

THE LOS ANGELES ASTRONOMICAL SOCIETY

APRIL, 2024 Volume 98, Issue 4

THE BULLETIN



In August 2017, the members of the LAAS traveled to Rexburg, Idaho to observe the total solar eclipse on Aug. 21st..

Photo credit: Spencer SooHoo, PhD.

ARE YOU READY FOR THE ECLIPSE ON APRIL 8, 2024?

The Garvey Ranch Park Observatory is open for free to the public and to all LAAS members and friends on Wednesday nights from 7:30 PM to 10 PM. Go to our website at <u>LAAS.org</u> and click on "Locations" to learn more about this special weekly event.



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Upcoming Club Events Board Meeting: Apr. 3 Dark Sky Night: Apr. 6 General Meeting: Cancelled Public Star Party: Apr. 13

Mt. Wilson 60 and 100 Inch Nights Schedule for 2024

60 Inch Dates:

Friday Apr. 12

Friday May 3

Friday June 7

Friday July 5

Friday Aug. 2

Saturday Sept. 7

100 Inch Night:

Friday, June 7th.

Friday Oct. 4th.

The Cost per person, per session: 60 Inch Night - \$65.00 100 Inch Night - \$170.00 (Booked/Waiting List only)

There will be 20 people, per session



Learn more about these incredible events by visiting Mt. Wilson Observatory's website:

https://www.mtwilson.edu/60-telescope/

https://www.mtwilson.edu/100-telescopeobserving/

How to Make a Reservation?

Please contact Darrell Dooley **BEFORE** you pay for your reservation. Darrell is our Mt. Wilson Coordinator and the **ONLY** contact available. Darrell's Email Address: <u>Mtwilsoncoordinator@laas.org</u> Darrell will answer all of your questions and concerns.

Amboy And Their Toys By Keith Armstrong



Hi Friends!

Last Saturday was Messier Marathon weekend and we definitely made the most of it. That day was also the first SKAS Dark Sky Night that wasn't weathered out in awhile, so deciding where to go was a heavy choice. Our beloved SKAS is probably dark enough for the marathon, but in order to "catch em all" before they set and before the sun rises at the end of the night, low East and Western horizons are a must. Therefore a group of us headed to the Amboy Crater to partake in its expansive landscape and Bortle 2 skies to give it a go. Three of us were really going for it, while the more mentally stable of us imaged, and took the time to actually enjoy what they were observing.

The marathon is a truly gluttonous affair, akin to monster trucks and hot dog eating contests. In my second year it is becoming more clear to me that the benefit of it is always about something else rather than astronomy itself. Last year was my first attempt, and it was all about confidence. I had only been a-scopin' for about 10 months at that point, but Brian convinced me that it wouldn't be a total failure. He mercifully had a plan B in his digital setting circles, and we ended up going to them a good bit when our Telrad skills failed us. However I came out of that experience feeling as though I cleared some sort of hurdle. In the way that coral needs to grow on a rock formation or the like, I find that my confidence needs to grow on specific accomplishment. The marathon last year was instrumental in letting me feel comfortable sharing what I know as a positive use of the receiver's time. Also I feel braver in trying to find more difficult objects, even using classic star hopping, where you need to move one FOV at a time to get to where you want to go.

This year was something of a Bar Mitzvah for the PiFinder. For those of you not privy to this wondrous device, it is a self contained finder system that uses a camera to plate solve the night sky and tell you where to move your telescope so that you can see the object of your heart's desire. It is relatively small and lightweight, with design consideration taken so that it can be mounted on any telescope without modification. It is made by our own Rich Sutherland (more about him later) and you can learn more about it here:

https://www.pifinder.io/

I was lucky enough to learn about it a year ago and it has been really fun watching it get better and better with each software revision. My original plan for this year was to do a fully non-assisted marathon, but I wanted to practice in advance, allowing me to know that I actually CAN find all 110 Messier objects without any robots helping me out. But weather got in the way, and I have only gotten about halfway through the catalog in that regard. So I decided to see what it would be like to PiFind my way through the marathon as a test of the device. I got 109 out of 110 with the last of em (M30) being drowned out by the sun before I had a chance to try. I chose to use Pifinder in concert with Sky Safari, so that the sky safari reticle (chosen to reflect the FOV of my scope and ep) moves across the screen reflecting exactly what it is aimed at. I had the marathon list highlighted by Sky Safari, so I could easily move to the next object on the list without referring to any other sources. Once I ID'd the object through my eyepiece, I deleted it from the list, which also removed it's highlight. SO EASY and fast. We got to the "intermission" of the marathon, when there is typically an hour or two of waiting before new objects come up in the east, at about 9:30pm. Waaaaaaaaay earlier than the previous year. The rest of the night we were just picking off objects low on the eastern horizon, shortly after they rose. I didn't need to wait for guide stars at all.

Granted, the visual quality of the objects was low due to the extra atmosphere we were viewing through, but it did offer us a lot of time to see stuff outside the Messier catalog. We also also took in my fave irregular galaxy, NGC 4449, Jupiter, Mars, Venus, Albeirio, Double Cluster, Centaurus A, and Omega Centauri. It was fun seeing Omega and contrasting it to m13. It seemed about twice the size of the Hercules cluster. Just MASSIVE. Also we got to take in two comets!!! Both 12P/Pons-Brooks (mag 6.5) and C/2021 S3 (PANSTARS) (mag 7.5) were visible with recognizable tails. I reckon that by the end of the night I had seen 119 objects. The Amboy sky was mostly cloud free with good seeing, but transparency wasn't wonderful, making the Bortle 2 seem closer to what we normally get at Lockwood.

But yet again, the overwhelming feeling I came away with on the ride home was the elation of spending such quality time with you guys. At the Amboy parking lot there was also an Astro meetup going on with others interested in the hobby, and they seemed like they were having a pretty good time. But there wasn't the laughter and comfortable patter that our group had. Almost all of us took the traditional hike to the top of the crater and also took part in the group breakfast the morning after. It felt like home with you all. Thank you to Rich S, Ben G, Jonathon C, Nasir J, Belanie A, Elizabeth P, Daniel A, and his dad for making that night so wonderful. I know that with LAAS I am going to have a good time regardless of whether the clouds wipe us out, there is a technical meltdown, or if everything runs perfectly. You are the reason it is worth the long drives and sleep deprivation every time.



One of my favorite things about this event was that I got to spend it with Belanie. She was one of the first people I spoke to as a new member on my first trip to SKAS. She images with a 6" newtonian similar to my main axe at the time. It was wild to me to see what you could do with that instrument since mine was so meager, with a simple unguided EQ mount, while hers was bulging with all manners of guiding and cameratica. She was so kind to me and helped me feel more at ease among the bewildering and massive setups being built in the pre sunset hour that evening. Since then she has always kept that cheerful demeanor, even on Saturday when her rig suddenly acted out of malice and started making the sort of sound my coffee grinder does. I believe the quote was something like "oh well, I got some good images already. I am happy to look through other peoples scopes now). I will always be grateful for the effort she put in cleaning out the old trailer at SKAS. It was a fairly disgusting job and she jumped right in to help. She usually sets up with the other AP folks to the west at SKAS, so we never get to hang out, as I am always to the east with observers and the 26" or in GMO with the 16". I hope we become more regular astro neighbors in the future!

Another obvious plus to the night was having Ben around. I would describe him as my favorite kind of smart. The bookshelves in his mind are clearly full with all manners of knowledge of computer, imaging, geology, and the like. But he is also an engaging personality and he weaves that knowledge into conversation in an easily digestible way. He teaches what he knows like an equal, as if he was sharing what he had just learned the week before and not creating an obvious mentor dynamic. He easily is a mentor to others in the club and I never hesitate to send members to him to learn AP. But what makes him special to me is that he is always looking to get out there under the sky. He has become one of my first-call members because I know there is a good chance he will say yes. He will make that short notice drive to SKAS, Cottonwood, and Amboy and be excellent company once he is there.

Not unlike Ben there is Rich. The dude scratch built pifinders in his mind and then his home. I will always be in awe of people who know enough about the world around them that they can create at the level that he does. He dispenses his expertise as a gesture of his inherent politeness and kindness. Rich certainly offers tremendous support for the pifinders, but also to you just because you are there. He scratch built his massive and excellent dob, making him an example of the initial essence of LAAS. From what I understand of Steve Kufeld, Rich is our heir-apparent to him. I LOVE that our membership created the Telrad as a solution for it's time, and now the Pifinder as solution for the modern era. Having him to my right on that night running through the catalog was such a joy, and I hope you get a chance to meet him if you already haven't. He isn't a regular anywhere outside of SKAS, but look out for him at the dob pad in the crazy industrial freezer suit when it gets cold.

The other marathonist that night was Jonathon C. I met him at Garvey and he became one of the regulars at Chuchupate. Since then he has joined for both Marathons at Amboy and the Astrotrip. He is always great to have on these journeys, but I cannot believe how good he has gotten at star hopping. With little exception he was beating me to targets all night using only a traditional finder scope. Of the people I know dong this sort of astro, he has got to be the top gun. He is also a quintessential good-vibes dispenser and is the ideal companion for a long night out. He doesn't operate with intensity, yet will casually nail dozens of objects in bursts and then jam out on a kalimba atop a crater. Something of a fictional character come to life, we get to have him in our midst. Blessed are we!

I hope we get a bunch more adventures this year making this one only the first! I can't wait to trade eclipse stories with you, and I hope to see you for the Mexico exchange program later this year. I feel like both of these things will be the highlights of 2024, along with a potential Astro-trip II.

See y'all at Garvey, SKAS, G.O., Mt Wilson, and outreach!

L—> R we have Elizabeth Perser, Ben Guthrie, Nasir Jeevanjee, Richard Sutherland, Jonathon Coronel, Me, and Belanie Amoranto.



Amboy And Their Toys - Images By Ben Guthrie

I have wanted to visit Amboy for some time, and wasn't let down. It's a long drive, but I am fine with a long drive if the result is good... and it was. Super fun group, washrooms, paved parking lot, a fun midnight hike to the crater... sign me up for another run. I cant wait until the summer when it's warm all night to do it again.

I haven't had a chance to process my images, but here is what my iPhone saw. I am hesitant to process iPhone data at all as I don't have any calibration images...



Keith kept baiting me with NGC4449, saying it was this fun box shaped nebula... so this was my first attempt at the native focal length of the EdgeHD 9.25. I wanted to reach for some of the more uncommon galaxies at this focal length, and Amboy seemed to offer the skies to support it. This is a slight crop, but basically 2350mm @ F10 with my APS-C 2600MC. Unfortunately my auto focuser drove the focus way off for about 150 pictures... and traffic around my telescope appears to have caused vibration in the tripod which damaged another 20 or so beyond what I would call acceptable... so this has about half of the signal I had hoped I would have. This focal length is not very forgiving for sure. Regardless, this was mostly a success and I will try it again.



I was hoping for framing more like this... but instead I have to zoom in unreasonably.



Participate in Eclipse Science By Kat Troche

April is NASA's Citizen Science Month, and there is no shortage of projects available. Here are some <u>citizen science</u> <u>projects</u> that you can participate in on April 8th, on and off the path of totality right from your smartphone!



Eclipse Soundscapes, ARISA Lab / NASA

Eclipse Soundscapes

Eclipse Soundscapes will compare data from a 1932 study on how eclipses affect wildlife – in this case, crickets. There are a number of ways you can participate, both on and off the path. NOTE: you must be 13 and older to submit data. Participants 18+ can apply to receive the free Data Collector kit. Learn more at: <u>eclipsesoundscapes.org/</u>

GLOBE Eclipse

Folks that participated in the **GLOBE Eclipse** 2017 will be glad to see that their eclipse data portal is now open! With the GLOBE Observer smartphone app, you can measure air temperature and clouds during the eclipse, contributing data to the GLOBE program from anywhere you are. Learn more at: <u>observer.globe.gov/</u>



HamSCI, The University of Scranton / NASA

HamSCI

HamSCI stands for **Ham Radio S**cience **C**itizen Investigation. HamSCI has been actively engaged in scientific data collection for both the October 14, 2023, annular solar eclipse and the upcoming April 8, 2024, total eclipse. Two major activities that HamSCI will be involved in around the solar events will be the **Solar Eclipse QSO Party** (SEQP) and the **Gladstone Signal Spotting Challenge** (GSSC) which are part of the HamSCI Festivals of Eclipse Ionospheric Science. Learn more about these experiments and others at: <u>hamsci.org/eclipse</u>



SunSketcher, Western Kentucky Universi-

SunSketcher

If you're traveling to totality, help the **SunSketcher** team measure the oblateness, or shape, of the Sun during the eclipse by timing the flashes of Baily's Beads. You will need a smartphone with a working camera for this, along with something to hold the phone in place - don't forget a spare battery! NOTE: The app will need to run from five minutes *before* the eclipse starts until the end of the eclipse. Any additional phone use will result in Sun Sketcher data loss. Learn more at: <u>sunsketcher.org/</u>

Don't stop at the eclipse - NASA has citizen science projects you can do all year long – from <u>cloud spotting on Mars</u> to <u>hunting for distant planets</u>! By contributing to these research efforts, you can help NASA make new discoveries and scientific breakthroughs, resulting in a better understanding of the world around us, from the critters on the ground, to the stars in our sky.

We'll be highlighting other citizen science projects with our mid-month article on the <u>Night Sky Network</u> page, but we want to wish all you eclipse chasers out there a very happy, and safe solar eclipse! For last minute activities, check out Night Sky Network's <u>Solar Eclipse Resources section</u>!



This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit <u>nightsky.jpl.nasa.gov</u> to find local clubs, events, and more!

Images By Laura-May Abron

I was observing the sun in H-alpha right before sunset when I spotted, ha, an incredibly bright region. There was haze and this must have been AM4 or 5 which is why it surprised me. I had been tuning it and was only on it a short while before sunset so I figured it was a plage but then got an X-flare notification. How do I differentiate visually between them? Sudden brightening?

I grabbed a few shots through a potato.

...Either way, double stack is truly worth the money.





I did realize later that evening that it was indeed a sympathetic solar flare. The brightness of two separate areas is what had shocked me.

I shot it on a Lunt double-stacked H-alpha 80mm

Photo credit: Laura-May Abron

Monthly Sky Report By Dave Nakamoto

All times in Pacific Daylight Time

On the 1st, civil twilight begins at 6:14 a.m., sunrise at 6:40 a.m., sunset at 7:15 p.m., and civil twilight ends at 7:40 p.m. On the 30th, civil twilight begins at 5:38 a.m., sunrise at 6:04 a.m., sunset at 7:37 p.m., and civil twilight ends at 8:04 p.m.

The last quarter moon occurs on the 1st, new moon on the 8th, first quarter on the 15th, and full moon on the 23rd. Here are the planets as they appear from evening to morning.

Venus is close to the sun in April and cannot be observed safely.

On the 1st, Mercury sets in the west-northwest at 8:26 p.m., one hour 11 minutes after sunset. The planet's disk is 17 -percent illuminated and 9.3 arcseconds wide. On the 8th, the sun sets at 7:20 p.m., and Mercury sets at 7:45 p.m., 25 minutes later. The planet is close to the sun and cannot be observed safely. On the 18th, Mercury rises in the east at 5:47 a.m., and the sun rises at 6:18 a.m., 31 minutes later. On the 30th, Mercury rises at 5:09 a.m., 55 minutes before sunrise. The planet's disk is 24-percent illuminated and 9.8 arcseconds wide. Do not observe any planet when it comes close to the sun, for the danger to the eyes is great.

Jupiter sets in the west-northwest at 9:59 p.m., on the 1st. The planet is 33 arcseconds wide. On the 30th, Jupiter sets at 8:37 p.m. With a telescope capable of magnification 50x you can see the Red Spot, and the four bright Galilean moons can be seen moving back and forth, across and behind Jupiter.

Uranus is in the constellation Aries the Ram. On the 1st, the planet sets in the west-northwest at 10:16 p.m. On the 30th, Uranus sets at 8:30 p.m. On the 15th Uranus is at Right Ascension 3^h 16^m 35^s with a declination of +17° 52' 38". A telescope with a magnification of 150x or more is needed to see its 3.4 arcseconds wide disk.

Mars moves from Aquarius the Water Bearer to Pisces the Fishes on the 23rd. On the 1st, Mars rises in the eastsoutheast at 5:15 a.m., one hour 25 minutes before sunrise. The planet is 95-percent illuminated and 4.6 arcseconds wide, too small for anything to be seen on its disk. On the 30th, Mars rises at 4:20 a.m.

Saturn is in Aquarius the Water Bearer. On the 1st, Saturn rises in the east at 5:33 a.m. On the 30th, the planet rises at 3:47 a.m. Saturn is 16 arcseconds wide, and so a telescope with a magnification of 50x is needed to see the rings and Saturn's largest moon, Titan.

Neptune is in the constellation Pisces the Fishes. On the 1^{st} , Neptune rises in the east at 6:09 a.m., 31 minutes before sunrise. On the 30^{th} , Neptune rises at 4:17 a.m. On the 15^{th} , Neptune is at Right Ascension $23^{h} 56^{m} 7^{s}$ with a declination of $-1^{\circ} 45' 20''$. A telescope with a magnification of 150x is needed to see its 2.2 arcsecond wide disk.

The Lyrid meteor shower is active from the evening of the 15th to the morning of the 29th. They are named after the constellation Lyra the Harp from which they appear to originate. The Lyrid meteors may have 20 meteors per hour at the peak, which will occur from the evening of the 21st to the morning of the 22nd and can produce occasional fireballs. The 96-percent-illuminated moon will interfere with observations.

A total solar eclipse will occur on April 8 along a narrow path stretching from México through Canada's Maritimes. It will be a partial eclipse as seen from Los Angles. The moon first enters the sun's disk at 10:06 a.m. The moon will cover 49-percent of the sun's disk at 11:12 a.m. The moon will then slowly uncover the sun until it leaves the disk at 12:22 p.m. Never look at the sun without proper solar filters.



The author can be reached at <u>dinakamoto@hotmail.com</u>.



Almanac

Source: <u>Seasky.org</u>

April 8 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 18:22 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 8 - Total Solar Eclipse. A total solar eclipse occurs when the moon completely blocks the Sun, revealing the Sun's beautiful outer atmosphere known as the corona. This is a **rare, once-in-a-lifetime event** for viewers in the United States. The last total solar eclipse visible in the continental United States occurred in 2017 and the next one will not take place until 2045. The path of totality will begin in the Pacific Ocean and move across parts of Mexico and the eastern United States and Nova Scotia. The total eclipse will be visible in parts of Texas, Arkansas, Missouri, Illinois, Indiana, Kentucky, Ohio, Pennsylvania, New York, Vermont, New Hampshire, and Maine. (<u>NASA Map and Eclipse Information</u>) (<u>NASA Interactive Google Map</u>)

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 night of the 22nd and morning of the 23rd. These meteors can sometimes produce bright dust trails that last for several seconds. Unfortunately the glare of the full moon will block out all but the brightest meteors this year. But if you are patient, you may still be able to catch a few good 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.

April 23 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 23:50 UTC. This full moon was known by early Native American tribes as the 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 Fish Moon because this was the time that the shad swam upstream to spawn..

April 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				_		
	1	2	3	4	5	6
			Garvey Night			Dark Sky Night
			Board Mtng			
7	8	9	10	11	12	13
			Garvey Night		60 Inch Night	Public Star Party
14	50lar Eclipse	16	17	18	19	20
**	10	10	Garvey Night	10	10	20
			danvoy night			
21	22	23	24	25	26	27
			Garvey Night			
28	29	30				



Elijah Kay Nora Lee

Amy Lin

Lori Orson

LAAS Board Meetings

Mari Weiss

All Board Meetings are 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 <u>secretary@laas.org</u> 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.

Volunteers are always welcome 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.

Please send any articles, images, or artwork to the newsletter editor here: <u>communications@laas.org</u>

Time To Renew Your Membership?

Please remember to renew your membership after you receive a notice from the Club Secretary.

Please send any new contact information to the club secretary at <u>secretary@LAAS.org</u> OR login to your account here: <u>https://common.wildapricot.com/login</u>



Outreach Team Volunteers

"We are dedicated to advancing the knowledge of astronomy, optics, telescope making, and the wonders of our universe."



One of the ways the LAAS advances the knowledge of astronomy and the wonders of our universe is to visit local schools in our area with telescopes. The telescope operators are current members of the club. Many schools invite us to their campus to provide views of the objects in the night sky for not only the children but for the staff and parents, too. Some schools invite us on scheduled "Science Nights" while other schools plan a special evening of astronomy education on their campus. Other activities may be planned by the school during the event while our members are stationed in one specific location with telescopes to share with students and other school guests. These special members are part of our Outreach Team.

Our Outreach Coordinator is Heven Renteria. He and the others on his team have been attending outreach events on campuses throughout Los Angeles county and beyond. Many of them travel great distances (and after a full day of work) to share astronomy with children and the public. The LAAS is also invited to attend special community events or events at state or city parks, libraries, and other venues. Re-

cently, the club could not accept additional requests for outreach events because the team's schedule was full.

The LAAS needs more members to join the outreach team. Some of these events may be local to you. Outreach members are greatly appreciated by the school administrators and students at every event.

You don't need to be an expert using a telescope as the members of the team will help you set up and find objects in the sky to share with the students. You can attend an outreach event without a telescope and help the team with their telescopes or help with the long lines of children who are excited to look through a telescope for the first time.

These events are fun and rewarding in many ways. The enthusiasm shared by the children is infectious, in the best way possible. If you enjoy attending Public Star parties at the Griffith Observatory, you will enjoy a school outreach event.

The Outreach Team really needs your support and participation.

Please contact Heven at outreach@laas.org to learn more.

Thank you for volunteering!

Andee Sherwood Communications



John O'Bryan shows a student the Sun at Overland Elementary, 2021. Photo credit: Van Webster

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 for more information.



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

Outreach Request Form

LAAS Club Merchandise

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

To find new merchandise from our store, please use the following link: **Shop Here**

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.





LAAS Hoodie







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.

John O'Bryan, Jr.

Treasurer

Astronomy Magazines

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.



Click here to subscribe to Sky and Telescope Magazine.



Subscribe or renew to the McDonald Observatory's StarDate Magazine and receive a special discount. Follow this link to subsribe and press "Add to Cart" under the type of subscription option: <u>http://stardate.org/store/subscribe</u>

On the Checkout form, enter "network" in the Coupon Code box.



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.

Use this link to begin the subscription process.



Join the Astronomical Society of the Pacif-

ic and help support the cause of advancing science literacy through engagement in astronomy. Member benefits include a subscription to <u>Mercury Magazine</u>, published quarterly.

Club Contact Information

President: Darrell Dooley

President@laas.org

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 Historian—Lew Chilton

trainfans2@sbcglobal.net



Find astronomy outreach activities by visiting NASA's <u>Night Sky Network</u>

Club Contacts

Club Phone Numbers

LAAS Message Phone: 213- 673-7355 (Checked daily) Griffith Observatory: 213-473-0800

Sky Report:

213-473-0880



Follow us on social media by clicking on one of the icons below:









