

PRIMEFOCUS

Tri-Valley Stargazers



June 2020



Meeting Info:
Lick Observatory During
Pandemic Times: 1918
and 2020

Who:
Dr. Elinor Gates

When:
June 19, 2020
Meeting at 7:30 p.m.
Lecture at 8:00 p.m.

Where:
Virtual Meeting using: Zoom*
See the April or May issue of
PrimeFocus for info on getting
connected using Zoom.

Inside

News & Notes	2
Calendar of Events	2
TVS Observing Programs	4
TVS Member Astrophotos	4
H2O: New OTA Deployment	5
What's Up	6
NASA Night Sky Notes	7
Membership/Renewal Application	8

June Virtual Meeting Using "Zoom"

Lick Observatory During Pandemic Times: 1918 and 2020 By Dr. Elinor Gates, Lick Observatory

Lick Observatory has been doing ground-breaking research since its opening in 1888. Pandemics create challenging times for any organization, so I'll explain how Lick Observatory was affected by the Spanish Flu in 1918 and is affected by COVID-19 in 2020, highlighting the exciting research being done in both eras.

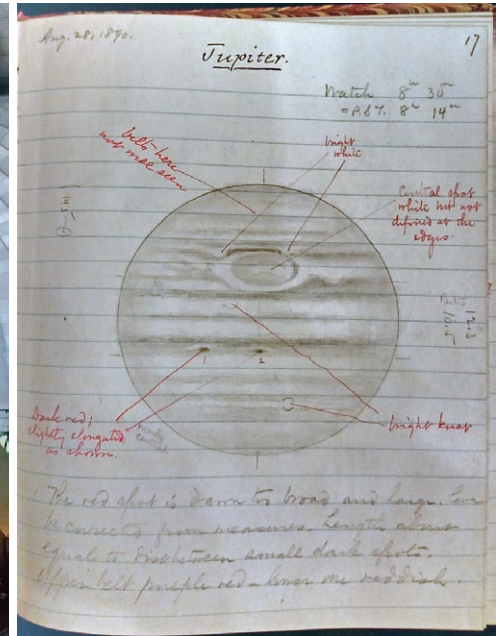
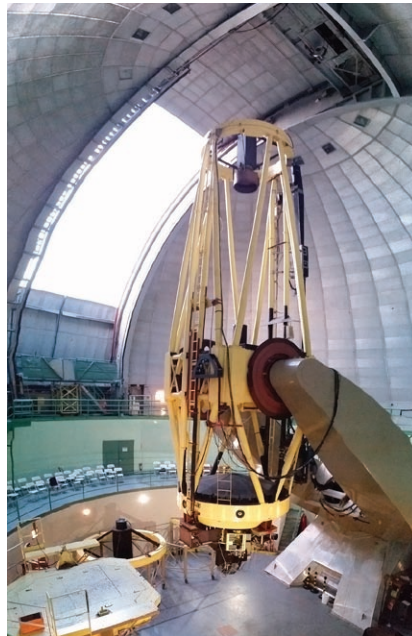


Figure Caption: Left: The 120-inch Shane Telescope, commissioned in 1959. The mirror was a test blank for the 200-inch Hale telescope. Caltech sold the blank to Lick Observatory for \$50,000 (see <https://www.ucolick.org/main/science/telescopes/shane.html>). Right: Jupiter observing log entry of J. E. Keeler from August 28, 1890 made using the 36-inch Alvin Clark Great Refractor. Keeler was Lick Observatory Director from 1898-1900, when he passed away at the age of 42. Image Credits: K. Sperber

Bio: Dr. Elinor Gates is a staff astronomer at Lick Observatory specializing in laser guide star adaptive optics and near infrared camera instrumentation and observations. She received her Ph.D. in Physics/Astronomy from the University of New Mexico in 1998. Before moving to Lick Observatory, she worked at the Smithsonian Astrophysical Observatory, the National Radio Astronomy Observatory, and the Air Force Phillips Laboratory. Dr. Gates' current research interests are studying quasars and their host galaxies.

News & Notes

2020 TVS Meeting Dates

Below are the TVS meeting dates for 2020. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting.

Lecture Meeting	Board Meeting	Prime Focus Deadline
Jun. 19	Jun. 22	
Jul. 17	Jul. 20	Jul. 03
Aug. 21	Aug. 24	Aug. 07
Sep. 18	Sep. 21	Sep. 04
Oct. 16	Oct. 19	Oct. 02
Nov. 20	Nov. 23	Nov. 06
Dec. 18	Dec. 21	Dec. 04

Money Matters

As of the last Treasurer's Report on 05/19/20, our club's account balance is \$13,402.01.

TVS Welcome to New Members

TVS would like to welcome new members William McMahon and Ryan Mattee. Please say hello and chat with them during our Zoom club meetings.

H2O and Del Valle Observing Sites Reopened

TVS maintains two observing sites: our Del Valle site on EBRPD property and Hidden Hill Observatory on private property. The club is happy to announce that both sites reopened for observing on June 1st. However, due to the ongoing COVID-19 emergency, the following additional restrictions must be followed:

*The sites are open for individual use only by club members and immediate family; no guests or group events allowed

*You use each observing site at your own risk and agree to hold the club and the landowners free of all liability

*Do not use either observing site if you are not feeling well or suspect you were recently exposed to the virus

*Announce your intention to use either site on our groups.io group

*While at either site maintain social distancing of at least 15 feet (about a car's length)

*Bring hand sanitizer and use it before and after touching any locks or facilities

*Club members should not touch or look through each other's equipment. Focuser knobs and eyepieces can potentially spread the virus.

*H2O keyholders who wish to use the Quick Dome should first contact Ross Gaunt (secretary@trivalleystargazers.org) to reserve it for individual use for the day

*H2O patrons who wish to use the Marling Scope should first contact Chuck Grant (observatory@trivalleystargazers.org) to reserve it for individual use for the day

*Note that these restrictions do not replace or negate any Alameda or Santa Clara County health orders in place at this time.

Ross Gaunt, our club secretary, emailed the updated lock combinations and usage instructions for each site to all H2O keyholders and all Del Valle registered users. If you are an H2O keyholder or Del Valle registered user and didn't get Ross's email, please let Roland (president@trivalleystargazers.org) or Ross know and we'll straighten it out. Stay safe and happy observing!

TVS Star Party Descriptions

NOTE: ALL STAR PARTIES ARE SUBJECT TO POSSIBLE CANCELLATION PENDING THE STATUS OF THE STAY-AT-HOME ORDER!

Del Valle star parties are also public outreach events. They are jointly hosted with the EBRPD and held at the Arroyo Staging Area. The public is invited for the first 1.5-2 hours, while club members can stay the remainder of the night.

Tesla Vintners star parties are open to only club members and their guests. These star parties end at midnight, but participants can leave earlier, should they wish.

H2O star parties are open to the public. The open house ends at midnight, and all participants are encouraged to stay the duration. The drive to H2O takes about 1 hour, and the caravan leaves promptly from the corner of Mines and Tesla Rds.

Outreach Star Party Schedule

August 22: Bankhead Theater

Contact Eric Dueltgen if you are interested in participating (outreach@trivalleystargazers.org).

2020 Club Star Party Schedule

July 25: Del Valle Arroyo

August 15: H2O

September 12: Tesla Vintners

September 19: Del Valle Arroyo

October 17: Tesla Vintners

Calendar of Events

June 12, 8:00pm

What: 137 Years of Chabot Space & Science Center in 60 Minutes

Who: Benjamin Burress (Chabot)

Sponsor: Chabot Space and Science Center

Header Image: Lick Observatory during a TVS tour in 2016.
Credit: Ken Sperber

Calendar of Events (continued)

Online: <https://chabot.space.org/events/events-listing/>;
Presented on Facebook Live, "Like" the Chabot Space and Science Facebook Page

Chabot Space & Science Center has very old roots in Oakland and the East Bay, and no fewer than three incarnations as a student and public observatory and science education center. Now celebrating the 20th anniversary at its present location on the skyline of the Oakland Hills, the institution as a whole turns 137 this year. This presentation will trace and illustrate the rich and interesting history of an observatory that was, from its inception, dedicated to educating the public about science and the universe.

To receive a notification when the talk begins, make sure to "Like" the Chabot Space and Science Center Facebook page.

If you miss the live event, the full presentation will be released on the YouTube channel within one week of the event: https://www.youtube.com/channel/UCarFXs-04xmdHW_PVc7LWRg

June 17, 7:00pm

What: Early Asteroid Impact Detection: Defending the Planet One Asteroid at a Time
Who: Larry Denneau (U. Hawaii) and Prof. Amy Mainzer (U. Arizona)
Sponsor: SETI Institute
Online: <https://www.seti.org/event/early-asteroid-impact-detection-defending-planet-one-asteroid-time>; REGISTRATION REQUIRED

Could an asteroid strike our planet in the future? Astronomers think so since thousands of near-earth asteroids (NEAs) cross our planet's path. However, the good news is that an asteroid impact is a preventable large-scale disaster. NASA has

recently opened a Planetary Defense Coordination Office to manage its ongoing mission of so-called "Planetary Defense." One of the programs is to find, track, and characterize at least 90 percent of the predicted number of NEAs that are at least 140 meters—bigger than a small football stadium—and characterize a subset of them, so we develop projects to deflect them if needed. How are NEAs found and tracked? What are the expected NEA close approaches?

June 23, 7:15pm

What: Hubble and James Web Telescopes
Who: Professor Dan Weisz, UC Berkeley
Where: Mt. Diablo Astronomical Society, Lindsay Wildlife Experience, Community Room, 1931 First St., Walnut Creek, CA 94597
Cost: Free.

Details not available.

For more information see: https://nightsky.jpl.nasa.gov/event-view.cfm?Event_ID=106410

June 27, 7:30pm

What: Astrobiology Under Our Feet & Out to the Stars
Who: Penny Boston, NASA
Sponsor: Mt. Tam Astronomy Nights
Online: www.youtube.com/channel/UCcqr2q6lgFSOglvh-66VFSLw

The Age of Astrobiology has begun. We have a whole Solar System—and a galaxy of star-warmed worlds beyond—to explore for life. How do we look for life here and way out there? How will we know it when we find it? Our exploration begins at Earth. We must apply what we are learning about our own amazing home planet to our search for life beyond.

Officers

President:
Roland Albers
president@trivalleystargazers.org

Vice-President:
Eric Dueltgen
vice_president@trivalleystargazers.org

Treasurer:
Jenny Siders
treasurer@trivalleystargazers.org

Secretary:
Ross Gaunt
secretary@trivalleystargazers.org

Past President:
Rich Combs
past_president@trivalleystargazers.org

Volunteer Positions

Astronomical League Rep.:
Dennis Beckley
alrep@trivalleystargazers.org

Club Star Party Coordinator:
Eric Dueltgen
coordinator@trivalleystargazers.org

Del Valle Coordinator:
David Feindel
delvalle@trivalleystargazers.org

Historian:
Hilary Jones
historian@trivalleystargazers.org

Librarian:
Ron Kane
librarian@trivalleystargazers.org

Loaner Scope Manager:
Ron Kane
telescopes@trivalleystargazers.org

Newsletter Editor:
Ken Sperber
newsletter@trivalleystargazers.org

Night Sky Network Rep.:

Ross Gaunt
nnsn@trivalleystargazers.org

Observatory Director/Key Master:
Chuck Grant
observatory@trivalleystargazers.org

Observing Program Coordinator:
Ron Kane
awards@trivalleystargazers.org

Outreach Coordinator:
Eric Dueltgen
outreach@trivalleystargazers.org

Potluck Coordinator:
OPEN
potluck@trivalleystargazers.org

Program Coordinator:
Dan Helmer
programs@trivalleystargazers.org

Publicity Coordinator:
OPEN
publicity@trivalleystargazers.org

Refreshment Coordinator:

Laurie Grefsheim

Webmaster:
Hilary Jones
webmaster@trivalleystargazers.org

Web & E-mail
www.trivalleystargazers.org
info@trivalleystargazers.org

TVS E-Group
To join the TVS e-group just send an e-mail message to the TVS e-mail address (info@trivalleystargazers.org) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.

TVS Observing Programs

By Roland Albers

TVS is proud to announce the first in a series of observing programs for our members: the TVS 2020 Summer Observing Program. You can find our observing programs by going to our club website (www.trivalleystargazers.org), hovering over "Activities" and then clicking on "Observing Programs." Or you can use this direct link: www.trivalleystargazers.org/observing.shtml

The TVS Observing Programs are patterned after the Astronomical League Observing Programs (www.astroleague.org/observing.html). But unlike the AL Observing Programs, most of which require 100 or more observations and a year or more to complete, the TVS Observing Programs require only 15 to 30 observations and are designed to be completed in a single season.

In addition, the TVS Observing Programs will introduce beginner and intermediate observers to the best telescopic objects in the night skies for each season, including double stars, open star clusters, globular clusters, emission nebulae, planetary nebulae, and galaxies. Most objects can be observed

in telescopes as small as 4-inches in aperture and from the moderately light-polluted skies of the Tri-Valley. Of course, larger apertures and darker skies (like our Del Valle and H2O observing sites) will reveal more details, so take advantage of each if you can.

To participate in the program, begin by downloading the observing list and sample observing log (available in both Excel and PDF formats) for the Summer Program. Then get outside during our clear summer nights and observe! Record your observations for each of the 29 objects in the summer list using the supplied log or one of your own design, being sure to include all the required information. You can include an optional sketch too!

Once you've completed all your observations, submit your log in electronic format (Excel file or scanned PDF) to: awards@trivalleystargazers.org. We'll have an attractive certificate and mention in this newsletter for all who complete the program. So start making your observations today and be one of the first to earn a TVS Observing Award!

TVS Member Astrophotos



Debbie Tee took this image of the Milky Way with Jupiter rising during her first visit to H2O on June 10! She used a Nikon 850 with a 14mm lens, f/2.8, ISO-800, 19 second exposure.

H2O: New Optical Tube Assembly Deployment



On May 31, Rich Combs, Chuck Grant, and Gert Gottschalk went up to H2O to install the new optical tube assembly (OTA) on the AP900 mount. They first loaded the new OTA into a well-padded trailer for transport to H2O (top left). Once at H2O, the old OTA with its 17.5" mirror was removed from

the mount (top right). The new OTA was then bolted to the mount (middle left) and the mirror cell with an 18" f/4.5 mirror was installed (middle right). With the addition of the focuser the scope was ready for balancing and collimation (lower left). Unfortunately, collimation revealed rotational flexure as

continued on p.6
5

What's Up By Ken Sperber (adapted from S&T and The Year in Space)

All times are Pacific Daylight Time

June

- 12 Fri Last-Quarter Moon (11:24pm)
- 13 Sat The Moon is $\sim 5^\circ$ from Mars in the southeast (Dawn)
- 19 Fri The Moon and Venus rise together, $\sim 1^\circ$ apart (Dawn, see p. 49 of the June S&T)
- 20 Sat New Moon (11:41pm)
- 25 Thu The waxing crescent Moon is $\sim 5^\circ$ from Regulus in Leo (Dusk)
- 28 Sun First-Quarter Moon (1:16am)
- 30 Tue The waxing crescent Moon is $\sim 3^\circ$ from Zubenelgenubi, or Alpha Librae (Dusk)

July

- 1 Wed Jupiter and Saturn are $\sim 6^\circ$ apart in the southeast (Evening)
- 4 Sat Full Moon (9:44pm)
- 5-6 Sun- The Moon, Jupiter, and Saturn form a line on the 5th and a triangle on the 6th (Evening)
- 11 Sat In the southeast the Moon and Mars are $\sim 6^\circ$ apart with Venus and Aldebaran $\sim 1^\circ$ apart (Dawn)
- 12 Sun Last-Quarter Moon (4:29pm)
- 14 Tue Jupiter at opposition (Visible all night)
- 17 Fri The Moon, Venus, and Aldebaran form an arc $\sim 6^\circ$ long (Dawn)
- 20 Mon New Moon (10:33am)
- 20 Mon Saturn at opposition (Visible all night)
- 22 Wed The crescent Moon is $\sim 3^\circ$ from Regulus, low in the west (Dusk)
- 27 Mon First-Quarter Moon (5:33am)
- 28- Tue- The Delta Aquariid meteor shower peaks with best viewing before dawn on Wednesday morning
- 29 Wed The crescent Moon is $\sim 5^\circ$ from Antares (Dusk)
- 31 Fri The Moon, Jupiter, and Saturn form a line $\sim 20^\circ$ long in the southeast (Dusk)

H2O: New OTA (continued)

the telescope was moved in altitude. One candidate for the flexure was deformation of the upper-tube assembly (UTA). To address this issue, Rich reinforced the UTA with stiffening rings (p.5, lower right) but after installation flexure was still evident. Even so, the addition of the stiffening rings will be beneficial since the added strength will be advantageous when CCD/CMOS cameras are attached to the telescope. Drawing on his decades of amateur telescope making, Rich meticulously traced the rotational flexure to deformation of the secondary mirror holder relative to the spider vanes. A plan is in development for reinforcing the secondary holder and spider vanes.

While the AP900 mount responded well when configured

with the older and much heavier aluminum OTA, it was operating near the limit of its weight capacity. The new OTA is much lighter, thus putting much less stress and strain on the mount, and the 18-inch mirror has about 6% greater light gathering ability than the original mirror, so it is a Win-Win situation!

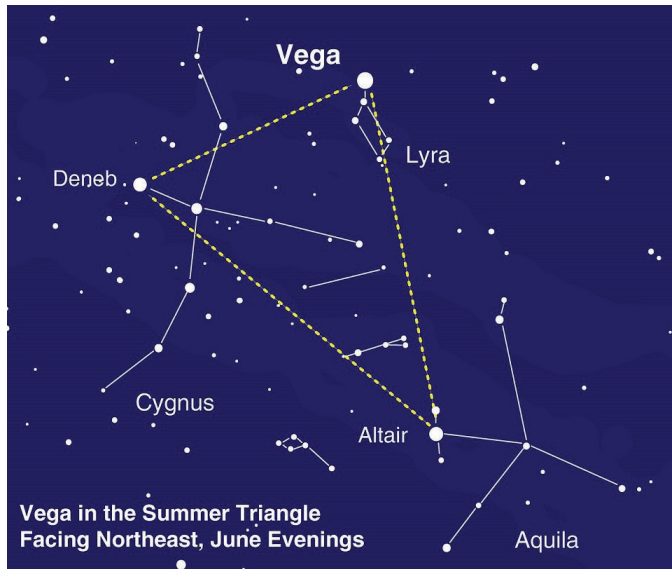
Image Credits: Gert Gottschalk: Images 1-5; Rich Combs: Image 6.

NASA Night Sky Notes

Become a Citizen Scientist with NASA!

By David Prosper

If you live in the Northern Hemisphere and look up during June evenings, you'll see the brilliant star Vega shining overhead. Did you know that Vega is one of the most studied stars in our skies? As one of the brightest summer stars, Vega has fascinated astronomers for thousands of years.



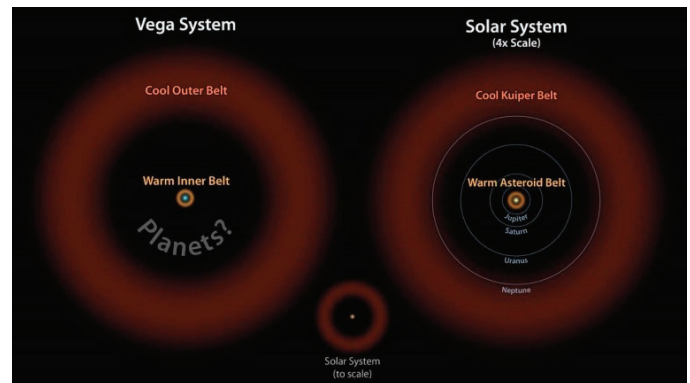
Caption: Can you spot Vega? You may need to look straight up to find it, especially if observing after midnight.

Vega is the brightest star in the small Greek constellation of Lyra, the harp. It's also one of the three points of the large "Summer Triangle" asterism, making Vega one of the easiest stars to find for novice stargazers. Ancient humans from 14,000 years ago likely knew Vega for another reason: it was the Earth's northern pole star! Compare Vega's current position with that of the current north star, Polaris, and you can see how much the direction of Earth's axis changes over thousands of years. This slow movement of axial rotation is called precession, and in 12,000 years Vega will return to the northern pole star position. Bright Vega has been observed closely since the beginning of modern astronomy and even helped to set the standard for the current magnitude scale used to categorize the brightness of stars. Polaris and Vega have something else in common, besides being once and future pole stars: their brightness varies over time, making them variable stars. Variable stars' light can change for many different reasons. Dust, smaller stars, or even planets may

block the light we see from the star. Or the star itself might be unstable with active sunspots, expansions, or eruptions changing its brightness. Most stars are so far away that we only record the change in light, and can't see their surface.

NASA's TESS satellite has ultra-sensitive light sensors primed to look for the tiny dimming of starlight caused by transits of extrasolar planets. Their sensitivity also allowed TESS to observe much smaller pulsations in a certain type of variable star's light than previously observed. These observations of Delta Scuti variable stars will help astronomers model their complex interiors and make sense of their distinct, seemingly chaotic, pulsations. This is a major contribution towards the field of astroseismology: the study of stellar interiors via observations of how sound waves "sing" as they travel through stars. The findings may help settle the debate over what kind of variable star Vega is. Find more details on this research, including a sonification demo that lets you "hear" the heartbeat of one of these stars, at: bit.ly/DeltaScutiTESS

Interested in learning more about variable stars? Want to observe their changing brightness? Check out the website for the American Association of Variable Star Observers (AAVSO) at aavso.org. You can also find the latest news about Vega and other fascinating stars at nasa.gov.



Caption: Vega possesses two debris fields, similar to our own solar system's asteroid and Kuiper belts. Astronomers continue to hunt for planets orbiting Vega, but as of May 2020 none have been confirmed. More info: bit.ly/VegaSystem Credit: NASA/JPL-Caltech

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.



Tri-Valley Stargazers
P.O. Box 2476
Livermore, CA 94551
www.trivalleystargazers.org

Tri-Valley Stargazers Membership Application

Contact information:

Name: _____ Phone: _____

Street Address: _____

City, State, Zip: _____

Email Address: _____

Status (select one): _____ New member _____ Renewing or returning member

Membership category (select one): Membership term is for one calendar year, January through December.

_____ Student member (\$10). Must be a full-time high-school or college student.

_____ Regular member (\$30).

_____ Patron member (\$100). Patron membership grants use of the club's 17.5" reflector at H2O. You must be a member in good standing for at least one year, hold a key to H2O, and receive board approval.

Hidden Hill Observatory Access (optional): Must be 18 or older.

_____ One-time key deposit (\$20). This is a refundable deposit for a key to H2O. New key holders must first hear an orientation lecture and sign a usage agreement form before using the observing site.

_____ Annual access fee (\$10). You must also be a key holder to access the site.

Donation (optional):

_____ Tax-deductible contribution to Tri-Valley Stargazers

Total enclosed: \$ _____

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function. TVS will not share information with anyone except as detailed in our Privacy Policy (<http://www.trivalleystargazers.org/privacy.shtml>).

Mail this completed form along with a check to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551.