

PRIME FOCUS

Tri-Valley Stargazers



April 2004



Meeting Info:

What

A Mix and Match Meeting

Who

TVS Members

When

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

Where

Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

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April Meeting

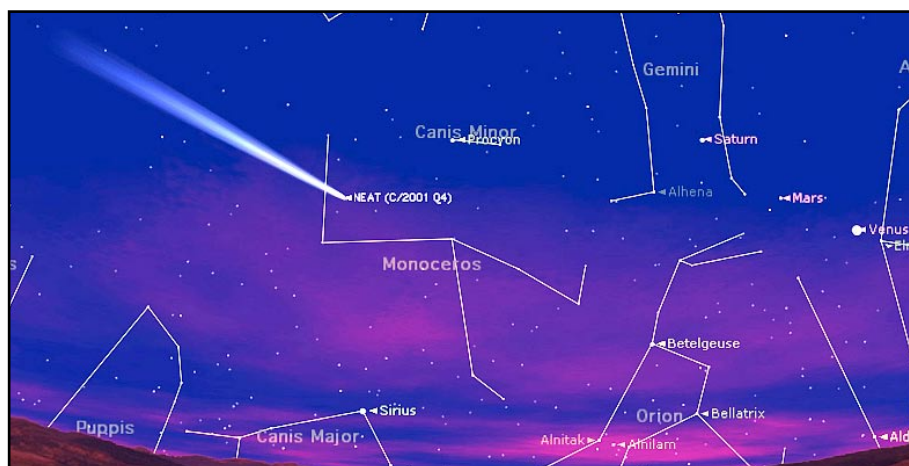
A Mix and Match Meeting

TVS Members

Our April meeting will be a mix of topics. We'll start the meeting off with Rich Campbell, who will talk about TVS's participation in the NASA Night Sky Network and will present one section of the PlanetQuest Outreach ToolKit. This will be our first opportunity in presenting this information, so feedback is appreciated.

Next, we'll see a DVD of eight years of solar activity. Don't worry, we won't actually watch *all* eight years of footage. Mike Rushford received this DVD from Alan Title, the director of the Lockheed Solar Center.

Afterwards, Mike will tell us about the successor to the Hubble Space Telescope, the James Webb Space Telescope, formally known as the NGST—Next Generation Space Telescope (<http://ngst.gsfc.nasa.gov>). It will carry an 18 segment mirror 6.5 meters in diameter and will be equipped with both near and mid-infrared instrumentation. It is due to be launched in 2011.



Comet NEAT (C/2001 Q4) as seen on May 8th. Image generated by Starry Night Pro and doesn't accurately represent what the comet will really look like.

A Tale of Two Comets

From late April to mid-May, two comets have the chance to become naked-eye comets. The comets are NEAT (C/2001 Q4) and LINEAR (C/2002 T7). NEAT will be better placed in the evening sky than LINEAR and will be viewed easiest around Saturday, May 15, as it crosses the ecliptic in the same part of the sky as Mars and Saturn. See page 7 for info on where and when to see these comets.

News & Notes

Welcome

TVS welcomes three new members—**Chris Benson**, **Carter Scholz**, and **Celeste Burrows**.

2004 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 May 9th deadline is for the May issue).

Lecture Meeting	Board Meeting	Prime Focus Deadline
Apr. 16	Apr. 19	Apr. 4
May 21	May 24	May 9
June 18	June 21	June 6

Money Matters

At the March Board meeting, Treasurer **Gary Steinhour** gave us the account balances (as of March 22, 2004) of TVS's accounts:

Checking	\$1,248.19	
CD #1	\$3,930.46	matures 05/17/04
CD #2	\$2,425.63	matures 05/27/04
CD #3	\$2,066.49	matures 04/16/04

Janet Mattei

Recently the astronomy community received word of the passing of Dr. Janet Mattei, the former AAVSO (American Association of Variable Star Observers) Director. She died on March 22 after a long battle with acute myelogenous leukemia.

Amateur astronomer Mario Motta writes "The AAVSO has lost a strong leader who has guided our organization to greatness. Amateur astronomers the world over have lost a mentor who bridged the world of amateurs and professionals. I, along with many others the world over who knew her well, have lost a dear friend who will be deeply missed."

Janet had been the director of the AAVSO for 30 years. She encouraged and inspired amateur astronomers around the world. For more information about her life, visit the AAVSO web site, www.aavso.org.

To me, an observation of a variable star is not a number, not a statistic. It's something very much alive. I see the estimate and imagine the observer's face light up as he or she looks at the star through a telescope.

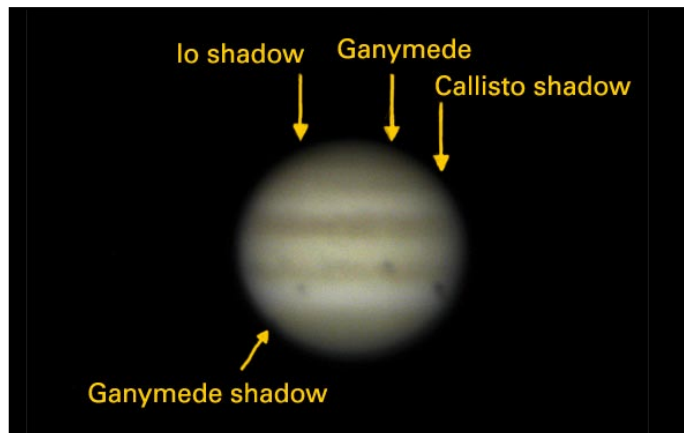
— Janet A. Mattei

April TVS Messier Marathon

The last-chance TVS Messier Marathon will take place on Saturday, April 17th. The usual routine is for everyone to meet at the corner of Mines and Tesla for caravanning to H2O. Don't forget to bring \$3 exact change and any thing you might need for the night (H2O is a long ways from 'civilization'). Details are posted on the TVS home page. Cross your fingers for clear skies.



TVSer Ken Sperber and his astrophotography set up—a Takahashi refractor on a Losmandy G-11 mount. Note the high-tech bundle of rocks acting as a counterweight. Photo by: John Horvath



The March 27/28 triple shadow transit of Jupiter (barely). Ganymede's shadow is on the limb. Photo by: Debbie Dyke

Newsletter header image: Double shadow transit on Jupiter.

On the eastern limb Europa is egressing from its transit of Jupiter and the Great Red Spot is apparent (including detail within!). To the west is Europa's shadow, with that of Io trailing.

Image details: 12 March 2004, 10:12 UT, 4" Takahashi, 2.5x barlow, 125 frames combined in Registax. This is from 1 of 47 image capture sessions over the course of almost 3 hours.

Photo: Ken Sperber

Calendar of Events

April 14, 7:00 – 9:00 p.m.

What: *A Galileo Wrap-Up: What We Have Learned About Giant Jupiter and its Marvelous Moons*

Who: Dr. Claudia Alexander (NASA JPL)

Where: Smithwick Theater, Foothill College, Los Altos

Cost: Free, but there is a \$2 parking fee

Dr. Alexander will review the many exciting discoveries from Galileo and show the best of the spectacular images of Jupiter's stormy clouds and puzzling moons. She served as the project manager of the Galileo mission to explore the Jupiter system and supervised the final descent of the spacecraft into the planet's clouds after its 14-year mission of exploration.

Seating is on a first-come, first-served basis. Arrive early to locate parking. Visitors must purchase a required campus parking permit for \$2 (eight quarters). Parking lots 1, 5, 6 and 7 provide easy access to the theater. Foothill College is located on El Monte Road off Interstate 280. For more information, call 650-949-7888.

April 17, 6:00 p.m.

What: *Global Environmental Issues: Problems, Consequences and Solutions*

Who: David Seaborg (World Rainforest Fund)

Where: Chabot Space & Science Center, Oakland

Cost: \$5

Many scientists today are agreeing on not only the current status of Earth's environment but many of the causes for its decline. David Seaborg, founder of the World Rainforest Fund, will discuss the issues facing us today and the consequences that may face Earth's future generations if solutions are not applied in time.

April 24, 8:00 p.m.

What: *Music Under the Stars*

Who: Axis Mundi with Azigza

Where: Chabot Space & Science Center, Oakland

Cost: \$15 adults; \$12 youth, seniors, and members. Price does not include General Admission. If entering after 4:30 p.m., reduced General Admission charge of \$8 adults; \$5 youth, senior.

Specially designed for the Chabot Ask Jeeves Planetarium, Symphonic-World-Fusion recording and performance group, Azigza, will perform hypnotic and exuberant original compositions that tap into the emotive energies stored in traditional music from around the world. Their music is disciplined by the forms of lush classical symphonic melodic arrangement and expressed in the exuberant and mesmerizing context of a modern rock n roll ensemble. While the simulated night sky swirls above the planetarium dome and celestial projections feed the visual senses, Azigza will take you on a spellbinding musical journey. An unforgettable experience of exotic sight and epic sound awaits.

May 8, 6:00 p.m.

What: *Back to the Astronomy Cafe*

Who: Dr. Sten Odenwald (Goddard Spaceflight Center)

Where: Chabot Space & Science Center, Oakland

Cost: \$5

Why do bones become brittle in space? Where does Space end? Award winning author Dr. Odenwald will answer these questions and talk about what's the latest in the ever-changing world of astronomy. Book signing will follow lecture.

Officers

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Addresses

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

Lecture Meeting:

Unitarian Universalist Church
1893 N. Vasco Road, Livermore

Board & Discussion Meetings:

Round Table Pizza
1024 E. Stanley Blvd., Livermore

Web & E-mail

www.trivalleystargazers.org
tvs@trivalleystargazers.org

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.

Astro Events

Jupiter Transits

Below is a listing 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.

April

Date	Object	Starts	Transits	Ends
Fri 9	GRS	10:20p	12:10a	2:10a
Mon 12	GRS	na	9:40p	11:40p
	I	10:00p	11:05p	12:14a
	E	10:48p	12:10a	1:37a
	Is	10:50p	11:50p	1:06a
Tue 13	Es	12:32a	1:44a	3:22a
Wed 14	GRS	9:25p	11:15p	1:15a
Fri 16	GRS	11:00p	1:00a	3:00a
Sat 17	GRS	na	8:50p	10:50p
Mon 19	GRS	8:40p	10:30p	12:30a
Fri 23	GRS	11:50p	1:40a	3:40a
Sat 24	GRS	na	9:30p	11:30p
Mon 26	GRS	9:30p	11:15p	1:15a
Wed 28	I	na	9:10p	10:19p
	Is	9:07p	10:05p	11:22p
	GRS	11:00p	12:45a	2:45a
Fri 30	Es	na	na	9:54p

May

Sat 1	GRS	12:40a	2:25a	4:25a
	GRS	na	10:20p	12:20a
Sun 2	Gs	9:00p	10:18p	12:16a
Wed 5	I	9:55p	11:00p	12:10a
	Is	11:02p	11:55p	1:17a
	GRS	11:50p	1:40a	3:40a
Thur 6	GRS	na	9:30p	11:30p
Fri 7	E	na	na	10:10p
	Es	9:43p	10:50p	12:30a
Sat 8	GRS	1:35a	3:15a	na
	GRS	9:20p	11:10p	1:10a
Sun 9	G	na	9:45p	11:32p
Mon 10	Gs	12:55a	2:15a	4:14a
Thur 13	GRS	na	10:15p	12:15a

First Light: Beginners' Astronomy

by Richard Campbell

Astronomy: Take It Personally

As you enter the hobby of astronomy, you'll find club etiquette, rules and regulations, instruction manuals, protocols...menus...lots of good structure. All well-meaning. All necessary. But after mastering the group's rules, and your telescope's computer, when are you doing astronomy *your way*? I think the following events are signs you've successfully personalized your astronomy experience.

Your art graces your equipment.

The classic example is painting your telescope tube. If you make your own telescope, it often has a pressed cardboard or 'sono tube' that holds the telescope mirrors. That tube makes an excellent palette for painting constellations, comets or planets...stargazers...anything! One Tri-Valley Stargazer has painted a velvety dark night sky with *dozens* of accurate star maps all over the 5-foot long tube! Such works can win, and have won awards at national events like the upcoming Riverside Telescope Makers Conference. Another local astronomer was displayed on the cover of Sky and Telescope magazine *hugging her home-painted scope*. If painting is not your forte, you can hot-rod your scope with bumper-stickers from your favorite astronomy organization. I like to put SETI (Search for Extra-terrestrial Intelligence) stickers on my scope, as if to attract a signal from a distant star.

You often sketch when you observe.

Sketching the planets or moon will bring our your idiosyncratic vision to life. Which moon craters do you sketch? Are you more of a lunar mountaineer? Then your sketches will be Lunar Sierra landscapes. Amazed by the dance of Jupiter's moons? Then icy rocks will swirl in your drawings. Such sketches can have considerable scientific value: the spokes in Saturn's rings were discovered by amateurs, as well as several comets! At the same time, they are opportunities for waxing poetic. You might title your sketches "Venus ablaze in the Pleiades," "the exploding beehive cluster," or my personal favorite, "The extra-dimensional blob of bad seeing."

You accentuate your observing with other passions.

For some reason, many astronomers are musicians. So, why not let your personal music accompany you on your trip through the cosmos? Obviously, it must be done discreetly, preferably with a walkman, but oh what a difference it can make! You might start with planetarium-style music like *Hearts of Space*, or *And the stars go with you*, by John Serrie. For 70's types, Pink Floyd's *Dark Side of the Moon* or Genesis' *Watcher of the Skies* work nicely. The grandeur of classical music is a great complement to a view of massive, sprawling galaxy like Andromeda.

Gourmet food lovers taste gouda between views. Wood workers fashion their own observing chairs. Astronomy

dovetails with many endeavors. It is common to speak of an observing/camping/hiking/sketching/concert-going/photographing trip. And why not?



Saturn as seen by the Cassini-Huygens spacecraft.

As Cassini closes in on Saturn, its view is growing sharper with time and now reveals new atmospheric features in the planet's southern hemisphere.

Atmospheric features, such as two small, faint dark spots, visible in the planet's southern hemisphere, will become clearer in the coming months. The spots are located at 38 degrees south latitude.

The spacecraft's narrow angle camera took several exposures on March 8, 2004, which have been combined to create this natural color image. The image contrast and colors have been slightly enhanced to aid visibility. Cassini-Huygens was 35 million miles away from Saturn when the picture was taken. The image scale is approximately 210 miles per pixel.

For more information about the Cassini-Huygens mission visit, <http://saturn.jpl.nasa.gov> and the Cassini imaging team home page, <http://ciclops.org>.

Image Credit: NASA/JPL/Space Science Institute

Advertisement



LICK OBSERVATORY

Attention Star Gazers!!!

Looking for something interesting
to do on the weekends?
How about getting paid for it?

Who: Lick Observatory is located at the Mount Hamilton Observing Station 19 miles southeast of San Jose at 4,200 feet elevation. The Observatory is looking for Summer Program Assistants who will assist in the set up and tear down of our Summer Visitors and Concert Series programs.

What: ***Music of the Spheres 2004** is a summer concert series that benefits the Lick Observatory Visitors Program. Guests enjoy live music, astronomy lectures and an opportunity to view the sky through both the 36-inch refracting and the 40-inch reflecting telescopes. The shift schedule for the Music of the Spheres Concert Series is:

Fridays:

June 25, July 23, and Aug. 27; 3:00pm-9:00pm

Saturdays:

June 26, July 24, and Aug. 28; 3:00pm-11:00pm

The **Summer Visitors Series** is a program where visitors attend astronomy and history lectures as well as view the sky through both the 36-inch refracting telescope and 40-inch reflecting telescope. The shift schedule for the Summer Visitors Program is:

Fridays:

July 9, August 6, and Sept. 10; 5:00pm-9:00pm

Saturdays:

July 10, August 7, and Sept. 11; 5:00pm-9:00pm

Fun: Dinners and overnight accommodations will be provided. However, only scheduled shift time will be paid.

Job # 04-03-26

Initial Review Date: May 1, 2004

Salary: \$10.84/hour

Shift Differential: .37/hour

* Summer Concert assistants must have the ability to move equipment and materials weighing up to 50 lbs. with or without accommodation.

Please go to www.ucolick.org to view the complete job description for this position.

Application materials must reflect a job number. All current job listings are available via the Internet at www.ucsc.edu. Applications are also available via the Internet. Please return applications to: Staff Human Resources, UC Santa Cruz, 1156 High Street, Santa Cruz, CA 95064.

The University of California is an AA/EEO Employer.

What's Up *by Debbie Dyke*

All times Pacific Daylight Time unless otherwise noted.

April

- 11 Sun **Last Quarter Moon** 8:46 p.m.
Easter
- 12 Mon 1961 Yuri Gagarin becomes the first man to orbit the Earth (orbit lasted 1h 48m).
1981 First space shuttle, Columbia, launched.
- 13 Tue 1970 Apollo 13 disaster strikes.
- 16 Fri **Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church,
1893 N. Vasco Road, Livermore.
Mercury in inferior conjunction 6:00 p.m.
- 17 Sat 1970 The Apollo 13 astronauts return safely to Earth. A sigh of relief is heard around the world.
- 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 **Tri-Valley Stargazers Board meeting.** 7:00 p.m. at the Round Table Pizza in Livermore.
New Moon 6:21 a.m.
International Astronomy Week (through April 25).
- 20 Tues 1972 Apollo 16 lands on the Moon at Descartes.
- 21 Wed Lyrid meteor peak at 9:00 p.m.
- 22 Thur Earth Day
After sunset, look for a grouping of the crescent Moon, Venus and Mars.
- 23 Fri Moon at apogee (251,350 mi/405,403 km) 5:00 p.m.
Mars 3.5° S of the Moon during the evening.
- 24 Sat **Astronomy Day**
Saturn less than 5° S of the Moon during the evening.
- 25 Sun 1990 Hubble Space Telescope deployed from shuttle Discovery.
- 27 Tues **First Quarter Moon** 10:32 a.m.
4977 B.C. According to Kepler, the Creation occurs on this date.
- 29 Thurs Jupiter 3° S of the Moon during the evening.

May

- 1 Sat 1006 A supernova in Lupus is discovered by Ali ibn Ridwan, with the Japanese, Chinese, and a Swiss
monk also recording the event.
- 2 Sun Venus at greatest brilliancy.
- 4 Tues Eta-Aquarid meteors peak at 10:00 a.m.
Full Moon 1:33 p.m. (Total Lunar Eclipse in some locations.)
- 5 Wed Venus at extreme declination +27°49'
Moon at perigee (223,082 mi/359,811 km) 10:00 p.m.
The Moon and Antares are 1° apart in the early morning sky 4:00 a.m.
1961 Alan Shepard becomes the first American in space with a 15 minute ride on Freedom 7.
He was paid \$14.38.
- 9 Sun Mother's Day.
- 10 Mon Neptune 5° N of the Moon 3:00 p.m.
- 11 Tues **Last Quarter Moon** 4:04 a.m.

Sciencecraft

by Patrick L. Barry and Tony Phillips

Probes that can distinguish between “interesting” things and “boring” things are vital for deep space exploration, say JPL scientists.

Along with his colleagues in NASA’s Space Technology 6 Project (ST6), JPL’s Steven Chien is working to develop an artificial intelligence technology that does just that. They call it the Autonomous Sciencecraft Experiment, and it’s one of many next-generation satellite technologies emerging from NASA’s New Millennium Program.

As humanity expands its exploration of the outer solar system—or even neighboring solar systems!—the probes we send suffer from two unavoidable handicaps. First, commands radioed by mission scientists on Earth take a long time to reach the probe: six hours for the planned New Horizons mission to Pluto, for example.

Second, the great distance also means that data beamed back by the probe trickles to Earth at a lower bandwidth—often much less than an old 28.8 kbps modem. Waiting for hundreds or thousands of multi-megabyte scientific images to download could take weeks. And often many of those images will be “boring,” that is, they won’t contain anything new or important for scientists to puzzle over. That’s certainly not the most efficient way of using a multi-million dollar probe.

Even worse, what if one of those images showed something extremely “interesting”—a rare event like a volcanic eruption or an unexpected feature like glaciers of methane

ice? By the time scientists see the images, hours or days would have passed, and it may be too late to tell the probe to take a closer look.

But how can a probe’s computer brain possibly decide what’s “interesting” to scientists and what’s not?

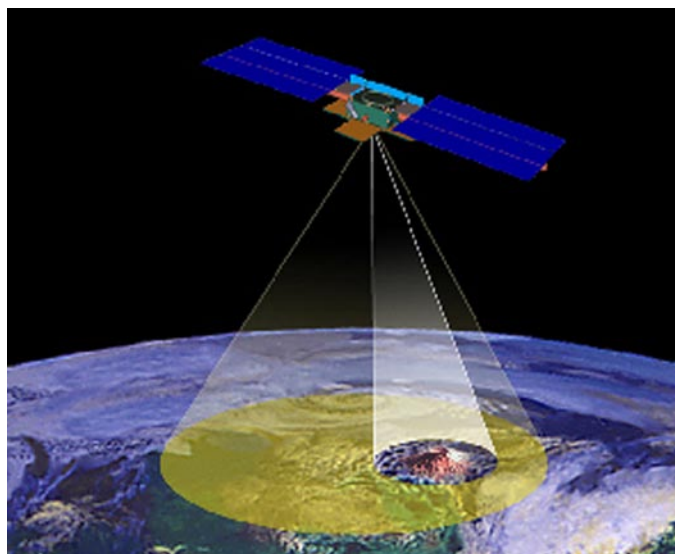
“What you really want is a probe that can identify changes or unique features and focus on those things on its own, rather than just taking images indiscriminately,” says Arthur Chmielewski, one of Chien’s colleagues at JPL.

Indeed, that’s what Chien’s software does. It looks for things that change. A mission to Jupiter’s icy moon Europa, for instance, might zero in on newly-formed cracks in the ice. Using artificial intelligence to set priorities, the probe could capture a complete movie of growing fractures rather than a single haphazard snapshot.

Until scientists can actually travel to deep space and explore distant worlds in person, they’ll need spacecraft “out there” that can do some of the thinking for them. Sciencecraft is leading the way.

Learn more about Sciencecraft at nmp.nasa.gov/st6. Kids can make a “Star Finder” for this month and learn about another of the ST6 technologies at spaceplace.nasa.gov/st6starfinder/st6starfinder.htm.

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



The Autonomous Sciencecraft technology that will be tested as part of NASA’s Space Technology 6 mission will use artificial intelligence to select and transmit only the scientifically significant images.

A Tale of Two Comets *continued*

Here are the details for where and when to look for the two comets.

NEAT C/2001 Q4

Date	Mag.	Constel.	Rise	Transits	Sets
May 4	1	C. Maj	12:56p	5:27p	9:57p
May 8	0.9	Mono	12:08p	5:51p	11:36p
May 15	1.5	Cancer	10:59a	6:12p	1:31a
May 22	2.3	Lynx	9:58a	6:17p	2:41a

LINEAR C/2002 T7

Date	Mag.	Constel.	Rise	Transits	Sets
May 1	1.6	Pisces	4:34a	10:38a	4:41p
May 8	1.1	Cetus	4:56a	10:46a	4:36p
May 15	0.4	Cetus	6:47a	12:10p	5:33p
May 22	0.9	C. Maj	10:46a	3:50p	8:54p
May 29	2.	Hydra	12:03p	5:23p	10:42p

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.