PRIMEFOCUS

Tri-Valley Stargazers

December 2003

Meeting Info:

What
TVS Holiday Potluck

Who
TVS Members

When
December 19, 2003
Set-up at 6:30 p.m.
Dinner at 7:00 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

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December Meeting

TVS Holiday Potluck

TVS Members

Come one, come all to our annual Holiday Potluck dinner.

TVS will provide a ham, as well as hot and cold drinks, and all the paper and plastic stuff (paper plates, plastic utensils, etc.) you could ever possibly need. So what do you need to bring to the potluck? Using the first letter of your last name, follow the list below. Whatever you bring, please bring enough to feed 8-10 people.

A-F	Rice or Potato Side Dish
G-L	Dessert
M-R	Main Dish
S-Z	Veggie or Fruit Side Dish

Please note that our meeting time has been moved up by half an hour – we'll be setting up at 6:30 and eating at 7:00. Feel free to bring your family and friends for this evening of food and drink with your astronomical cohorts.

Morrison Planetarium Marks End of An Era

by J. M. Ryan

Looking up, they see piercing stars amid ebon splendor. Mars shines in Aquarius, and Saturn in Gemini. The Milky Way, arching overhead, elicits murmurs of awe. Dark, cozy silence wraps warm about them like a blanket. A fireball streaks toward the east, and a pulsing melodic swell of music greets the sunrise. With the "Good Morning" greeting from the lecturer, they applaud, and join nearly 10 million others who've witnessed, over the past fifty-one years, a starshow at Morrison Planetarium.

The black star projector, lit in primary colors by gleaming spotlights, sits ten feet above the audience, amidst the 65-foot star theatre, vaulted by a dome of white perforated aluminum higher than a four-story building. The great

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News & Notes

Welcome

TVS welcomes back two former members into the club — **Chuck Marble** and **Chuck Farruggia** — and welcomes **Mark** & **Debi Mintz** and possibly our youngest member, **Jake Sturgill** (Jake is the grandson of **Stan Isakson**).

2003 and 2004 TVS Meeting Dates

Below are the TVS meeting dates for December and the first part of the year. The lecture meetings will continue to be on the third Friday of the month, with the Board meeting on the Monday following the lecture meeting. The *Prime Focus* deadline applies to that month's issue (e.g., the December 7th deadline is for the December issue).

Lecture Meeting	**Board Meeting**	***Prime Focus* Deadline**
Dec. 19	Dec. 15	Dec. 7
Jan. 16	Jan. 19	Jan. 4
Feb. 20	Feb. 23	Feb. 8

Money Matters

At the November Board meeting, Treasurer **Gary Steinhour** gave us the account balances (as of November 24, 2003) of TVS's accounts:

Checking	$1,816.92	
CD #1	$3,924.52	matures 02/17/04
CD #2	$2,418.31	matures 02/27/04
CD #3	$2,063.37	matures 01/16/04

Membership Renewal Time

It's time to renew your membership as our membership year runs from January to December. For those who subscribe to *Sky & Telescope* or *Astronomy* magazine through the club, the sooner you renew the better.

The membership categories remain at Student–$5, Basic–$25, and Regular–$30. The only difference between the latter two is that the Basic membership will access the newsletter online, the Regular membership will get it via the mail.

For the few of you who are Patron Members, your Patron status will be renewed automatically. At this time, since the Marling scope is still unoperative (but we are beginning to make progress in getting it fixed), we will not be collecting a Patron Membership fee.

TVS Election Results

As expected, those who have been in office for the last year and had been nominated to serve another year get to do just that. Wheeee.

Donation Thanks

TVS would like to thank **Richard Whipkey** for his generous donation of a military surplus generator. We'll store the generator at H2O so that it can be used for various maintenance projects at the site throughout the year.

New Books

We have a couple of new additions to the club's library: *Jesus Christ's Meteorite Prophecy* and *The New Cosmology – A Revolutionary Treatise Involving: Demise of Big Bang Cosmology - The Nature of Gravitation Evolution and Reincarnation - Cosmic Purpose and Destiny*. They will be in the "Alternative Ideas" section of the library.

We're Insured

After many months of trying to acquire insurance for the club, we've finally succeeded in large part to the efforts of our Secretary **Maggie Halberg**. In order to get insurance we had to join the Astronomical League, which requires us to pay a membership fee for each member of the club.

In the meantime, we are now able to safely go about our normal TVS routine without having to worry about any lawsuits that might occur if someone trips over a telescope while at one of our star parties.

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Calendar of Events

Classic Sci-Fi Film Series

Chabot Space & Science Center

The movies are shown in their original theater format at the 60' Tien MegaDome Theater. Tickets are $5 per person and are available at the door, at TicketWeb.com, or the Chabot Box Office, 510-336-7373.

Movies:

These dates have been rescheduled from a previous date.
Raiders of the Lost Ark, December 19-20
Indiana Jones and the Temple of Doom, December 26-27
The Last Crusade, January 2-3

Showtimes:

Friday – Sunday on the first weekend of each month.
Friday & Saturday – 7:30 p.m., Sunday – 4:00 p.m.

Newsletter header image: NGC 2024 - The Flame Nebula in Orion.

Photo taken last month with an 80mm f/8 scope, using a Starlight HX516 CCD camera. Exposure times: L:10 x 4 min; RGB: 4 x 4 min.

Photo: Gert Gottschalk

Calendar of Events *continued*

December 16, 7:30 p.m.
What: *Galaxies and What Lies Between Them*
Who: Dr. Jessica Rosenberg
(University of Colorado, Boulder)
Where: Morrison Planetarium, San Francisco
Cost: Free

The universe is filled with tenuous filaments of gas and dark matter with galaxies and galaxy clusters residing at the intersections. Is the gas between the galaxies a reservoir of pristine material still in the process of forming galaxies or is it the refuse of star formation in galaxies? What is the connection between galaxies and these intergalactic filaments? Come to the lecture and find out!

December 18, 7:30 p.m.
What: *Gamma Ray and Neutrino Astronomy: New Window on the Universe*
Who: Dr. Rick Norman
(Lawrence Berkeley National Laboratory)
Where: Chabot Space & Science Center, Oakland
Cost: $5

Astrophysicist Dr. Rick Norman will talk on how the birth of our cosmos has recently been revealed in more detail than ever before and how astronomy has changed in the past decade with the new ability of astronomers to view into the "micro" universe presented by gamma rays and neutrinos.

December 30, 7:00- 10:00 p.m.
What: *Saturnalia Party (for Adults)*
Who: You (if you're an adult)
Where: Chabot Space & Science Center, Oakland
Cost: General: $11 Adults & $8 Senior,
Members: $8 Adults & $5 Senior

Come in costume or your New Year's party duds and revel in the rings of Saturn. Make merry, visit with our wandering magician, see the Ring World planetarium show, enjoy the exhibits, and toast the true Lord of the Rings. Cash bar. Telescopes open (weather permitting).

December 31, 4:00 p.m.
What: *4th Annual New Year's Balloon Drop*
Who: Chabot visitors
Where: Chabot Space & Science Center, Oakland
Cost: Free with General Admission. Advance tickets recommended.

Celebrate the actual New Year 2004 at midnight Greenwich Mean time (4 p.m. PST) with musical fanfare and a balloon drop from the second floor of the Rotunda. In what has become an annual Chabot event, the countdown takes place to the thundering drama of Richard Strauss' *Also Sprach Zarathustra*. See if you get a balloon with a prize!

December 31, 4:00 p.m.
What: *Journey to Mars*
Who: The Exploratorium
Where: The Exploratorium, San Francisco
Cost: See Exploratorium web site

During the month of January, the Exploratorium will have a host of exhibits and activities centered on the Mars Exploration Rover (MER) *Spirit* that will be landing on Mars on January 4, 2004.

There will be live webcasts of the first Spirit images at the Exploratorium as well as through their web site www.exploratorium.edu/marsrover. There will be other webcasts and video conferences with NASA/JPL scientists and engineers throughout the month.

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Calendar of Events *continued*

Visitors can also control robots and send them on missions in "Mars Yards" — 10' square boxes simulating the Martian surface. Through January 18th, a full-scale, movable model of the actual MER from the JPL will be on view in the Phyllis C. Wattis Webcast Studio.

All live events and special weekend programs are free with museum admission. For details on all the activities and special events, as well as directions and entrance fees, please visit the Exploratorium web site at www.exploratorium.edu.

News & Notes *continued*

Join the Discussion Group

For those who are relatively new to the club, TVS has an online discussion group where members can post their questions, answers, observing reports — basically anything astronomically and/or TVS related. This online group is for TVS members only and is run through Yahoo Groups. We're a relatively quiet bunch so you won't have to worry about wading through hundreds of posts a day.

If you'd like to join, 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.

If you already belong to other Yahoo groups, you can sign on to the group yourself using your Yahoo ID by going to http://groups.yahoo.com/group/trivalleystargazers/join. Be sure to list the e-mail addresses where you will read and post to the list in the alternate e-mail address section, and set one of the addresses as your primary address so your e-mail list messages are sent there.

When you sign on through Yahoo, it will take a little while before you receive any messages as your request to join has to be forwarded to the moderator of the group for approval. You'll receive an e-mail notifying you if you've been approved.

Astronomical Insights

by David Feindel

One of the unwritten rules of the universe in amateur astronomy is that acquiring accessories triggers the need for yet more accessories. American capitalism at work, I guess. My particular problem stemmed from upgrading my 'scope to a 2" diagonal and a nice wide-field 2" ep. This added about 2 lbs more to the back of what was already a back-heavy telescope. The first obvious sign of trouble was having to REALLY tighten the clutch to keep it from slipping in azimuth. Of course, I was oblivious. I was too taken in by the view of the Double Cluster in the FOV to notice. Taking the clutch apart and cleaning the grease off the plates helped only a little bit. The next sign of impending doom wasn't noticed until a couple of observing sessions later — tracking and pointing accuracy were now much worse. Switching back to the 1.25" diagonal and smaller eps made the problem go away. Hummmm…
A search of several internet sites confirmed the problem and turned up both commercial and home-made solutions. A call to ScopeStuff (www.scopestuff.com), $60, and two days waiting got a balance kit to my door. Ten minutes with an allen wrench to install it, and my 'scope now seems happy. I'm hoping I didn't do any long-term damage to the clutch; we'll see.

So now that my scope was back in operation, naturally the clouds moved in. Typical Bay Area weather in December. A two-week business trip to Europe also interfered with my plan to wait the clouds out. So I thought about how to get some astronomy in during the trip. One frequent European traveler had mentioned seeing the northern lights from the plane on about 60% of his trips. Great, I thought; just get an "A" window seat outbound (left-hand side as you face forward) and put the blanket over your head to get some darkness. Lesson #1: being over the wing is NOT a good location. Get up front (duh! That's where the first and business class seats are!) or if you don't/can't fly in those circles, well towards the rear. My company's accountants will be pleased to know that row #28 is well behind the business class section, but still not far enough back in a 777 for observing. The wing still occupied much of the field of view. Lesson #2: not all routes to Europe are equal. Try for a non-stop from a West-coast city to wherever in Europe; they fly the closest to the magnetic north pole, where the effect is strongest. My flight went to Washington first. So whether it was my less-than-optimal seat, not getting close enough to the pole, or just one of those 40% that don't, the result was the same. I saw nothing. But maybe next time!

First Light: Beginners' Astronomy

by Richard Campbell

Rainy Day, Surf Away

There is a question that has plagued astronomers throughout the millennia. A question that lurks in the mind of every observer. A question that if answered well, can make the difference between crushing boredom or a flight of fancy. The question is: What do I do if it's raining?

Simple. Power up your computer, and surf the cosmos online! Here are excellent websites to get you started:

Astronomy Picture of the Day
(http://antwrp.gsfc.nasa.gov/apod/astropix.html)

Here NASA shows one exciting image per day on a huge variety of astronomy topics. One day it will be a classic photo from the Apollo Lunar missions, the next a groundbreaking new image from Mars. Each photo will have a short summary at the bottom of the picture written in approachable language. Technical terms will be hypertext-referenced to other Astronomy Picture of the Day (APOD) entries. By all means, click on the "archive" to browse all the images of recent years. If you're new to astronomy, APOD will stoke the fires of your enthusiasm.

www.heavens-above.com
This one takes a little more effort to use, but it's well worth it. Once you select your location from the list, Heavens-above will tell you all you need to know about your local skies: Planet positions, times when satellites you can see with the naked eye pass overhead (including the International Space Station), flare predictions of when a satellite shines brighter than the stars (a.k.a. Iridium flares), and of course a lunar phase diagram. The predictions here are so accurate, you can predict flashes in the sky down to the second — literally. Try it!

www.spaceweather.com
Another NASA gem. This site will tell you all about the sun and other celestial sights linked to our own atmosphere. There is an excellent diagram showing current sunspot activity (viewable only with a safe solar filter on your scope) that covers the near and far sides of the sun. Spaceweather.com also showcases the latest amateur photographs of auroras, meteor showers and eclipses. Keep snapping away and you might be published there someday! (Gert, are you listening?) Also not to be missed is the "SOHO" link near the bottom of the page. Once you access SOHO, you see the latest images and movies of the sun taken with a solar space telescope. The author has had the best success with the "MPEG" movies within the site. These moving pictures show massive solar explosions looping on the surface and mighty coronal mass ejections of fire — even comets that whip around the sun! Your home star has never looked so good.

Is it raining now where you are? No worries. The sun and the stars always shine online. If you find your own web treasures, share them at the next Tri-Valley Stargazers meeting. There's plenty of web for all of us!

Morrison Planetarium *continued*

instrument is one of a kind; unique in the world, incredibly durable and, in the realism of its projected sky, still among the best ever.

The salon-like theatre, warm and welcoming, features comfortable chairs, subdued lighting, and wafting music. The plaques on the walls, the glass case with archival displays, the remnant of the original console with its red and black toggle switches, and the spotlighted bust of Alexander Morrison, convey a sense of history. Metal cutouts, artistically shaped as buildings, bridges, and landmarks form a familiar San Francisco skyline-in-silhouette around the periphery, where the arching dome meets the circular wall.

Morrison Planetarium's homemade projector.

In the gallery beyond the western wall of the theatre, the gleaming brass teardrop that is the Foucault Pendulum swings endlessly to and fro across a fenced circular pit, demonstrating the relentless turning of the Earth. Entranced visitors stand or lean for long minutes contemplating the ceaseless motion as they anticipate the periodic toppling of the vertical pegs, each delicately stood on end at its respective mark.

Unfortunately, this exquisite venue and the remarkable machine at its heart will serve the public only through December 31st of this year. Anyone wishing to visit the historic planetarium and its outstanding artifacts, or to witness the fine, original shows still produced at Morrison, a rarity in today's world of standardized product, has just until year's end to do so.

The Academy, in process of creating a modern facility for the 21st century, will soon relocate elements of its museum and aquarium to 875 Howard Street while it demolishes, then rebuilds, its 75-year-old home in Golden Gate Park. Morrison Planetarium, too, will be rebuilt with a new projector in the modern style of planetaria today. The new complex, though, will not open to the public until mid-2008. In the interim, Morrison will continue public outreach activities using inflatable domes, and offer lectures in other venues.

But there's been no word concerning the preservation, display, or transfer of the projector and the other historic fixtures. Architectural models of the planned new facility show no space allocation to display these historic artifacts.

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What's Up *by Debbie Dyke*

All times Pacific Standard Time unless otherwise noted.

December

8	Mon	**Full Moon** 12:37 p.m. Mercury at greatest elongation east (21°) 10:00 p.m.
11	Thurs	1972 Apollo 17 lands at Taurus-Littrow on the Moon.
12	Fri	Pluto at superior conjunction (far side of the Sun).
13	Sat	Geminid meteors peak at 7:00 p.m.
14	Sun	1546 Tycho Brahe born. 1962 Mariner 2 becomes the first spacecraft to flyby Venus.
15	Mon	**Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore. 1970 Venera 7 becomes the first craft to land on Venus and transmit data back to Earth.
16	Tues	**Last Quarter Moon** 9:42 a.m.
19	Fri	**Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore. Hanukkah begins at sundown.
21	Sun	**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. **Winter Solstice** 11:04 p.m.
22	Mon	Moon at perigee – large tides expected (222,169 mi/358,338 km) 4:00 a.m. Ursid meteors peak at 4:00 p.m.
23	Tues	**New Moon** 1:43 a.m.
24	Wed	1968 Apollo 8 astronauts are first to orbit the Moon.
25	Thur	**Christmas Day**. 1642 Isaac Newton born.
27	Sat	1571 Johannes Kepler born. Inferior conjunction of Mercury.
30	Tues	**First Quarter Moon** 2:03 a.m.
31	Wed	Saturn at opposition (746 million mi/1204 million km from Earth) 1:00 p.m.

January

1	Thur	1801 First asteroid (Ceres) discovered by Giuseppe Piazzi.
3	Sat	Moon at apogee (251,538 mi/405,707 km) 12:00 p.m. Quadrantid meteors peak 10:00 p.m.
4	Sun	Jupiter stationary 7:00 a.m. Earth at perihelion (closest to the sun) at 91,198,466 mi/147,094,300 km 10:00 a.m.
7	Wed	**Full Moon** 7:00 a.m. 1610 Galileo discovers Jupiter's moons Io, Europa, and Callisto.
8	Thur	1942 Steven Hawking born.

NASA's Space Place

Stardust

by Patrick L Barry and Dr. Tony Phillips

Philosophers have long sought to "see a world in a grain of sand," as William Blake famously put it. Now scientists are attempting to see the solar system in a grain of dust-comet dust, that is.

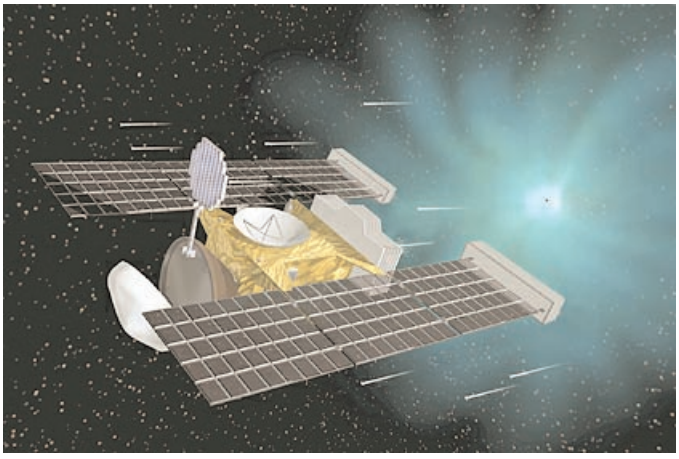
If successful, NASA's Stardust probe will be the first ever to carry matter from a comet back to Earth for examination by scientists. It would also be the first time that any material has been deliberately returned to Earth from beyond the orbit of the Moon.

And one wouldn't merely wax poetic to say that in those tiny grains of comet dust, one could find clues to the origin of our world and perhaps to the beginning of life itself.

Comets are like frozen time capsules from the time when our solar system formed. Drifting in the cold outer solar system for billions of years, these asteroid-sized "dirty snowballs" have undergone little change relative to the more dynamic planets. Looking at comets is a bit like studying the bowl of leftover batter to understand how a wedding cake came to be.

Indeed, evidence suggests that comets may have played a role in the emergence of life on our planet. The steady bombardment of the young Earth by icy comets over millions of years could have brought the water that made our brown planet blue. And comets contain complex carbon compounds that might be the building blocks for life.

Launched in 1999, Stardust will rendezvous with comet Wild 2 (pronounced "Vilt" after its Swiss discoverer) on January 2, 2004. As it passes through the cloud of gas and dust escaping from the comet, Stardust will use a material called aerogel to capture grains from the comet as they zip by at 13,000 mph. Aerogel is a foam-like solid so tenuous that it's hardly even there: 99 percent of its volume is just air. The ethereal lightness of aerogel minimizes damage to the grains as they're caught.



NASA's Stardust mission will capture dust from comet Wild 2 and bring them back to Earth for study.

Wild 2 orbited the sun beyond Jupiter until 1974, when it was nudged by Jupiter's gravity into a Sun-approaching orbit-within reach of probes from Earth. Since then the comet has passed by the Sun only five times, so its ice and dust ought to be relatively unaltered by solar radiation. Some of this pristine "stuff" will be onboard Stardust when it returns to Earth in 2006, little dusty clues to life's big mysteries.

To learn more about Stardust, see the mission website at stardust.jpl.nasa.gov. Kids can play a fun trivia game about comets at spaceplace.nasa.gov/stardust.

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

[Ed note: Our November speaker, **Chuck Marble**, spoke to us about Stardust and had a sample of Aerogel for people to look at.]

Morrison Planetarium *continued*

There's been no public comment, but the Academy is seeking a home where the projector, at least, can be operated or displayed. They might appreciate knowing the thoughts and preferences of members, patrons, and interested advocates.

Citizens of the San Francisco Bay region share a vested interest in the outcome. The planetarium was a landmark exercise in the power of citizen involvement and initiative. Schoolchildren famously donated their pennies to help make it a reality. And it has, for decades, been a favorite field trip for school classes around the Bay, and across the state.

For those who've admired or even loved Morrison Planetarium, time is short and opportunity fleeting. Those interested in enjoying the unique ambience of the star theatre should plan to visit before final shutdown on December 31st. The planetarium will present shows every day except Thanksgiving and Christmas.

The regular show schedule terminates on Sunday, December 28th. From Monday, December 29th through Wednesday, the 31st, the Academy and Planetarium will offer a three-day open house, waiving admission fees. Morrison will feature the live program *The Sky Tonight* eleven times a day, every hour from 10 a.m. to 8 p.m. The timing will allow the opportunity for questions and picture-taking. The Wednesday show at 8 p.m. will be the last.

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.
_____ $25 Basic. You will receive e-mail notification when the PDF version of *Prime Focus* is available for download off the TVS web site.
_____ $30 Regular. You will receive a paper version of *Prime Focus* in the mail.
_____ $32.95 One year subscription to *Sky & Telescope* magazine.
_____ $29 One year subscription to *Astronomy* magazine.
_____ $55 Two year subscription to *Astronomy* magazine.
_____ $20 Hidden Hill Observatory (H2O) refundable key deposit (key property of TVS).
$_____ 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.