# PRIMEFOCUS
Tri-Valley Stargazers

February 2006


**Meeting Info:**

**What**
*Chabot Space & Science Center*

**Who**
Tom Estill

**When**
February 17 2006
Conversation 7:00 p.m.
Lecture at 7:30 p.m.

**Where**
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

## Inside



## February Meeting

### Chabot Space & Science Center
*Tom Estill*


Where can you go to travel amongst the stars and planets, to view life up close here on Earth, and to see the wonders of the galaxy with your own eyes? Why, the Chabot Space & Science Center, of course!

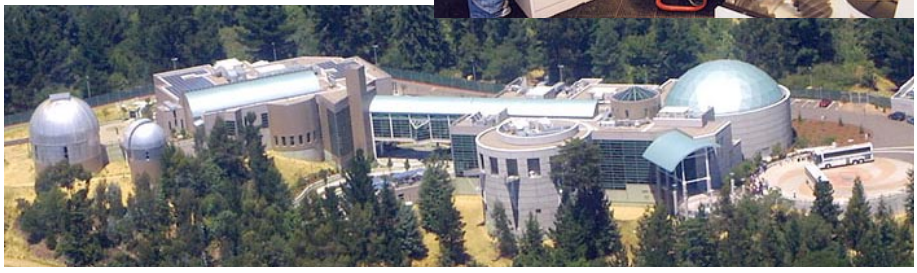
Tom Estill, Flight Director for the Chabot Space and Science Center's Challenger Center, will be talking about the numerous, interesting, and varied opportunities available to the general public at the Center. He'll start the program with a short CSSC general overview DVD, followed by a question and answer session.

At Chabot, you can fly through the galaxy in the planetarium, and learn about the Sun and life here on Earth in the Mega Dome wide screen theater.

The observatory complex houses an 1883 8" Alvan Clark refractor, a 1915 20" refractor, and a 36" classic Cassegrain. The telescopes are available for free public observing on Friday and Saturday nights.

The facility has several exhibit spaces highlighting various aspects of astronomy and space sciences using hands-on exhibits. You can plan a trip to Mars, travel through the other planets, touching a meteor along the way. Or maybe try your hand at landing an Apollo spacecraft on the Moon.

There are several science education classrooms for school groups, as well as a Challenger Learning Center available for any group (including birthday parties) wishing to conduct a space mission. Come to the meeting and find out just what Chabot has to offer you.

# News & Notes

## Money Matters

Treasurer **David Feindel** reports the TVS account balances (as of February 2, 2006):

| | | |
|---|---|---|
| Checking | $2,308.36 | |
| CD #1 | $3,495.74 | matures 2/17/06 |
| CD #2 | $2,470.72 | matures 2/27/06 |

## 2006 TVS Meeting Dates

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

| **Lecture Meeting** | **Board Meeting** | ***Prime Focus* Deadline** |
|---|---|---|
| Feb. 17 | Feb. 20 | Feb. 5 |
| Mar. 17 | Mar. 20 | Mar. 5 |
| Apr. 21 | Apr. 24 | Apr. 9 |
| May 19 | May 22 | May 7 |

## Dues Are Due!

The 2006 membership year is in full swing. If you haven't already renewed your membership, now's the time to do so. Come March, you'll stop receiving the newsletter, and if you have the combination to the our dark sky site you'll find it will no longer work.

You have a couple of membership levels to choose from:

The Basic membership (you get the newsletter online) is $30 a year. The Regular membership (you get the newsletter mailed to you) is $40 a year. Student membership level remains the same at $5 a year. If you receive your Prime Focus by mail, check you mailing label for your membership expiration date—if the number listed above your name is R05 or RP05, your membership has expired and needs to be renewed.

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

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

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

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

You can find the renewal form on the back of the newsletter, or you can download it from our web site (click on the Membership button).

## TVS Logowear

You may have seen some TVS members wearing shirts and jackets embroidered with the TVS logo. If you are interested in obtaining an embroidered logo item, you can do so by ordering whatever you'd like through Land's End's Corporate Sales section (http://ocs.landsend.com/corpsales) and specifying TVS logo #0118948. You will need to set up an account, which will ask for the logo number and the TVS customer number (3452021). Besides shirts and jackets, you can also order attachés, duffel bags, tote bags, caps, towels and throws (great for keeping warm during an observing night).

TVS has also set up shop at Cafepress (www.cafepress.com/tvstargazers) for members to buy non-embroidered TVS logo wear. You can have the TVS logo printed on t-shirts, mugs, buttons, hats, coasters, etc. You purchase your items through Cafepress, and Cafepress sends TVS a portion of the proceeds. Visit the web site to see all the TVS logo paraphernalia.

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**Newsletter header image:** The Orion Nebula (M42, NGC1976)

This is just a small portion of the just released Hubble image of M42. The bright star toward the lower left of the image, known as LP Orionis, is surrounded by a prominent reflection nebula. Astronomers believe the star is moving within another veil of material that lies in front of M42. The appearance of the bright rim above LP Ori indicates that the teardrop shaped dark region around the illuminating star must be a cavity formed as the star moves through the veil material, rather than being a dusty veil obscuring light behind it.

*Credit: NASA, ESA, and The Hubble Heritage Team (STScI/AURA)*
*Acknowledgment: ANSA, ESA, M. Robberto (Space Telescope Science Institute)*

# Calendar of Events

**February 11 and 12, times below**
What: *Valentine's Day Love Mission*
Who: You and a loved one
Where: Chabot Space & Science Center, Oakland
Cost: $60 per couple (includes general admission)

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

Missions sell-out fast—call now to reserve your seats! 510-336-7421.

Mission Times:

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

**February 11, 9:30 a.m.**
What: *NCHALADA LXXXVI - Eclipses & Longitude*
Who: You
Where: Chabot Space & Science Center, Oakland
Cost: Free

After coffee and puns at 9:30, the morning session, *Eclipses & Longitude*, will start at 10:00 a.m. chaired by John Westfall. The afternoon topic will be *Lunar Rays*, chaired by Robert A. Garfinkle, FRAS. NCHALADA is the Northern California Historical Astronomy Luncheon and Discussion Association. www.nchalada.org

The NCHALADA meeting generally take place at the Y&H Soda Board Room towards the observatory end of Chabot. Check with the front desk for the correct meeting location. Lunch will be at a local restaurant.

**February 18, 6:00 p.m.**
What: *Saturn Night at the Randall Museum*
Who: Ken Frank & Michael Portuesi
Where: Randall Museum, San Francisco
Cost: Free

Join sidewalk astronomers Ken Frank and Michael Portuesi as they present a 30-minute illustrated talk on Saturn. We'll learn about the efforts of pioneering Saturn explorers Galileo, Cassini, and Huygens. Then we'll get acquainted with Saturn, its rings, and its many moons through breathtaking photos returned over the past year and a half by the NASA Cassini-Huygens mission.

Finally, we'll show you how to find Saturn in the night sky and observe it, with or without a telescope.

After the talk, members of the San Francisco Amateur Astronomers will have telescopes set up for you to experience Saturn and its cloud belts, rings, and moons first-hand.

Lecture starts 6:00 p.m., telescope viewing until 9:00 p.m. The Randall Museum is located at 199 Museum Way, San Francisco.

For more information on the Randall Museum, including driving directions, visit the Randall's web site: www.randallmuseum.org.

**March 1, 7:00 p.m.**
What: *Bringing Home a Comet: Stardust Mission Update*
Who: Scott Sandford (NASA Ames)
Where: Smithwick Theater, Foothill College
Cost: Free (although parking is $2 in quarters)

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**Officers**

**President:**
Chuck Grant
cg@fx4m.com
925-422-7278

**Vice-President:**
Rich Campbell
r_photon@yahoo.com

**Treasurer:**
David Feindel
feindel1@comcast.net

**Secretary:**
Debbie Dyke
(acting secretary)

**Board of Directors**

Alane Alchorn, Jim Alves, Debbie Dyke, Gert Gottschalk, Stan Isakson, Mike Rushford, John Swenson.

**Volunteer Positions**

**Librarian:**
Jim Alves
jim_alves_engr@yahoo.com
209-833-9623

**Newsletter Editor:**
Debbie Dyke
ddfam@pacbell.net
925-461-3003

**Program Director:** unfilled

**Loaner Scope Manager:**
John Swenson
johnswenson1@comcast.net

**Webmaster:**
Chuck Grant

**Observatory Director/ Key Master:**
Chuck Grant

**School Star Party Chair:**
Rich Campbell
r_photon@yahoo.com

**Public Star Party Chair:**
Rich Campbell

**Historian:**
Debbie Dyke

**Mentor:**
Mike Rushford
rushford@eyes-on-the-skies.org

**Addresses**

*Mailing:*
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.

## Calendar of Events *continued*

Astronomer Scott Sandford of NASA's Ames Research Center will give a non-technical, illustrated talk on: *Bringing Home a Comet: Stardust Mission Update* in the Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in Los Altos Hills, California.

Call the series hot-line at 650-949-7888 for more information and driving directions.

The Stardust mission is a spacecraft that flew by and, for the first time ever, collected samples from a comet (Comet Wild-2.) The samples were successfully returned to Earth on January 15, 2006 and are now being analyzed. (The spacecraft traveled about 2.9 billion miles over 7 years to collect and bring back samples of what may be some of the earliest material from the solar system ever seen.)

Dr. Sandford, an expert on meteorites and the material between the planets, is co-investigator on the Stardust mission, and was actively involved in the recovery of the Stardust capsule in the Utah desert. He will fill us in on what this historic mission accomplished and what the initial analysis of the samples is revealing.

The lecture is presented as part of the Silicon Valley Astronomy Lecture Series sponsored by the Foothill College Astronomy Program, NASA-Ames Research Center, SETI Institute and Astronomical Society of the Pacific.

**March 13, 7:30 p.m.**

What: *Beyond Pluto: Discovery of the 10th Planet*
Who: Dr. Mike Brown (California Institute of Technology)
Where: Jewish Community Center, San Francisco
Cost: $4

For the past seven years we've been scanning the skies for planets beyond Pluto. In 2005, after a search of about half of the sky and the discovery of dozens of objects almost the size of Pluto, we finally found 2003 UB313, the first object larger than Pluto, and the first that might be called a new planet. What is a planet? Why is the question of planethood difficult? What should the real answer be?

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

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

## News & Notes *continued*

### NASA's Space Place

In addition to providing the content for astronomy club newsletters, NASA's Space Place has an online presence with activities for kids and a Teacher's Center with resources for teachers. http://spaceplace.nasa.gov/en/kids.

Recently they sent out a notice about a new item and game on their web site:

#### Whirlwind Disaster

Where do these monster storms we call hurricanes come from? Why do they always form near the equator and only during certain times of the year? How do they come to be so organized and so destructive? You can find answers to these questions and play an exciting hurricane word game called "Whirlwind Disaster" at the SciJinks Weather Laboratory Web site. SciJinks targets young people of middle school age. It is a joint effort of the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA). The new "How does a hurricane form?" page and accompanying interactive game can be found in the How & Why menu on the SciJinks Weather Laboratory home page, http://scijinks.gov.

### School Star Parties

On the school star party agenda, we have a big one in March, a few smaller ones in April, and a request for help for some parties in February and March.

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

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

We've also had a request via the San Jose Astronomical Association for help with some Newark elementary school star parties.

The star parties are for an event called Family Science Night that happens annually at each of Newark's eight elementary schools. They are VERY well attended.

Last year they set up four or five scopes and a 12x65 binocular on a mount. The lines were pretty long, so they're

hoping to get a few more astronomers out this year. They will have student docents for all of the star parties, and a SJAA representative will cover most of them.

Here are the dates:

Thursday, February 23 — Graham
Tuesday, February 28 — Lincoln
Thursday, March 9 — Milani
Tuesday, March 14 — Kennedy
Thursday, March 16 — Schilling
Thursday, March 23 — Musick
Tuesday, March 28 — Snow
Thursday, March 30 — Bunker

The official time of the events is 7:00 to 8:00 p.m., but last year the lines lasted to at least 8:30 p.m. They plan to setup at 6:30 p.m. If you are interested, or have questions, please contact Tom Collett, the astronomy teacher at Newark Memorial High School (and star party co-ordinator) at 510-818-4364 or tcollett [at] nusd.k12.ca.us.

## Shingletown Star Party

Registration is now open for the 2006 Shingletown Star Party. This year the party runs from June 21st to the 26th. A five day pass is $40, a one day pass is $20. Registration via PayPal is a few bucks more.

The star party takes place on a runway in the town of Shingletown, about 35 miles east of Redding. Besides dark skies, there will be complimentary coffee, showers, and a BBQ dinner complete with live music and raffles. For more information, or to register for the star party, visit their web site at www.shingletownstarparty.org.

It's a bird, it's a plane, no, it's Green Laser Pointer Man! Ah, the joys of public star parties. This picture is of a star party in Kodachrome Basin State Park in Utah; a photo montage of digital sky and campfire shots using a Canon 10D. *Photo by: Ron Bissinger*

## Star Party Season Revs Up

The Shingletown Star Party is just one of many that will take place this summer. The following is just a sampling of some of the bigger star parties that will take place throughout the U.S.

**April 26-30 Desert Sunset Star Party**
Caballo Loco Ranch, south of Three Points, AZ
www.chartmarker.com/sunset.htm

**May 6-7 Northeast Astronomy Forum & Telescope Show** (NY), hosted by the Rockland Astronomy Club
www.rocklandastronomy.com/neaf.htm

**May 26-28 RTMC** (Riverside Telescope Makers Conference Astronomy Expo) in Riverside, CA
www.rtmcastronomyexpo.org

**June 16-17 Apollo Rendezvous & Telescope Fair** in Dayton, OH
www.mvas.org/AR.html

**June 17-24 Grand Canyon Star Party**, hosted by the Tucson Amateur Astronomy Association
www.tucsonastronomy.org/gcsp.html

**June 22-25 Rocky Mountain Star Stare**, hosted by the Colorado Springs Astronomical Society
www.rmss.org

**June 22-25 ASKC Star Party** (Butler, MO), hosted by the Astronomical Society of Kansas City
http://www.askc.org/index.htm

## SJAA Annual Auction

Mark your calendars, the XXVI SJAA Annual Auction will be at noon on Sunday, April 9, 2006. The auction is a chance for Bay Area amateurs to sell off their astronomical goods that they no longer need or want, and buy someone else's astronomical goods that were no longer needed or wanted.

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# What's Up *by Debbie Dyke*

All times Pacific Standard unless otherwise noted.

## February

| | | |
|---|---|---|
| 11 | Sat | Saturn 4° South of the Moon. 7:00 a.m. |
| 12 | Sun | **Full Moon**. 8:44 p.m.<br>1809 Charles Darwin born. |
| 13 | Mon | Moon at apogee (251,942 miles). 5:00 p.m.<br>1852 Johann Dreyer, compiler of the NGC catalogue, born. |
| 14 | Tues | Valentine's Day. |
| 15 | Wed | Venus at greatest heliocentric latitude North.<br>For the next two weeks, look to the West after evening twilight for the Zodiacal Light.<br>1564 Galileo Galilei born. |
| 16 | Thur | Mars 2° South of the Pleiades (M45). 12:00 p.m.<br>1948 Gerard Kuiper discovers Uranus' moon, Miranda. |
| 17 | Fri | **Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.<br>Venus at greatest brilliancy. 12:00 p.m.<br>Spica 0.4° South of the Moon. 9:00 p.m. |
| 18 | Sat | 1930 Clyde Tombaugh discovers Pluto using the 13-inch scope at Lowell Observatory. |
| 19 | 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.<br>Jupiter 10° North of the Moon. 5:00 a.m.<br>1473 Nicolaus Copernicus born. |
| 20 | Mon | **Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.<br>**Last Quarter Moon**. 11:17 p.m.<br>1962 John Glenn becomes the first American in orbit around the Earth. |
| 21 | Tues | Antares 0.2° North of the Moon. 1:00 p.m. |
| 22 | Wed | Mercury at perihelion. |
| 23 | Thurs | Mercury at greatest elongation East (18°) 9:00 p.m. |
| 25 | Sat | Ceres 0.8° North of the Moon. 2:00 a.m.<br>1972 Luna 20 goes to the Moon and brings back rock samples. |
| 26 | Sun | Neptune 4° North of the Moon. 5:00 a.m. |
| 27 | Mon | Moon at perigee (221,268 miles) 12:00 p.m.<br>**New Moon**. 4:31 p.m. |
| 28 | Tues | Mercury 4° North of the Moon just after sunset in the West. |

## March

| | | |
|---|---|---|
| 1 | Mon | Mercury stationary. 11:00 p.m. |
| 4 | Sat | Moon 6° North of the Pleiades. 9:00 p.m.<br>1774 Willhelm Herschel made his first recorded observation of the Orion Nebula. |
| 5 | Sun | Mars 3° South of the Moon, with the Pleiades not far away. 9:00 p.m.<br>1982 Venera 14 lands on Venus. |
| 6 | Mon | **First Quarter Moon**. 12:16 p.m.<br>1986 Vega 1 spacecraft encounters Comet Halley. |

## Snowstorm on Pluto

*by Dr. Tony Phillips*

There's a nip in the air. Outside it's beginning to snow, the first fall of winter. A few delicate flakes tumble from the sky, innocently enough, but this is no mere flurry.

Soon the air is choked with snow, falling so fast and hard it seems to pull the sky down with it. Indeed, that's what happens. Weeks later when the storm finally ends the entire atmosphere is gone. Every molecule of air on your planet has frozen and fallen to the ground.

*That* was a snowstorm—on Pluto.

Once every year on Pluto (1 Pluto-year = 248 Earth-years), around the beginning of winter, it gets so cold that the atmosphere freezes. Air on Pluto is made mainly of nitrogen with a smattering of methane and other compounds. When the temperature dips to about 32 K (-240° C), these molecules crystallize and the atmosphere comes down.

"The collapse can happen quite suddenly," says Alan Stern of the Southwest Research Institute. "Snow begins to fall, the surface reflects more sunlight, forcing quicker cooling, accelerating the snowfall. It can all be over in a few weeks or months."

Researchers believe this will happen sometime during the next 10 to 20 years. Pluto is receding from the warmth of the Sun, carried outward by its 25% elliptical orbit. Winter is coming.

So is New Horizons. Stern is lead scientist for the robotic probe, which left Earth in January bound for Pluto. In 2015 New Horizons will become the first spacecraft to visit that distant planet. The question is, will it arrive before the snowstorm?

This artist's rendering shows how Pluto and two of its possible three moons might look from the surface of the third moon. Credit: NASA/ESA and G. Bacon (STSci)

"We hope so," says Stern. The spacecraft is bristling with instruments designed to study Pluto's atmosphere and surface. "But we can't study the atmosphere if it's not there." Furthermore, a layer of snow on the ground ("probably a few centimeters deep," estimates Stern) could hide the underlying surface from New Horizon's remote sensors.

Stern isn't too concerned: "Pluto's atmosphere was discovered in 1988 when astronomers watched the planet pass in front of a distant star—a stellar occultation." The star, instead of vanishing abruptly at Pluto's solid edge, faded slowly. Pluto was "fuzzy;" it had air. "Similar occultations observed since then (most recently in 2002) reveal no sign of [impending] collapse," says Stern. On the contrary, the atmosphere appears to be expanding, puffed up by lingering heat from Pluto's waning summer.

Nevertheless, it's a good thing New Horizons is fast, hurtling toward Pluto at 30,000 mph. Winter. New Horizons. Only one can be first. The race is on….

Find out more about the New Horizons mission at http://pluto.jhuapl.edu. Kids can learn amazing facts about Pluto at spaceplace.nasa.gov/en/kids/pluto.

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

# News & Notes *continued*

## Last Call for RASC Handbooks

We've got just a few of the Royal Astronomical Society of Canada (RASC) Observer's Handbooks still left for sale ($20). We're sold out of the Calendars. You can buy the Handbook at the February meeting.

## EAS Annual Awards Dinner

Tickets are now available online for the Eastbay Astronomical Society's Eighty-Second Annual Awards Dinner. The dinner is on Sunday, March 12, 2006. Doors open at 5:45 p.m. and dinner at 6:30 p.m. As has been in the past, the dinner will be catered by Harry's Hofbrau.

The guest speaker this year is Nobel Laureate Dr. Charles H. Townes, who will be speaking on the subject of *The Parallelism and Eventual Convergence of Science and Religion.* Also included in the evening is the presentation of several awards and the ever popular raffle.

You can sign up for tickets via the EAS web site (www.eastbayastro.org) through a PayPal link, or download a registration form from their web site and mail in a check the old fashioned way.

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

**PRIME**FOCUS

# Tri-Valley Stargazers Membership Application

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function.

Name _____ Phone _____ e-mail _____

Address _____

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

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

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

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