SIRIUS ASTRONOMER

www.ocastronomers.org

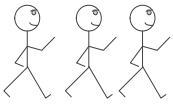
The Newsletter of the Orange County Astronomers

General information and contacts for the Orange County Astronomers club can be found at www.ocastronomers.org

April 2026 Free to members, subscriptions $12 for 12 issues **Volume 53, Number 4**

Star trails captured by Alan Smallbone from the Alabama Hills near Lone Pine at the last part of evening with the hills beginning to be lit by the rising moon. See more star trail pictures later in this issue.

Upcoming Events - free and open to the public

Beginner's class	Friday, 1 May at 7:00 to 9:00 PM **ONLINE** This is the 3rd session of the Beginners Astronomy Class. It covers various methods of finding objects in the night sky.
Club Meeting 	Friday, 10 April at 7:30 to 9:30 PM **ONLINE and IN PERSON** "What's Up": Chris Butler **IN PERSON** Main speaker: Dr. David Rubin from University of Hawai'i at Mānoa **ONLINE** whose talk will be "Supernovae, Dark Energy, and the Mystery of the Accelerating Universe"
Astro-Physics SIG	Friday, 17 April, at 7:00 PM to 9 PM **IN PERSON** Orange Coast College, Building 40, Astronomy House
Star Parties	Saturday, 16 April at the OCA Anza site. 23 April at Irvine site tentatively – check OCA site calendar.

The monthly club meeting is viewable in progress on Zoom and our social media platforms. The recording is available on these platforms after the meeting is over.

https://www.facebook.com/OrangeCountyAstronomers
https://www.youtube.com/@ocastronomers

Please consult the calendar on the OCA website to RSVP online meetings (required)

President's Message

By Barbara Toy

Reminiscences of Pat Knoll

Those of you who remember when Oceanside Photo and Telescope (OPT) was a vibrant force in our local astronomy world, with a big telescope show room and all kinds of related equipment to tempt us, may also remember that they had a very nice telescope repair service. Pat Knoll was the lively gentleman who did most of the repairs, and that was how many in the amateur astronomy world knew him.

For a long time, OPT had its own astronomy club, OPTAS, which had star parties out in Anza Borrego. Pat was one of a group of regulars there who migrated to OCA when OPTAS stopped meeting a number of years ago. Initially, I think he mainly came out to our Anza site to help Joe Busch (one of our observatory holders and also one of the OPTAS group) with problems he was having with his telescope and dome, but Joe brought him up to see the club observatory and, very fortunately for me, he developed a great interest in the Kuhn telescope.

Joe generously donated the current focuser on the Kuhn, as well as the 5-inch refractor that is mounted as one of the finder scopes on top of the Kuhn. Pat played a central role in getting this new equipment mounted, getting the Kuhn balanced and regularly lubricated, figuring out how to collimate it and how to best clean the main mirror – among many projects for improving its performance. An indispensable member of the team for getting these projects done was another member of that OPTAS group, Trey McGriff, and hearing Pat and Trey play off of each other was at least half the fun of working with them on these projects.

Some of the best evenings I've had at the Kuhn have been with Pat, Trey and Joe, and often other friends from their OPTAS years, including Pat's wife, Paula, putting the telescope through its paces and enjoying their stories and banter. On star party nights, we would often have visitors joining in the conversation as well as the viewing, making a great night even better.

On one memorable night with that group Joe got Jerry Brunache, who had ground the mirror for the Kuhn but had never actually seen it in action, to come out to the observatory to do some viewing. As an indicator of how small the astronomy world can be, Jerry is related to Joe (I think they are cousins), and Pat was a long-time friend of Jerry and his wife. Jerry, btw, had a long career doing optical work, including several projects for NASA.

One of Pat's projects outside the club was installing a telescope for the observatory at West Point. As a result of that, we had a group from West Point visit our observatory, and one of my few pictures of Pat is the group picture from that visit – Pat is the third from the left, in the baseball hat and plaid jacket. The other club members there that evening were Alan Smallbone (5th from the left, fuzzy hat and blue jacket), Trey McGriff (next to Alan) and me (next to Trey, partially hidden). That was another fun (but cold) evening, in January, 2016.

Sadly, all of that was before Covid and before Pat's health seriously declined. We had hoped we might be able to have another get-together with him and the rest of the gang out at Anza, but his health was too fragile to make the trip. I'm sorry to say that we have now learned that he has died, but he will be long remembered by all of us who had the great pleasure of knowing him.

© Barbara Toy, March 2026

Help Wanted

- OCA representative to the Western Amateur Astronomers
- Anza Maintenance Coordinator
- Orange County Star Party assistants

Both you and the club can benefit with your participation. For the WAA coordinator position, please send Barbara an email and give her a chance to tell you about it.

For the Anza Maintenance coordinator and Orange County Star Party assistants, Alan Smallbone at alan@ocastronomers.org is the person to contact. He can describe the jobs.

AstroSpace Update

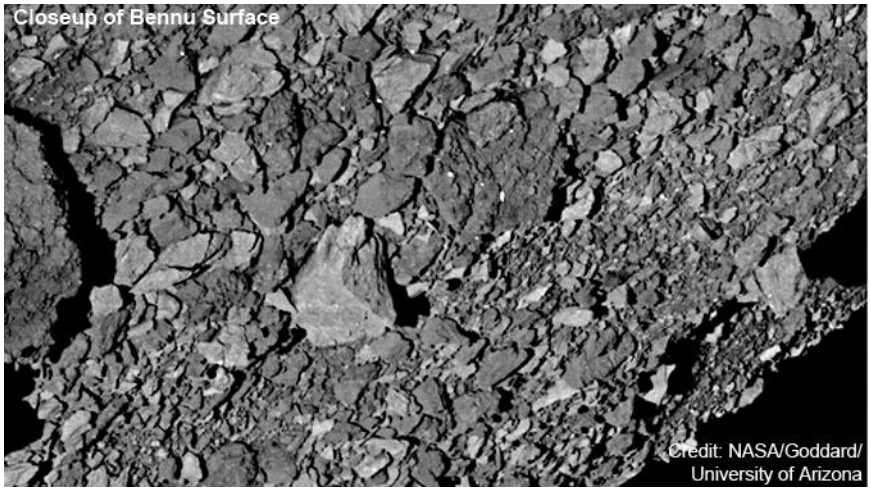
April 2026
Astronomy and space news summarized by Don Lynn from NASA and other sources

Near Miss – After its discovery, asteroid 2024 YR_4 was predicted to pass quite close to Earth in 2032, possibly even striking our planet. Further precise tracking narrowed the possible uncertainty in its trajectory, at which time astronomers declared they were sure that it would miss us. However, it was still possible that the asteroid would strike the Moon. Recent tracking with the James Webb Space Telescope (JWST) showed that it will definitely miss the Moon, likely by about 13,000 miles. No one has studied how big of an impact to the Moon would create danger to people on Earth. Astronomers are being motivated to study that by the upcoming near miss.

Comet Breaks Up – A group of astronomers was granted time in November 2025 on the Hubble Space Telescope (HST) to observe a comet, but it was determined that its location at the proposed observing time was outside the limits of HST pointing. So they switched to observing the next best comet, which was C/2025 K1 (ATLAS), or K1 for short. When the first day of observation came in, astronomers found the comet had just broken into 4 pieces. The observing time occurred on 3 days. The result was the best series of observations of a comet breaking up. The observations showed that the comet took a few days to brighten after the pieces broke off. It is thought that the brightening was caused by a cloud of dust forming about the nucleus of the comet, but that dust takes a few days to form. There is still some disagreement as to why forming the cloud takes this long. This breakup afforded astronomers an opportunity to determine what is inside a comet, not just what is on the surface of the comet nucleus. Based on the new observations, that nucleus was estimated to be about 5 miles across, before breaking up.

Comet Spin – A search of archived HST observations of comet 41P/Tuttle-Giacobini-Kresák found that the spin of its nucleus slowed, and then started to spin in the opposite direction. Such behavior has never been seen in a comet before. Astronomers believe that the change in spin was caused by outgassing acting as a jet as the comet approached and was warmed by the Sun. The phenomenon is probably rare because it will happen only with a very small comet. The mass of a large comet is much less affected by the small forces of such jets. This comet's nucleus is estimated to be only about 0.6 mile across. This comet orbits the Sun every 5.4 years. Computer simulations of this comet's future behavior predict that it may eventually spin so fast that it comes apart.

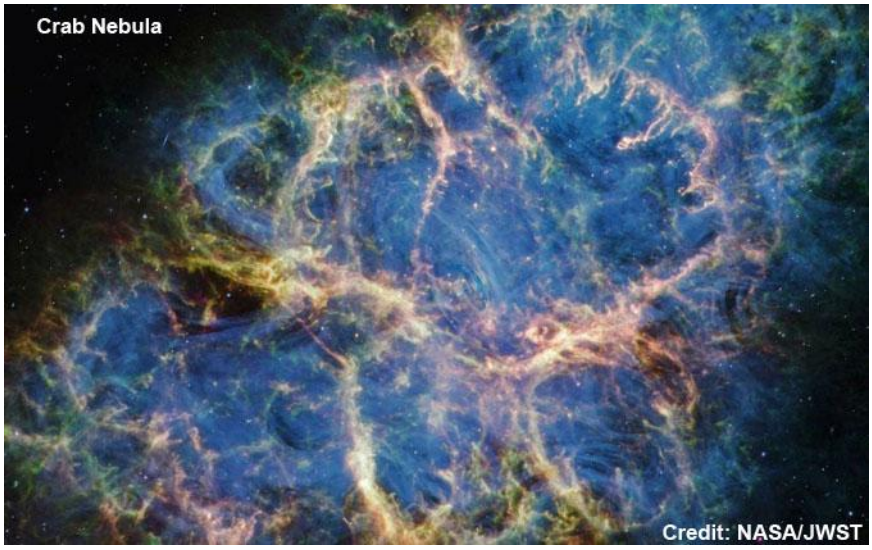
Bennu Cracked, Not Sandy – Thermal observations of asteroid Bennu made from Earth and near-Earth showed temperature changes going in and out of sunlight that are typical for a sandy surface. Then NASA sent the OSIRIS-REx spacecraft there and found a rough surface covered with large boulders instead. The spacecraft managed to squeeze between the boulders and grab a sample of soil to bring back to Earth. Thermal experts claimed the only way the surface found could produce the measurements made is if the boulders are all porous. But the sample brought back wasn't found to be porous enough. So they made a CT scan of sample material, and finally solved the mystery. The rocks in the sample material were found to be riddled with cracks, which is what caused the thermal observations.



ASTERIS is a newly developed artificial intelligence (AI) program designed to compare multiple images of an area of the sky and teach itself how to recognize noise in the images. It then removes the noise. Tests of ASTERIS show that it is about 90% effective in removing noise pixels, and by doing so, reveals objects about 1 magnitude fainter than can otherwise be seen. Applying ASTERIS to deep images taken by JWST revealed dozens of very faint extremely distant galaxies. Use of this program can substantially reduce the time to image very faint objects. The down side is that other 10% of noise that sneaks by this process can occasionally be mistaken for faint real objects.

Distant Gamma-Ray Burst – In September 2023 a gamma-ray burst (GRB) was detected by the Fermi space telescope. It was shown through follow-up X-ray and other observations to be caused by two neutron stars colliding in a small galaxy so distant that its light took about 8.5 billion years to reach us. It is possible that this is the most distant GRB ever detected. There was clear evidence (including a very long tidal stream) that the small galaxy was interacting with galaxies about it. This is an unusual environment to originate a GRB. The astronomers involved in the observations believe that the galaxy interaction instigated star formation some time ago. A binary star that formed then over hundreds of millions of years aged and eventually exploded as supernovas into a binary of neutron stars, which collided to emit the GRB. Such neutron star collisions are known to be a prime source of creating and dispersing the elements heavier than iron, including gold. A similar event about 5 billion years ago may have created the heavy elements including gold that ended up in the Earth and the other planets in our Solar System.

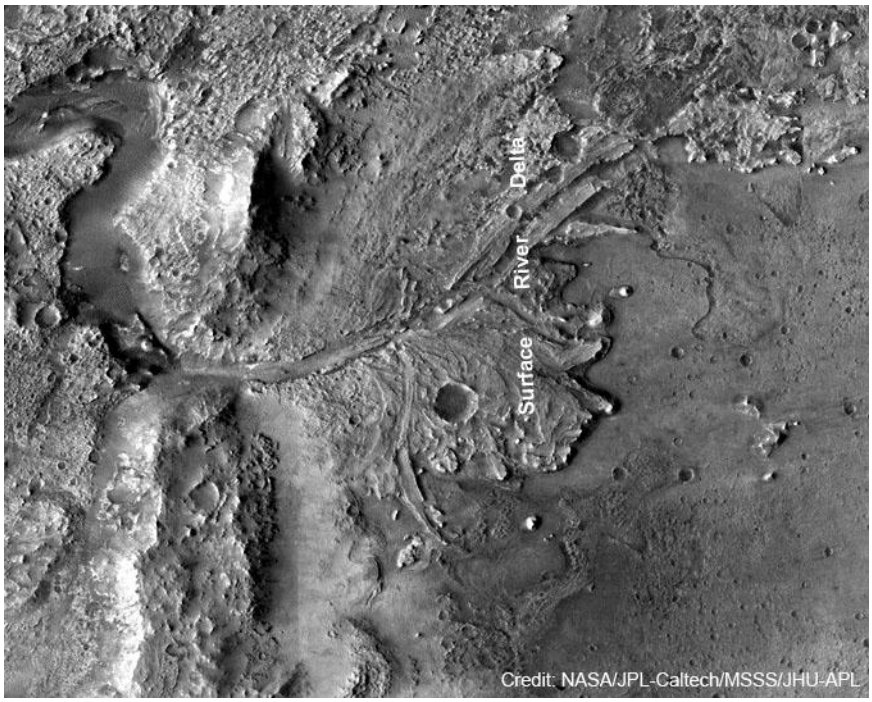
Crab Spectrum Explained – The Crab Nebula, also known as M1 or NGC 1952, is perhaps the best studied remnant of a supernova explosion in the entire sky. Yet astronomers are still finding new facts about it. It has been known for about a decade that the spectrum in radio light of the pulsar at the center of M1 has a number of alternating bright and dark lines in it, and these have become known as M1's zebra stripes. No other pulsar has this feature. But the cause of M1's stripes has remained unknown until now. A new study finds that a combination of effects from plasma (cloud of charged particles) and extreme (relativistic) gravity causes the zebra stripes.



X-rays Explained – It has been known for about 50 years that the star gamma Cassiopeia (or γ Cas) emits X-rays, but no cause had been found. New high-resolution observations made with the XRISM X-ray space telescope show that the X-rays are coming from material falling onto a white dwarf companion star that is too dim to be seen optically. The presence of the companion was already known by its gravitational effect on the motion of γ Cas. Only a very few stars comparable in size to γ Cas have similar X-ray emission. This same cause of the X-rays may apply to such stars.

Close Binary Brown Dwarfs – Brown dwarfs are objects bigger than planets but without quite enough mass to sustain the nuclear fusion that powers ordinary stars. A search of data from the Zwicky Transient Facility (the program that repeatedly images most of the sky to look for changes, using the Palomar 48-inch Schmidt camera) found a binary pair of brown dwarfs that orbit so closely that one is gravitationally pulling matter from the other. Their orbit is smaller than our Moon's orbit about Earth. Likely in the distant future the brown dwarfs will either merge to form an ordinary star or the one receiving matter may grow enough to become an ordinary star. No other matter-stealing brown dwarf binary has ever been found. The pair is about 1000 light-years away in Ursa Major. The spot where the stolen matter hits the receiving brown dwarf is hot and glowing. When the spot rotates out of view (which happens every 57 minutes), the brightness of the pair drops by more than two magnitudes. This change in brightness is what made the system show up in the Zwicky data.

Radar on Mars – The Perseverance Mars rover has a ground-penetrating radar. Every time it pulses, it creates a map of the cross section in the ground below it. The radar signals reach depths of 20 to 35 yards, depending on soil type. Recent analysis of this radar data showed what appears to be a second river delta beneath the one on the surface. There is a slight chance the layers detected were made by volcanic or other activity, but a river delta best fits the data. This indicates that water was flowing into Jezero Crater for a longer time than previously thought in order to have deposited two deltas, one on top of the other. This all happened roughly 4 billion years ago.



Jupiter Measured – A team of scientists has carefully measured the location of the edges of Jupiter in archived radio data from all the space missions that observed Jupiter close up, in order to make the best estimate of the exact size of the planet. The result is a polar radius of 41,533.7 miles and equatorial radius of 44,420.6 miles, about 2-7 miles smaller than the previous best measurements. It is believed this new work is accurate to a quarter mile or so. The polar radius has been known for centuries to be smaller than equatorial due to centrifugal force of its spin. How do astronomers define the edge of a gaseous planet? It is the altitude where the gas pressure is the same as Earth's air pressure at sea level.

Lunar Magnetic Fields – The Moon has long been known to have no magnetosphere, that is, a magnetic field that protects it from charged particles in the solar wind. However it has also long been known that local magnetic fields occasionally pop up at certain places on the Moon and then fade. Scientists call these lunar external magnetic enhancements, or LEMEs. A new paper gives a likely explanation for LEMEs. A new and better computer simulation of Kelvin-Helmholtz instability (KMI) showed that such instability where different waves of charged particles meet would produce the LEMEs that match previous observations of them. KMI is the same phenomenon that sometimes produces rolling wave-like clouds in the Earth's sky, except the material is different (air versus charged particles).

Particle Discovered – Scientists working at CERN near Geneva report that they have discovered a new subatomic particle. It is known as the Xi_{cc}^{+} particle (or using the Greek symbol Ξ_{cc}^{+}). It is similar to the proton in that it is made of 3 quarks. However the new particle contains 2 charm quarks rather than 2 up quarks. It is about 4 times as massive as the proton. It decays into 3 lighter particles. The discovery was made possible by the recent upgrade of the LHCb particle detector at CERN.

News About Our Anza Site

Kuhn Shipping Container Cleanup

The cleanup was done on Saturday, 21 March, as planned. Jerry Floyd and Alex Ketchum were able to find new homes for several large items. Don Lynn, Dave Kodama, and Dave Fischer extracted and sorted through most of the other items and were able to dispose of many items that were no longer useful to the club. The remaining items were reorganized and put back in the storage container.

We were unable to find the missing pieces from the club's field trimmer and will find an alternative means of managing the weeds.

The job is mostly done but there are a number of things left to deal with. 4 boxes that formerly contained Meade SCT telescopes other than the ones installed in the Kuhn observatory remain in the container. These will be brought back to Orange County for telescopes are in the OCA storage space in Santa Ana.

Lots of loose hardware was found scattered about the storage container and will be collected into durable boxes over time.

It started this way

Midway through the cleanup

Some stuff laid out for evaluation

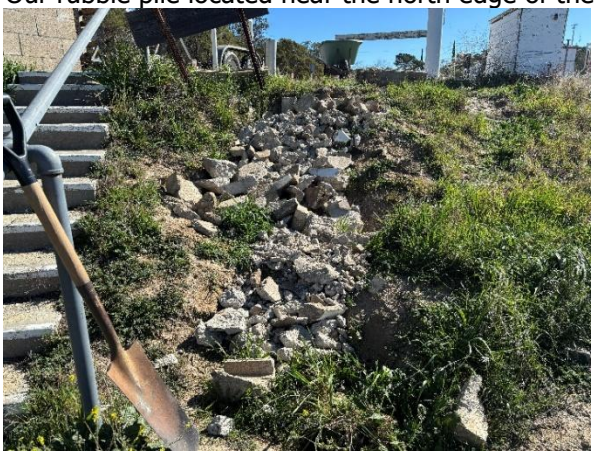
More stuff

Lower Pads Area
The modifications to this area have been completed. The former pads have been broken down to rubble which we may be able to apply to making a better ditch on Bonny Lane with the aim of controlling erosion from rain storms.


Breaking up the pads


Our rubble pile located near the north edge of the site


Where the Lower Pads used to be


Gully near Jupiter Ridge mostly filled in February

Dealing With Weeds
The club's field mower is missing a critical part, called the Wagner Anti-wrap Bracket, and a replacement has not been found yet either online or through the manufacturer. We did not find the part while cleaning up the Kuhn storage container so we will evaluate alternatives for keeping the weeds in check.

Because of the wet winter, the soil is well moisturized and there is a lot of early season weed growth. Pad and observatory owners should plan on doing harsh weed suppression by March before it gets entirely out of control.

10 Pad Alley
Repair of the gully between 10 Pad Alley and Jupiter Ridge has been completed.

Upper Pads Area
A load of gravel will be spread over some of the areas that were cleared of vegetation last year to limit erosion and make the area less prone to mud following rain and snow. This will happen sometime during the next couple of months.

Star Trails

Star trail images are made by pointing a wide field camera at a fixed orientation relative to the Earth and capturing a sequence of relatively short exposures which are then combined to make the image. Unlike deep space imaging, the camera moves with the Earth's rotation letting the stars smear as the exposures progress. Adding the exposures together gives the trails.

The trails form along circles around the Northern and Southern poles so if one of those is within the field of view, we see circles and without a pole in the image then we get parts of circles. Alan's image was oriented East-West and so has some arcs from each pole.

Here are a few more star trail images contributed by club members for this issue.

From Anza by Dave Kodama

Taken at Mount Wilson by Matt Ota in 2001

From Terlingua, Texas by Craig Bobchin

Vernal Equinox

On 20 March, we saw the sun setting exactly along the East-West line on which the Upper Pads were laid. Days earlier, it set to the South of that line and during the summer, it sets to the North.

OWENS VALLEY RADIO OBSERVATORY TRIP
SCIENCE BEYOND THE BOOK

June 12-13th 2026

With Dr. Mark Hodges and
Dr. Doug Millar and Cecilia Caballero, MA

Please join with us on the above dates for an extraordinary adventure in science education at the Owens Valley Radio Observatory, outside of Big Pine, CA. Included are science demonstrations at the 40m radio telescope and a tour, walking a scale model of the Solar System, solar astronomy, and nighttime astronomy. We will also make ice cream with liquid nitrogen.

This year we are emphasizing the DSA2000 radio telescope. We will have the chance to hear from one of the engineering staff and talk about some of the technical details of the array. We will also review some of the challenges to getting the data transferred and transformed. It should be very interesting. If you want to get a head start look at the DSA2000 website at https://www.deepsynoptic.org/

If you want to come on Friday, we have been invited by the owners of the Starlight Motel to be treated to an Indian dinner free of charge to our attendees. It will be served at the motel at 5pm. Please let us know if you would like to attend, because we need a head count. We will also have an evening of astronomy Friday night at the south of Building #10 at the west end of the observatory. You can bring your own telescope and there will be a number of telescopes set up to share their views. 120V AC is available. We will also do astronomy on Saturday night. The main program will be on Saturday afternoon, starting in the dining area in Building #10. We will go to the Pizza Factory in Bishop for dinner.

The tour of OVRO is free and courtesy of Dr. Mark Hodges, OVRO, and Caltech. Attendees are responsible for their own meal expenses. This trip is open to teachers, students with their families, members of local astronomy clubs, and radio hams. You must RSVP to go on the trip to Dr. Millar so that we know how many to expect (contact information below). Please also forward your cell phone number.

This is not a sponsored event. Everyone is on their own for transportation and lodging. You have many options. You can stay at a motel nearby, camp in a campground, or bring a tent or trailer and stay at the OVRO site. Don't camp under the 130ft dish as it is a favorite object for photos. We can give you more ideas of good spots to set up camp. If you do decide to camp at OVRO, you must provide your own bathroom, as the buildings will be locked. There are places to eat in Big Pine and Bishop. The Brewed Awakening in Big Pine is great and Jack's in Bishop is an old favorite.

Please arrive at OVRO by 1:00 PM on Saturday for the program. The weather will be warm and dry. If there are mosquitos, I'll have repellent available. Evenings will be a little cooler, so dress accordingly for the nighttime astronomy. Most popular food to share? Chocolate chip cookies. Coffee will be available. Or bring your favorite K cup.

The March Sirius included several pictures of prior visits to give a sense of what this activity is like.

Schedule:

Friday-

Dinner at the Starlight Motel

Set up telescopes to the south of building #10 for astronomy by sunset. 110v AC, bathroom and coffee and water available.

Saturday

1:00pm: arrive at kitchen in building #10 for start of program and tour.

5pm: check in at your Motel (if not already checked in) and go to dinner in Bishop.

Evening- Astronomy at the site

Sunday

A lot of us like to gather for breakfast about 9:30 at Jack's in Bishop. More information will be available on Saturday.

Leave whenever you like. Check websites about the area and the Highway 395 for sightseeing opportunities.

The directions from the LA area are: Drive north on the I5/CA14 through Palmdale and Mojave. Continue past Inyokern and join US395. Continue on North through Little Lake, Lone Pine and Independence. Continue through Big Pine. Just as you get to the end of town turn right on Highway 168 towards the Westgard Pass. Go about 2 miles and turn left onto Leighton Lane, the observatory road. You should be able to see the 40m dish in the distance, but it is 4 miles away! Continue through the gate, even though it says "authorized personnel only", onto the property and follow the blacktop road. Go past two 90-foot telescopes to the west end of the site and park. Below is a more detailed map. The observatory address is: 100 Leighton Lane, Big Pine, CA.

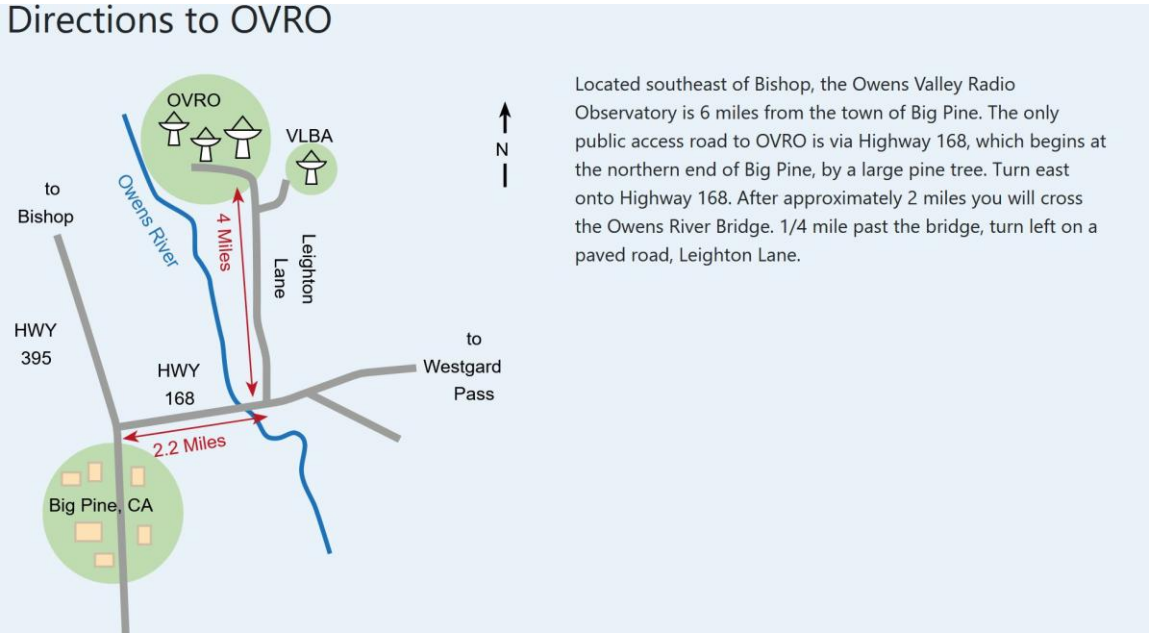
If you would like to bring your own telescope, please do so.

For any questions and RSVP's, my contact information is
Dr. Doug Millar Cell- 562-810-3989 and email is drzarkof56@yahoo.com

Thank you and I hope to see you on the trip!
Dr. Millar

Local Directions to the observatory:

n.b. The large pine tree no longer exists.



Advertisements

Buy, Sell or Trade some of your gear? This is where club members can place advertisements. Please contact the editor at newsletter@ocastronomers.org to place an advertisement or to learn more about placing one. There is no cost to club members for non-commercial advertisements in the newsletter. The editor may resize and re-arrange ad content to fit and will feed back the formatted ad for approval prior to publishing.

Some policy changes have been made to reflect the expanded capacity of the electronically published newsletter.

- Each advertisement may now occupy up to ½ of a printed page and may include small pictures within the space permitted. The editor may resize and re-arrange ad content to fit and will feed back the formatted ad for approval prior to publishing.

- Each advertisement may be run for 3 consecutive issues, after which it will be removed unless the advertiser requests extension of the ad by contacting the editor of the newsletter.

For Sale contact Jerry Floyd jlfloyd720@gmail.com

- Stellarvue **SV102EDT** Triplet Refractor, 102mm aperture, 621mm focal length, f/6.1, Serial #23 $ 600

This is equipped with JMI Focuser, tube rings, and base plate. Telrad (mounted on custom wood adapter) and star diagonal are included

- Stellarvue **SV80S** apochromatic triplet refractor with High-quality Russian LOMO OK4 glass $ 600

  80mm aperture, 480mm focal length, f/6.0, Serial #0018. Designed by Thomas Back.
  2 inch Feather Touch Focuser, saddle plate instead of tube rings.
  1.25 inch star diagonal, 2 inch to 1.25 inch reducer, 25mm 1.25" Plossl eyepiece and soft case included

- Stellarvue **SV80L** super apochromatic triplet refractor. 80mm aperture, 600mm focal, f/7.5 $ 550

  2" Feathertouch focuser
  Has a single large tube ring with base plate for mounting
  Included are 2" star diagonal, Stellarvue red-dot finder, and padded case.

Pick up in Hemet, at OCA Anza site, or I will deliver locally in Southern California area, within approx. 100 mile radius.

For Sale contact David Tassey tasdave@cox.net

- ZWO ASI 2600mc duo camera, lightly used $1000

For Sale contact Val Akins akins7821@gmail.com

- 4" Celestron f9.8 Refractor with heavy duty Celestron ALT-AZI mounts and slo-mo cables, Red dot finder, star diagonal, 2 lenses $100
- Celestron Luminos 7, 10, and 15 mm 1 1/4 " eyepiece set in padded Apache case lower price >> $100
- University Optics 1 1/4" eyepiece set with Meade RG lenses - (hard to find!) 8 eyepieces with case $100

Want to Buy contact Norbert Ulbrich janmaatcalifornia@yahoo.com 650-507-9944 Cell

- Aerospace Engineer is looking for a vintage 4-inch refracting telescope from the 1950s or 1960s that was made by the **GOTO Kogaku Company of Tokyo, Japan**. The refractor can be in any condition.

I will do personal pick-up and pay a fair price. Please, contact Norbert by email or via my cell phone - text anytime, call after 8:00pm.

For Sale contact Steve Feldman 949-461-0028

- Sky Watcher Mak 127, pickup only, Mission Viejo $280
- SynScan Hand Control v.5, pickup or mail $100
- ZWO 482 MC Planetary Camera, pickup or mail $125

From the Editor

Has anybody an idea for a new article or interesting column of articles for the newsletter ? The NASA column will no longer be available.

The newsletter is once again looking for front cover picture contributions. We have had one suggestion that is being looked into and are very open to additional ones.

Due dates for submission of articles, pictures and advertisements are generally 13 days prior to the subsequent general club meeting.

Issue	**Due date**
May	25 April
June	30 May
July	27 June

Last Page