible signs of ancient life and collect soil samples for return to Earth by future missions. It will even carry the first off-planet helicopter: Ingenuity. Not coincidentally, Perseverance will be on its way to the red planet just as Mars dramatically increases in brightness and visibility to eager stargazers as our planets race towards their closest approach in October of this year.



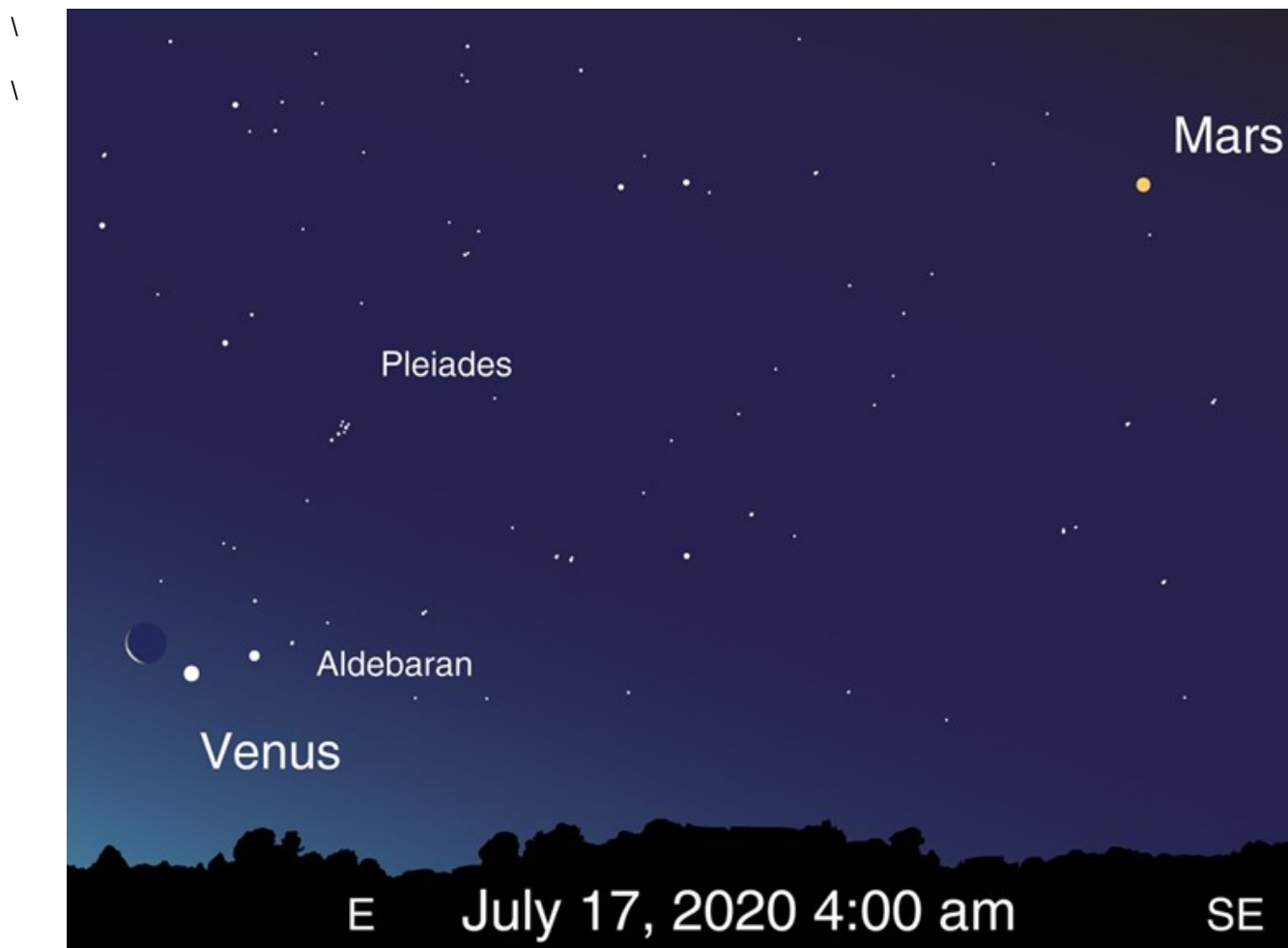
Perseverance inspects a cluster of interesting Martian rocks with its instruments in this artist rendering by NASA JPL/Caltech

Perseverance's engineers built upon the success of its engineering cousin, Curiosity, and its design features many unique upgrades for a new science mission! In February of 2021, Perseverance will land at the site of an ancient river delta inside of Jezero Crater and ready its suite of seven primary scientific instruments. The rover will search for traces of past life, including possible Martian fossils, with WATSON and SHERLOC, two advanced cameras capable of seeing tiny details. The rover also carries an amazing instrument, SuperCam, to blast rocks and soil outside of the rover's reach with lasers to determine their chemical makeup with its onboard suite of cameras and spectrometers. Perseverance will also take core samples of some of the most promising rocks and soil, storing them for later study with its unique caching system. Future missions will retrieve these samples from the rover and return them for detailed study by scientists on Earth. Perseverance also carries two microphones so we can hear the sounds of Mars and the noises of its instruments at work. It will even launch a small helicopter - Ingenuity - into the Martian atmosphere as a trial for future aerial exploration!

Would you like to contribute to Mars mission science? You can help NASA's rover drivers safely navigate the Martian surface by contributing to the AI4Mars project! Use this tool to label terrain features on photos taken of the Martian surface by NASA missions to help train an artificial intelligence algorithm to better read their surrounding landscape:

bit.ly/AI4Mars

The launch of Mars Perseverance is, as of this writing, scheduled for July 20, 2020 at 9:15am EDT. More details, updates, and livestreams of the event are available on NASA's official launch page: bit.ly/Mars2020Launch. Dig deep into the science of the Mars 2020 mission and the Perseverance rover at: mars.nasa.gov/mars2020/. Find out even more about past, present, and future Mars missions at nasa.gov.



Observe Mars yourself over the next few months! Mars can be found in early morning skies throughout July, and by the end of the month will rise before midnight. Mars gradually brightens every night until the close approach of Mars in October. The pre-dawn skies of July 17 present an especially nice view, as the waning crescent Moon will appear near Venus and Aldebaran.



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!

The Crescent Nebula

By Spencer SooHoo



While it's been fun going after galaxies my favorite objects are the colorful nebula in the Milky Way. This is Crescent Nebula (NGC6888) a faint emission nebula just south of Sadr, the central star in the constellation Cygnus (the Swan). It's about 5000 ly from us. Taken with a Celestron 9.25 inch SCT and Nikon D5300 @ ISO 400.



The next two photos are of M104, the Sombrero Galaxy which is characterized by a bright core circled by thick dust lanes that are thought to be the site of star formation. There is evidence to suggest the center of the galaxy contains a massive black hole. It's about 28M ly away in the constellation Virgo and has a mass of 800 billion suns. We are seeing the galaxy edge-on. The image is produced from a stack of 37 images, half with an exposure time of 180 sec and the other half @240 seconds(@ISO 400). I'm surprised this image came out as well as it did, since it was relatively low in the sky and obscured by the haze/light pollution over the LA Basin. I only just a little over an hour each night to shoot this galaxy because by the time it was dark enough to see any stars, it was just an hour or so from setting behind some trees. The skies around the galaxy never got dark...it was more of a light gray, as seen in the last single image photo.



Monthly Star Report

By Dave Nakamoto

Finally, after going through June without any planets, we get some great planet action right through to the end of the year!

It begins with both Jupiter and Saturn. They are visibly very close to one another during this year, about 10 degrees apart at the start of July. Jupiter is west of Saturn. Both rise around 10pm at the start of July. By the end of July they'll be directly south. As the months go by, Jupiter will get closer and closer to Saturn. By December they'll be passing very close to one another, low in the western sky as the Sun sets. I'll write more on that in December.

Jupiter is visibly the largest planet in any telescope. With magnifications of around 60x or so, you can see the twin belts around the planet, and the four Galilean moons. Occasionally you can see the famous Red Spot traverse across the disk. The moons perform an intricate dance around Jupiter. It was this dance that caught the eye of Galileo and made him realize that these star-like objects were moving around Jupiter, and not the earth. This violated a belief held for at least 1,500 years, that everything revolved around the earth. It was the first fact that showed that the Ptolemaic earth-centered view was wrong. Occasionally the moons pass in front of Jupiter. At those times they might cast a shadow on Jupiter's disk. They can also pass behind Jupiter, in which case you might see a moon disappear as it goes into Jupiter's shadow.

Saturn is physically as large as Jupiter, but it is twice as far away, so normally it would appear half as large. However, its rings are physically twice as wide as Jupiter's disk, so the two effects cancel, and the end result is that Saturn with its rings appears as large as Jupiter. Unfortunately, being twice as far from the Sun as Jupiter means the moons of Saturn receive half the amount of light from the Sun, and therefore appear much dimmer than the Galilean moons. They're also a lot smaller except for Titan, Saturn's largest moon, and the second largest moon in the Solar System, Jupiter's Ganymede being the largest. Since Saturn's moons are twice as far from the earth as Jupiter's moons are, the end result is that Saturn's moons are considerably fainter than Jupiter's. The brightest, Titan, is sixteen times fainter than any of the four Galilean moons, and the rest are over a hundred times fainter. Titan can be seen in small telescope, but for the rest you'll need a scope of at least 5 inches of aperture to see them.

Still, Saturn is most people's favorite planet, due to the rings. You cannot see the rings around Jupiter, Uranus, or Neptune, and due to this, Saturn appears markedly different from any other planet. And there's quite a lot to see for those with telescopes capable of 100x magnification or more.

The entire Saturnian system, planet, rings, and moons, are oriented such that Saturn's north pole is tilted towards us this year. Because of this, there are at least two rings visible; the narrower outer A-ring, and the wider inner B-ring. The black gap between them is Cassini's division. If you look carefully, you might see a darkening on Saturn's disk where the rings cross in front of the planet, inside the inner edge of the B-ring. This dark band is the C-ring. On Saturn's disk you'll see the darkening in the north polar region. Near the Saturnian equator, you'll see a large diffuse dark band, which is a band of clouds encircling the planet. If you follow the rings as they pass behind Saturn, you'll see on one side or the other a black sliver separating the rings from the disk of the planet. This is the shadow of Saturn cast upon the rings.

The Moon's phases during July are:

Full Moon – 5th

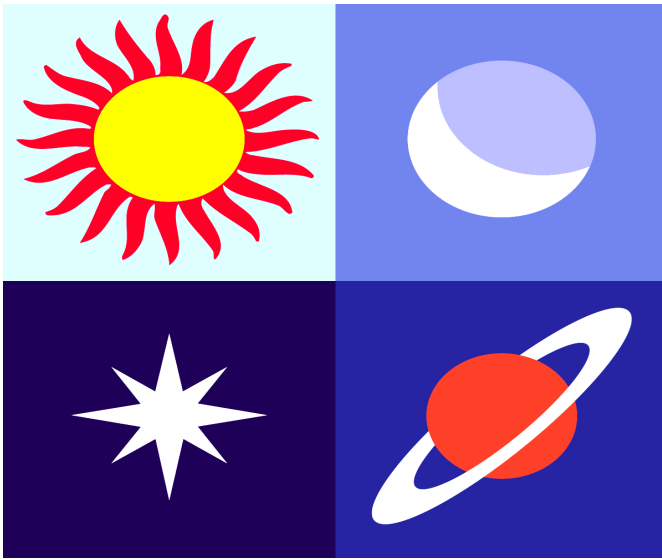
Last Quarter – 13th

New Moon – 20th

First Quarter – 28th

The Los Angeles Astronomical Society, of which the author is a long-standing member, runs 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 the time this article was composed. As soon as the situation changes, I will post it here.

Almanac



July 5 - 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 04:44 UTC. This full moon was known by early Native American tribes as the Buck Moon because the male buck deer would begin to grow their new antlers at this time of year. This moon has also been known as the Thunder Moon and the Hay Moon.

July 5 - Penumbral Lunar Eclipse. A penumbral lunar eclipse occurs when the Moon passes through the Earth's partial shadow, or penumbra. During this type of eclipse the Moon will darken slightly but not completely. The eclipse will be visible throughout most of North America, South America, the eastern Pacific Ocean, the western Atlantic Ocean, and extreme western Africa. ([NASA Map and Eclipse Information](#))

July 14 - Jupiter at Opposition. The giant planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Jupiter and its moons. A medium-sized telescope should be able to show you some of the details in Jupiter's cloud bands. A good pair of binoculars should allow you to see Jupiter's four largest moons, appearing as bright dots on either side of the planet.

July 20 - 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 17:33 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.

July 20 - Saturn at Opposition. The ringed planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Saturn and its moons. A medium-sized or larger telescope will allow you to see Saturn's rings and a few of its brightest moons.

July 22 - Mercury at Greatest Western Elongation. The planet Mercury reaches greatest western elongation of 20.1 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the eastern sky just before sunrise.

July 28, 29 - Delta Aquarids Meteor Shower. The Delta Aquarids is an average shower that can produce up to 20 meteors per hour at its peak. It is produced by debris left behind by comets Marsden and Kracht. The shower runs annually from July 12 to August 23. It peaks this year on the night of the 28th and morning of the 29th. The second quarter moon will block many of the fainter meteors this year. But if you are patient, you should still be able to catch a few of the brighter ones. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Aquarius, but can appear anywhere in the sky.

Source: <http://www.seasky.org/astronomy/astronomy-calendar-2019.html>

Meet The New Members

Welcome to the LAAS!



Sam and Deanna Winotai

LAAS Board Meetings

Our LAAS Board Meetings take place once a month at the Garvey Ranch Park Observatory. You can find the dates for these meetings on our event calendar. All members are welcome to attend all Board meetings. These meetings begin at 8 PM.—**Note: All meetings will be held over the phone or virtually until the observatory reopens in mid-April or May.**

All current members may listen to recorded meetings by logging on to our website at LAAS.org and clicking on the "Members Only" tab to find the files. Contact Spencer at laassecretary@laas.org for further information

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.

Participating at one of our outreach events is another fine and fulfilling opportunity. This is YOUR club. Don't sit back and let other members do the work and have all the fun! Speak with a club officer and find out how you can volunteer and get more involved in the LAAS as a member.

Time To Renew Your Membership?

Please remember to renew your membership once you receive notice from the Club Secretary in your email inbox. Use this link to learn how to renew your membership:

<https://fs30.formsite.com/LAAS/MemberRenewal/index.html>

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



JULY 2020

Sun Mon Tue Wed Thu Fri Sat

1 2 3 4



5 6 7 8 9 10 11

Family Night

12 13 14 15 16 17 18

Boy Scout
Merit Badge

Dark Sky
Night

19 20 21 22 23 24 25

26 27 28 29 30 31

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 JACKETS, T-SHIRTS, AND CAPS

Share your club spirit with the public and wear your club colors to help identify you as a member of the LAAS today by ordering a new jacket, t-shirt or cap.

To order club swag, please use the following link:

<https://fs30.formsite.com/LAAS/Apparel/index.html>



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/>



Disclaimer: The Los Angeles Astronomical Society, Inc. is a public charity, as defined by Internal Revenue Code Section 501(c)(3) and all contributions to the Society are deductible for Federal and State Income tax purposes. **The Society does not endorse Amazon.com or any of its business practices**, but we are registered with Amazon Smile and will accept contributions from that program. If you are an Amazon customer and would like to have part of the proceeds from your purchase returned to the Society as a contribution, please go to <https://smile.amazon.com/> when you are shopping on Amazon and select Los Angeles Astronomical Society under the caption: "Or pick your own charitable organization." A percentage of you purchases will be donated to the Society to fund its educational and outreach programs.

John O'Bryan, Jr.

Treasurer

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

Youth Coordinator: James Rochford

jcrochford@gmail.com

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



YouTube

twitter



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

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

**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

PLACE
STAMP
HERE

To: