PRIMEFOCUS
Tri-Valley Stargazers

January 2006

Meeting Info:

What
Show and Tell

Who
TVS Members

When
January 20, 2006
Conversation 7:00 p.m.
Lecture at 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

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January Meeting

Show and Tell (and Just How Do I Work This Thing?)

TVS Members

Now that the holidays are over, we can all relax and enjoy all the goodies we got from our loved ones. (And maybe a few we bought for ourselves.)

Members are encouraged to bring their astronomy related gifts to the meeting for a little show and tell. Did you get any good books? Bring them along and let other members take a peek. How about any eyepieces or filters? We can use one of the loaner scopes to demonstrate the capability of it. (Unless it's cloudy, of course.)

Nifty gadgets are always of interest to other members, so bring along that Swiss Army polar alignment counter weight and dew heater that Santa left in your stocking. Maybe you got a parallelogram mount for your binoculars. There will be plenty of members that would love to take it for a test drive.

Or maybe you got a really nifty gadget, but you have no idea how to use it. Bring it along! We have a multitude of experienced astro folks who probably have one of those doodads and know all the ins and outs of how to use it.

If you got a new telescope and just aren't quite sure what it means when the instructions say you have to polar align the scope, or collimate it, or find a star on the ecliptic (and just what is the ecliptic anyway?), bring it to the meeting and we'll help you sort through all the mysteries of telescope ownership.

The January meeting is the place to be to show off your new acquisitions and/or get your questions answered.

News & Notes

Money Matters

At the December Board meeting, Treasurer **David Feindel** reported the TVS account balances (as of December 19, 2005):

Checking	$1,524.91	
CD #1	$3,495.74	matures 2/17/06
CD #2	$2,470.72	matures 2/27/06

2006 TVS Meeting Dates

Below are the TVS meeting dates for the next few months. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting. The *Prime Focus* deadline applies to that month's issue (e.g., the March 5th deadline is for the March issue).

Lecture Meeting	**Board Meeting**	***Prime Focus* Deadline**
Jan. 21	Jan. 24	Jan. 9
Feb. 18	Feb. 21	Feb. 6
Mar. 17	Mar. 20	Mar. 5

Membership Renewal Time Is Here!

The start of the new year brings with it the start of a new TVS membership year. This year we've had to raise our dues due to increased operating costs.

The Basic membership (you get the newsletter online) is $30 a year. The Regular membership (you get the newsletter mailed to you) is $40 a year. Student membership level remains the same. For those of you who get your newsletter mailed to you, you can check you mailing label for your membership expiration date—if the number listed above your name is R05 or RP05, your membership has expired.

We've instituted at $10 a year H2O access fee. All key-holding members will need to pay the fee in order to continue to access the club's observing site. On March 1st, the gate combinations will change and members who have paid the fee will get the new combination. This fee is in addition to the $3 per car entrance fee, which goes directly to the landowners.

If you are not a key holder and would like to be, there is a refundable $20 key deposit and an orientation required before you can gain access to the site (plus the aforementioned $10 site access fee). Our observing site is located on private property, so there are rules regarding our conduct while on the property, as well as rules regarding the use of our site. Key holders get use of the site, but not the observatory.

Patron membership is for those who have been a member for at least one year and are in good standing. Patron membership allows members to use the club's 17.5" telescope. Patron members go through an orientation on the proper operating procedures for the observatory and scope. Patron dues are an additional $40 to whatever membership level (Basic or Regular) has been chosen. Patron members also need to be key holding members and pay the $10 access fee.

This year we will have membership cards available for members who shop at Orion Telescope and Scope City, which require proof of membership in order to get a 10% discount. Cards will be available at the meetings, or you can send a self-addressed stamped envelope to the club's PO box and one will be mailed to you.

RASC Handbooks and Calendars

We still have plenty of the Royal Astronomical Society of Canada (RASC) Observer's Handbooks and Calendars available for purchase. The handbooks are $20, the calendars $10.

The Handbook contains a wealth of information. The "Sky for 2006" section contains month by month list of interesting astronomical events. It also contains information about Sun and Moon rise and set times, eclipses, and occultations. It has sections on optics, stars, object lists, basic data, and sky maps. It is a very handy, useful resource.

H2O Repairs

Sometime when the weather makes a turn for the better, we'll have a mini work party to replace the rotting plywood observatory back wall. We already have the replacement plywood sitting inside the observatory, so it's just a matter of getting out there and doing the work.

We also hope to get the solar panel installed on the roof before the observing season begins. It's possible we'll tackle that chore while we're there replacing the wall. The solar panel keeps the telescope battery juiced up and ready to go for the next time it's called upon to run the drive.

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Newsletter header image: Uranus and its rings

The Hubble Space Telescope has discovered two rings surrounding Uranus. The largest is twice the diameter of Pluto's previously known ring system. Two small satellites, Mab and Cupid, were also discovered. One of the satellites shares an orbit with the outermost of the new rings. The satellite is probably the source of fresh dust that keeps replenishing the ring with new material knocked off the satellite from meteoroid impacts.

Because of the extreme tilt of Uranus's axis, the ring system appears nearly perpendicular relative to rings around other gas giant planets like Saturn. Also, unlike Saturn, the rings are very dark and dim because they are mostly dust rather than ice.

Credit: NASA, ESA, and M. Showalter (SETI Institute)

Calendar of Events

January 21, 10:00 a.m. to 6:000 p.m.
What: *Meade Day*
Who: Meade Representative
Where: Scope City, San Francisco
Cost: Free

Scope City is having a Meade Day, with a representative from Meade showing their 2006 product line. Meade opticians will be there for free optical cleaning, mechanical and optical inspection on all Meade telescopes. Scope City will have trade-in offers for your telescope for the purchase of any new Meade telescope. There will also be a raffle, with proceeds donated to local astronomy clubs.

January 23, 7:30 p.m.
What: *Digging a Comet: Results from NASA's Deep Impact Mission*
Who: Dr. Peter Schultz (Brown University)
Where: Jewish Community Center, San Francisco
Cost: $4

In July 2005, the Deep Impact spacecraft flew by Comet Tempel 1 and released a probe which steered into the comet's path. Overtaken at about ten kilometers per second, the impactor collided with the comet while the flyby spacecraft watched. Data from this mission is providing an amazing glimpse into the life of a comet, and telling us important information about the early solar system.

During the reconstruction of the Academy, the Dean Lectures have temporarily moved to the San Francisco Jewish Community Center at 3200 California Street (at Presidio Avenue). Parking is available across the street in the UCSF Laurel Heights campus parking lot for $1.25 per night. Parking in the JCC garage is $1.25 per half-hour. The #1 California, #3 Jackson, #4 Sutter, and #43 Masonic MUNI lines stop directly in front of the building. The #38 Geary and #24 Divisadero buses stop only a few blocks away.

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street. Tickets are $4 and are available in advance or at the door.

January 25, 7:00 p.m.
What: *Beyond Pluto: The Discovery of the "10th Planet"*
Who: Michael Brown (Cal Tech)
Where: Smithwick Theater at Foothill College
Cost: Free (parking is $2—8 quarters)

Cal Tech Astronomer Michael Brown presents *Beyond Pluto: The Discovery of the "10th Planet"*, a non-technical, illustrated talk, Wednesday, Jan. 25, at 7 p.m. in the Smithwick Theater at Foothill College. Admission is free and the public is invited. No background in science is required for this talk, which will interest everyone who enjoys the latest news of exploration at the frontiers of astronomy. Arrive early to locate parking. Parking is $2 (eight quarters). For more information, call (650) 949-7888.

In this rare Northern California appearance, Dr. Brown will discuss how he and his coworkers recently found an object larger than the planet Pluto and with an orbit at least twice as large. He will fill us in on the latest thoughts about whether this new object (and Pluto) are planets or not. He will also will explain how astronomers continue to find larger and smaller bodies in the outskirts of our solar system.

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Eyes on the Skies

Eyes on the Skies is a robotic solar telescope run by Mike Rushford (rushford@eyes-on-the-skies.org). You may access it by visiting www.eyes-on-the-skies.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 (tvs@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.

Calendar of Events *continued*

A professor of planetary astronomy at the California Institute of Technology, Dr. Brown, is co-discoverer of what some people are calling the "tenth planet" and also of the intriguing objects Quaoar, Orcus and Sedna. He specializes in the discovery and analysis of the faintest and most distant parts of our solar system. For more information, call (650) 949-7888.

The Silicon Valley Astronomy Lecture Series is co-sponsored by the Foothill College Astronomy Program, NASA Ames Research Center, SETI Institute and Astronomical Society of the Pacific. This particular lecture is made possible by a Second Century Lectures grant. Second Century Lectures celebrate the centennial of the American Astronomical Society, the main body of professional astronomers in the U.S. They feature talks by noted astronomers covering the most exciting new research about the universe.

February 11 and 12, times below

What: *Valentine's Day Love Mission*
Who: You and a loved one
Where: Chabot Space & Science Center, Oakland
Cost: $60 per couple (includes general admission)

Celebrate with your Valentine on a Mission to Mars! Take a simulated space mission to the Red Planet, includes chocolates, fizzy martian beverage and a souvenir of your trip to outer space.

Missions sell-out fast—call now to reserve your seats! 510-336-7421. Book by February 3rd and receive an early bird discount.

Mission Times:

Saturday, February 11 - 3:30 p.m. & 5:30 p.m.
Sunday , February 12 - 1:30 p.m. & 3:30 p.m.

News & Notes *continued*

School Star Parties

There are several school star parties on the horizon.

First up is this January 28th, 6:00 to 9:00 p.m. at the Livermore Valley Charter School, 543 Sonoma Avenue, Livermore, CA 94550. (http://www.livermorecharterschool.org/iw/?D=9.) In case of rain, the reschedule date is February 11th.

Please come with planetary telescope viewing equipment, as this star party is being billed as a Saturn viewing party. Mike Rushford is the coordinator for the star party. He'll have a TVS recruiting table set up. There will also be hot chocolate for sale, with proceeds to be split between the school and TVS.

Other school star parties coming up in the next few months: In April, the Croce Elementary School in Livermore will have their Space Day (and night) and we'll do a star party for another school in Livermore. The exact dates and times will be posted on the TVS web site, as well as listed here.

Wednesday, March 29th, is the Pleasanton School District's Science Fun Fair. We'll need at least two volunteers to man the booth (regardless of weather), and a bunch more outside for a star party of sorts (weather permitting). The Fun Fair draws close to 10,000 students, parents, and siblings. We do need a volunteer to act as the liaison to the Fun Fair coordinator, and to organize the TVS volunteers. Your Editor, who has been the contact person for the last few years, will be in Libya watching a total solar eclipse on the day of the Fun Fair and won't be able to help out this year.

There is also the possibility of doing a star party at the Altamont Creek Elementary School, but no date has been set yet.

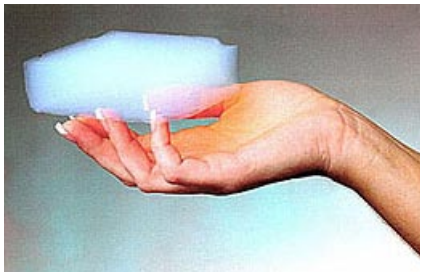
The image on the left may look like a close-up of the Sun, but it's actually an image of lots and lots of suns—the center of our galaxy. The image was taken by the Spitzer Space Telescope's Infrared Array Camera at a wavelength of 8 microns.

The image on the right is the same section of the Milky Way, taken with the same camera. This time it is a composite of four infrared "colors"—3.6 microns (blue), 4.5 microns (green), 5.8 microns (orange) and 8.0 microns (red). *Photo: NASA/JPL-Caltech/S. Stolovy*

Stardust

As Joni Mitchell sang, "we are stardust, we are golden". And here's your golden opportunity to participate in the data analysis of what the Stardust spacecraft has returned to Earth.

In the early morning of January 15th, the Stardust spacecraft passed through California airspace on its way to a successful landing in Utah. It returned from a seven year mission to explore strange new worlds, to seek out new life and new civilizations, to boldly. . . uhh, wrong spacecraft. In January 1999, Stardust left on its mission to visit comet Wild2 and collect samples from its coma (the material around its nucleus). It also was scheduled to collect some samples from the interstellar dust stream that flows through our Solar System.



On board the craft is a material called aerogel. Several years ago we had Chuck Marble give a presentation, in which he brought a sample of the material. It is a translucent smoke-like gel material that is 99.8% air, yet insulates 39 times better than fiberglass insulation. It was quite interesting to see a real sample of it up close.

The aerogel on Stardust was used to collect the comet and dust samples during its lengthy voyage. One side of it was exposed to the coma when the craft passed through the comet. The other side was exposed when the craft passed through the interstellar dust.

Once the aerogel is removed from the spacecraft, it will be digitally scanned in sections. Volunteers are needed to go through the millions of pictures that will be generated in an attempt to find any particles or grains of dust that might be embedded in the gel. The project is very similar to the SETI@Home project in which the public was asked to volunteer their computer's processor to sort through mounds of data in hopes of finding a signal from outer space (as of yet, no signal has been detected).

This time, volunteers are asked to study the images in hopes of finding a needle in the haystack. The impact from the dust grains are microscopic in size and will require careful observation to catch any particle bits. According to the project web page, "The job is roughly equivalent to searching for 45 ants in an entire football field, one 5cm by 5cm (2 inch by 2 inch) square at a time! More than 1.6 million individual fields of view will have to searched to find the interstellar dust grains." To participate in the Stardust@Home project visit their web site at http://stardustathome.ssl.berkeley.edu. Volunteers will access the images via the web and will be able to download a special "microscope" to aid them in the search.

Volunteers will need to register and go through a training session to see if they are up to the task. The project will get underway later in the spring after the gel has been photographed. An added benefit of helping with the project is that volunteers will be able to name any dust grains they find.

Local Boy Makes Good

In the February 2006 issue of *Sky & Telescope*, page 34, our very own **Ron Bissinger** is pictured at his backyard observatory. The article is about amateur astronomers' contribution to the search for exoplanets. The article mentions the Transitsearch.org network, of which Ron is a member, and shows his graph of the light curve of one of the transits (HD 189733b). Congrats Ron!

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IC5146/B168: The Cocoon Nebula is approximately 460PC distant. This image was taken in September 2005 using a Takahashi FS-102 with an f/6 focal reducer and an ST-2000XM camera operating at -15C. Combined exposures totaling 60 minutes of luminance (1x1 bin) and 20 minutes each of RGB (2x2 bin) were used to generate this color image. *Photo: Ken Sperber*

What's Up *by Debbie Dyke*

All times Pacific Standard unless otherwise noted.

January

1	Sun	New Year's Day 1801 First asteroid (Ceres) discovered by Giuseppe Piazzi.
3	Tues	2004 NASA's Rover Spirit successfully lands on Mars.
6	Fri	**First Quarter Moon.** 10:56 a.m.
7	Sat	1610 Galileo discovers Jupiter's moons Io, Europa, and Callisto.
8	Sun	Mars 1.3° south of the Moon. 12:00 p.m.
9	Mon	1968 Surveyor 7 lands on the Moon near Tycho.
13	Fri	1610 Galileo discovers Ganymede.
14	Sat	**Full Moon**. 1:48 a.m.
15	Sun	Saturn 4° south of Moon. 5:00 a.m.
17	Tues	Moon at apogee (251,648 miles). 11:00 a.m.
20	Fri	**Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.
22	Sun	**Last Quarter Moon**. 7:14 a.m. **Tri-Valley Stargazers discussion meeting**. 2:00 p.m. at the Round Table Pizza on 1024 E. Stanley Blvd., Livermore. Discuss astro stuff with your fellow members.
23	Mon	**Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.
24	Tues	Venus at perihelion.
27	Fri	Saturn at opposition. 3:00 p.m. 1967 Apollo 1 capsule catches fire while sitting on launch pad, killing all three astronauts on board.
28	Sat	1986 Space Shuttle Challenger explodes soon after liftoff, killing all seven on board.
29	Sun	**New Moon**. 6:15 a.m.
30	Mon	Mercury at greatest heliocentic latitude south. Moon at perigee (221,822), large tides expected. 12:00 a.m.
31	Tues	**Saturn 0.5° from the Beehive Cluster (M44)**. 8:00 p.m.

February

1	Wed	2003 Columbia breaks apart during reentry, killing all seven on board.
2	Thur	Ground Hog Day.
3	Fri	1966 First soft landing on Moon by the Soviet spacecraft Luna 9. Luna returns the first pictures of the surface of the Moon.
4	Sat	**First Quarter Moon**. 10:29 a.m. 1906 Clyde Tombaugh (discoverer of Pluto) born.
5	Sun	Mars just over 4° from the Moon. 9:00 p.m. **The Moon is close to the Beehive that . . .**
6	Mon	**. . . at midnight the Moon occults the Beehive Cluster.** 1971 Alan Shepherd (Apollo 14) is the first person to play golf on the Moon.
7	Tues	1984 First untethered spacewalk performed by Challenger astronauts Bruce McCandless and Robert Stewart. 1889 The Astronomical Society of the Pacific is formed.

A New View of the Andromeda Galaxy

by Dr. Tony Phillips and Patrick L. Barry

This is a good time of year to see the Andromeda galaxy. When the sun sets and the sky fades to black, Andromeda materializes high in the eastern sky. You can find it with your unaided eye. At first glance, it looks like a very dim, fuzzy comet, wider than the full moon. Upon closer inspection through a backyard telescope—wow! It's a beautiful spiral galaxy.

At a distance of "only" 2 million light-years, Andromeda is the nearest big galaxy to the Milky Way, and astronomers know it better than any other. The swirling shape of Andromeda is utterly familiar.

Not anymore. A space telescope named GALEX has captured a new and different view of Andromeda. According to GALEX, Andromeda is not a spiral but a ring.

GALEX is the "Galaxy Evolution Explorer," an ultraviolet telescope launched by NASA in 2003. Its mission is to learn how galaxies are born and how they change with age. GALEX's ability to see ultraviolet (UV) light is crucial; UV radiation comes from newborn stars, so UV images of galaxies reveal star birth—the central process of galaxy evolution.

GALEX's sensitivity to UV is why Andromeda looks different. To the human eye (or to an ordinary visible-light telescope), Andromeda remains its usual self: a vast whirlpool of stars, all ages and all sizes. To GALEX, Andromeda is defined by its youngest, hottest stars. They are concentrated in the galaxy's core and scattered around a vast ring some 150,000 light years in diameter. It's utterly unfamiliar.

The GALEX telescope took this UV image of the Andromeda galaxy (M31), revealing a surprising shape not apparent in visible light.

"Looking at familiar galaxies with a new wavelength, UV, allows us to get a better understanding of the processes affecting their evolution," says Samuel Boissier, a member of the GALEX team at the Observatories of the Carnegie Institution of Washington.

Beyond Andromeda lies a whole universe of galaxies—spirals, ellipticals and irregulars, giants and dwarfs, each with its own surprising patterns of star formation. To discover those patterns, GALEX has imaged hundreds of nearby galaxies. Only a few, such as Andromeda, have been analyzed in complete detail. "We still have a lot of work to do," says Boissier, enthusiastically.

GALEX has photographed an even greater number of distant galaxies—"some as far away as 10 billion light-years," Boissier adds—to measure how the rate of new star formation has changed over the universe's long history. Contained in those terabytes of data is our universe's "life story." Unraveling it will keep scientists busy for years to come.

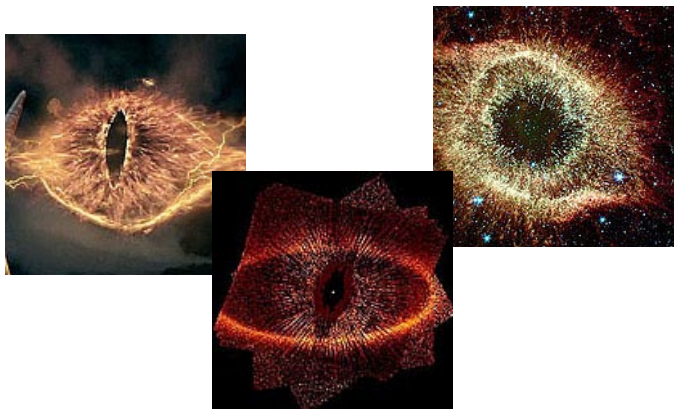
For more about GALEX, visit www.galex.caltech.edu. Kids can see how to make a galactic art project at spaceplace.nasa.gov/en/kids/galex/art.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

News & Notes *continued*

The Eyes Have It

More proof that truth is stranger than fiction. The image on the left is the Eye of Sauron from the movie *Lord of the Rings.* The image in the middle is a dusty ring around the star Formalhaut *(Hubble)*. The image on the right is the Helix Nebula as seen in the infrared *(Spitzer)*.



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

PRIMEFOCUS

Tri-Valley Stargazers Membership Application

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.

Name _____ Phone _____ e-mail _____

Address _____

Do not release my: _____ address, _____ phone, or _____ e-mail information to other TVS members.

Membership category:
_____ $5 Student.
_____ $30 Basic. You will receive e-mail notification when the PDF version of *Prime Focus* is available for download off the TVS web site.
_____ $40 Regular. You will receive a paper version of *Prime Focus* in the mail.
_____ $32.95 One year subscription to *Sky & Telescope* magazine.
_____ $34 One year subscription to *Astronomy* magazine.
_____ $60 Two year subscription to *Astronomy* magazine.
_____ $10 Hidden Hill yearly access fee. You need to be a key holder to access the site.
_____ $20 Hidden Hill Observatory (H2O) refundable key *deposit* (key property of TVS).
_____ $40 Patron Membership. Must be a member for at least a year and a key holder.
$_____ Tax deductible contribution to Tri-Valley Stargazers.

$_____ TOTAL – Return to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551

Membership information: Term is one calendar year, January through December. Student members must be less than 18 years old or still in high school.