The Los Angeles Astronomical Society

800 Members Looking up!

THE BULLETIN

December, 2017

Volume 91, Issue 12

"Did some guided imaging from Red Rock Canyon State Park yesterday. Much darker and warmer than lockwood. Imaged several objects. Here's one of them. Still using jpg subs for stacking. "

Photo credit: Nasir Jeevanjee/LAAS - Nov. 17, 2017

The Andromeda Galaxy, also known as Messier 31, M31, or NGC 224, is a spiral galaxy approximately 780 kiloparsecs from Earth, and the nearest major galaxy to the Milky Way. Wikipedia

2018 will soon be here! Please remember to update your contact info with the club secretary to stay current with the society. Send any new contact info, such as new cell phone numbers and email addresses to Spencer at secretary@laas.org.

Happy Chanukah, Merry Christmas, and Happy New Year to All!

In This Issue

LAAS VOTES!

Elections for club officers and Board members will take place at the general meeting on Dec. 11, 2017. See Page 3 for the list of candidates.

Holiday Party and Potluck

Celebrate the holidays at our annual holiday party and potluck. All club members, families and friends are welcome to attend. The more, the merrier!

Friends, Food, and Fellowship!

Date: Wednesday, December 13, 2017

Time: 7 PM to 9 PM

Location: The Garvey Ranch Observatory

Address: 781 S. Orange Ave.,

Monterey Park, CA 91755

Contact: Geovanni Somoza

geovanni_somoza@hotmail.com

LAAS Election
The Candidates for 2018

Officers

President - Thompson, Tim

Vice President - Gilchrist, Kevin

Treasurer - John O'Bryan

Secretary - Spencer SooHoo

Board of Directors

Bednarski, Daniel

Byrom, Curtis

Dobrovics, Zoly

Dooley, Darrell

Hurst, Alecia

Jeevanjee, Nasir

Navajas, Gerardo

Phipps, Joe

Roosman, Richard

Smudde, Mary

Sovereign, Dave

This list was revised

on Nov. 29, 2017

An electronic ballet will be sent to all current members soon through the ANC-Yahoo group. If you are not registered in this group, please contact Andee at

communications@laas.org.

All current LAAS members will also have an opportunity to vote at our General meeting on Monday, Dec. 11, 2017

Good luck to all candidates!

Understanding Lockwood: *Part 2*

'OK, so I've paid my fifty smackers- why are you asking me for more money to fix up Lockwood? Who let it get in that condition, anyway? Why, why, why?'

Yes, why! Why, is probably the same why as not-all-that-old bridges are not inspected and go all rusty and fall down into the Mississippi? Someone was resting on their laurels. Or, more likely, is that decay is slow, and we are looking at it all the time, so we get used to it, and don't see the decay until "Holy smokes, how did it get like that?" Well, OK. It is like that and it's time to do something about it.

What we are hoping to do

As covered in the first part of Understanding Lockwood in last month's Bulletin, we have a few things the current Lockwood committee would like to do:

Get the trailer toilet functional again before we demolish the current restroom. Pour at least half of the "Dob Landing Strip" when we pour the concrete foundation for the new restroom that will probably have 2 sides (both unisex), and one of which must be friendlier to people with mobility issues (access ramp, grips, more space). Systematically demolish and replace the current pads with larger pads, many with pier foundations, set aside space to allow for 2 or 3 roll-back shed observatories in addition to a roll-back observatory for the club's Takahashi scope, and plan for the eventual replacement of the trailer

When are we going to do it?

It's already started, in a small way. Over the past couple of years the trailer roof was given a new elastomeric surface and can once again be entered without fear of developing a dreaded lung disease. The trailer toilet will be functional again (2017-2018). Bunk beds will be added to the back bedroom as well as a couple of folding cots will be available for use in the living room (2017). A broken window was repaired this year and various dead trees removed as well as others that had simply grown too big and were obstructing the views.

The committee is studying how best to make use of the space when the pads are replaced. This will take the most time and money and will look something like this:

2018: A prototype pad and pier foundation will be poured in the northwest quadrant of the observing field. If all goes well and the design and costs approved, five more pads and pier foundations will be added adjacent to the prototype. If there is enough concrete available at this time, another section will be added to the Dob Landing Strip, hoping it will be finished at this time.

2019: Hereafter, in each quadrant of the observing field, old pads will need to be removed, followed by six new pads and pier foundations added in the southeast quadrant.

2020: Six pads and pier foundations added in the southwest quadrant.

2021: Six pads (no pier foundations) added in the northeast quadrant.

2022: Six pads and pier foundations added in the northwest quadrant.

2023: Six pads and pier foundations added in the southeast quadrant.

2024: Six pads and pier foundations added in the southwest quadrant.

2025: Six pads (no pier foundations) added in the northeast quadrant.

That's a total of 48, each pad approximately 8 ft. x 10 ft. most with ground-level pier foundations available for star members adapt to their equipment's needs. While the diameter of the piers will have an upward limit, the heights can be determined by the pad leaseholder.

If the leaseholder does not wish to use a pier, the ground level adapter can be left as it is. With the pier set to one side of the pad, the pad will be available to any member, such as on Family Nights, to set up with a tripod or Dobsonian- a great improvement over the current situation. Why only 6 pads at a time? The amount of concrete needed for a little more than 6 pads is one truck load of transit-mixed concrete.

In addition to the pads, other projects are expected to take shape and proceed, such as repairs and maintenance to the Gordon Mitchell Observatory, the Takahashi observatory built, other roll-off observatories built, and improvements to, or replacements of, existing instruments.

How are we going to pay for it?

Currently, the Board of Directors has set aside a generous amount of $12,000, but the projected costs are $63,000 for the pads and piers, and naturally that dollar amount will rise with time. The club does not have the funds to cover the entire project, and even if it did, tearing up the entire field for more than one Dark Sky Night would not rest well with many of the membership. Imagers have projects that can go longer than just one weekend, or even a week, not to mention the visual astronomers who might only have one or two times in the summer that they can participate.

Replacing even one pad means breaking up the old pad and disposing of it, dealing with the electrical wiring in the ground (moving or adding), digging for the pier foundation, setting rebar, pouring said foundation, installing the ground level hub, digging for the pad, setting the form, setting rebar, pouring the pad, screeding (leveling), working the aggregate down and bringing the cream to the top to produce a smooth surface that will keep water from seeping into the aggregate and freezing/thawing, and keeping the drying time to that required to make a long-lasting pad, sometimes this means covering the concrete with burlap and keeping it damp. This will require a workman to visit often during the week or so of curing.

To date, the Lockwood committee has only briefly discussed raising the Star membership dollar amount, plus we realized that the $10 per year pad lease is not commensurate with any maintenance or expansion program we can devise. Except for the Lockwood Valley project, when it was first conceived and brought to fruition in the 1970's, the LAAS, as a group, does not have a tradition of asking for yearly donations as many other groups do. If we want to continue to have Lockwood available to us, until such time that light pollution may make it a pointless undertaking, we can do one of two things: do nothing beyond cutting the weeds and trimming the trees- leave people to their own devices with regards to pouring a pad and pier if it so suits them or to set up in the dirt- let the trailer, the restroom, and other structures rot- turn off the electricity and leave the water tank empty -- or, we can celebrate our 100th anniversary (in late 2026) knowing that we have maintained and improved upon a legacy passed down through the decades of providing our members with a location whose skies are about as dark as we can ask without having to drive at least one hour longer to the northwest.

As some of you may recall, a couple years back a questionnaire was circulated asking what interested our members about the LAAS, and in most cases the responses included positive references to the availability of Lockwood Valley and an interest in imaging. To keep Lockwood "alive" we will need to develop a culture of supporting this asset by setting in place a campaign based around reminders to support the LAAS above the usual membership dues. Remembering the LAAS in our wills, small monthly donations through PayPal, checking the box in Amazon Smiles when we make online purchases, and by other means, we will not only keep Lockwood going, but improved.

Watch this space.

Kevin Gilchrist, Lockwood Committee Chair 2017

The Untold Story of the Ford Observatory Telescope

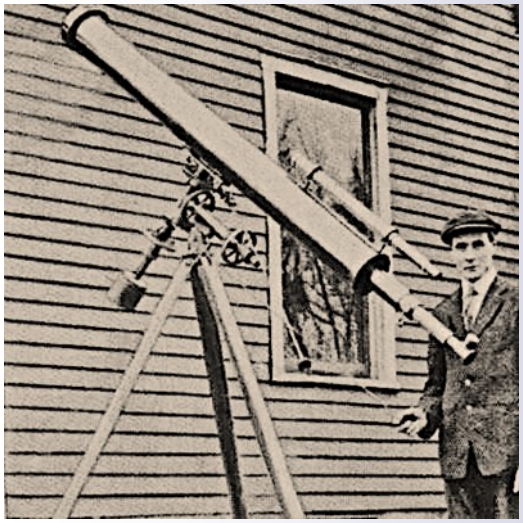
Lew Chilton, LAAS Historian

The following article is based largely on an excerpt from Thomas R. Cave, Jr.'s unpublished autobiography. In it he describes how in 1951 he salvaged the optics of Claude Carpenter's 18-inch f/7 Newtonian telescope, which is now the primary instrument of the Los Angeles Astronomical Society's Clinton B. Ford Observatory near Wrightwood, California. – L. Chilton, LAAS Historian

John Edward Mellish (1886-1970) was a renowned Wisconsin amateur astronomer and telescope maker. He manufactured many telescopes and optical components for American observatories and astronomers and was credited with the discovery or co-discovery of five comets between 1907 and 1917, two of which earned him medals from the United States and Mexican governments. Using the great 40-inch refractor at Yerkes Observatory in 1916 at a claimed magnification of 1100X, he was the second observer, after E. E. Barnard (1857-1923), to report seeing craters on Mars. His claim was later disputed, but a crater on Mars was named for him nonetheless. His reputation as an accomplished telescope maker seemed secure – until 1951 when he completed an 18-inch mirror for LAAS member Claude Carpenter (1902-1992).

<u>Left:</u> A young John Mellish.

<u>Right</u>: John Mellish in 1925 with a telescope of his creation. (Both images: Wikipedia)



In 1950, Carpenter, an avid variable star observer and a member of the AAVSO, the Los Angeles Astronomical Society and the (Long Beach) Excelsior Telescope Club, engaged John Mellish, who by then was living in Escondido, California, to make the optics for an 18-inch Newtonian telescope of approximately 130-inches focal length. It was to be installed in an observatory to be built on Carpenter's rural property in Menifee Valley near Perris, California. At that time, this location was remote and noted for its dark and steady skies.

Harry Schroeder (1898-1970), owner of a machine shop in Perris, was contracted to build most of the big equatorial mount.* Carpenter hired another craftsman to build a sizeable Harvard-style drum dome that rotated from the outside by a geared motor and an endless cable. Mechanically, Claude's telescope was first rate.

While the heavy telescope mount and the building were being constructed, the Excelsior Telescope Club was having star parties on Claude's property. In 1950 and 1951, we had three or four star parties each summer. ** We drove down on Saturday afternoons and set up our portable telescopes of various sizes. I had built myself a very fine performing 6-inch f/6 reflector with a considerably undersized diagonal, an electric clock drive and a rotating tube. When "seeing" was good, it performed better than all theoretical standards for a 6-inch. Under such conditions, the small, faint companion of Antares was always an easy target.

In the spring of 1951, Claude finally received his aluminized optics from Mellish and with assistance installed them in his new telescope. It was near midweek when I received an urgent telephone call. Claude was practically in tears, talking fast and telling me that the optics were absolutely awful but the mechanics were excellent. He asked if I could possibly come to his observatory the following Saturday evening and see for myself.

That Saturday, Charlie Tarwater (1914-1956) and I made the nearly two-hour drive to Claude's observatory. The skies were clear and the air was calm. First, I looked through a medium power eyepiece. All the stars were big blobs with no critical focus. Next, I took a business card and nulled the optics on a second magnitude star. There was no semblance of a parabolic figure, just a concentric series of hideous zones. I explained, as did Charlie, that Mellish had really taken Claude with such abortive optics. Claude said he had tried the optics on variable stars but couldn't see anything below 12th magnitude. It was all he could do that night to not break down and cry. He asked if I would refigure the mirror. I told him I would do my best if he'd bring the mirror and diagonal to my shop. He said he'd be there Monday.

Claude arrived Monday afternoon with the optics. First, I tested the mirror in our tunnel and let him look at it while I explained what to look for. I checked the diagonal, a 45-degree ellipse, a thick piece of green plate glass, very rough around the edge, and no sign that any optical work had been done. It was about three or four wavelengths from flat. We then used our 500-watt inspection lamp. The big mirror's surface showed pits from the coarsest grinding and was not anywhere near polished out. The main mirror was Pyrex and thicker than other Pyrex blanks of that size. It weighed a hundred pounds.

I quoted Claude a price of $550 for almost a complete regrind, a full polishing and as perfect a figure as I could put on it, including the blocking and re-polishing of the diagonal to a true flat surface. But after I got into it, I sorely wished I had charged him at least twice that much or more. He said he would get the optics when I was finished and have the aluminizing done himself.

I ordered two plate glass disks from Sudden Service Glass in East Los Angeles. Each disk was 1¼-inches thick and 18-inches in diameter. I cemented hex tiles to one disk with rosin and beeswax. With a runner cemented to the back of the disk, I used our largest spinning head grinder to shape the disk to the same radius of curvature as Claude's mirror. Using a medium grade abrasive, I removed all the coarse pits, then the finest grade to keep the radius of Claude's mirror exactly the same.

I used the back of the 18-inch concave plate glass tool for a pitch lap. Dad and I quickly built a wooden frame to hold the mirror in the water pan of our largest Draper machine. I only ran it during the day, not for 24 hours as I usually did for smaller mirrors. After three days, the mirror was completely polished. We checked it in the tunnel with a knife-edge. It tested free of zones and turned edge, was very smooth and spherical, and no sign of astigmatism.

The stroke and side throw of the Draper machine were changed and the mirror was run for two or three hours. Gradually, a little correction was visible with the Foucault test, but not nearly enough for an f/7 mirror of that size.

I had read that Dr. André-Louis Danjon (1890-1967) in France had an elaborate method of electrically heating the polishing fluid to parabolize mirrors, so I decided to bail out a large amount of finely broken down rouge water and heat it on our gas burners. After trimming the pitch lap and cold pressing it on the mirror, I continued figuring with the heated rouge water for about an hour. Testing revealed that the softened lap from the heated rouge water had really put a correction on the mirror. While still warm, the mirror's surface looked about the way an f/6 mirror should appear. I had worried about turning the edge, but that didn't happen. Dad and I left at the end of the day for dinner at a nearby restaurant. We returned to the shop a few hours later so that I could see if the f/7 mirror had changed. Oh boy, had it! It looked like a perfect correction and the heat in the big piece of Pyrex was gone. Dad went home, but I wanted to see Charlie Tarwater. He came at once to the shop, took a long, hard look at the mirror and, except for sighs of amazement, said nothing for perhaps five minutes. Then he finally said, "don't touch it if it looks this good in the morning." By morning, the figure on the mirror hadn't changed. I also had finished the big diagonal flat to about ⅛-wave.

I left the mirror at the far end of our long testing tunnel and phoned Claude. He was at the shop the next morning. He immediately saw the infinitely improved difference and seemed overjoyed. I told him the scope should now be optically perfect. At that time, it was the largest mirror I had done.

A few weeks later, Claude was back from the coater with his aluminized optics and with the help of a neighbor installed them back into his telescope. He phoned me at work after the first clear night to say that the optics were absolutely wonderful. He had visually reached well below 16th magnitude on variable and comparison stars on his AAVSO charts.

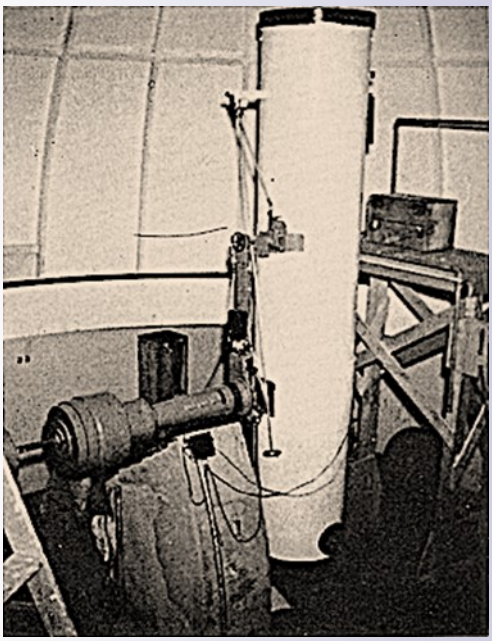
In the beginning of that summer of 1951, the Excelsior Club held its first star party of the year. Charlie Tarwater and I drove down especially to see how well the reworked optics were performing. Jupiter was well placed that night and the steadiness of the air, the "seeing," was very good. Our first look at Jupiter revealed an enormous wealth of detail and a razor sharp image. Then the telescope was positioned on Gamma Andromedae, a pretty double with a fainter bluish companion, which was itself a very close double with a separation of less than 0.4 arc-second but was easily split by everyone who looked through the 18-inch that night.

We also observed a number of faint galaxies, planetary nebulae and globular clusters – all seen far better in the very dark skies over Claude's observatory than I had ever seen them before. It was well past midnight and Andromeda was well up in the eastern sky when Charlie and I left. Driving home, I was quite proud that the 18-inch had turned out so well and for having done all the optical work alone.

In the June 1966 *Sky & Telescope*, p. 339, an 80-year old Mellish proudly writes the editor that he made the mirrors for Claude Carpenter's 18-inch telescope. It is mystifying that he would announce such an "accomplishment," considering how badly they had turned out. Perhaps he had forgotten because of his age!

By 1963, the development of a nearby retirement city near Claude's observatory prompted him to relocate his 18-inch telescope and sell the property. The skies of Menifee Valley were no longer dark and steady as they had been in 1951.

The 18-inch was given a new lease on life when it was moved to a new home in the San Gabriel Mountains near Wrightwood, California. About a half-dozen mostly LAAS members assisted Claude in accomplishing the move, including Larry Bornhurst, Tom Cragg (1927-2011) and Leif Robinson (1939-2011). In 1964, a working group calling themselves the Mount Peltier Association was organized to oversee construction that took place between 1964 and 1965. The observatory was dedicated on August 24, 1965 and became known as the Ford Observatory, in honor of AAVSO, Mount Peltier Association member and benefactor, Clinton B. Ford (1913-1992).



The Carpenter telescope as it appeared in 1965 in its new observatory in Wrightwood, California. Its tube is 22 inches in diameter and weighs 500 lbs. Image: *Sky & Telescope* magazine, March 1966, p. 140.

The Ford Observatory and its 18-inch telescope later passed into the hands of the AAVSO and then to the Los Angeles Astronomical Society in 2012. Curtis Byrom is its current director.

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* Msgr. Ronald Royer, in his description of the Clinton B. Ford Observatory, avers that Clifford Seauvageau (1911-1988) of Detroit, Michigan was the primary builder of the Carpenter 18-inch telescope. This contradictory information warrants further investigation. –L.C.

** LAAS star parties were held at Claude's Menifee Valley ranch in September 1956, July 1957 and July 1959, and possibly at other times as well. Your editor Lew Chilton attended his very first LAAS function during one of these star parties and distinctly remembers viewing an impressive Saturn through the 18-inch. He looks forward to repeating that observation at the Ford Observatory.

Lew Chilton

Club Historian

THE LAAS ANNUAL BANQUET AND AWARDS CEREMONY

COCKTAILS, BUFFET DINNER, GUEST SPEAKER, AWARDS CEREMONY, RAFFLE PRIZES AND MORE.

SUNDAY, JANUARY 28, 2018

5:00 PM TO 11:00 PM

THE QUIET CANNON

901 VIA SAN CLEMENTE, MONTEBELLO 90640

RSVP

FURTHER DETAILS FORTHCOMING

PosterMyWall.com

RTMC, WAA and Okie-Tex Star Party

Jack Eastman

As May draws to a close, the traditional Memorial Day weekend gathering of astronomers, opticians, machinists and friends will, once again, gather at Camp Oakes, Big Bear City, California for the 49th annual Riverside Telescope Maker's Conference and reunion of those still out there that I grew up with, assuming I ever really grew up. I've talked about this sojourn many times, this one was no different. Weather cooperated nicely except for some powerful winds crossing the Mojave Desert. Got to the motel Thursday evening, was able to catch our own Jon Groubert's first, and winning, run on Jeopardy. Good job, Jon! The obligatory Mexican feast at La Paws, then Friday AM it was off to the camp. So far all is going well, got settled then off to reunite with old and new friends.

Saturday, beginning at dawn, the traditional swap meet commenced, as in times past, loads and loads of stuff. I was in the market for a ~20-pound counterweight for that equatorial I picked up at Okie Tex for my 6-inch Mak-Newt, the Levy blessed Comet Hunter. Believe it or not, such was not forthcoming! A few little ones, maybe 5-pounds, nothing that'd work for me. I did set up the 6-inch Clark, but didn't get around to the Comet Hunter or, for that matter the 25X100 binoculars. Dan Schechter wasn't there this time, no AP-900 for the Clark, so it was on its original, and somewhat wimpy, mount. Fortunately very little to essentially no wind, so observing the planets and several double stars was easily done. Skies were OK, not great, thanx to the Marine Layer, that low lying layer of air comping off the Pacific Ocean, and usually very cloudy, coming in over the Greater Los Angeles megalopolis, Friday was the darkest sky, SQM* reading 21.66. These low clouds disappeared after Friday, Saturday the sky definitely looked washed out and the SQM reported 21.33 Sunday a little better at 21.44 but I think there was a layer of very thin high clouds. Camp Oakes experiences crummy seeing, largely for the same reason we (Denver) being downwind from a relatively high mountain ridge. Still, Jupiter and Saturn looked good as well as a few double stars and deep sky including M-104.

We were well fed, no longer a "meal plan" but rather a cafe, with extended hours (good!) and rather good stuff. Friday there was very little in the way of formal activities, which meant lots of quality time with old and new friends, making even newer acquaintances and in general taking it easy. Saturday the talks, workshops and events began in earnest. the theme of the meeting revolved around the upcoming eclipse, but there were few discussions on this subject. there were a number of outstanding talks on Gravitational Wave detection, History of the Historic Mt. Wilson Observatory and such. As has been the case in the past there were concurrent sessions, in another area were many discussions for the very beginners/kids and also numerous activities for the non-astronomers.

Tim Thompson, physicist, volunteer at the historic Mt. Wilson Observatory and past president of the Los Angeles Astronomical Society (3-years, followed a bit later by 7-continous years!) talked about the history of the Mt. Wilson Observatory, featuring George Ellery Hale, who engineered the funding, and Andrew Carnegie who provided the money. Mt. Wilson began in 1904 as the Mt. Wilson Solar Observatory, the first large silver-on-glass reflector, the 60-inch, saw first light in 1908 and was, perhaps the most productive telescope when it came to the then new science of astrophysics. In 1917, it was succeeded by the 100-inch reflector. Tim then gave a great talk on "Women in Astronomy" citing the many women, many them were "computers" their job was crunching numbers, most worked with Edward C. Pickering, then director of the Harvard College Observatory.

David Dunham, of the International Occultation and Timing Association (IOTA) whose passion has been grazing occultations, useful for mapping the hills and dales of the Lunar Limb, talked about Grazing Solar Eclipses, and how these might be useful for improving the accuracy of the Solar Diameter.

Then it was Dr. Gabriele Vajente, Cal Tech, having worked for the past 12 years on the design of instruments for the detection of Gravitational Waves, currently working on the detectors for the Laser Interferometer Gravitational Wave Observatory. (LIGO) His presentation was about the LIGO and we were all impressed with the precision needed to make the Gravitational Wave detection. These detections require a precision of a part in 1E23, a hundred-billion-trillion! Gabriele admits to being an amateur astronomer since his childhood and is a member of the Los Angeles bunch.

Manny Antimisiaris is a research pilot and navigator at NASA's Armstrong Flight Research Center at Edwards CA. Hi is currently pilot of the highly modified 747SP that is the Stratospheric Observatory for Infrared Astronomy (SOFIA) Highly modified? yes, indeed a very large door in the aft part of the plane that can be opened at their operating altitude, from 41,000 t0 43,000 feet, to allow a 2.4-meter (100-inch) telescope to make observations of objects above 81 percent of our atmosphere, crucial for infrared observations. Some of us may recall a talk at the 2015 Okie Tex Star Party where David Davisson and Eileen Grzybowski, educators from Norman North Astronomy went along on a ride in SOFIA while observations were being made of star forming regions in the Sagittarius region.

Other presentations revolved around the scale of the Universe, eclipses and eclipses over history. along with the aforementioned concurrent sessions for those new to the hobby.

Time out early Sunday for the board meeting of the Western Amateur Astronomers, of which the DAS is a member in good standing. WAA is in good financial shape for continuance of the G Bruce Blair award for lifetime accomplishment in amateur astronomy. The only other business was the reelection of the current slate of officers by acclimation!

This year's winner of the prestigious G. Bruce Blair award were Jim and Virginia Strogen who have been staunch ambassadors for the amateur astronomical community. They were members of the Los Angeles Society, Jim serving as President (2003/4) They both were telescope operators at the Historic Mt. Wilson Observatory, operating both the 60-inch and 100-inch telescopes. After leaving Los Angeles and settling in Missouri they founded the Camden County Astronomy Association, procured 10 acres and built two observatories. Clearly they are deserving of the G. Bruce Blair award for 2017.

After all, this is supposed to be a telescope makers confab, and there were a number of interesting instruments. One fellow had a large Newtonian on what he called an "Alt-Alt" mount, a 3-axis arrangement that allowed easy access to anywhere in the sky, no blind spots near the pole (equatorial) of Zenith (Alt-Az, Dobsonian). Two of the usual suspects were there again, Bob Pfaff (of wine-bottle telescope fame) had a very nicely made ~80-mm refractor, mostly all brass. He couldn't find a brass tube of the proper size, so he very neatly wrapped a sheet of brass around an aluminum tube. The tailplate was engraved "Bob Pfaff 2017" in the style of the old masters, Alvan Clark, Mogey and such. His buddy Gerry Logan had another interesting creation a Stevic/Paul, 3-mirror tilted mirror system, 8-inch aperture. Interesting in that this design has essentially zero aberrations and doesn't require bizarre cylinder or toric surfaces! Primary is an ordinary paraboloid, the others spheres! Both Bob and Gerry are true masters of woodworking, precision machine work and exotic optics. Gerry has made a number of apochromat triplets, coma free Schmidt Cassegrains, and other unusual designs..

In conclusion, it was a truly wonderful get-together, good weather, good food and lots of interaction with all us like-minded hobbyists. As I've said many times before, I'll do it again in 2018!

Jack Eastman

DAS/LAAS

Meet The New Members

Julie Bray-Ali

Emma Hankins & Joseph Di Marco

Jeffrey Baker

Jeffrey Lee and Family

Partha Laha and Venkata Kotamragu

Nader and Melodie Modarres

Gary Agpar

Daniel Yadegar and Family

Philip Estrin

Carlos Salgado

Ken Fancher

Shah Selbe

Aram Hacobian

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

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

Astronomy Magazines

Sky and Telescope renewals should be sent directly to Sky Publishing.

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Los Angeles Astronomical Society

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2800 East Observatory. Road

Los Angeles, 90027

ATTN: Treasurer

Be sure to include the exact name and mailing address for your subscription. Then, thereafter, send the renewal bills directly to Sky Publishing. **For a club rate subscription to Astronomy**, send a check payable to Kalmbach Publishing Co. in the amount of $34 for one year or $60 for two years to the above address.
Be sure to include the exact name and mailing address for your subscription. That magazine also requires later subscription renewals to be handled through the LAAS Treasurer.

A Guide To the Night Sky - December, 2017

By Tre Gibbs

The major astronomical event this month occurs on December 21st at 8:16 am, when Earth's Northern Hemisphere will be tilted away from the sun at it's greatest angle - known as The Winter Solstice. Typically this is also the shortest day of the year and conversely the longest night of the year. If you happen to follow the sunsets and/or sunrises along Earth's horizons, you may notice that on this day the sun rises and sets at the most southern point.

Just a few months ago - on September 22 - the sun rose and set due west, signaling the Autumn Equinox (*Equinox* is a Latin term meaning *"Equal Night"*). Since then, the sun - and it's path in the sky - have been inching further south, shortening the amount of daylight and increasing the amount of night. As the sun gets closer to it's most southern point on the horizon, it appears to slow down, then "stand still" on the 21st, then changes direction, and slowly begins to head back north, which then causes our days to get longer while the amount of night shortens.

The word *Solstice* is also a Latin term meaning *"stand still",* since the sun appears to "stand still" for a brief period of time as it changes direction. Ancient cultures would get really freaked out by this, worried that the sun may not stop, turn around and head back north. Luckily, the sun always stopped it's southerly course and changed direction. Over time, ancient cultures celebrated this time of year with traditions that we carry through to this day, such as bringing evergreens into the house, decorating with lights to counteract the darkness, sumptuous feasts, etc. So enjoy it! After the 21st, when the sun changes direction, the days will slowly begin to get longer again, night and darkness will wane, noticeably so by mid to late January.

On December 3rd, we will be treated to The Full Cold Moon, since this is the time of year when Winter begins to tighten it's cold grip. Again, technically the moon is only full for a moment (7:48am) as it continues it's easterly journey around our planet, but the movement appears so slow that the moon will actually look full the day before, as well as the day after.

Early risers will be treated to a couple of mid month conjunctions! In the predawn skies of December 13th, look to the ESE just prior to morning twilight to see the crescent moon above and to the left of dim Mars which will be above - and to the right of - bright Jupiter. On the very next morning, December 14th, notice that while Mars and Jupiter are pretty much in their same places in the predawn sky, the crescent moon has left Mars' side, drifted closer to the eastern horizon and is now above and to the left of mighty Jupiter, though all three will quickly be rendered invisible by the sun's approaching glare…

Until 2018, have a safe and happy holiday season - and as always, KEEP LOOKING UP!

Tre Gibbs
LAAS

Almanac

- **December 3 - Full Moon, Supermoon.** 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 15:47 UTC. This full moon was known by early Native American tribes as the Full Cold Moon because this is the time of year when the cold winter air settles in and the nights become long and dark. This moon has also been known as the Full Long Nights Moon and the Moon Before Yule. This is also the only supermoon for 2017. The Moon will be at its closest approach to the Earth and may look slightly larger and brighter than usual.

- **December 13, 14 - Geminids Meteor Shower.** The Geminids is the king of the meteor showers. It is considered by many to be the best shower in the heavens, producing up to 120 multicolored meteors per hour at its peak. It is produced by debris left behind by an asteroid known as 3200 Phaethon, which was discovered in 1982. The shower runs annually from December 7-17. It peaks this year on the night of the 13th and morning of the 14th. The waning crescent moon will be no match for the Geminids this year. The skies should still be dark enough for an excellent show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Gemini, but can appear anywhere in the sky.

- **December 18 - 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 06:30 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.

- **December 21 - December Solstice.** The December solstice occurs at 16:28 UTC. The South Pole of the earth will be tilted toward the Sun, which will have reached its southernmost position in the sky and will be directly over the Tropic of Capricorn at 23.44 degrees south latitude. This is the first day of winter (winter solstice) in the Northern Hemisphere and the first day of summer (summer solstice) in the Southern Hemisphere.

- **December 21, 22 - Ursids Meteor Shower.** The Ursids is a minor meteor shower producing about 5-10 meteors per hour. It is produced by dust grains left behind by comet Tuttle, which was first discovered in 1790. The shower runs annually from December 17-25. It peaks this year on the the night of the 21st and morning of the 22nd. The crescent moon will set early in the evening leaving dark skies for optimal observing. Best viewing will be just after midnight from a dark location far away from city lights. Meteors will radiate from the constellation Ursa Minor, but can appear anywhere in the sky.

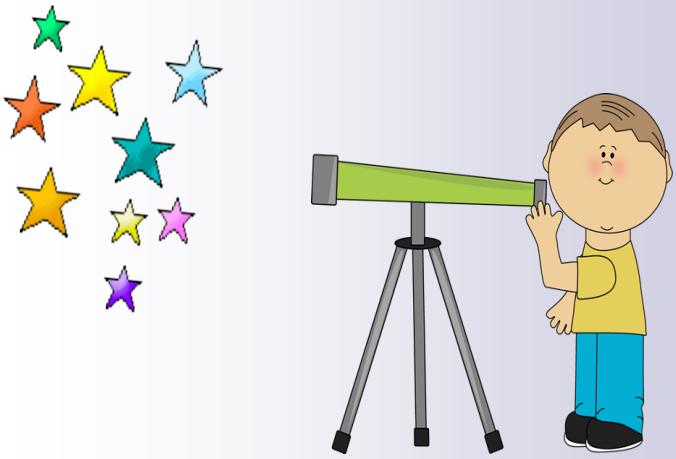
Source: http://www.seasky.org/astronomy/astronomy-calendar-2017.html

Be a part of something great! Join our Outreach team of volunteers today.

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

Need Help With A New Telescope?

Need help with your new telescopes or other astronomy gear? Visit the Garvey Ranch Observatory on any Wednesday night 7 PM to 10 PM for tips and assistance by your fellow LAAS members.



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26 **4:46 PM** Sunset	27	28	29 **7:00 PM** Garvey	30 **5:30 PM** Outreach - East LA	01 **5:30 PM** Outreach - Van Nuys	02
03 **4:44 PM** Sunset	04	05	06 **7:00 PM** Garvey **8:00 PM** Board Meeting	07 **5:00 PM** Outreach - East LA	08 **5:00 PM** Outreach - East LA	09
10 **4:45 PM** Sunset	11 **7:30 PM** General Meeting	12 	13 **7:00 PM** Garvey **7:00 PM** Holiday Party	14	15	16 **2:00 PM** Star Party **5:00 PM** Dark Sky Night
17 **4:47 PM** Sunset	18	19	20 **7:00 PM** Garvey	21	22	23
24 **4:50 PM** Sunset	25 	26	27 **7:00 PM** Garvey	28	29	30 
31 **4:54 PM** Sunset	01 	02	03 **7:00 PM** Garvey	04	05	

LAAS Members: Please log on to the Night Sky Network (NSN) to view all private events on the calendar.

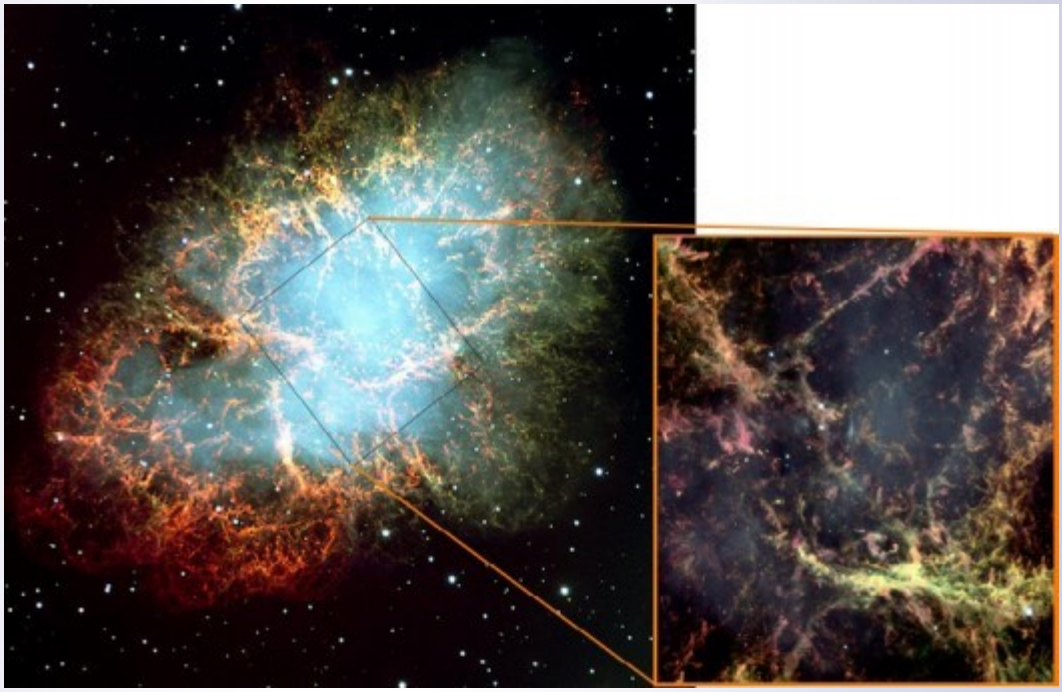
Be advised all scheduled events may not be visible on the calendar above, due to last minute changes.

If you have not registered on the network, please follow this link and register today:

https://nightsky.jpl.nasa.gov/club-apply.cfm?Club_ID=1344&ApplicantType=Member

The Crab Nebula

Universe Discovery Guide For December



The Crab Nebula: The remains of a star that exploded as a supernova about one thousand years ago. Credit: European Southern Observatory (ESO)
In this Hubble close-up of the Crab Nebula, various chemical elements have been detected in the expanding gas, including hydrogen (orange), nitrogen (red), sulfur (pink), and oxygen (green). Some of these elements are newly generated during the life and the explosive death of the star and now blasted back into space. These chemical elements will eventually be incorporated into new stars and planets. Credit: NASA, STScI/AURA More details: http://hubblesite.org/ newscenter/archive/releases/2000/15/ image/a/

Discover the universe with your family and friends!

Download the guide by following this link:

https://nightsky.jpl.nasa.gov/docs/12UDGCrabNebula.pdf

IN THIS GUIDE:

CHILDREN OF THE STARS » SKY FEATURE: CRAB NEBULA » TRY THIS! » ACTIVITY: A UNIVERSE WITHOUT SUPERNOVAE » CONNECT TO NASA SCIENCE

Always use Adobe Acrobat Reader to view the Guides on a computer.

NASA'S NIGHT SKY NETWORK - FREE WEBINARS

Each month, the NSN hosts a free online webinar for all registered members of the Night Sky Network.

Log on to your NSN account to learn more.
9:00 PM Eastern/ 6:00 PM Pacific
Topic and Speaker TBD
Check the NSN newsletter for further information.

YouTube Playlist : All NSN Astronomy Webinars
All Past Webinars and Resources on NSN

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

FUNDRAISING 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!

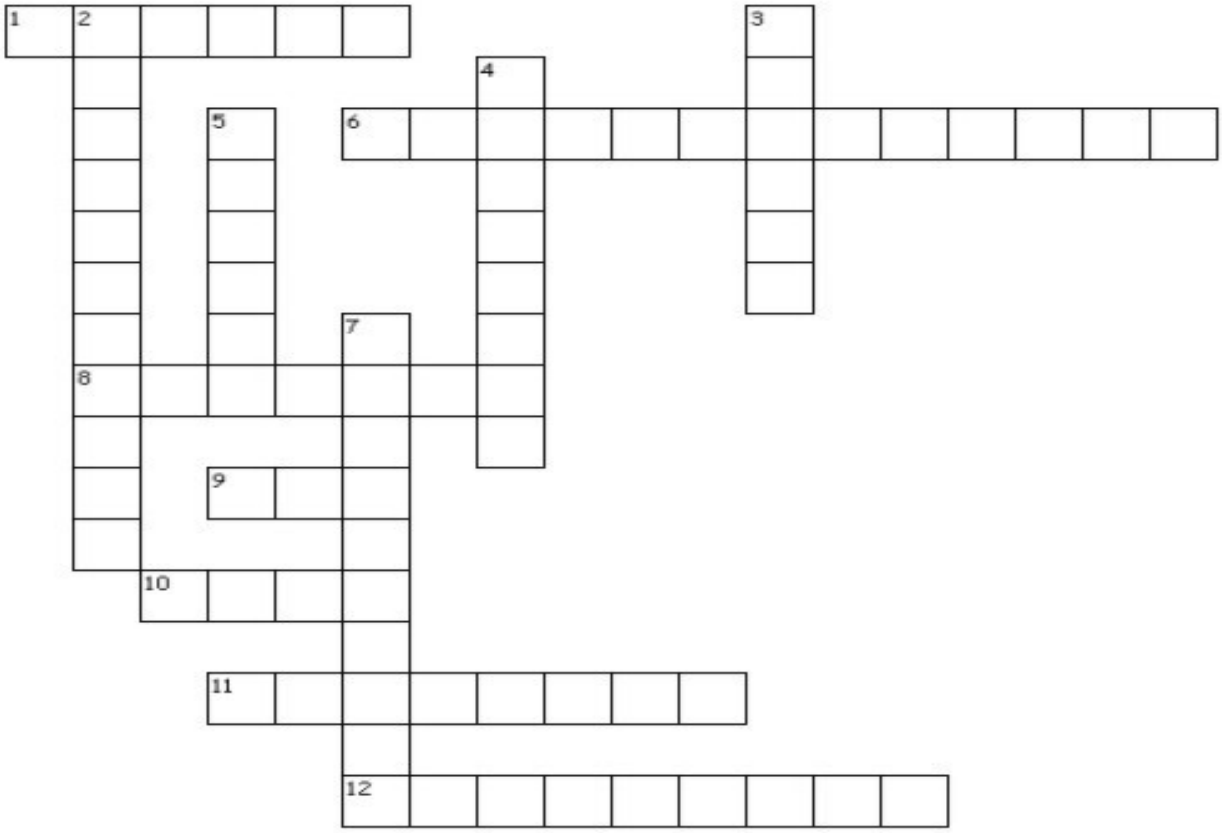
Learn more by following this link: http://smile.amazon.com/

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 retuned 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

Thank you for your donation!

Astronomy Crossword Puzzle



Across

1. A harmonious system

6. The names for groups of stars

8. Revolves around the sun

9. Moon Earth's natural satellite

10. Any heavenly body

11. AKA minor planet

12. natural or unnatural object revolving around a planet .

Down

2. The region beyond the atmosphere of the earth

3. A system of stars

4. The totality of known objects

5. A cloud of interstellar gas and dust

Galaxy, A system of stars
Constellation, The names for groups of stars
Nebula, A cloud of interstellar gas and dust
Outer-space, The region beyond the atmosphere of the earth
Cosmos, A harmonious system
Universe, The totality of known objects
Planets, Revolves around the sun
Asteroid, AKA minor planet
Star, Any heavenly body
The Moon, Earth's natural satellite
Meteorites, A mass of stone or metal that has reached the earth from outer-space
Satellite, natural or unnatural object revolving around a planet

Club Contacts

Club Contact Information

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Bulletin Editor: Andee Sherwood

communications@laas.org

Club Phone Numbers

LAAS Message Phone:

213- 673-7355 - Checked daily

Griffith Observatory:

213-473-0800

Sky Report:

213-473-0880

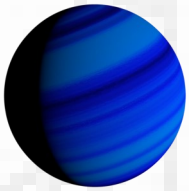
Lockwood Site:

661-245-2106

Not answered, arrange time with caller.

Outgoing calls – Collect or calling card only.

Click on one of the images below to view hyperlinks attached with information about astronomy and for fun.



Contact Us
The Los Angeles Astronomical Society
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Los Angeles, CA 90027

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

Visit our web site at
www.LAAS.org

From:
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c/o Griffith Observatory
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Los Angeles, CA. 90027

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