



THE LOS ANGELES ASTRONOMICAL SOCIETY

THE BULLETIN

APRIL, 2020

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© Brian Paczkowski

The Sombrero Galaxy (M104) in the constellation Virgo. This lenticular galaxy is located 31 million LYs from Earth and has a very prominent dust lane with a very large bright central bulge. This is a LRGB composite made from 13 hours of data. Image acquired using a 17" CDK telescope I'm renting located in Chile. Processed in PixInsight. (Planewave 17" CDK, Paramount ME mount, SBIG STXL11002 camera)

Photo credit: Brian Paczkowski

Outreach Event Advisory

Until further notice, all outreach program events are cancelled. Please visit Page 2 for further information.

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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.

A Message From The LAAS President



It looks like most of the facilities and groups that LAAS use for public events are being closed because of the Corona Virus (Covid-19).

All LAAS public events will be cancelled until April 19, 2020 effective immediately.

This will mean cancellation of

1. All LAAS outreach events.
2. All LAAS public events at Griffith Observatory -- Public Star Parties and the April General Meeting.
3. All LAAS public events at Garvey Ranch Observatory -- Wednesday Evening Viewing.
4. All LAAS public events at all other LAAS Facilities.

Private events at Lockwood Valley are at the the discretion of John O'Bryan (Lockwood Committee Chairman).

Ford Observatory may have access problems until May.

Mt Wilson public activities will not get started until May at the earliest.

Tim Thompson is our direct contact person with Monterey Park, Griffith Observatory and Mt. Wilson officials and will keep us updated on their status.

Curtis Byrom

LAAS President

Lockwood Closure Information

Due to the virus and expected rain, this month's Dark Sky Night is cancelled at our Lockwood Valley site. The property may still be used by Star Members, only. NO GUESTS. Sleeping in the trailer is prohibited for 30 days until April 16th. No one wants to share a bed that may be contaminated. Members who plan to use the toilets are asked to bring wet wipes and wipe down the seat and sink after use.

Thank you for your cooperation.

John O'Bryan
Lockwood Committee Chair.

The Monster in the Milky Way

By Ray Blumhorst

There's a monster at the center of our Milky Way galaxy. No, it's not Godzilla, or Mothra, but one of the most intriguing and powerful objects in our universe - a super massive black hole.

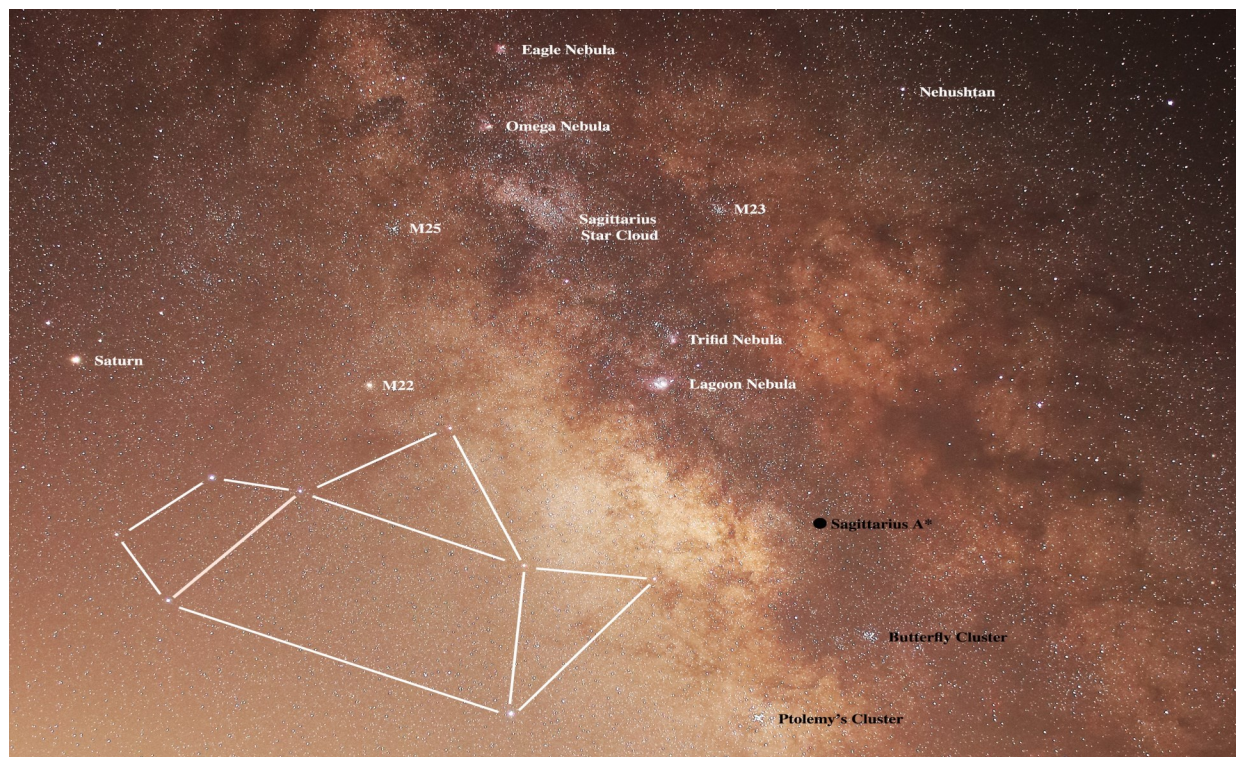
Sagittarius A-Star (Sgr A*) is 4 million solar masses (4 million times more massive than our Sun) and is 27,000 light years from our solar system.

Sgr A* is shrouded in interstellar dust and gas (extinction). Even if there were no dust or gas between us and Sgr A*, it would still be invisible to our eyes as its gravity is so strong no light can escape from it. Sgr A* is undetectable when observing in optical light, but has been found by a combination of other means: radio telescopes, infrared telescopes, and gravitational influence on nearby stars.

Radio telescopes and Infrared telescopes are able to peer through the Interstellar gas and dust. Near infrared telescopes show stars in orbit around Sgr A*, speeding up as they get closer to Sgr A* and slowing down as they move away.

Capturing a photo of the center of the Milky Way galaxy can be exciting and fun even with all the interstellar gas and dust, but first you have to get out of the bright city lights, then set up all your gear (tracking mount recommended), then point your camera above the southern horizon and start clicking. There are many ways to proceed based on the equipment available to you, but going wide angle with a small, fast lens is a good way to start. Using an f2.8, Canon 50mm lens, this past August I was able to "piggy back" on a Celestron 8-inch, Edge HD reflector telescope and CGEM II mount and get good images. A month later I went back with a big refractor (152mm) and got closer up to some of the amazing objects in my wide view image, but that's another story.

After doing a little tweaking in Photoshop of a selected wide view image, it was as sharp and clear as possible, I then went to the SkySafariPro6 App on my iPad and started identifying objects in the image. Using Photoshop, I outlined the famous Teapot asterism, and wrote the names of other objects I'd identified directly onto the image.



After identifying more than a dozen objects, I proceeded to make my best estimate as to where the black hole (Sagittarius A-Star) is located and placed a black dot there. That's about as close as an amateur astronomer can get, but not as close as professional astronomy equipment can take us.

This animation on Youtube is made from more than a decade of data gathered by the European Southern Observatory. It shows the orbits of stars speeding up as they near an object at the center of our Milky Way galaxy. Such a strong influence on a star's orbital speed could only be caused by one thing, a super massive black hole – the 4,000,000 solar mass monster at the center of our galaxy.

“Simulation of the orbits of stars around the black hole at the center of the Milky Way”



Click on the image above or follow one of these links to view the simulation.

<https://www.youtube.com/watch?v=wyuj7-XE8RE>

or

<https://tinyurl.com/w2e8l45>

Star Hops - April 2020

By Dave Nakamoto

In this article, I will describe one of my star hops, this one for M35, the giant open cluster visible even from urban skies. But before we start, let's review the basics.

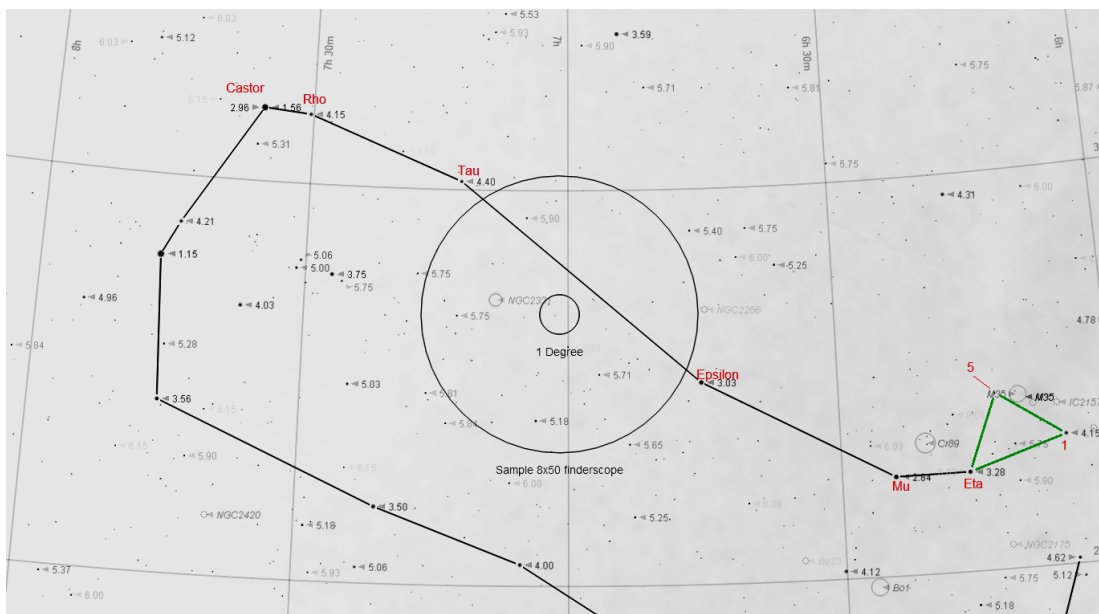
If you have a Newtonian, Schmidt-Cassegrain, or Maksutov, check the collimation. This will ensure your optics are in proper alignment, otherwise the view to be blurred, and nothing is worse than a blurred image. Faint details can't be seen, and dim stars fade away. I can't get into the details of how it's to be done, but you'll find references on the Internet. I use a laser collimator from Woodland Hills Camera to do this on my Newtonian. Although a tad expensive, it is accurate and fast. On Newtonians, you need to check your collimation every time you use it. For SCTs and Maks, you should also check every time, but chances are you won't need to collimate. For refractors, it is rare to have one go out of collimation, but you should check every now and again.

Next, align your finder. This is also an every-use activity, since metal parts expand and contract, which is why you should store your scope where it won't get too warm, and preferably where it will remain cool. Nevertheless, finders do go out of alignment, even DURING an observing session, so check on it from time to time.

A finder is necessary in an urban environment, but it also helps at a dark site, because it allows you to spot stars much fainter than you can see with the unaided eye.

The equipment I use for these star hops is located at the Garvey Ranch park observatory. It consists of an 8-inch f/12 refractor and a 50mm eyepiece, giving a one-degree field of view (FOV). It is equipped with an 8x50mm finder which has a 5-degree FOV. Piggy-backed on the 8-inch is a 4.7-inch f/8.33 refractor with a ZWO camera. This combination gives an 83 arcminute FOV. The entire optical system is mounted on a large German equatorial mount, with no slewing or computerized capability, so all these star hops are done manually. Normally I use my Star Atlas 2000.0 printed star charts. They're large, easy to read under a red light, and allow for notetaking directly on the pages with a pencil. The mount is equipped with large setting circles. One is for the right Ascension or RA axis, which is the one that is aligned with the earth's rotational axis, which is within a half a degree or so of Polaris. The other is the Dec, or Declination circle, indicating north and south from the celestial equator. +90 degrees points directly at the north celestial pole, and zero degrees points to the celestial equator.

Below is the star chart for our hop.



For this hop, we start at Castor. The wider circle is 5 degrees wide, the FOV of an 8x50 finder. The smaller circle is a one-degree FOV, corresponding to the 8-inch f/12 refractor with a 50m eyepiece.

Center on Castor. Note the 4th mag star Rho Gemini to the west. That is the direction we'll be heading towards. If you move the scope in RA or Dec only, you avoid the problem I have with one axis or the other sticking. This way you avoid erratic movements. The trick to star hopping is to make the movements easy, repeatable, and small. If you use RA and Dec moves, they'll work no matter where the object and constellation is. If you use azimuth and elevation moves, those change depending on what date and time you observe.

Move past Rho until Castor is almost out of the finder's FOV. 4th mag Tau Gemini will appear on the opposite side of the finder's FOV. Center on Tau, then move it to the north, just within the finder's FOV. Move west, until Tau disappears and Epsilon, a 3rd mag star, appears at the opposite part of the FOV. Center on Epsilon, then move west until 3rd mag Mu appears as Epsilon is almost outside the FOV. Center on Mu and notice Eta Gemini is just to its west. Center on Eta and notice 1 Geminorum to its west and 5 Geminorum to its north forming a triangle. Now center on 5 Geminorum and sweep just to the west with your main scope. You should see M35 easily. In a one-degree FOV it will fill the eyepiece. Notice we're hopping from one star or star pattern to another. This is the trick to successful star hopping.

The image below was taken through the ZWO camera. It's 84 arc-seconds wide. As a comparison, the moon is 32 arcminutes wide. The smaller open cluster in the lower right (southwest) corner is NGC-2158. It's thought to be as big and bright as M35, but M35 is 3,870 light-years away, while NGC 2158 is over 11,000 light-years away. 54 ten second images were stacked using Sharp-cap's Livestack feature, then enhancements including subtraction of the background glow were applied. I also did a color enhancement, hence the bluish glow around some stars, which is also the effect of using a refractor. Refractors are tuned to bring yellow light into focus, the color your eyes are most sensitive to, so the red and blue colors are spread out, hence the halos.



Photo credit: Dave Nakamoto

Outreach Report

By Van Webster

Canterbury Magnet Elementary School (Arleta)

Date: Thursday, March 5, 2020

Time: 5:30 PM – 7:30 PM

Members of the Los Angeles Astronomical Society traveled to the community of Arleta in the north-eastern part of the San Fernando Valley for an evening of star gazing at Canterbury Magnet Elementary School. Arriving shortly after 5:00 PM, the astronomers set up their gear on a north-south picket line and were ready for students by 5:30 PM.

Of particular interest to the astronomers was the presence of a hot food truck from In –N- Out Burgers. After a complimentary meal of a cheeseburger, chips and a drink, we were fortified for a busy evening.

And busy it was. More than 200 students, family member, faculty and staff lined up for views of the night sky. Conditions were a bit sketchy at first with high clouds and lots of vapor trails. As the sun set and the air cooled, the sky cleared and the seeing was pretty good.

The Moon was the obvious first target with lots of oohs and aahs from the students. Venus was shining brightly in the west. Uranus was in near conjunction with Venus so those astronomers who had computerized telescope mounts were able to get a faint view of our distant solar system neighbor.

M42, the Orion Nebula was imaged with one of the new all-digital telescopes that was getting a beta test workout that night. Not only was the image visible through a view finder on the telescope, but the image could also be transmitted to a smart phone for group viewing and storage.



At 7:15 PM the PA system announced that there was 15 minutes remaining for the event and the crowds began to disperse. There were lots of thank-yous expressed to the astronomers for sharing their equipment with the community. This was one of the most successful school outreach events I have attended in a long time.

And then the school plant manager urged us to pack up our gear and be on our way.

Photo Credit: Van Webster

The Statue of Liberty Nebula (NGC 3576)

By Brian Paczkowski



The Statue of Liberty Nebula (NGC 3576). The beautiful emission nebula in the southern constellation of Carina. This nebula is located about 6,000 LYs from Earth. This is a Ha+OIII+SII+RGB composite made from 36 hours of data. Image acquired using a 17" CDK telescope I'm renting located in Chile.

(Check out martinpughastrophotography.space for more information). Processed in PixInsight. (Planewave 17" CDK, Paramount ME mount, SBIG STXL11002 camera)

Photo credit: Brian Paczkowski

Halo Around The Moon

By James Casey

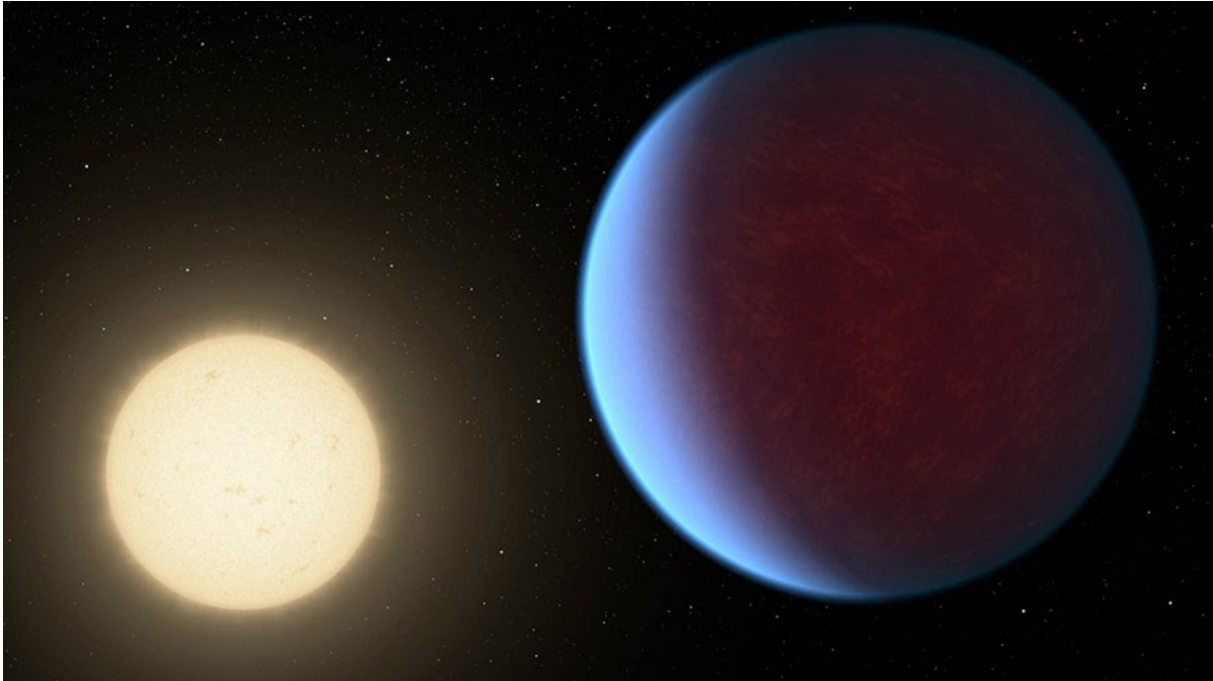


On Monday March 9, 2020 at 1 am PST I went outside my house located in Hawaiian Gardens California to let my dogs out. When I looked up at the moon I saw this strange eerie looking halo. I did a little research and found out this is caused when moonlight passes through thin clouds of ice crystals high in the earth's atmosphere. According to Google "As moonlight passes through the ice crystals, it is bent in a way similar to light passing through a lens. The shape of the ice crystals causes the moonlight to be focused into a ring." Good thing I looked up because by 1:20 am PST or so it had dissipated.

Photo credit: James Casey

Dim Delights in Cancer

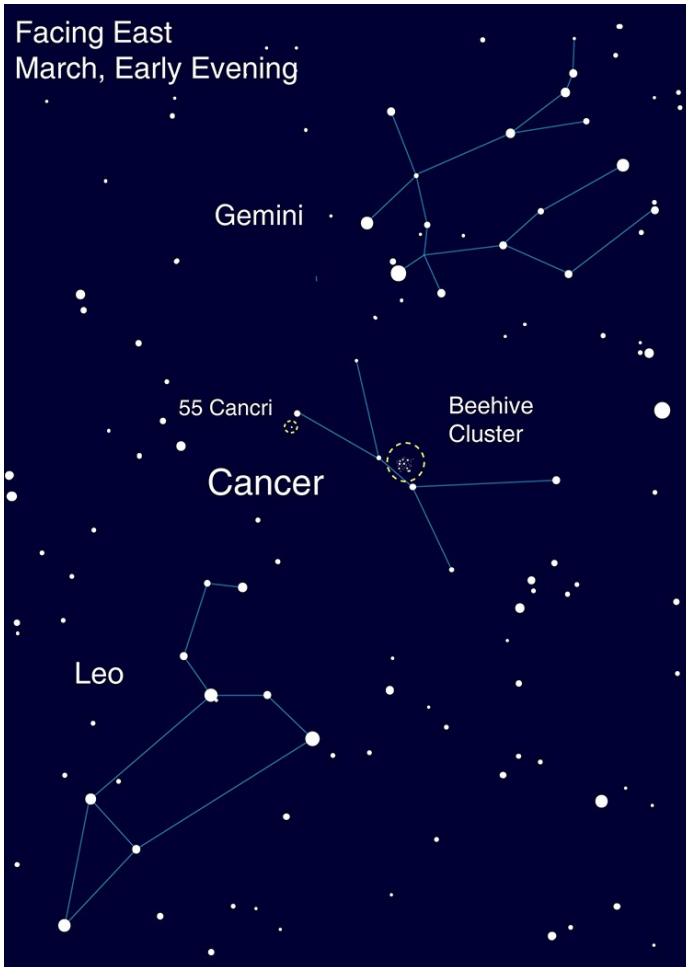
By David Prosper



Artist concept of 55 Cancri e orbiting its nearby host star. Find details from the Spitzer Space Telescope's close study of its atmosphere at: bit.ly/spitzer55cancrie and the Hubble Space Telescope's observations at bit.ly/hubble55cancrie Credit: NASA/JPL-Caltech

Cancer the Crab is a dim constellation, yet it contains one of the most beautiful and easy-to-spot star clusters in our sky: the **Beehive Cluster**. Cancer also possesses one of the most studied exoplanets: the superhot super-Earth, **55 Cancri e**.

Find **Cancer's** dim stars by looking in between the brighter neighboring constellations of Gemini and Leo. Don't get frustrated if you can't find it at first, since Cancer isn't easily visible from moderately light polluted areas. Once you find Cancer, look for its most famous deep-sky object: the **Beehive Cluster**! It's a large open cluster of young stars, three times larger than our Moon in the sky. The Beehive is visible to unaided eyes under good sky conditions as a faint cloudy patch, but is stunning when viewed through binoculars or a wide-field telescope. It was one of the earliest deep-sky objects noticed by ancient astronomers, and so the Beehive has many other names, including Praesepe, Nubium, M44, the Ghost, and Jishi qi. Take a look at it on a clear night through binoculars. Do these stars look like a hive of buzzing bees? Or do you see something else? There's no wrong answer, since this large star cluster has intrigued imaginative observers for thousands of years.



55 Cancri is a nearby binary star system, about 41 light years from us and faintly visible under excellent dark sky conditions. The larger star is orbited by at least five planets including **55 Cancri e**, (a.k.a. Janssen, named after one of the first telescope makers). Janssen is a “super-earth,” a large rocky world 8 times the mass of our Earth, and orbits its star every 18 hours, giving it one of the shortest years of all known planets! Janssen was the first exoplanet to have its atmosphere successfully analyzed. Both the Hubble and recently-retired Spitzer space telescopes confirmed that the hot world is enveloped by an atmosphere of helium and hydrogen with traces of hydrogen cyanide: not a likely place to find life, especially since the surface is probably scorching hot rock. The NASA Exoplanet Catalog has more details about this and many other exoplanets at bit.ly/nasa55cancrie.

How do astronomers find planets around other star systems? The Night Sky Network’s “How We Find Planets” activity helps demonstrate both the transit and wobble methods of exoplanet detection: bit.ly/findplanets. Notably, 55 Cancri e was discovered via the wobble method in 2004, and then the transit method confirmed the planet’s orbital period in 2011!

Want to learn more about exoplanets? Get the latest NASA news about worlds beyond our solar system at nasa.gov.

You can find a printer-ready version of this article on our Night Sky Notes [resource page](#) every month, free to share with your club newsletter, website, or even local paper!

Additional Skywatching Resources

Plan your skywatching with help from our [planner page](#), featuring daily stargazing tips courtesy [EarthSky](#) monthly [sky maps](#), and [videos](#) from NASA/JPL. You can even find out how to spot the [International Space Station](#). Both [Astronomy](#) and [Sky and Telescope](#) magazines offer regular stargazing updates to readers in print and online. Find [clubs](#) and astronomy [events](#) near you, and may you have [clear skies](#)!



Night Sky Network (NSN) member clubs are dedicated to bringing the wonders of space and NASA science to folks across the USA. NSN program participation provides clubs with [tools](#) and [resources](#) to assist in their public outreach.

From the LAAS Archive

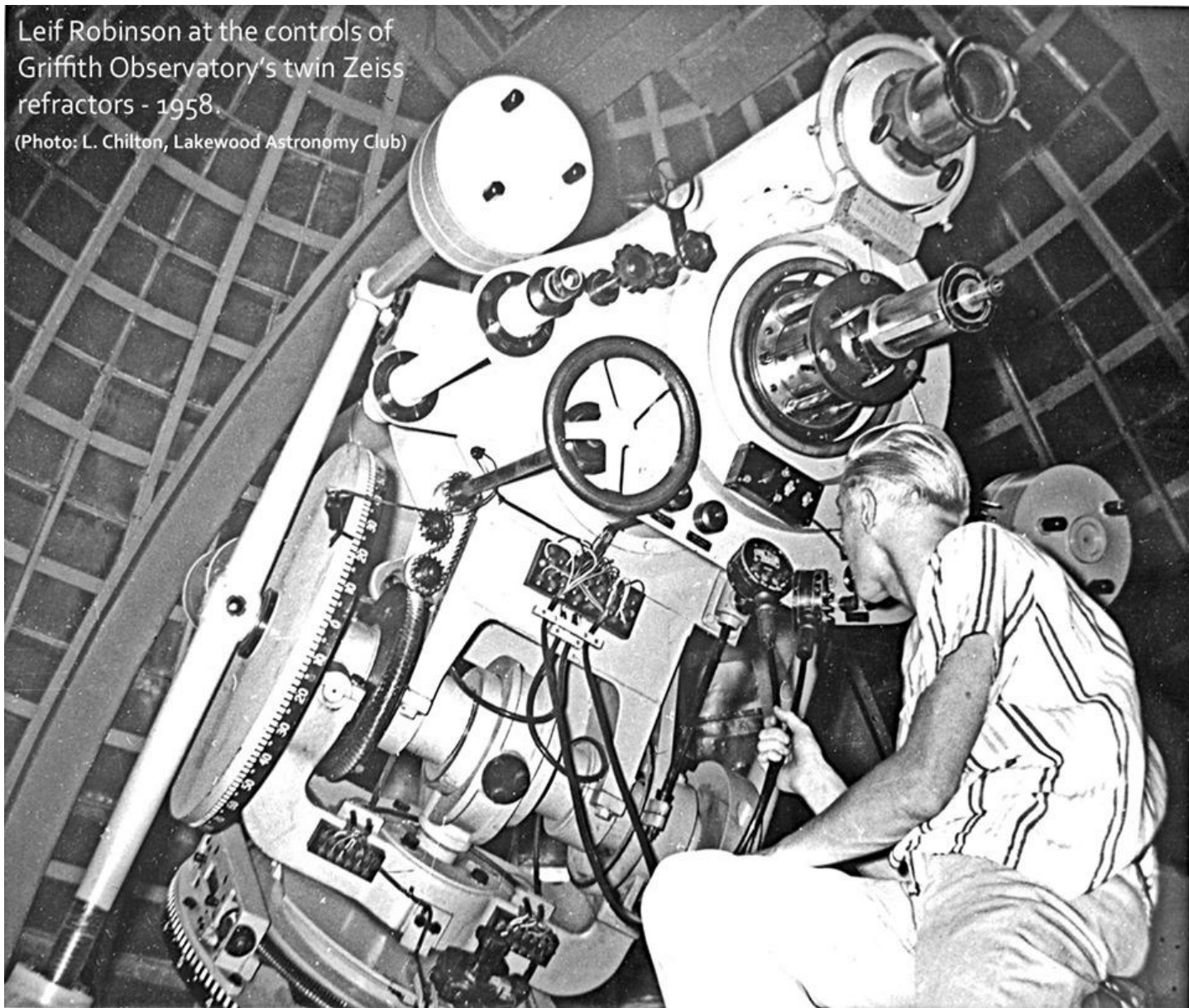
By Lew Chilton, Club Historian



My first camera, pictured here, introduced me to a lifelong love of photography. That was 1957, the same year I acquired my first telescope and became an avid amateur astronomer. The following year, 1958, my junior high school astronomy club took a tour of Griffith Observatory where I took the two accompanying pictures with this little camera. My first mirror making effort followed soon after. And the die was cast!

Leif Robinson at the controls of
Griffith Observatory's twin Zeiss
refractors - 1958.

(Photo: L. Chilton, Lakewood Astronomy Club)



1958 - Leif Robinson at the controls of Griffith Observatory's twin Zeiss refractors.

Photo credit: Lew Chilton



LAAS optical shops in the basement of Griffith Observatory, 1958. Shop director Joe Miller (right) and Charlie Chinzi (left) are polishing 6-inch mirrors. (Photo taken by Lewis Chilton with a Kodak Brownie Holiday camera during a field trip of the Lakewood Astronomy Club.)

LAAS ARCHIVE

Meet The New Members

Welcome to the LAAS!



Cele Zhao

Lauren Benedict

Paul Major

Peter, Hadley, & Josie Arnold

Amy and Amanda Astrosky

Yvonne Mullet & Alliston Cardona

Mark Schaefer

Farhed AlZanik

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.



Monthly Star Report

By Dave Nakamoto

Venus is the only bright planet visible in the skies of April. It now lies directly west and quite high up, and is the brightest “star” in the sky this month and through to May. But as the weeks pass, Venus gets lower and lower in the western sky, until by the end of May it disappears until early 2021, although if you really want to see it, it appears in the morning skies towards the east in late June. Through a telescope, Venus shows itself as slightly less than a half phase, and gets thinner and thinner, and larger and larger, as the weeks go by. You’ll need magnifications of about 50x to see these phases.

We’re passing through a transition period of sorts with the constellations; the ones associated with Winter are in the western skies, while the ones for Spring are in the east. Orion is low in the west when evening comes, adorned with reddish Betelgeuse in the upper left corner, and cold white Rigel in the lower right corner. In the east is the sickle or reversed question mark of Leo the Lion, with white Regulus at the base of the Sickle. If you look in the northeast, you’ll see the Big Dipper with its handle pointing towards the ground and its bowl or dipper riding high in the sky.

This month the moon starts the month as a first quarter phase and ends it the same way. This happens because the lunar cycle is close to a 30 day period, hence the word “month” which is derived from the same root as “moon”.

The moon always presents a fascinating and ever-changing panorama of shifting shadows and differences in greys across its surface, especially along the terminator, the line between lunar daylight and night.

Here is the lunar cycle for this month.

First Quarter – 1st

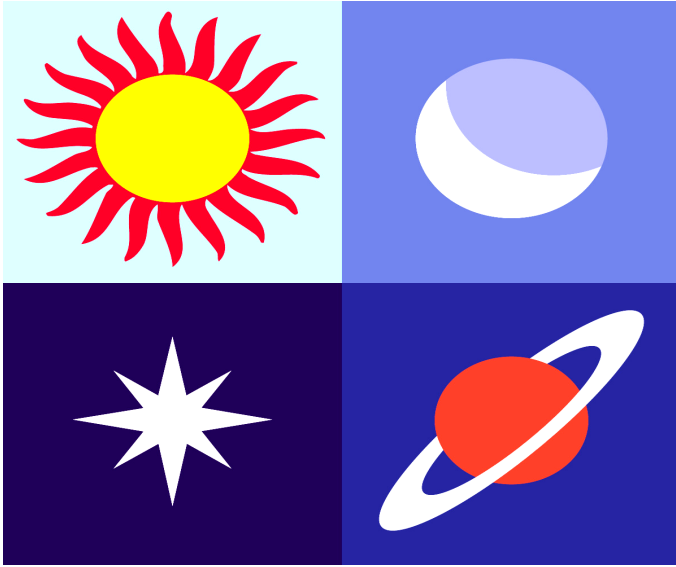
Full Moon – 8th



David Nakamoto has been observing the heavens through various scopes since he was in the 5th grade. He can be reached at

dinakamoto@hotmail.com.

Almanac



April 5 - 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 08:51 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.

April 11 - Mercury at Greatest Western Elongation. The planet Mercury reaches greatest western elongation of 27.7 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.

April 19 - 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 11:12 UTC. This full moon was known by early Native American tribes as the Full Pink Moon because it marked the appearance of the moss pink, or wild ground phlox, which is one of the first spring flowers. This moon has also been known as the Sprouting Grass Moon, the Growing Moon, and the Egg Moon. Many coastal tribes called it the Full Fish Moon because this was the time that the shad swam upstream to spawn.

April 22, 23 - Lyrids Meteor Shower. The Lyrids is an average shower, usually producing about 20 meteors per hour at its peak. It is produced by dust particles left behind by comet C/1861 G1 Thatcher, which was discovered in 1861. The shower runs annually from April 16-25. It peaks this year on the night of the 22nd and morning of the 23rd. These meteors can sometimes produce bright dust trails that last for several seconds. The waning gibbous moon will block out many of the fainter meteors this year, but if you are patient you should still be able to catch a few of the brightest ones. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Lyra, but can appear anywhere in the sky.

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

Need Help With A New Telescope?




Due to the Covid Virus, the Garvey Ranch Park Observatory will be closed until mid-April.

If you need assistance over the phone, call 213-673-2755. We'll try to find someone who can help you.

Learn more: [The Garvey Ranch Park Ob-](#)



April 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
			5	6	7	8 Board—Virtual Passover
12 Easter Sunday 	13 General Meeting/ Cancelled!	14	15	16 	17	18
19	20	21	22	23	24	25 Dark Sky Night/ Cancelled
26	27	28	29	30		

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

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secretary@laas.org

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jcrochford@gmail.com

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communications@laas.org

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mtwilsoncoordinator@laas.org

Bulletin Editor: Andee Sherwood

communications@laas.org



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

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

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

**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: