

# PRIMEFOCUS

Tri-Valley Stargazers



August 2017



## Meeting Info

**What:**  
**CANCELLED**

**Who:**

**When:**

### Where:

Unitarian Universalist  
Church in Livermore  
1893 N. Vasco Road

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## August Meeting: **CANCELLED!!!**

With the TVS board members being out of town to observe the August 21 solar eclipse, the August general and board meetings have been cancelled.

The next club meeting will be on September 15, when club members will give presentations about their solar eclipse experiences.

## TVS Outreach Star Parties: August 12 (HELP Needed)

TVS has 3 outreach star parties on this date for which help is desperately needed. See p.2 for details!!! If you would like to assist in any TVS outreach event, please contact Eric Dueltgen, the TVS Club Star Party Coordinator.

## TVS Yosemite Outreach Star Party: August 25-26

Every year TVS does an outreach star party at Glacier Point in Yosemite National Park. In return for setting up our telescopes and binoculars at Glacier Point, we get free admission to the park, and free camping at the nearby Bridal Veil Creek campground.

This year's Glacier Point Star Party will be Friday and Saturday nights, August 25 and 26. Since this is the weekend after the eclipse, we will have a thin crescent Moon to show the public, that will set between 10:00 and 11:00.

We will have the usual Saturday evening pot luck, and TVS will provide hamburgers, hot dogs and veggie burgers.

So far, we have about 18 people signed up, and have room for 30. If you are planning to join us this year, please contact Eric Dueltgen as soon as possible, indicating how many people, how many tents, and for how many days you and your group plan to attend.

## (G)astronomical Event By Rich Combs

In preparation for the arrival of the Summer Solstice, a hungry group of about 30 TVS'ers gathered at the Unitarian Church for our annual summer barbecue and potluck. Chefs David Childree and Robert Horton provided the heat for burgers, sausages, and our famous veggie burgers. There was enough food for 40, with great variety, topped off with a glazed Bundt cake and ice cream pie. Yum! With great organization by Jill Evanko, complete with solar eclipse sun straws and other decorations, and perfect weather for our outside seating, a better event could not be had. It was a great opportunity to socialize and tell a few tall tales, and swap plans for the upcoming solar eclipse. See p. 4 for photos from the BBQ. Our next potluck will be in December, plan to join us.

## News & Notes

### 2017 TVS Meeting Dates

The following lists the TVS meeting dates for 2017. 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
August: No General Meeting or Board Meeting		
Sep. 15	Sep. 18	Aug. 25
Oct. 20	Oct. 23	Sep. 29
Nov. 17	Nov. 20	Oct. 27
Dec. 15	Dec. 18	Nov. 24

### Money Matters

As of the last Treasurer's Report on 7/24/17, our club's checking account balance is \$14,381.26.

### Outreach Star Parties: Help Needed

August 12: Venture Scouts at Rancho Los Mochos, Solar Observing--arrive by 12:30pm; Dinner at 6pm; Evening observing--arrive by 7:30pm

August 12: City of Dublin Family Campout at Schaefer Ranch park. More details here: <http://www.dublin.ca.gov/784/Family-Campout>

August 12: Perseid viewing at Del Valle Park. More details here: [https://apm.activecommunities.com/ebparks/Activity\\_Search/perseid-meteor-shower-starparty/17539](https://apm.activecommunities.com/ebparks/Activity_Search/perseid-meteor-shower-starparty/17539)

August 26 – 27: Yosemite/Glacier Point weekend

September 28: Livermore Library

September 29: RADD at Pleasanton Senior Center

Please contact Eric Dueltgen for more information.

### Club Star Parties: 2017 Summer/Autumn

The following club star parties have been approved by the TVS Board:

September 23: Tesla Winery star party

October 21: Tesla Winery star party (Orionids Meteors).

August 12: Cub Scouts at Rancho Los Mochos

## Calendar of Events

### Present - August 31, 10:00am-5:00pm, Wednesday-Sunday

What: California's First Philanthropist: The Legacy of James Lick

Who: Exhibition

Where: Pioneer Hall at the Presidio, 101 Montgomery,

Suite 150, Presidio of San Francisco, 94129

Cost: Free

James Lick used his wealth to establish charitable organizations to address the basic needs of the many who were less fortunate. He willed his entire fortune to benefit the people of California. In addition to endowing existing service organizations, including homes for the elderly, schools for orphans, and The Society for the Prevention of Cruelty to Animals, Lick allocated \$700,000 to build "a telescope superior to and more powerful than any telescope yet made" on Mount Hamilton. Other beneficiaries included the California Academy of Sciences, The Mechanics Library, landmarks in Golden Gate Park, as well as The California School for Mechanical Arts, the first to enroll young women interested in studying industrial design and manufacturing. This exhibition considers the legacy of James Lick, and features images by Isaiah West Taber, who documented many of the projects Lick funded, including the Lick Observatory and the Academy of Sciences.

For more information see: <http://www.californiapioneers.org/museum/today-in-the-museum/>

### August 7, 7:30pm

What: The 21st Century: The Century of Biology on Earth and Beyond

Who: Dr. Jill Tarter, SETI Institute

Where: California Academy of Science, 55 Music Course Dr., Golden Gate Park, San Francisco, CA

Cost: Advanced ticketing required. Academy members \$12, Seniors \$12, General \$15. Reserve a space online or call 1-877-227-1831.

This century will permit us the first opportunities to study biology beyond Earth; biology as we don't yet know it, and biology that we have exported off the surface of our planet. The technologies needed for discovering biology beyond Earth are different, depending on whether you are searching for microbes or mathematicians, and depending on whether you are searching in-situ or remotely. In many cases the necessary technologies do not yet exist, but they will probably develop more rapidly - and in more ways - than any one of us can now imagine.

See [www.calacademy.org/events/benjamin-dean-astronomy-lectures](http://www.calacademy.org/events/benjamin-dean-astronomy-lectures) for lecture and reservation information.

### August 26, 8:30pm

What: The Search for Life Beyond Earth

Who: Dr. Carol Stoker, NASA Ames

Where: Mt. Tamalpais State Park, Cushing Memorial Amphitheater, more commonly known as the Mountain Theater, Rock Spring parking area

Cost: Free

Header Image: A map of the United States showing the path of totality for the August 21, 2017 total solar eclipse. Image Credit: NASA, Ernie Wright (USRA): Lead Visualizer; see: <https://svs.gsfc.nasa.gov/4518>

## Calendar of Events (continued)

Besides Earth, several planetary bodies in our solar system are recognized as having the potential to host primitive forms of life. This talk will describe why and how NASA plans to search for life on Mars and the icy moons of Jupiter and Saturn.

For more information see: <http://www.friendsofmetam.org/astronomy/schedule>

### September 1, 6:00pm - 10:00pm

**What:** \$5 First Fridays  
**Who:** Chabot Exhibit  
**Where:** Chabot Space and Science Center, 10000 Skyline Blvd., Oakland, CA 94619  
**Cost:** Chabot Admission \$5, Free for Members

At \$5 First Fridays you can join a Night Hike through the redwoods or enjoy various laser and planetarium shows. Admission also includes hands-on activities and live demonstrations throughout the center, as well as any special events that are going on that evening. It's fun for the whole family!

See [www.chabot.space.org/first-fridays.htm](http://www.chabot.space.org/first-fridays.htm) for more information and to pre-purchase tickets, or call (510) 336-7373.

### September 11, 7:30pm

**What:** Farewell to Saturn: Cassini's Spectacular End-of-Mission Science  
**Who:** Dr. Matthew Tiscareno, SETI Institute  
**Where:** California Academy of Science, 55 Music Concourse Dr., Golden Gate Park, San Francisco, CA  
**Cost:** Advanced ticketing required. Academy members \$12, Seniors \$12, General \$15. Reserve a space online or call 1-877-227-1831.

Cassini's 13 years at Saturn have made it the most spectacular-

ly successful interplanetary mission in the history of NASA. In its final 10 months, Cassini has transformed itself into a whole new mission with its Grand Finale, including 20 close flybys off the outer edge of Saturn's rings and 22 passes between the rings and the cloud-tops of the planet. With detailed new data, Saturn's rings, its clouds, its small inner moons, and more are coming into sharper focus than ever before. In this lecture, only four days before Cassini's final plunge into the depths of Saturn, Cassini rings scientist Matthew Tiscareno will review the rich harvest of the Cassini mission.

See [www.calacademy.org/events/benjamin-dean-astronomy-lectures](http://www.calacademy.org/events/benjamin-dean-astronomy-lectures) for lecture and reservation information.

### September 23, 8:00pm

**What:** Life in the Goldilocks Zone  
**Who:** Dr. Natalie Batalha, NASA Ames Research Center  
**Where:** Mt. Tamalpais State Park, Cushing Memorial Amphitheater, more commonly known as the Mountain Theater, Rock Spring parking area  
**Cost:** Free

Discoveries by NASA's Kepler Mission suggest there are billions of potentially habitable worlds in the Milky Way galaxy. What has the study of planets within and beyond the Solar System taught us about our own planet Earth? And what's next in the search for life beyond the Solar System?

For more information see: <http://www.friendsofmetam.org/astronomy/schedule>

#### Officers

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#### Web & E-mail

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[info@trivalleystargazers.org](mailto:info@trivalleystargazers.org)

#### TVS E-Group

So how do you join the TVS e-group, you ask? Just send an e-mail message to the TVS e-mail address ([info@trivalleystargazers.org](mailto: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 Barbecue



Image Caption: TVS members enjoyed a fine barbecue on June 16, 2017. Thanks to Jill Evanko for shopping on behalf of the club, and to the members who brought the delicious side dishes and desserts. Image Credit: Rich Combs

## H2O Open House Club Star Party



Image Caption: There was an excellent turnout for the July 15 TVS Open House at H2O. Though there was lots of enthusiasm, mother nature threw a curve ball by providing mostly cloudy skies. Image Credit: K. Ross Gaunt

## Solar Eclipse Preparations By K. Ross Gaunt



Image Caption: Here are a couple photos of the dual camera system that I made for the eclipse. The cameras sits on a platform that fits on my Celestron mount. On the 1000mm (focal length) Meade telescope I will attach my QHY183 astro-cam to get video. The Canon Mrk III has a 400mm (FL) lens that will take still photos, with 7-step auto bracketing. I'll use the Meade to get the close-up stuff (Diamond ring, beads, etc.), and the Canon will get the corona and wide angle views. I have timer that I will attach to the Canon that will trigger the shutter every 5 seconds during totality. Image Credit: K. Ross Gaunt

## The Lunar Reconnaissance Orbiter Gets Hit Upside the Head

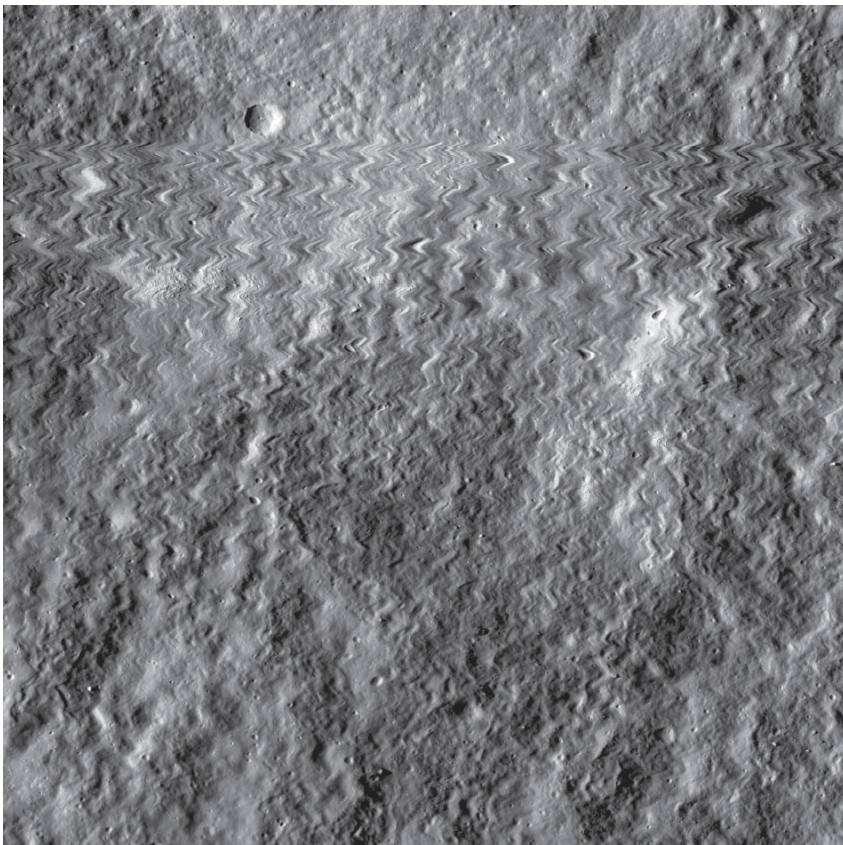


Image Caption: The first wild back-and-forth line records the moment on October 13, 2014 when the left Narrow Angle Camera's radiator was struck by a meteoroid. The Narrow-Angle Camera builds up images one line at a time, and as such it shows the damping-down of the impact-induced oscillation. Using the computer model that was developed to evaluate if the camera could withstand the rigors of launch from Cape Canaveral, the Lunar Reconnaissance Orbiter Camera team estimates that the camera was hit by a meteoroid that was 0.8mm in size (about half the size of a pinhead) travelling at 4.3 miles per second.

For more information see: <https://www.nasa.gov/feature/goddard/2017/camera-on-nasas-lunar-orbiter-survived-2014-meteoroid-hit>

Credits: NASA's Goddard Space Flight Center/Arizona State University

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

All times are Pacific Daylight Time

### August

7 Mon Full Moon (11:11am)

11-13 Fri- The Perseid Meteor shower peaks in the morning of the 12th, however the Moon rises before midnight

14 Mon Last-Quarter Moon (6:15pm)

16 Wed The crescent Moon is about 2 degrees from Aldebaran (morning)

19 Sat The crescent Moon is about 5 degrees below Venus in the east (dawn)

21 Mon New Moon (11:30am)/Total Solar Eclipse from the NW to the SE US!!!

25 Fri Crescent Moon, Jupiter, and Spica form a triangle in the west (dusk)

29 Tue First-Quarter Moon (1:13am)

29-30 Tue- The Moon is about 7 degrees away from Saturn (evening)

### September

5 Tue Neptune at opposition, closest to Earth and brightest of the year, visible all night

6 Wed Full Moon (00:03am)

12 Tue The Moon Occults Aldebaran (Bay area: Disappears: 4:29am, Reappears: 5:48am)

12 Tue Mercury at greatest elongation, 17.9 degrees from the Sun, visible in the east (predawn)

12 Tue Last-Quarter Moon (11:25pm)

15 Fri **Cassini's 13 -year mission at Saturn comes to an end as it plunges into Saturn!!! This is necessary to prevent contamination of Enceladus or Titan, two worlds that have pre-biotic chemistry.**

16 Sat Regulus 4.5 degrees below Venus, with Mercury and Mars 7 degrees below Regulus (Dawn)

17-30 Sun- The Zodiacal Light is visible in the east 120 to 80 minutes before sunrise

18 Mon Venus, Regulus, thin crescent Moon, Mars, and Mercury form a nearly vertical line 12 degrees long (dawn)

19 Tue New Moon (10:30pm)

19 Tue The crescent Moon is about 5 degrees below Venus in the east (dawn)

22 Fri Thin crescent Moon about 7 degrees to the upper-left of Jupiter in the west-southwest (dusk)

## Twenty Years Ago on Mars...

By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather.



These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit [spaceplace.nasa.gov](https://spaceplace.nasa.gov) to explore space and Earth science!



Image Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech



Tri-Valley Stargazers  
P. O. Box 2476  
Livermore, CA 94551  
[www.trivalleystargazers.org](http://www.trivalleystargazers.org)

## Tri-Valley Stargazers Membership Application

(or apply for membership online: [www.trivalleystargazers.org/membership.shtml](http://www.trivalleystargazers.org/membership.shtml))

### 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 (\$5). 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):

\_\_\_\_\_ 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.

**Magazine Subscriptions** (optional): Discounted subscriptions are available only to new subscribers. All subsequent renewals are handled directly with the magazine publishers.

\_\_\_\_\_ One-year subscription to Sky & Telescope magazine (\$32.95).

\_\_\_\_\_ One-year subscription to Astronomy magazine (\$34).

**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 other than other club members and the Astronomical League without your express permission.

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