PRIMEFOCUS

Tri-Valley Stargazers

January 2004

TVS

Tri-Valley Stargazers

Meeting Info:

What
Member's Night

Who
TVS Members

When
January 16, 2004
Conversation at 7:00 p.m.
Lecture at 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

January Meeting

Member's Night
TVS Members

We start the year off with a Member's Night. Anyone who's been to one of our meetings knows that we love to chat with each other about astronomy and telescopes. Our January meeting will be devoted to members discussing anything and everything astronomy related.

Got a new telescope for Christmas? Bring it to the meeting and show it to us! If you've got questions about that new telescope, the TVS meeting is the place to find answers. Any toys or gadgets you think other members would like to know about? Read any good astronomical books lately? Take any astrophotos you'd like to share with the rest of the club? Our meeting night is the night for some Show and Tell.

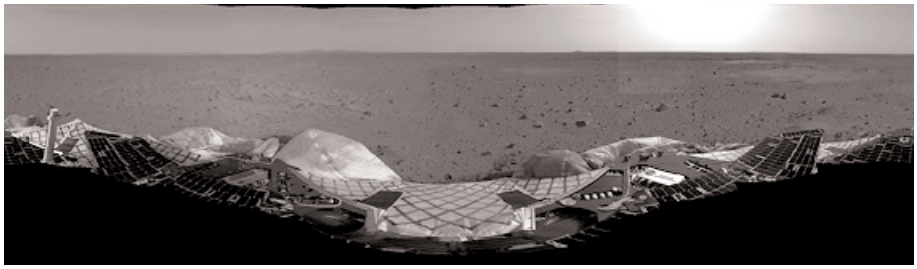
So join us for a night of fun and astronomical camaraderie. If it's clear, we'll take some of our loaner scopes out for spin around the galaxy.

Spirit Makes A Successful Landing

By now you probably heard that on Saturday night, January 3rd, NASA's rover Spirit made a successful landing at the Gusev Crater on Mars. Its sister rover, Opportunity, is scheduled to land on Meridiani Planum on January 24th at 9:05 p.m. PST.

Since landing, Spirit has continued to send back fabulous pictures from the surface of Mars. At press time the rover had not yet left its nest, so time will tell if it is successful in venturing forth to Sleepy Hollow or any other target NASA chooses to send it to.

For all the latest info, go to the Mars rover web site: www.marsrover.nasa.gov.



A 360° view from Spirit. This photo was taken not long after Spirit landed in Gusav Crater.

News & Notes

Welcome

TVS welcomes our newest member to the club — **David Meccariello**.

2004 TVS Meeting Dates

Below are the TVS meeting dates for 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 March 7th deadline is for the March issue).

Lecture Meeting	Board Meeting	*Prime Focus* Deadline
Jan. 16	Jan. 19	Jan. 4
Feb. 20	Feb. 23	Feb. 8
Mar. 19	Mar. 22	Mar. 7

Money Matters

At the December Board meeting, Treasurer **Gary Steinhour** gave us the account balances (as of December 14, 2003) of TVS's accounts:

Checking	$1,293.68	
CD #1	$3,924.52	matures 02/17/04
CD #2	$2,421.97	matures 02/27/04
CD #3	$2,063.37	matures 01/16/04

Dues Are Due!

If you haven't already, now's the time to renew your membership (our membership year runs from January to December).

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 a paper version sent to them in 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.

Astro Wizard Is Awarded

At the December pot luck, the Board of Directors presented **Dave Rodrigues**, a.k.a. the Astro Wizard, a certificate of appreciation for all the public outreach work that he has done, and a check for $150 to help him continue with his work. For a brief moment, Dave was speechless!

Major Scope Donation

TVS would like to thank **Brinton Jones** for his extremely generous donation of his two scopes, plus other goodies:

Newtonian telescope (f/4.5 with 18" Nova Optics mirror with premium coatings) on a Dobsonian mount, with Dob Driver II, JMI focuser with electric focus, fan, battery charger for fan and gel cell, truss tube, shroud, Telrad, ramp and wheelbarrow handles for transporting. (This scope will probably be housed at H2O for Patron Member use.)

Newtonian telescope (f/6 with 10" Orion mirror) on Dobsonian mount, with Dob Driver II, JMI focuser with electric focus, fan, battery charger for fan and gel cell, truss tube, and a Rigel reflex finder.

In addition, Jonsey also donated the following:

9 X 60 binoculars, BAK4 porro prisms; Set of 10 1-1/4" filters in various Wratten colors; Orion Ultra-Violet (UV) filter; Orion *Skyglow* filter; Moon filter; Sky filter; *Astrobeam* laser collimator by Astrosystems; Orion laser collimator; 2 TeleVue plössl eyepieces: 20 mm and 8 mm (1-1/4"); 3 Orion eyepieces: Optiluxe 40 mm (2"), Ultrascopic 35 mm and 15 mm (1-1/4"); Celestron *Nexstar* plössl: 40 mm (1-1/4"); 2 Orion barlows: 2" 2X and 1-1/4" 2X; Orion Cheshire collimator; Lens pen; Two-volume set of *Finder Charts for the Messier Objects* by Brent Watson (published by Skyspot).

continued page 4

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:

At press time the movie schedule hadn't been released. Visit www.chabotspace.org/visit/theater.asp for movie listings.

Showtimes:

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

Newsletter header image: Saturn

The Saturn Season is well underway, with opposition occurring on December 31, 2003.

This photo was taken December 19, 2003 from 3:18 to 3:32 UT with an 8" f/5 Newtonian, using a 3x barlow and a ToUcam camera at 740k + IR, 1/25 sec.

Photo: Sibylle Fröhlich

Calendar of Events *continued*

January 11-February 15, 7:30-9:30 p.m.
What: *Adult Astronomy Class*
Who: Staff Members
Where: Chabot Space & Science Center, Oakland
Cost: $55 Chabot members, $65 non-members

Chabot Space & Science Center is offering a six-week astronomy course designed especially for adults who are curious about the universe surrounding them & want to learn more.

This non-mathematical class will cover constellations, the solar system, stars, galaxies and the universe. Historical conceptions and modern research will also be discussed. The course will utilize the Ask Jeeves Planetarium and the Chabot observatories.

Space is limited, so be sure to reserve your place by calling 510-336-7368.

January 17, 6:30 p.m.
What: *Lonely Planets: The Natural Philosophy of Alien Life*
Who: Dr. David Grinspoon
Where: Chabot Space & Science Center, Oakland
Cost: $5

Dr. David Grinspoon will present his new book, *Lonely Planets: The Natural Philosophy of Alien Life*. Come hear about what it takes for a planet to support life in a remarkably hostile Universe.

Book signing will follow the lecture.

January 31, 6:30 p.m.
What: *Magnificent Mars*
Who: Ken Croswell
Where: Chabot Space & Science Center, Oakland
Cost: General: $11 Adults & $8 Senior, Members: $8 Adults & $5 Senior

Berkeley astronomer Ken Croswell will speak about *Magnificent Mars*. Copies of his new book, titled the same, will also be available that evening for signing.

February 11, 7:00 p.m.
What: *The Search for Planet X: Exploring the Solar System Beyond Neptune*
Who: Dr. Eugene Chiang, (U.C. Berkeley)
Where: Smithwick Theater, Foothill College
Cost: Free; parking is $2

Dr. Eugene Chiang of the University of California at Berkeley, will give a non-technical illustrated talk on *The Search for Planet X: Exploring the Solar System Beyond Neptune* in the Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in the Los Altos Hills. Dr. Chiang will discuss how new discoveries are revealing an array of interesting new objects — including several mini-planets — at the outskirts of our planetary system.

Call the series hotline at 650-949-7888 for more info.

Co-sponsored by NASA Ames Research Center, The Foothill College Astronomy Program, The SETI Institute, The Astronomical Society of the Pacific.

News & Notes *continued*

These items will be available for members to rent as soon as we get them processed into our loaner program.

Thanks again Jonsey!

E-Group Mentor

Although we don't have an official club mentor program, we do have a wealth of knowledge within our member's heads. If you have questions or problems with your scope, please post your question to the TVS e-groups and let our members help you. **Mike Rushford** has agreed to be the head Mentor of our group, but all members are free to chip in and put in their two cents worth.

So how do you join the e-groups you ask? Keep reading.

Join the TVS Discussion E-Group

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.

Science Fun Fair

Once again TVS will participate in the Pleasanton & Dublin School District's Science Fun Fair at the Alameda County Fairgrounds. This year the event takes place on Wednesday, February 18, from 6:00-9:00 p.m. We could use volunteers to man our table inside as well as bring scopes for observing outside. The Fair organizers anticipate 16,000 people so the more volunteers we have the better. If you wish to help, please contact **Debbie Dyke** at ddfam@pacbell.net or 925-461-3003. We'll have a limited number of parking passes, so carpooling with other volunteers is recommended.

First Light: Beginners' Astronomy

by Richard Campbell

First Night

Yes! You received the gift of your dreams—a new telescope!

The wrapping paper sits ripped in the corner. The boxes are all opened and the assembly begins. Sooner or later it looks like a telescope should and you're ready to actually look through it. Although new telescopes are notorious for causing clouds to roll in, you may get *lucky* and have clear skies. If that happens, point your telescope at these "first night" objects — guaranteed to thrill the beginning astronomer:

The Moon

Unbelievable! There is so much detail on the moon that you could spend a lifetime exploring its craters, mountains, rilles and ridges. Great news for the beginner: *any telescope* will show satisfying lunar views, even at lowest power. Start with your wide-field eyepiece (probably a 25mm) and center the moon. You will immediately discover it is not as smooth as it appears with the naked eye. Zoom in to the rougher features, and you'll notice craters everywhere — often nested within each other. Many of these impact craters are about the size of the Bay Area. But what about those tiny ones, off to the side? About the size of *your town*. Wow!

Saturn

Breathtaking! The telescopic view of the ringed planet captivates all who see it. When I show it to adults, some seriously ask me, "Is that really what I'm seeing? Did you put a picture on the lens of the telescope?" Truth is, Saturn really is that gorgeous. More great news: Saturn is *especially gorgeous* nowadays, since its rings are *fully tilted* towards Earth. That means you can see the rings completely encircling the planet, and note subtle gradations of color in the ring structure. Several years from now, we will see Saturn's rings edge-on, so they will almost disappear! Keep looking this year, and you might see faint colors in the planet itself, often varying from pale ivory to light beige. Where is it currently? Close to the constellation Orion.

The Orion Nebula

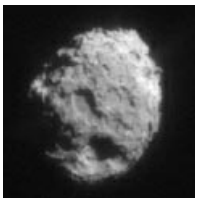
Monumental! This monster cloud of dust could swallow our solar system several times over. Instead, it floats peacefully underneath Orion's Belt, looking like a rose viewed from the side. The dust in this cloud has already compressed so tightly that *new stars* have emerged from its depths. You can see these infant stars at the center of the nebula, in a trapezoid-like arrangement, called the Trapezium. The ghostly grey color of the Orion Nebula will appear often in your telescopic adventures, since faint celestial delights reveal *structure*, not color to the human eye. But oh, what structure it is!

Clear Skies, Open minds!

Astronomical Insights

by David Feindel

There's a reason why astronomy wanes as a hobby in the Bay Area in December. I re-discovered the reasons this past Saturday while trying to catch Saturn at opposition to see the unique shadow pattern. Cold. Wind. Jet stream. Frost. The end result was about an hour of observing before soft seeing, chattering teeth, and frost forming on my scope forced my retreat back indoors (although not before putting my scope in a huge sealed plastic bag to keep condensation from forming on it). The best I could do was 143X which occasionally gave glimpses of six moons, the equatorial belt, and just a hint of planet shadow on the left side. But since it had been a month of photon starvation, the night was still pronounced successful.

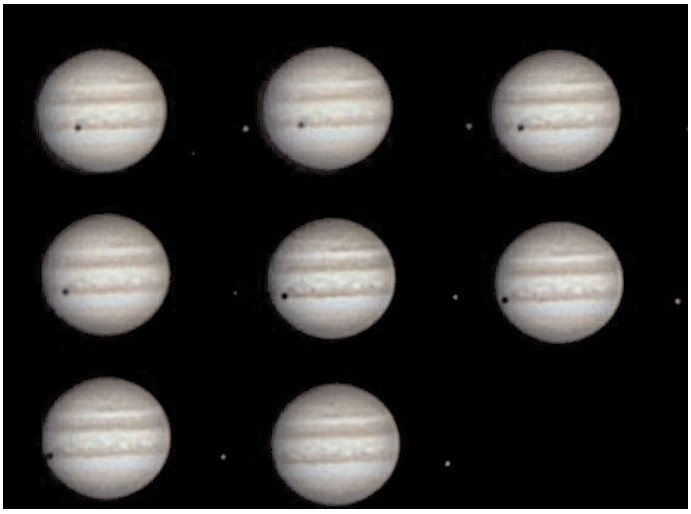


Stardust's photo of Comet Wild-2 *(pronounced Vilt-2).*

In compensation, this month may be the best month EVER for armchair astronomers. Consider that the best picture of a comet ever taken was made available. Someone on one of the newsgroups published this picture next to the former best comet picture (Halley's Comet, taken by ESA's Giotto spacecraft in 1986); the difference was startling. (Compare www.jpl.nasa.gov/images/comet/wild2-comet-browse.jpg with http://seds.lpl.arizona.edu/nineplanets/nineplanets/halley.html.) Next up was the successful landing of Spirit, with the anticipated 3D views of Mars at high resolution becoming available over the next 3 months. And Opportunity's (hopefully) successful landing on January 24th with its images. The amount of information on TV and the web is phenomenal. Be sure and catch the *Nova* program *Mars: Dead or Alive* on PBS; it is an excellent history of the Spirit/Opportunity program and the challenges that had to be overcome. First broadcast was about 18 hours after Spirit landed, it incorporated photos from Spirit. (A minor digression — the planetarium program on Mars at Chabot that afternoon also incorporated a photo taken by Spirit!) *Nova* will also be broadcasting live when Opportunity lands on the 24th. As for information on the web, start with the official JPL mission site, www.jpl.nasa.gov and go on from there. Also try www.spaceflightnow.com and http://mars.telascience.org for some neat stuff for viewing 3D images from the mission. All of the photos are eventually going to get posted to the web; as one amateur suggested, go buy a couple of new hard drives and sign up for a T-1 line now. Each uncompressed panorama shot is a couple of gigs.

The news media descends on Chabot Space & Science Center on the evening that Spirit landed on Mars. *Photo by: Carter Roberts*

Astro Events



Ganymede's shadow transit on Jupiter. Photo taken on December 19, 2003, from 3:09 to 4:92 UT using the 6" Zeiss refractor at Wilhelm-Foerster-Sternwarte in Berlin. The imaging was done with a Philips ToUcam and a Baader Fluorit Flatfield Converter (a high end barlow). *Photo by: R. Rogoszynski*

Jupiter Transits

Below is a few listings of transit times for various Jupiter related objects. The abbreviations are fairly straight forward: G=Ganymede, C=Callisto, I=Io, E=Europa, GRS=Great Red Spot, and if you see a 's' next to one of the moons, it means its shadow (e.g., Cs=Callisto's shadow); na means Jupiter is below the horizon or it is daylight at that time.

January

Date	Object	Starts	Transits	Ends
Fri 9	GRS	9:05p	11:15p	1:09a
Sun 11	Is	9:13p	10:30	11:27p
	I	10:15p	11:20p	12:27a
	GRS	10:50p	1:00a	2:45a
Fri 16	GRS	10:00p	12:00a	2:00a
Tue 20	Cs	9:07p	11:10p	12:50a
Wed 21	GRS	9:05p	11:05p	1:05a
Fri 23	GRS	10:40p	12:40a	2:40a
Sat 24	GRS	na	8:40p	10:40p
Sun 25	Es	na	na	9:40p
	E	na	9:55p	11:20p
Tue 27	Is	na	8:45p	9:42p
	I	na	9:22p	10:30p
Wed 28	GRS	10:00p	12:00a	2:00a
Fri 30	G	na	9:03p	10:35p
	GRS	11:35p	1:35a	3:35a

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What's Up *by Debbie Dyke*

All times Pacific Standard Time unless otherwise noted.

January

7	Wed	**Full Moon** 7:40 a.m. 1610 Galileo discovers Jupiter's moons Io, Europa, and Callisto.
8	Thurs	The Moon is 3° N of the Beehive Cluster (M44). 1942 Steven Hawking born. 1642 Galileo died.
10	Sat	1968 Surveyor 7 lands on the Moon near Tycho.
12	Mon	Jupiter 2.5° S. of Moon 5:00 a.m.
13	Tues	1610 Galileo discovers Ganymede.
14	Wed	Venus 0.9° S of Uranus (36° E) in the evening. **Last Quarter Moon** 8:46 p.m.
16	Fri	**Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.
17	Sat	Mercury at greatest elongation W (24°) 1:00 a.m.
18	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.
19	Mon	Moon at perigee (224,917 mi/362,770 km) 11:00 a.m. Mercury 8.5° N of Moon low on the SE horizon 6:30 a.m. **Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.
21	Wed	**New Moon** 1:05 p.m.
22	Thurs	Gung Hay Fat Choy! Today starts Year 4701, the Year of the Monkey, in the Chinese Lunar calendar.
24	Sat	1986 Voyager 2 flyby of Uranus.
27	Tues	Mars 3° N of Moon 7:00 p.m. 1967 Apollo 1 capsule catches fire while sitting on launch pad, killing all three astronauts on board.
28	Wed	**First Quarter Moon** 10:03 p.m. 1986 Space Shuttle Challenger explodes soon after liftoff, killing all seven on board.
30	Fri	The Moon is just 3° N of the Pleiades (M45).
31	Sat	Moon at apogee (250,980 mi/404,807 km).

February

1	Sun	2003 Columbia breaks up during reentry, killing all seven on board.
2	Mon	Ground Hog Day. Neptune in conjunction with the Sun 1:00 a.m. Saturn 4° S of the Moon 7:00 p.m.
3	Tues	1966 First soft landing on Moon by the Soviet spacecraft Luna 9. Luna returns the first pictures of the surface of the Moon.
4	Wed	1906 Clyde Tombaugh (discoverer of Pluto) born.
5	Thurs	1970 Apollo 14 lands on the Moon at Fra Mauro.
6	Fri	**Full Moon** 12:47 a.m.
9	Mon	For the next two weeks the **Zodiacal Light** might be visible in the West after evening twilight.

NASA's Space Place

So Little Time, So Many Galaxies

by Dr. Tony Phillips

Fourteen billion years ago, just after the Big Bang, the universe was an expanding fireball, white hot and nearly uniform. All of space was filled with elementary particles and radiation. "Soupy" is how some cosmologists describe it.

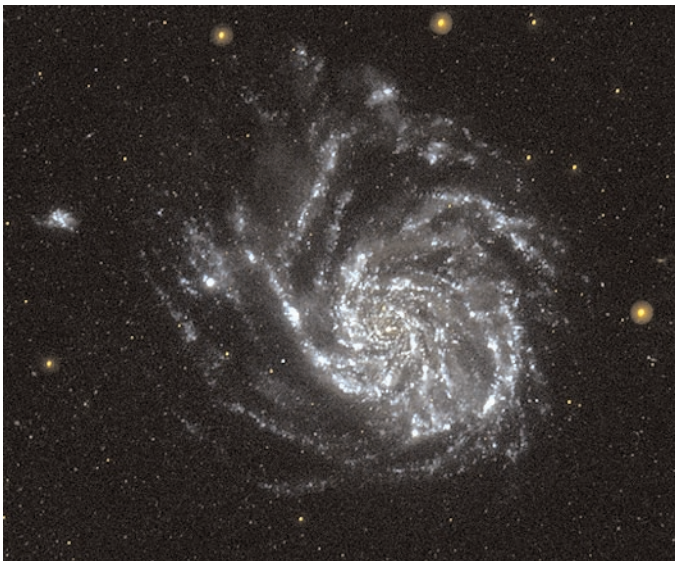
Today the universe is completely different. It's still expanding — even accelerating — but there the resemblance ends. The universe we live in now is "lumpy." Great cold voids are sprinkled with glowing galaxies. In galaxies, there are stars. Around stars, there are planets. On one planet, at least, there is life.

How we got from there to here is a mystery.

Finding out is the goal the Galaxy Evolution Explorer, "GALEX" for short, a small NASA spacecraft launched into Earth orbit April 28, 2003. GALEX carries an ultraviolet (UV) telescope for studying galaxies as far away as 10 billion light-years.

"GALEX is a time machine," says astronomer Peter Friedman of Caltech. Because light takes time to travel from place to place, pictures of distant galaxies reveal them as they were in the past. "GALEX is investigating the evolution of galaxies over 80% of the history of our universe."

The Hubble Space Telescope can see faraway galaxies, too, but GALEX has an advantage: While Hubble looks in great detail at very small regions of the sky, GALEX is surveying the entire sky, cataloging millions of galaxies during its 2-year mission.



This image of Messier 101 (M101), aka the "Pinwheel Galaxy," was taken in two orbits of GALEX on June 20, 2003. M101 is 20 million light years away.

GALEX is a UV mission for a reason. Friedman explains: "UV radiation is a telltale sign of star birth." Stars are born when knots of gas condense in interstellar clouds. The ones we see best are the big ones — massive stars that burn hot and emit lots of UV radiation. "These stars are short-lived, so they trace recent star formation."

Understanding star formation is crucial to studies of galaxy evolution. When galaxies collide, star formation surges. When galaxies run out of interstellar gas, star formation wanes. In galaxies like the Milky Way, spiral arms are outlined by star-forming clouds. The shapes of galaxies, their history and fate — they're all connected by star formation.

Even life hinges on star formation, because stars make heavy elements for planets and organic molecules.

"Our measurements of UV radiation will tell us both the rate at which stars are forming in galaxies and the distances of the galaxies," says Friedman.

How did we get here? GALEX will show the way.

Find out more about GALEX at www.galex.caltech.edu. For children, visit The Space Place at spaceplace.nasa.gov/galex_make1.htm and make a beautiful galactic mobile while learning about some of the different shapes galaxies can take.

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

Astro Events *continued*

Jupiter Transits continued

January

Date	Object	Starts	Transits	Ends
Sat 31	GRS	na	9:20p	11:20p

February

Sun 1	Es	9:27p	11:00p	12:16a
	E	10:55p	12:20a	1:40a
Mon 2	GRS	9:00p	11:00p	1:00a
Tue 3	Is	9:22p	10:33p	11:35p
	I	10:00p	11:10p	12:13a
Thur 5	GRS	na	8:30p	10:30p
Fri 6	Cs	8:15p	10:05p	11:40p
	C	9:10p	10:25p	11:55p
	G	10:45p	12:25a	2:00a
Sat 7	GRS	12:10a	2:20a	4:10a
	GRS	8:10p	10:10p	12:10p
Tue 10	GRS	na	7:40p	9:40p

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.