



THE LOS ANGELES ASTRONOMICAL SOCIETY

THE BULLETIN

MAY, 2018

VOLUME 92, ISSUE 05



Los Angeles Astronomical Society - July 27, 1941
from left: George Schmidt, Avery Hildom, James Handschiegl, Thomas Cragg, Lewis O'Hare, Ralph Dietz

The above photo was shared by our Club Historian, Lew Chilton. Here's what Lew has to say about the photo: "Mt. Wilson star parties are not new! Here's one from 1941 (or possibly 1940). Note the LAAS members and their scopes in the photo. "

Sunday Afternoon Concerts in the Dome

Our friends at Mt. Wilson Observatory will be having a concert under the dome of the 100 Inch Telescope on May 6, 2018. For further information about this spectacular event, please visit <https://www.mtwilson.edu/concerts/>

LAAS Dates To Remember

Board Meeting: May 9th. ~ General Meeting: May 14th.

Public Star Party: May 19th.

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Public Star Party News!!!

Starting in June, the Public Star Party end time will be extended to 10:30 PM. This will continue through August, 2018.

Supermassive Black Holes in Bulgeless Galaxies

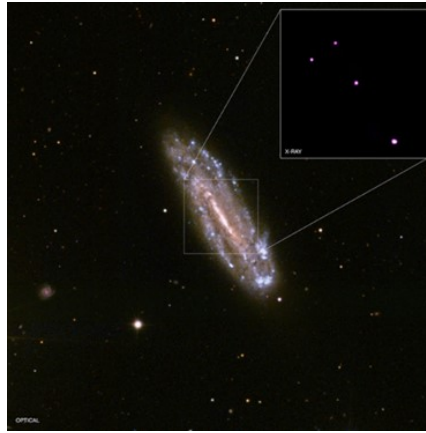
By Bryan Demapan

When we think of galaxies, we picture an arrangement of stars that form a variety of beautiful patterns of light amidst the dark emptiness in space. How ironic it is that for being great bodies of illumination, most galaxies have great hearts of darkness. Such hearts are objects known as supermassive black holes (SMBHs) the biggest of all black holes, which are one of the possible fates of massive stars. Black holes are so dense that not even light can escape from its immense gravity.

Yet, like yin and yang, the cosmic duality of a bright galaxy and its dark SMBH are interrelated with one another. Like a harmonious relationship, the SMBH and its host galaxy grow in time. More specifically, the stars that form the central part of the galaxy, the bulge, move out in larger orbits as the SMBH grows. In this case, larger SMBHs are in galaxies with larger bulges. So based on this relation, one can view SMBHs and their host galaxies with bulges to be like an inseparable couple. If a galaxy does not have a bulge then it should not have a SMBH. There have been many bulgeless galaxies that have been found to host no SMBHs. The most prominent example is the Pinwheel galaxy.

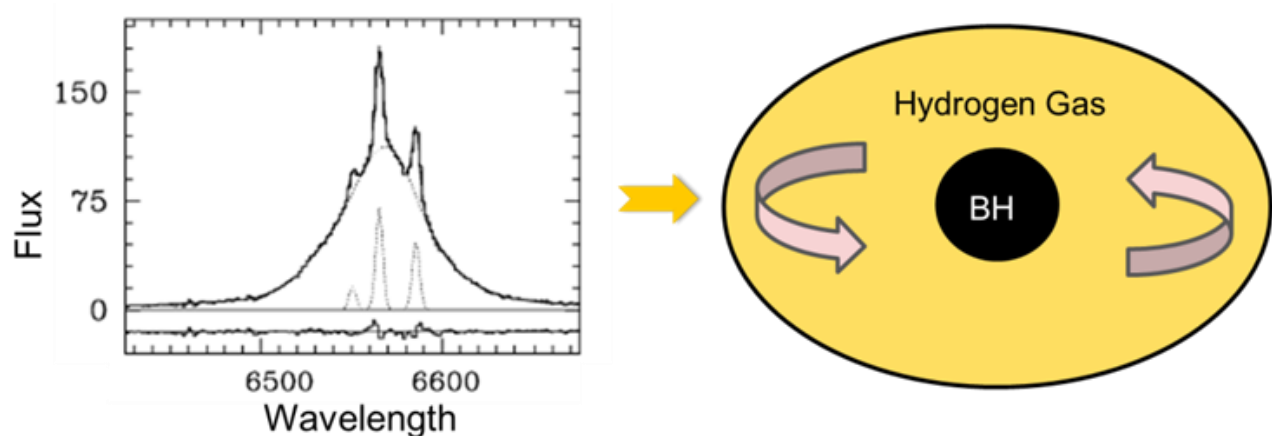
However, we are recently finding more SMBHs in bulgeless galaxies. Henize 2-10 is a nearby dwarf bulgeless galaxy about a thousandth the size of our Milky Way galaxy. Astronomers have confirmed that Henize 2-10 hosts a SMBH of about one million solar masses. Another bulgeless galaxy, NGC 4178, has a two hundred thousand solar mass SMBH, which is one of the smallest SMBHs ever identified! The discovery of bulgeless galaxies with SMBHs has both fascinated and mystified many astronomers. We thought we had a general idea on the origin and formation of SMBHs in relation to their host galaxies.

Continued on next page



NGC 4178 is a spiral bulgeless galaxy having a SMBH of 200,000 solar masses NASA's. The image zooms on X-ray sources taken from Chandra X-ray Observatory. The 3 outer x-ray sources are binary systems containing either a neutron star or black hole. The biggest of the 3 is said to be an intermediate black hole of 6000 solar masses. Image taken from: <http://chandra.harvard.edu/photo/2012/ngc4178/>.

But could we find more SMBHs in bulgeless galaxies? Several studies are being conducted to detect more hidden populations of SMBHs in bulgeless galaxy systems. One study's method is to calculate the mass of a SMBH just by using galaxy spectra. The spectrum of a galaxy provides information on the possibility of hosting SMBHs. The spectra of galaxies that host SMBHs contain unique broad line features, particularly the broad, hydrogen alpha emission line. The Sloan Digital Sky Survey (SDSS) provides galaxy spectra needed to obtain the values of SMBH masses from measured properties of broad lines. From GalaxyZoo, which is a project that asks the public to assist in classifying galaxies by simply looking at their Hubble images, one could find bulgeless galaxies with possible SMBHs. The results of this study and others could further support the idea that SMBH's growth and formation are linked to other factors other than their host galaxy.



The broad hydrogen line is due to the emitting material from the accretion disk that is revolving around the black hole with high speeds causing a range of Doppler shifts of the emitted photons. As the emitted material moves away from us, it gets redder or its wavelength becomes longer. Similarly, if it moves towards it looks bluer or its wavelength becomes. These broad lines are important to study because they provide a way for astronomers to estimate the masses of SMBH.

A New Camera For Garvey Ranch Clubhouse

By Joe Phipps

Monday March 26th

With the LAAS board's approval, a ZWO ASI-071 color camera was purchased to be installed at Garvey Ranch Observatory.



Vance with new equipment.

I meet with Vance Tyree about 6:30 pm on Monday evening to install the new equipment on the Orion ED120 telescope that's piggy-backed to the 8 inch D & G Optics scope in the dome. The new camera will be used along with a QHYCCD brand, model QHY5L-II-C that we've been using for some light astrophotography and broadcasting a live view from the telescope to the giant screen TV donated by member Robert Wu, which is located downstairs in the club workshop. Vance had previously spent several hours at home calibrating the two cameras in a Vixen flip mirror device to be parfocal so that both are in focus at the same point after adjusting the setup on the Orion's focuser. With the installation of the new camera and the additional cabling required, we did some re-routing of the old cabling along with the new cables attaching them to our Schaffer equatorial mount.

Heven Renteria had shown up for some restocking of the fridge and to clean up in the club house, so we asked him to assist in rebalancing the equatorial mount. This was necessary after adding the additional weight of the ZWO and the flip mirror.



Heven assisting with the balancing



Above: ZWO showing the entire moon

Below: QHY close up view



With a laptop computer recently donated by Darrel Dooley, we now have the capability of running two simultaneous versions of SharpCap 3.1 Pro. Using the flip mirror with a 3X Barlow on the QHY, we're able to switch between views of 5.4 X 4.2 arc-minutes on the QHY for high resolution planetary imaging and the 1.35 X 0.9 degree view on the ZWO for deep sky and full disk lunar imaging. Just a turn of the knob on the Vixen Flip mirror allows us to switch between these two fields of view without needing to re-focus.

After focusing the cameras with a Bahtinov mask, we were ready for a test run. The telescopes were slewed over to the Orion Nebula, and after some initial adjustments in SharpCap, Vance started the live stacking process. Within a few minutes of watching the image steadily improve we had a decent color picture on the monitor. Taking into consideration the 71% illuminated moon just 50 degrees from M42, light pollution and poor seeing conditions in Monterey Park that evening the image was fairly good.

We finished up a little after 9:30 and headed home. With the live stacking capability of SharpCap Pro and the results obtained with the initial testing, we are excited to see just what we'll be able to get out of this new setup.

Joe Phipps

First run result



Photo credit: Joe Phipps



What's It Like Inside Mars?

By Jessica Stoller-Conrad



Mars is Earth's neighbor in the solar system. NASA's robotic explorers have visited our neighbor quite a few times. By orbiting, landing and roving on the Red Planet, we've learned so much about Martian canyons, volcanoes, rocks and soil. However, we still don't know exactly what Mars is like on the inside. This information could give scientists some really important clues about how Mars and the rest of our solar system formed.

This spring, NASA is launching a new mission to study the inside of Mars. It's called Mars InSight. InSight—short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport—is a lander. When InSight lands on Mars later this year, it won't drive around on the surface of Mars like a rover does. Instead,

InSight will land, place instruments on the ground nearby and begin collecting information.

Just like a doctor uses instruments to understand what's going on inside your body, InSight will use three science instruments to figure out what's going on inside Mars.

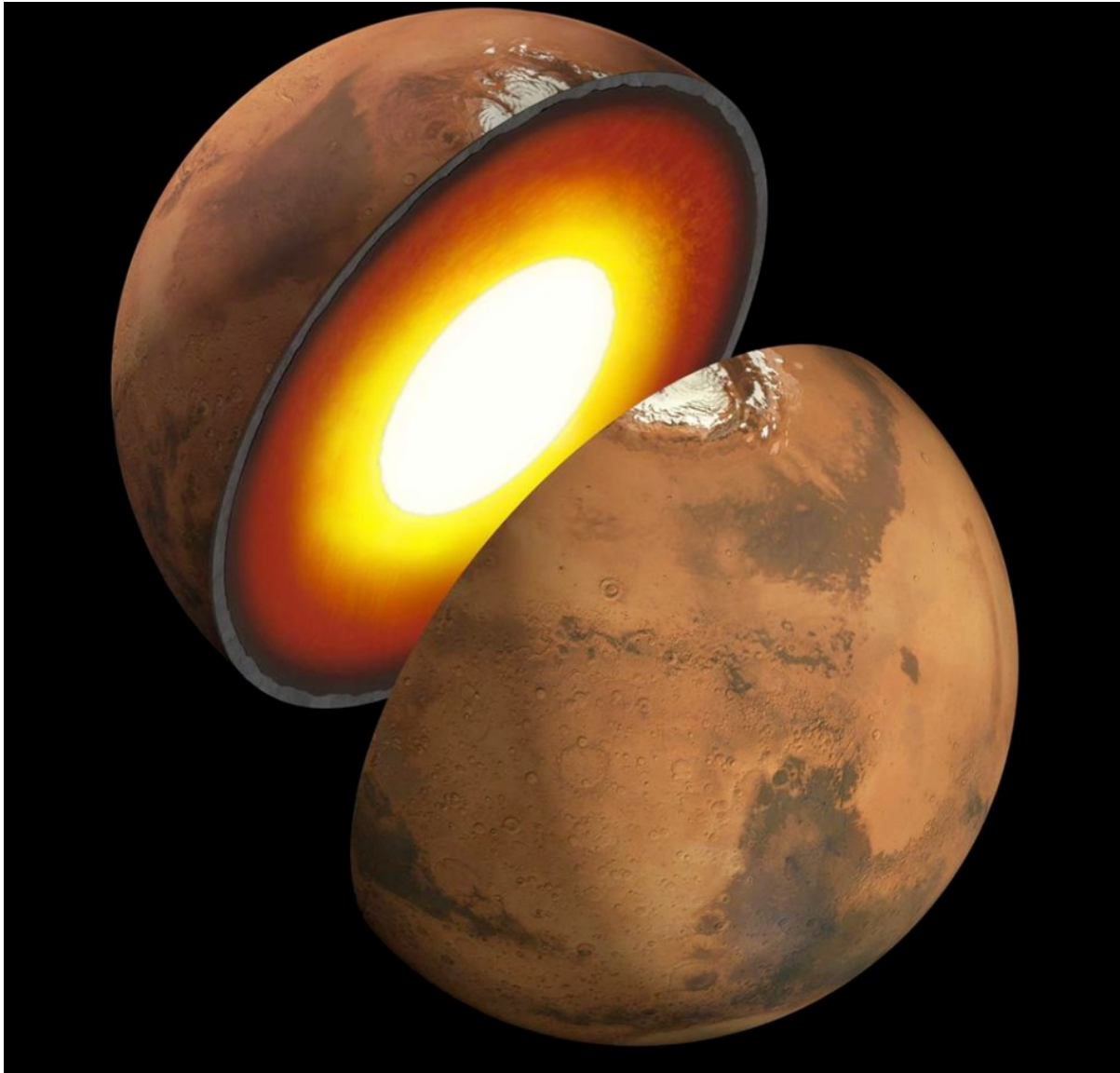
One of these instruments is called a seismometer. On Earth, scientists use seismometers to study the vibrations that happen during earthquakes. InSight's seismometer will measure the vibrations of earthquakes on Mars—known as marsquakes. We know that on Earth, different materials vibrate in different ways. By studying the vibrations from marsquakes, scientists hope to figure out what materials are found inside Mars.

InSight will also carry a heat probe that will take the temperature on Mars. The heat probe will dig almost 16 feet below Mars' surface. After it burrows into the ground, the heat probe will measure the heat coming from the interior of Mars. These measurements can also help us understand where Mars' heat comes from in the first place. This information will help scientists figure out how Mars formed and if it's made from the same stuff as Earth and the Moon.

Scientists know that the very center of Mars, called the core, is made of iron. But what else is in there? InSight has an instrument called the Rotation and Interior Structure Experiment, or RISE, that will hopefully help us to find out.

Although the InSight lander stays in one spot on Mars, Mars wobbles around as it orbits the Sun. RISE will keep track of InSight's location so that scientists will have a way to measure these wobbles. This information will help determine what materials are in Mars' core and whether the core is liquid or solid.

InSight will collect tons of information about what Mars is like under the surface. One day, these new details from InSight will help us understand more about how planets like Mars—and our home, Earth—came to be.



For more information about earthquakes and marsquakes, visit: <https://spaceplace.nasa.gov/earthquakes>



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Coast Instrument, Inc.

A brief history

By Lewis Chilton, LAAS Historian

Introduction

I have a personal interest in Coast Instrument, the other telescope manufacturer that prospered for a brief time in Long Beach, California. Billed as the “Home of the Treckerscope,” its quality line of astronomical telescopes was designed to tap the burgeoning amateur market at the beginning of the Space Age.

My association with Coast Instrument began innocently enough during the International Geophysical Year of 1957 when I was introduced to telescope making by a newsboy whose paper route took him past my house. One day, he stopped to inspect my small mail-order telescope that I had set out on my front lawn. He told me of his interest in astronomy and his project to build a 6-inch reflecting telescope. He had purchased his mirror-making supplies and mechanical parts from a place in Long Beach called Coast Instrument. That was the first I had heard of it.



There's no denying that Coast Instrument made a big impression on me. For a young, starry-eyed amateur astronomer, it was a magical place. Treckerscopes, Unitrons and other fine instruments lined the showroom floor in military-like precision. Display cases filled with eyepieces and other tempting telescope accessories seduced the eye at every turn. Star charts, atlases, astronomy books and magazines adorned the wall displays. It was during this first visit - a 40 minute bicycle ride from my house - that I purchased my first copy of Sky & Telescope magazine – the September 1957 issue – for 50¢.

In due time, I became acquainted with president Ken Brown, vice-president Roger Jesme and salesman Allen Hull. They were the faces of Coast Instrument and were always friendly to me and patient with my many questions. I also met chief optician Ralph Furgerson.

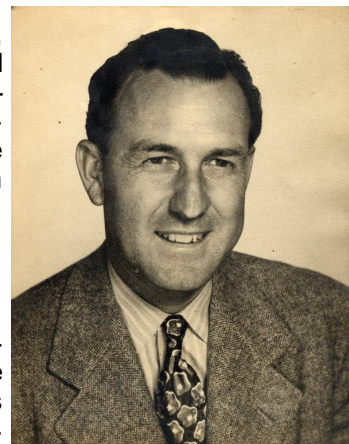
The telescope that eventually caught my eye, because it was almost within my paperboy budget, was the 4¼-inch Palomar Jr. from Edmund Scientific. However, some months later I defected to nearby Cave Optical Company to purchase a used model with savings from my paper route and a loan from my dad. In 1959, when I began building my 8-inch reflector, again with financial backing and technical assistance from my dad, I purchased many of the mechanical components at Coast Instrument.

It's now been 58 years since I last visited that telescope emporium. It was but a dim memory until I acquired an old Treckerscope through an internet auction site in 2005. After getting it home and setting it up, a flood of old memories returned. I decided that I wanted to learn more about the company that made this impressive instrument and so positively influenced my direction in life.

Beginnings

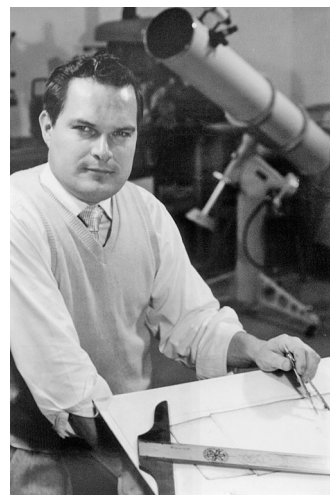
Kenneth French Brown was always imbued with the entrepreneurial spirit. Born in 1906 in Pasadena, California, he moved to Long Beach in 1943 and by 1945 was operating a cigarette vending machine business. During WWII, he served in the Coast Guard Auxiliary and achieved the rank of commodore.

Following the war, he initiated a short-lived flying boat service to Catalina Island. By 1949, he owned a general machine shop and was manufacturing and maintaining coin-operated telescopes. He named his business Coast Instrument. In 1950, he brought his new son-in-law Roger Jesme into the business, first as a mechanic, then as sales manager and eventually as vice-president. One of Roger's duties was to periodically go out to inspect the more than eighty coin telescopes scattered throughout Southern California and the western United States and collect the dimes from their coin boxes.



Coast Instrument's meteoritic rise

Coast Instrument, Inc. gained national prominence after it announced itself and its Trecker-scope line of reflecting telescopes in the pages of *Sky & Telescope* magazine in June 1956. Right from the start its ads were slick and flamboyant, claiming that it was in optics since 1933. Within a year, its ad space increased to two full pages, vying for reader attention and market share with such giants of the day as Unitron, Questar, Fecker, Tinsley, Criterion, Edmund Scientific and Jaegers. But Coast Instrument's main competitor was cross-town rival Cave Optical Company, which had been in business since 1950 and been marketing its Astrola line of reflecting telescopes in the pages of *Sky & Telescope* since September 1954.



The Treckerscope was named for its designer, Leon James "Lee" Trecker (1923-2003). Born and raised in rural Iowa, he attended trade school after returning home from the army at the end World War II, followed by an apprenticeship at the Buick Division of General Motors in Flint, Michigan. After his father's death in 1948, Leon came west on his Indian motorcycle, settling in the harbor district of Los Angeles where jobs were plentiful. He worked for the Firestone Rubber and Tire Company until 1952 and then began designing and building telescopes and other precision instruments in his spare time.

Treckerscope mounts were distinguished from other more traditional looking mounts by their sculpted polar and declination axis housings, which imparted a modern, aerodynamic look to them. They were finished in rugged tan Zolatone™ paint, set off by white fiberglass tubes supplied by Willard R. Parks (1915-1973) of Torrance. Parks purportedly supplied other mechanical components as well. Treckerscopes were sold with a 20-year guarantee.

Coast Instrument was located at 4811 Long Beach Boulevard in Long Beach, California. According to Stan Truitt, a Coast optician from 1958 to 1959, now retired and living in Hawaii, it was here that the sales showroom and rear assembly area were located. Some of

Coast's early Treckerscope optics were supplied by Lee Trecker and former Alvan Clark & Sons optician, Leland S. Barnes (1901-1977), who later did business as Cal-Astro Optical Laboratories in Pasadena. Evidence suggests that Coast's mirrors were also supplied at various times by T.F. Optical Labs, Huntington Beach; Keim Precision Mirrors, Glendale; and Optech Precision Instruments in Monterey Park. When Barnes could no longer meet Coast's production schedule, Brown decided to manufacture his optics in-house. He hired Ralph Furgerson as Chief Optician and manager of Coast's new optics plant, located just up the street from the showroom. Furgerson came from T.F. Optical Labs in Huntington Beach and Stellar Scientific Instruments in Santa Ana, where he had developed a line of Newtonian reflectors concurrent with his employment at Coast Instrument.

Continued on next page



Ralph Eugene Furgerson was an Oklahoman who came to California after serving a stint in the Marine Corps. After becoming interested in astronomy, he joined the Orange County Astronomers in the early '50s and taught himself how to make telescopes. He was known for his exceptional talent and fiery temperament.

Truitt recalled that approximately five months after he began working in Coast's optical shop, Furgerson quit in a rage after he was told to stop engraving his name on the back of mirrors that he had personally parabolized. I own one of those very mirrors, which is signed, "figured by Furgie."

Coast Instrument's meteoritic fall

In the January 1960 issue of *Sky & Telescope*, Coast Instrument announced a new line of reflecting telescopes called the Galaxy series. Touting many mechanical refinements and 1/20 wave optics, they were undeniably good looking in their 'dusk-charcoal' paint scheme and 'galactic blue' fiberglass tubes.

When the Treckerscope line was first introduced in *Sky & Telescope* in 1956, its pricing structure, for the most part, was competitive with cross-town rival Cave Optical Company's Astrola line (See table below). But by the end of 1959, Coast had increased its prices 20 to 37 percent above Cave's equivalent models. And with the introduction of the Galaxy series in January 1960, there was a further price increase. Galaxy models were a whopping 30 to 73 percent higher than their Cave Astrola counterparts! These dramatic price increases came at the beginning of the 1960-1961 recession and resulted in a dramatic decline in sales.

<u>Model</u>	<u>6-inch</u>	<u>8-inch</u>	<u>10-inch</u>	<u>12½-inch</u>
Treckerscope DeLuxe 1958/1959	\$495/675	\$575/775	\$875/1025	\$1150/1385
Cave Astrola DeLuxe 1958/1961	\$475/500	\$575/590	\$725/750	- /1150
Galaxy 1960/1961	\$775/495	\$895/595	\$1295/795	\$1495/1095

It's noteworthy that Galaxy ads appearing in *Sky & Telescope* never showed any model other than the 6-inch. But even more telling, a scant nine months after their introduction, Galaxy prices were slashed an average of 50 percent to bring them into line with the competition. In desperation, the standard version of the old Treckerscope line was brought back with even deeper price cuts. But, alas, it was too late. The company, woefully under funded and overextended, dropped its advertising after March 1961 and filed for bankruptcy that following August. The majority of its assets were claimed by Norman W. Edmund of Edmund Scientific, Barrington, NJ, who has been a major creditor. Sadly, after a little less than five years after it opened its doors, Coast Instrument closed them and quietly vanished from the scene.

The few Treckerscopes that occasionally surface on eBay® or other internet websites are the last vestiges of a company that couldn't outlive its 20-year product guarantee but nevertheless left its mark on the hobby.



Session Nights

Mt. Wilson Observatory

2018 Session Schedule:

- May 5th (Sat) **100 Inch Night**
- June 9th (Sat)
- July 7th (Sat)
- August 4th (Sat)
- September 7th (Fri)
- October 5th (Fri)
- November 3rd (Sat)
- December 1st (Sat)

The price for these nights are as follows:
 \$50 - 60 Inch Nights
 \$170 - 100 Inch Night

All of the dates above have been posted on the club calendar. These are private events exclusive to **current** LAAS members, families, and their guests only.

Please click on the following link to contact Darrell Dooley, our Mt. Wilson Coordinator before submitting payment.

mtwilsoncoordinator@laas.org.

To pay using PayPal or by credit card, please use the following link:

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

To pay by check, please mail your check to:
 LAAS
 c/o Griffith Observatory
 2800 E. Observatory Road
 Los Angeles, CA. 90027
 ATTN: Treasurer/Mt. Wilson

*Please write "60 Inch" or "100 Inch" on your check. Make your check payable to: LAAS

Note: If you pay by check, your check may be held by our Treasurer for several weeks, before clearing your bank.



60 Inch group photo from April, 2017

RTMC 2018 - Riverside Telescope Maker's Conference

May 24th - May 28th

Registration and General Information

This year is the RTMC Astronomy Expo's 50th Anniversary! We are planning to "do it big" to celebrate! David Levy will be speaking, as will a great slate of speakers all day Saturday and Sunday.

REGISTRATION IS OPEN!

Go to rtmcastronomyexpo.org

Why should YOU plan to come to RTMC-AE?

Because:

- 1 – Numbers! We have more attendees than any other Astronomy event on the West Coast. We had 550 last year, and it continues to grow. We're expecting a bump this year with the 50th anniversary. And we have no residency restrictions.
- 2 – Low Cost! We're one of the most reasonably-priced Astronomy Expos. Children under 17 are FREE and college students with ID are half-price.
- 3 - Activities! It's a YMCA camp, so there's a lot to do for everyone besides all the Astronomy events. But we do have workshops, lectures, star parties, a great swap meet (free to sell your goodies!) and Vendors for the Astronomers in the bunch.
- 4 - Kid's Stuff! We're actively working to bring youngsters into Astronomy! We have Children's activities and the Kid's Ice Cream Social on Sunday afternoon.
- 5 - Beginner's Corner! An active and expanding program for the new Astronomer, all the basics one needs to know to get started!

We'll see you here Memorial Day Weekend 2018!!

Cheers-

Teresa and the RTMC-AE Board
Questions? Email teresa@lbt.org



Follow the link below to view the

RTMC 2018 Brochure:

<http://rtmcastronomyexpo.org/wp-content/uploads/2017/09/brochure.2018.pdf>

Meet The New Members

Welcome to the LAAS!



Gene Mauk	Lance Dodes	Daniel Coleman and Tomako Matsumoto	Chris and Don Sweetnam
David Novick	Christina Bieber		
Kiel Bryant	Cesar Castaneda and Family	Manuel Zurito and Daniel Laino	
Lori Khan		Michael Domecq and Dre Bowling	

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.

NEW: You may listen to recorded meetings by logging in to our website at LAAS.org and clicking on the "Members Only" tab.

Before you try to access the "Members Only" information, you need to request login credentials from our Webmaster. On the left hand side of the page, scroll down and find "Login." Click "Login" 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 out-reach 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?

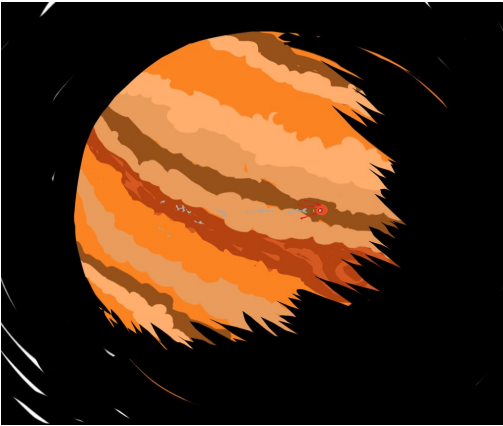
Please remember to renew your membership once you receive notice from the Club Secretary in your email inbox. Use this link to learn how to renew your membership: <https://fs30.formsite.com/LAAS/MemberRenewal/index.html>

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



A Guide To The Night Sky

By Tre Gibbs



.This month brings the prominent return of two of the brightest lights in the evening sky - Jupiter, The Roman King of The Gods, and Venus, The Roman Goddess of Beauty and Love. I say prominent because both have been in the sky prior to May, but now both will be visible in the early evening/twilight sky simultaneously, at least by month's end.

Starting off in Taurus The Bull and mid month moving into Gemini The twins, Venus, continuing her orbit around the sun, will appear to slowly climb higher in our skies until sometime around mid June, when she then begins a slow descent, heading back towards the Sun. Jupiter however, in the constellation of Libra The Scales, is low in the eastern sky at twilight, rising around 9:00 pm early in the month and 7:00 pm by month's end. In fact, near the end of May, you can look west and see Venus, then turn around looking east and see Jupiter, both will be

about the same distance above their respective horizons. They should be fairly obvious since both objects are the next brightest things in the sky after the Sun and Moon.

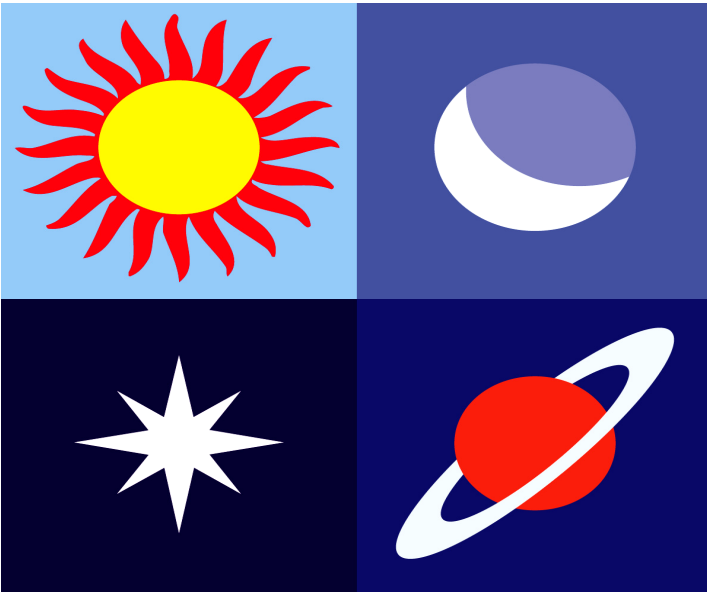
Mercury, The Roman Messenger of the Gods, will be lost in much of the Sun's glare this month but Mars and Saturn, both in the constellation Sagittarius The Archer, are visible although they both rise much later than Jupiter. Early in the month, Saturn - The Roman God of Agriculture, rises around 1:00 am in the southeast, followed about an hour later by Mars rising around 2:00 am. By month's end however, Saturn makes his way above the eastern horizon almost two hours earlier, rising around 11:00 pm, while Mars now follows Saturn a full two hours later, as the Roman God of War drifts further and further away from the quintessential ringed gas giant.

So, imagine yourself in space, above our Solar System, looking down at the Sun and all of the planets orbiting it. One thing you would notice is that all of the planets (and their moons) travel in the same *plane* around the sun. So here on Earth, that translates visually, to the Sun, Moon and planets all traveling the same path in the sky. As the moon orbits our Earth once every 28 (+/-) days, it appears to slip past the planets, thereby making the moon a great tool for finding these elusive wandering lights! (Note: the word *planet* is derived from the Greek word for "*wander*", because the planets move or wander thru the sky.) In the wee hours of May 4th, 5th and 6th, look to the southeast between 3:00 & 4:00 am to see the moon travel with Saturn on 5/4, then travel between Saturn and Mars on 5/5 and finally, the moon hangs out with Mars the morning of 5/6. If that's too early for you (it is for me), look low in the west all month long at the beautiful glowing Venus, which is so bright it's often mistaken for a helicopter or airplane coming toward you. During the early evening twilight of May 17th, a thin crescent moon joins Venus low in the western sky. It will not be there long as both will set rather quickly. On the evening of the 27th (10 days later) the moon, continuing it's eastward trek, is now paired up with Jupiter in the east. Look for both when it's dark enough to see Jupiter's bright glow.

On May 29th we will be treated to this month's Full "Flower" Moon, marking the time of year when flowers spring forth in abundance. Since the moon is in constant motion around our planet, it's only technically full for a moment - this month at 7:21 am - but will appear full to the casual observer not only the day of, but also the day before and the day after. Keep in mind that the moon rises approximately 50 minutes later each subsequent night (and/or day).

So that's it for this month. Next month is The Summer Solstice so stay tuned. Also, if you have any questions, please feel free to email me and I will do my best to answer all of your astronomical questions. tre@tregibbs.com *Until next month, keep looking up!*

Almanac



May 6, 7 - Eta Aquarids. The Eta Aquarids is an above average shower, capable of producing up to 60 meteors per hour at its peak. Most of the activity is seen in the Southern Hemisphere. In the Northern Hemisphere, the rate can reach about 30 meteors per hour. It is produced by dust particles left behind by comet Halley, which has known and observed since ancient times. The shower runs annually from April 19 to May 28. It peaks this year on the night of May 6 and the morning of the May 7. The waning gibbous moon will block most of the fainter meteors this year, but you should be able to catch quite A few good ones if you are patient. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Aquarius, but can appear anywhere in the sky.

May 9 - 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.

May 15 - 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 11:48 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.

May 29 - 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 14:19 UTC. This full moon was known by early Native American tribes as the Full Flower Moon because this was the time of year when spring flowers appeared in abundance. This moon has also been known as the Full Corn Planting Moon and the Milk Moon.

Source: <http://www.seasky.org/astronomy/astronomy-calendar-2018.html>

Need Help With A New Telescope?

Visit the Garvey Ranch Observatory on any Wednesday night 7 PM to 10 PM for tips and assistance from your fellow LAAS members.

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





EVENT CALENDAR

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2 Garvey Nite	3	4 Outreach Temple City	5 100 Inch Mt. Wilson
6	7	8	9 Garvey Nite Board Mtng	10	11 Outreach E. Los Angeles	12 Dark Sky Night
13	14 General Mtng	15	16 Garvey Nite	17	18 Outreach Movie Night	19 Public Star Party
20	21	22	23 Garvey Nite	24 RTMC (24TH -28TH)	25	26
27	28	29	30	31		

Additional events with updated information may be posted on the calendar. Please log on to your account on the Night Sky Network (NSN) to view the complete schedule of club events. Link: <https://nightsky.jpl.nasa.gov/>

The NASA Museum Alliance

For Night Sky Network Members



NSN members only: Add to your NASA expertise with a treasure trove of NASA experts at your fingertips. Interested in getting professionally-vetted NASA content for your club and outreach events?

The NASA Museum Alliance hosts archived and live teleconferences with scientists and engineers discussing the latest news about NASA missions and research. As a member of the NASA Night Sky Network community, you too can get access to a searchable archive of over 500+ past teleconferences – all complete with recordings, transcripts, and ready-to-use presentation materials on practically any NASA topic under (and beyond) the Sun!

You can also access upcoming live teleconferences! You can find login information for the Museum Alliance portal on our [special members-only resource page](#) (NSN login required).

If you have not registered as an LAAS member on the Night Sky Network, please do so by following this link:

[NSN Registration Form for the LAAS](#)

When you visit our club's website at LAAS.org, you will find this blue box on the right hand side of our homepage. It is the NSN widget. Anyone who visits our site can enter their city, state, and zip code to find astronomy events and clubs, just like ours, anywhere in the USA. This is a handy tool if you're going on vacation or on a business trip and would like to find astro events or contact a local astronomy club.

Click on the box and you'll be magically transported through the internet to our website where you can try the widget out for yourself.



The 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 beauties 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?>



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.

If you would like to purchase club jackets, T-shirts, or caps featuring our club logo, please look for Richard Roosman at the public star party and at our general meeting. Richard will have the club merchandise on sale from 2 PM to 6 PM at the star party.

For further information, feel free to contact Richard at Richardinwalnutpark@msn.com.

You can also use the link on Paypal, if you would like to place an order for club merchandise by using the following link:

<http://laas.org/joomlasite/index.php/laas-merchandise>



Amazon Smiles

Raise Funds For the LAAS



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

What is AmazonSmile?

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

Learn more by following this link: <http://smile.amazon.com/>

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John O'Bryan, Jr./Treasurer



Thank you for your donation!

Astronomy Magazine

Subscriptions

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.

Below, are some subscription links and suggestions for your convenience, from our friends at NASA's Night Sky Network:



[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.

Sky & Telescope Magazine



If your current subscription was obtained through your club, [click here for online renewal of your Sky & Telescope magazine subscription](#) at the club discount rate. You will be asked to enter your mailing label information. This information allows S&T to know that you originally subscribed through your club and can continue your subscription at the club discount rate.

If this is a new subscription or if you did not previously subscribe through your club or through the Night Sky Network, [click here for a NEW Sky & Telescope subscription at the club discount rate](#).



[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.



StarDate Magazine

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.

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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.



Click on any of the images below to discover links to astronomy information, videos, photos, and at times, old sci-fi movies, too!



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

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