

# PRIME FOCUS

Tri-Valley Stargazers



January 2002



## Meeting Info:

### What

*The Universe at Midnight*

### Who

Ken Croswell

### When

January 18, 2002  
Conversation at 7:00 pm  
Lecture at 7:30 pm

### Where

Unitarian Universalist  
Church in Livermore  
1893 N. Vasco Road

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### The Universe At Midnight

Dr. Croswell tells the riveting story of the discoveries that have revolutionized modern cosmology, introducing the colorful and inspiring characters behind them. *The Universe At Midnight* puts discoveries old and new into fresh perspective, explaining what the big bang, the Hubble constant, quintessence, and the cosmological constant really mean—and offering a brand new forecast for the universe's ultimate fate: the cosmos will expand forever, forever faster, until nearly all other galaxies slip out of sight.



## January Meeting

Dr. Ken Croswell

*The Universe at Midnight* is the definitive story of the golden age in our understanding of the universe—the age we live in right now. The universe's origin, evolution, and fate have long fascinated humanity, but until recently these subjects resided in astronomy's never-never land. The last ten years, however, have witnessed a stunning turnabout: an avalanche of new cosmological discoveries that illuminate the greatest questions of all.

Mammoth new telescopes on Earth, as well as the Hubble Space Telescope overhead, are probing the very frontiers of the universe. In 1996 astronomers pinpointed the center of the elusive “Great Attractor,” a mass of galaxies 250 million light-years away that is trying to tug our Galaxy and thousands of others across the universe. In late 1997, two teams hunting supernovae in galaxies billions of light-years away shocked their colleagues by discovering that the universe's expansion is speeding up. Then in 2001, astronomers spotted a supernova near the perimeter of the known universe, its light emerging from the ancient epoch before the universe began accelerating. Meanwhile, studies closer to home—right in the Milky Way—lit up debate on the mysterious dark matter that pervades the cosmos: is it dying stars, primordial black holes, or some substance presently unknown to science? As a result of these and other cosmological discoveries, we are finally beginning to SEE the universe at midnight, not merely imagine it.

Ken Croswell earned his Ph.D. in astronomy from Harvard University and is the author of several critically acclaimed books, including *The Alchemy of the Heavens*, *Planet Quest*, *Magnificent Universe*, and *See the Stars*. He lives in Berkeley, California.

## News & Notes

### Dues Are Really, Really, Due!!

It's the start of the new year which means that membership dues for year 2002 are due *this* month. As usual, TVS offers discounted subscriptions to *Astronomy* (\$29) and *Sky & Telescope* (\$29.95) magazines. However, the subscription offer ends in February, so make sure you get your request in soon. You can find the renewal/application form on the last page of this newsletter.

While you're filling out the form, please take the time to fill out the questionnaire as well. We actually do read them and really are interested in what our members are thinking.

### 2002 TVS Meeting Dates

Get out your calendars and take note of our new meeting dates. For the next two years, our monthly lecture meetings will meet on the **third** Friday of the month, with the Board meeting on the Monday following the lecture meeting. Here are the dates for 2002:

Lecture Meeting	Board Meeting	Prime Focus Deadline
Jan. 18	Jan. 21	Jan. 26
Feb. 15	Feb. 18	Feb. 23
Mar. 15	Mar. 18	Mar. 23
Apr. 19	Apr. 22	Apr. 27
May 17	May 20	May 25
June 21	June 24	June 29
July 19	July 22	July 27
Aug. 16	Aug. 19	Aug. 24
Sep. 20	Sep. 23	Sep. 28
Oct. 18	Oct. 21	Oct. 26
Nov. 15	Nov. 18	Nov. 23
Dec. 20	Dec. 16	Dec. 28

Newsletter header image: The Moon – Western Near Side. This image obtained December 8, 1990, at 5 a.m. PST by the Galileo spacecraft as it neared the Earth. The image was taken through a green filter and shows the western part of the lunar near side. The smallest features visible are 8 kilometers (5 miles) in size. Major features visible include the dark plains of Mare Imbrium in the upper part of the image, the bright crater Copernicus (100 km, 60 miles in diameter) in the central part, and the heavily cratered lunar highlands in the bottom of the image. The landing sites of the Apollo 12, 14 and 15 missions lie within the central part of the image.  
*Photo: NASA's Galileo Orbiter*

### TVS Annual Winter Solstice Potluck



Here are a few snapshots taken by Frank Rogue at the Solstice potluck.



### Welcome New Members

TVS would like to welcome two new members that joined us at the December potluck meeting: **Raymond Maldonado** and **Matt Jennings**. Their faces may seem familiar to you, as Ray has been to many TVS meetings in the past and Matt works at Lumicon. Welcome aboard Ray and Matt!

## News & Notes *continued*

### Condolences

Our sympathies go out to longtime TVS member **Dave Rodrigues** on the passing of his father on January 4th. Dave has spent the last several years taking care of his father, who had a long term illness.

### Loaner Scope Winter Special Continues

Although winter can be chilly, it does bring with it many beautiful objects to look at in the night sky. TVS wants you to get out and enjoy the winter night skies by having a two for one sale. Rent any scope in the Loaner Scope program for a month and receive another rental month for free. So what types of scopes do we have? 10" Dobs, 8" SCTs, and many more! See our Loaner Scope manager **John Swenson** for more info or to check one out. All you need to rent a scope is to supply a \$50 deposit check (which will be returned to you if you return the scope in the same condition as you received it) and a \$15 rental payment (\$5 for students). What a deal!

### Observing Books for Sale

Come one, come all and get your handy dandy observing literature. Treasurer **Mike Anderson** has acquired a few copies of the *2002 RASC Observer's Handbook* and the *RASC Observer's Calendar 2002* for sale at TVS meetings. The *Handbook* can be purchased for \$15, a real savings from the \$22 retail price. The calendar is yours for just \$10. There is a limited supply and they are available on a first come first served basis.

### Money Matters

At the December Board meeting, Treasurer **Mike Anderson** reported the current balances (as of December 17, 2001) of our various accounts:

Checking	\$2,430.81	
CD #1	\$3,836.71	matures 02/17/02
CD #2	\$2,367.78	matures 02/27/02
CD #3	\$2,015.22	matures 01/16/02

CD #2 holds the key deposits for H2O, to be returned to members when they surrender their keys. By the time this goes to press, one CD will have matured. The CD will automatically roll over and continue to earn interest.

### Home-Dome Up For Sale

Interested in owning your own dome building business? The present owners of Home-Dome® are wanting to sell their business. If you're interested, you can contact Meg and John Menke at Technical Innovations, Inc. via e-mail – [domepage@erols.com](mailto:domepage@erols.com), or by phone at 301-972-8040 (they're in Maryland). Visit their web site to view their wares – [www.homedome.com](http://www.homedome.com).

### Home For Sale Near H2O

Tired of that long and winding commute to Hidden Hills Observatory? There's a custom home up for sale on the hill just north of the TVS observing site. A lovely 2 story, 3,000 square foot, 5 bedroom, 3 bath home on 20 acres is yours for only \$395,000. If you're interested, you can contact Westside Associates at 209-862-1111.

#### **Officers**

##### **President:**

Chuck Grant  
[charleswgrant@attbi.com](mailto:charleswgrant@attbi.com)  
925-422-7278

##### **Vice-President:**

Gary Steinhour  
[steinhour1@juno.com](mailto:steinhour1@juno.com)

##### **Treasurer:**

Mike Anderson  
[andersonm@prodigy.net](mailto:andersonm@prodigy.net)

##### **Secretary:**

Maggie Halberg  
925-736-8627

##### **Board of Directors**

Alane Alchorn, Jim Alves, Dave Anderson, Dennis Beckley, Paul Caswell, Rich Combs, Debbie

Dyke, Gert Gottschalk, Kathleen Kelley, Signe McIntire, Dave Rodrigues, Frank Rogue, Mike Rushford, Debbie Scherrer, Al Stern, John Swenson, Norm Thomas, Phil Waide

##### **Volunteer Positions**

##### **Librarian:**

Jim Alves  
[jim\\_alves\\_engr@yahoo.com](mailto:jim_alves_engr@yahoo.com)  
925-634-0220

##### **Newsletter Editor:**

Debbie Dyke  
[ddfam@pacbell.net](mailto:ddfam@pacbell.net)

##### **Program Director:** unfilled

##### **Loaner Scope Manager:**

John Swenson

##### **Refreshments:**

Debbie Dyke

##### **Webmaster:**

Chuck Grant

##### **Observatory Director/**

##### **Key Master:**

Chuck Grant

##### **School Star Party Chair:**

Rich Green (unofficially)

##### **Public Star Party Chair:**

Rich Green (unofficially)

##### **Historians:**

Paul Caswell & Debbie Dyke

##### **Addresses**

##### *Mailing:*

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

##### *Lecture Meeting:*

Unitarian Universalist Church  
1893 N. Vasco Road, Livermore

##### *Board Meeting:*

Round Table Pizza  
1024 E. Stanley Blvd., Livermore

##### **Web & E-mail**

[www.trivalleystargazers.org](http://www.trivalleystargazers.org)

[tvst@trivalleystargazers.org](mailto:tvst@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](mailto:rushford@eyes-on-the-skies.org)). You may access it by visiting [www.eyes-on-the-skies.org](http://www.eyes-on-the-skies.org).

## Calendar of Events

**January 17, 7:30 p.m., \$5**

**Who:** Nancy Clanton

**What:** Light Pollution

**Where:** Chabot Space & Science Center, Oakland

**Cost:** \$5

Nancy E. Clanton, from the International Dark Sky Association & the International Association of Lighting Designers will be the guest speaker at the Chabot Space & Science Center's Distinguished Lecturer Series. The talk will take place in the Tien MegaDome Theater.

Nancy's talk, *Assessing California's Outdoor Lighting: Star Quality & Ample Quantity*, will take a look at current lighting regulations & design in California & how they affect both the quality of our lives & the level of light pollution. If you are interested in what is being done to enhance the dark sky environment crucial to the pursuit of astronomy, please join us!

Tickets can be purchased at TicketWeb.com, or by calling 510-336-7373. Tickets can also be purchased the night of the lecture. [www.chabotspace.org](http://www.chabotspace.org)

**January 23, 7:00 p.m.**

**Who:** Dr. Scott Hubbard

**What:** Mars Exploration

**Where:** Foothill College in Los Altos

**Cost:** Lecture is free, parking is \$2

Dr. Scott Hubbard will give an illustrated, non-technical talk on *Following the Water: The New Program for Mars Exploration*. He will discuss some of the exciting new discoveries about Mars, and the ingenious new missions that are being planned to get to know it more intimately. Evidence is mounting that early Mars (billions of years ago) had a thick atmosphere and rivers of flowing water. Two prime questions scientists are now asking is whether that "golden era" in Mars history might have led to the beginning of life, and how much of the water still remains on or in the planet today.

Dr. Hubbard is Deputy Director for Research at NASA's Ames Research Center in Mountain View. Before that, he was the first Mars Program Director at NASA Headquarters and helped re-define NASA's Mars exploration plans. He also helped establish NASA's new Astrobiology Institute, serving as its Interim Director.

The program will be held at Foothill College's Smithwick Theater in the Los Altos hills. From Interstate 280, exit at El Monte Road and travel west to the campus. Park in the first lot you come to and climb the stairs to the theater. Visitors must purchase a required campus parking permit for \$2 (exact change required, in quarters).

The lecture is free, non-technical, and open to the public. Call the Silicon Valley Astronomy Lecture Series hotline at

650-949-7888 for more information. Over 800 people attended several of the lectures in this series last year. Seating will be on a first-come, first-served basis. Children over 13 are welcome to attend.

Co-sponsored by: NASA Ames Research Center, the Astronomical Society of the Pacific, the SETI Institute, and Foothill's Division of Physical Science, Mathematics, and Engineering.

**February 5 – March 12, 7:30 p.m. – 9:30 p.m. on Tuesday evenings**

**Who:** Chabot staff

**What:** Astronomy Class

**Where:** Chabot Space & Science Center, Oakland

**Cost:** \$55 CSSC members, \$65 non-members

Chabot Space & Science Center is offering a six-week Astronomy Class 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 & the Universe. Historical conceptions & modern research will also be discussed. This course will utilize the Ask Jeeves Planetarium and the Observatories.

Registration can be done by mailing a check to CSSC, c/o D. Medlock, 10000 Skyline Blvd., Oakland, CA 94619 or by credit card by calling 510-336-7368.

Space is limited! [www.chabotspace.org](http://www.chabotspace.org)

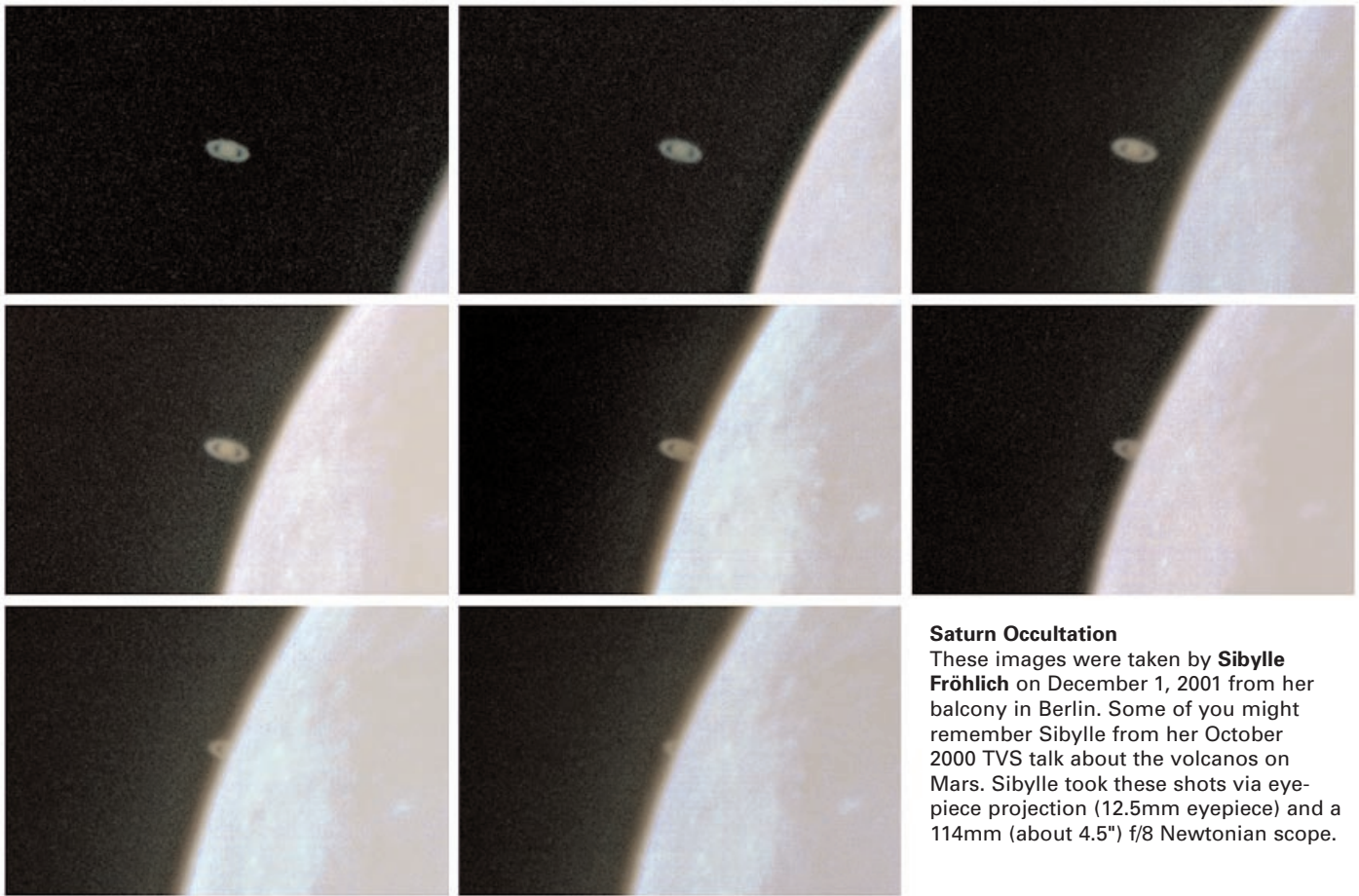
## Astronomical Insights

by David Feindel

I've volunteered to write a monthly column for *Prime Focus*. You'll find some rough edges here, as I'm new to the club and to amateur astronomy. So I'm still very much caught up in the enthusiasm of a new hobby, and subject to lots of rookie errors. I hope to share my more entertaining and informative learning experiences with you.

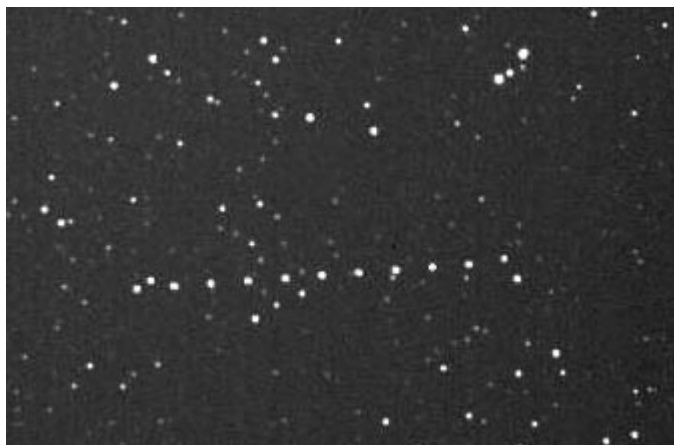
Some months I'll focus on a new book I've read (try *Parallax, The Race to Measure the Cosmos* by Alan Hirshfeld, for a fascinating story on astronomers trying to determine star distances from Hipparchus through Bessel/Struve/Henderson). Other months may be a discussion on interesting web sites ([www.seds.org/messier](http://www.seds.org/messier) for a LOT of information on the M-objects), activities such as looking through the 36" Lick refractor, or neat tricks with astronomical software. So join me on my journey of learning astronomy. And if you have interesting stories, activities, or techniques you'd like to share, drop me an e-mail at [feindel1@attbi.com](mailto:feindel1@attbi.com).

## Astro Events



### Saturn Occultation

These images were taken by **Sibylle Fröhlich** on December 1, 2001 from her balcony in Berlin. Some of you might remember Sibylle from her October 2000 TVS talk about the volcanos on Mars. Sibylle took these shots via eyepiece projection (12.5mm eyepiece) and a 114mm (about 4.5") f/8 Newtonian scope.



### Asteroid 1998 WT24

This CCD composite image was created by TVS member **Ron Bissinger**. It shows the progress of the asteroid at one minute intervals on the night of December 15, 2001. The scale of the image shows the asteroid moving nearly an arc minute every minute, almost a degree an hour! He easily observed the asteroid moving past the earth at only five earth-moon distances. "Using a 12" LX200 at 85x I watched it move over the course of 5 to 10 seconds (not minutes!) against the background stars...I've never seen something moving that quickly that wasn't in earth's orbit." Ron took the series of images from his backyard in Pleasanton using an ST7 CCD camera.



### Comet C2000/WM1 LINEAR

This image of Comet LINEAR was taken by **Gert Gottschalk** on December 9, 2001 at 2:45-3:21 UT using an 80mm f/8 APO, 30x30s, Starlight HX516 CCD camera.

## What's Up *by Debbie Dyke*

All times Pacific Standard unless otherwise noted.

### January

- 1    Tues    1801 First asteroid (Ceres) discovered by Giuseppe Piazzi.
- 2    Wed    Earth at perihelion (closest to the sun) at 91,402,496 miles 6:00 a.m.
- 5    Sat    **Last Quarter Moon** 7:55 p.m.
- 7    Mon    1610 Galileo saw three of Jupiter's moons for the first time.
- 8    Tues    1942 Steven Hawking born.
- 9    Wed    Mercury at greatest illuminated extent.
- 10   Thurs   1968 Surveyor 7 lands on the Moon near Tycho.
- 11   Fri    Mercury at greatest elongation E (19°) 3:00 p.m. Look for Mercury low in the WSW just after sunset, around 6:00 p.m.
- 13   Sun    **New Moon** 5:29 a.m.  
1610 Galileo discovers Ganymede.
- 14   Mon    Venus in superior conjunction 4:00 a.m.
- 18   Fri    Moon at apogee (furthest from the Earth – 251,413 mi) 1:00 a.m.  
**Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church,  
1893 N. Vasco Road, Livermore.
- 20   Sun    **Tri-Valley Stargazers discussion meeting.** 2:00 p.m. at the Round Table Pizza on 1024 E. Stanley  
Blvd., Livermore. Get together with your fellow members to chat about all things astronomy related.
- 21   Mon    **First Quarter Moon** 9:46 a.m.  
**Tri-Valley Stargazers Board meeting.** 7:00 p.m. at the Round Table Pizza in Livermore.
- 23   Wed    Saturn, the Moon, and the Pleiades make up a nice little triangle towards the southern sky tonight.
- 24   Thurs   Saturn, the Moon, and Aldebaran make up another little triangle towards the southern sky tonight.  
1986 Voyager 2 flyby of Uranus.
- 25   Fri    Venus at aphelion.
- 27   Sun    Mercury in inferior conjunction 11:00 a.m.  
1967 Apollo 1 capsule catches fire during a launch pad preflight test, killing all three astronauts on board  
– Gus Grissom, Edward White, and Roger Chaffee.
- 28   Mon    Neptune in conjunction with the Sun 6:00 a.m.  
**Full Moon** 2:50 p.m.  
1986 Shuttle Challenger explodes just 73 seconds after liftoff, killing all seven astronauts on board –  
Francis Scobee, Michael Smith, Ellison Onizuka, Ron McNair, Judith Resnik, Greg Jarvis, Christa McAuliffe.
- 30   Wed    Moon at perigee (closest to Earth – 223,197 mi) 1:00 a.m.

### February

- 3    Sun    1966 First soft landing on Moon by the Soviet spacecraft Luna 9. Luna returns the first pictures of the  
surface of the Moon.
- 4    Mon    **Last Quarter Moon** 5:33 a.m.  
1906 Clyde Tombaugh (discoverer of Pluto) born.
- 7    Thurs   1984 First untethered spacewalk performed by Challenger astronauts Bruce McCandless & Robert Stewart.

## 2001-2002 Questionnaire

2001-2002 is the 13th year that a questionnaire will be used to improve the quality of the club programs and activities. The details of your response will be kept confidential. Summary results will be published in the April issue of *Prime Focus*. Please answer all questions that apply. Attach an extra sheet of paper if necessary.

How did you learn about the club? \_\_\_\_\_

Why did you join? \_\_\_\_\_

Are we meeting your expectations? \_\_\_ Yes \_\_\_ No

Comments \_\_\_\_\_

How long have you been interested in astronomy? \_\_\_\_\_ years

How long have you been a member? \_\_\_ <1 year \_\_\_ 1-3 years \_\_\_ 3-5 years \_\_\_ over 5 years

How often do you attend the monthly meetings?

\_\_\_ Almost always \_\_\_ About half the time \_\_\_ Occasionally \_\_\_ Never

How often do you go to our dark sky site, H2O?

\_\_\_ Several times a month \_\_\_ Once a month \_\_\_ Every 2-3 months \_\_\_ 1-3 times a year \_\_\_ Never

Rate the following activities for their importance to you (1 = very important, 5 = no interest).

\_\_\_ Monthly meetings/speakers

\_\_\_ CCD imaging

\_\_\_ Star parties at our dark site

\_\_\_ Astrophotography (film)

\_\_\_ Public star parties

\_\_\_ Deep-sky observing (faint objects)

\_\_\_ Field trips to Yosemite, White Mountains, etc.

\_\_\_ School programs/presentations

\_\_\_ Using the 30" telescope at Fremont Peak

\_\_\_ Computer programs, internet, bulletin boards

\_\_\_ Telescope making

What kind of instrument do you use most for observing? \_\_\_\_\_

What program topics would you like us to cover at the meetings? \_\_\_\_\_

Do you have a computer? \_\_\_ Yes \_\_\_ No

Type? \_\_\_ Mac \_\_\_ PC

Do you have e-mail? \_\_\_ Yes \_\_\_ No

Do you have access to the internet? \_\_\_ Yes \_\_\_ No

If so, what type of connection? \_\_\_ Modem \_\_\_ DSL \_\_\_ Cable \_\_\_ Other (\_\_\_\_\_)

Have you visited the TVS web page ([www.trivalleystargazers.org](http://www.trivalleystargazers.org))? \_\_\_ Yes \_\_\_ No

Do you use your computer for astronomy related purposes? \_\_\_ Yes \_\_\_ No

If so, what? \_\_\_\_\_

Have you ever borrowed books from the TVS library? \_\_\_ Yes \_\_\_ No

Books you would like us to have: \_\_\_\_\_

Are you interested in helping with a school program? \_\_\_ Yes \_\_\_ No

How is the newsletter format? \_\_\_\_\_

How is the newsletter content? \_\_\_\_\_

Are there any activities that you would like us to provide? \_\_\_\_\_

Can you suggest any improvements to the club? \_\_\_\_\_

# PRIMEFOCUS



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

## 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 \_\_\_\_\_

Choose one: \_\_\_\_\_ I wish to download *Prime Focus* from the web (an e-mail notification will be sent to me when it's available for download). I understand that a paper version will *not* be mailed to me.  
\_\_\_\_\_ I wish *Prime Focus* to be mailed to me.

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

Membership category: \_\_\_\_\_ \$5 Student \_\_\_\_\_ \$20 Individual \_\_\_\_\_ \$25 Family  
\_\_\_\_\_ \$20 Hidden Hill Observatory (H2O) refundable key deposit (key property of TVS)  
\_\_\_\_\_ \$29.95 *Sky & Telescope* magazine subscription (for one year)  
\_\_\_\_\_ \$29.00 *Astronomy* magazine subscription (for one year)  
\$ \_\_\_\_\_ 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.