

# PRIME FOCUS

Tri-Valley Stargazers

December 2008



## Meeting Info:

### What

*Holiday Potluck*

### Who

TVS Members

### When

December 19, 2008

Set up at 7:00 p.m.

Dinner at 7:30 p.m.

### Where

Unitarian Universalist  
Church in Livermore  
1893 N. Vasco Road

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## December Meeting

Holiday Potluck

*TVS Members, Friends, Family*

Our annual Holiday Potluck will take place on December 19th. We're keeping our usual meeting time, instead of bumping it up a half hour like we have in the past. This means people should arrive around 7:00 to help set up the tables and chairs. Dinner will be at 7:30.

To help you decide what to bring, use the first letter of your last name and this handy-dandy chart:

A-F	Main Dish
G-L	Side Dish or Salad
M-R	Dessert
S-Z	Appetizers



M13 Snow Globe

Friends and family are welcome to join us—the more the merrier!

## TVS Membership Renewal Time

TVS' membership year runs from January to December. Therefore, next month starts our 2009 membership year. You can find the renewal form on the back page of the newsletter. Please fill it out and send it in with your check (made out to Tri-Valley Stargazers) to PO Box 2476, Livermore, CA 94551. You can also give your check and form to our treasurer David Feindel at the club meetings.

If you are a subscriber to *Sky & Telescope* magazine and need to renew, follow whatever instructions *S&T* sends you. If you are a new subscriber to *S&T*, fill out the membership renewal form and submit your payment to TVS. *Astronomy* magazine will continue to follow the procedure for subscribing or renewing through the club.

Rates continue to be \$32.95 for a 1-year subscription to *S&T*, and \$34/\$60 for a 1- or 2-year subscription to *Astronomy*. If you have questions regarding the subscriptions, contact club Treasurer David Feindel.

## News & Notes

### New Members

TVS would like to welcome our newest member,  
**Johannes Trost.**

### 2008-2009 TVS Meeting Dates

The following lists the TVS meeting dates for this month and the start of next year. The lecture meetings continue to be 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 December 7th deadline is for the December issue).

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

### Money Matters

Treasurer David Feindel reported the TVS account balances as of November 22, 2008.

Checking	\$2,875.88	
CD #1	\$3,752.01	matures 2/17/09
CD #2	\$2,639.10	matures 11/27/08

### TVS Election Results

With an incredible lack of surprise, the current slate of Officers and Board of Directors remain in command. However, we still need a Vice-President and Secretary, as well as more people on the board of directors. If you're interested in getting a little more involved with the club, please let any officer or board member know.

We also need more members to get involved with the volunteer positions. We still need a Program Director, Hostess with the Mostest, Star Party Coordinator, and Newsletter Editor. Please consider helping out in whatever way you can.

### RASC Handbooks & Calendars

The RASC (Royal Astronomical Society of Canada) Handbooks and Calendars came in just in time for the November meeting. We'll have them on hand at the December potluck. If you need a copy before then, please contact our Treasurer, David Feindel, to make arrangements for an early delivery.

The Handbooks are \$22, Calendars \$15. Cash or checks (made out to Tri-Valley Stargazers) accepted.

The Handbook is a useful book filled with all kinds of astronomical data. The calendar features photos taken by amateur astronomers. You can find more information at <http://www.rasc.ca/publications/index.shtml>.

### Discover Fame

TVS member Ron Bissinger can add a couple more minutes to his allotted 15 minutes of fame. He is mentioned in *Discover* magazine's December issue in an article titled "50 Best Brains in Science." Although he didn't rank quite as high as some of the brains listed (like Stephen Hawking, Larry Page and Sergey Brin of Google, and Neil deGrasse Tyson), he did manage to make the list as one of the "outsiders", those who are "garage researchers who match wits, and results, with the pros." Congratulations to Ron!

To see the online version of the article, go to:  
<http://discovermagazine.com/2008/dec/19-the-amateur-scientists-who-might-cure-cancer-from-their-basements> and go down to the bottom of page two.

## Calendar of Events

### December 15, 7:30 p.m.

**What:** *The Messenger Mission to Mercury*

**Who:** Robert Gold (Applied Physics Laboratory, John Hopkins Univ.)

**Where:** Kanbar Hall, Jewish Community Center of S.F.

**Cost:** \$5 in advance by mail or at the door

The Messenger spacecraft is on its way to orbit Mercury, a planet of extremes. Mercury has the greatest temperature variation, the highest density, and the most Earth-like magnetosphere of any planet. Despite Mercury often being the closest planet to Earth, very little was known about it because it is very difficult to observe and study. It has taken 30 years to mount an orbital mission to this terrestrial planet. Messenger has already flown by the planet twice. It has revealed exciting new information about Mercury's structure and the geological processes that have shaped it. This lecture will cover the challenges of developing a spacecraft to deal with the extreme environment at Mercury and show some of the amazing scientific results from the Messenger flybys.

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street (at Presidio Avenue). Please e-mail any questions to [deanseries@calacademy.org](mailto:deanseries@calacademy.org) or call 415-379-8000. Tickets are available online at [www.calacademy.org/events/index.php](http://www.calacademy.org/events/index.php) or at the door. Parking is available across the street

#### Newsletter header image: M31

M31, the Andromeda Galaxy, along with its fellow companions, M32 and M110. Andromeda is about 2.5 million light years away, is about 220,000 light years across, and is on a collision course with the Milky Way. Estimated impact is 2.5 billion years. *Photo: Bill Drelling*

in the UCSF Laurel Heights campus parking lot or in the JCCSF garage. 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 stop four to five blocks away.

**December 31, 12:45 p.m. and 3:45 p.m.**

**What:** *New Year's Eve Balloon Drop*  
**Who:** Everyone  
**Where:** Chabot Space & Science Center  
**Cost:** Chabot Members: \$3 per child;  
 Non-Members: \$3 per child plus admission to Chabot. Get your tickets through the Box Office at 510-336-7373.

Join us for a family tradition at Chabot – the 9th Annual New Year's Eve Balloon Drop; a global, daytime celebration especially for kids! This event sells out early, so get your tickets now.

When the clock strikes 1 p.m. and 4 p.m. in Oakland, it's the New Year somewhere on the Earth. Your kids will have a blast ringing in 2009 without staying up past their bedtime! Kids 6 and under will have a separate balloon drop from kids aged 7-12. Includes all access to hands-on exhibits, observatory deck, and much more!

**January 5 through March 27**

**What:** *An Introduction to the Planets & Life Out There*  
**Who:** Andrew Fraknoi (Foothill College)  
**Where:** Foothill College, Los Altos.  
**Cost:** \$65

Are you mourning for Pluto? Hoping we'll find alien civilizations whose economies are in better shape than ours? Scared that what killed the dinosaurs might get us, too? Then register now for Foothill College's ASTRO 10A:

*An Introduction to the Planets & Life Out There* course, taught by Andrew Fraknoi

You'll learn about Makemake and the other dwarf planets at the edge of the Solar System; weird planets astronomers are finding around other stars; water geysers on one of Saturn's moons (and take a peek at Saturn's kinky rings); and more. This is an exciting time for planet fans, and we invite you to spend 11 "far-out" weeks being part of the excitement. Foothill's five-unit ASTRO 10A class is an introductory course for non-science majors, requiring no background in science or math. Basic ideas are introduced with analogies, examples from real life, the latest color images shown on a big screen, and touches of humor. A popular public speaker, Fraknoi specializes in explaining scientific ideas in everyday language.

The daytime class meets Mondays, Tuesdays and Thursdays, Jan. 5–March 27, from noon to 1:25 p.m. in Room 8338. The evening class meets Tuesdays and Thursdays, Jan. 6–March 27, from 6 to 8:20 p.m. in Room 8338. An optional hands-on lab class, ASTRO 10L, accompanies each course. Register online now. To register by phone, call (650) 917-0509 or (408) 777-9394. To register in person, visit the Admissions & Records Office in Room 8101.

Foothill College welcomes everyone, from high-school juniors and seniors looking for a college-level class to adults who are interested in personal enrichment. Registration is ongoing through Jan. 4. Winter Quarter classes begin Jan. 5 and run through March 27, unless otherwise noted in the class schedule. You can apply for admission, register for classes, review the class schedule, pay enrollment fees, and purchase textbooks and parking permit at [www.foothill.edu](http://www.foothill.edu).

<p><b>Officers</b></p> <p><b>President:</b>          Chuck Grant          cg@fx4m.com          925-422-7278</p> <p><b>Vice-President:</b>          unfilled</p> <p><b>Treasurer:</b>          David Feindel          feindel1@comcast.net</p> <p><b>Secretary:</b>          David Woolsey          fatdawg@comcast.net</p> <p><b>Board of Directors</b>          Alane Alchorn, Jim Alves,          Debbie Dyke, Gert Gottschalk,          Mike Rushford, John Swenson.</p>	<p><b>Volunteer Positions</b></p> <p><b>Librarian:</b>          Jim Alves          Ajaengr@yahoo.com          209-833-9623</p> <p><b>Newsletter Editor:</b>          Debbie Dyke          astrodeb@comcast.net          925-461-3003</p> <p><b>Program Director:</b> unfilled</p> <p><b>Loaner Scope Manager:</b>          John Swenson          johnswenson1@comcast.net</p> <p><b>Webmaster:</b>          Debbie Dyke</p> <p><b>Observatory Director/          Key Master:</b>          Chuck Grant</p> <p><b>School Star Party Chair:</b>          unfilled</p>	<p><b>Public Star Party Chair:</b>          unfilled</p> <p><b>Historian:</b>          Debbie Dyke</p> <p><b>Mentor:</b>          Mike Rushford          rushford@eyes-on-the-skies.org</p> <p><b>Addresses</b></p> <p><i>Mailing:</i>          Tri-Valley Stargazers          P.O. Box 2476          Livermore, CA 94551</p> <p><i>Lecture Meeting:</i>          Unitarian Universalist Church          1893 N. Vasco Road, Livermore</p> <p><i>Board &amp; Discussion Meetings:</i>          Round Table Pizza          1024 E. Stanley Blvd., Livermore</p>	<p><b>Web &amp; E-mail</b>  <a href="http://www.trivalleystargazers.org">www.trivalleystargazers.org</a>  <a href="mailto:trivalleystargazers@gmail.com">trivalleystargazers@gmail.com</a></p> <p><b>Eyes on the Skies</b>          Eyes on the Skies is a robotic solar telescope run by Mike Rushford (<a href="mailto:rushford@eyes-on-the-skies.org">rushford@eyes-on-the-skies.org</a>). You may access it by visiting <a href="http://www.eyes-on-the-skies.org">www.eyes-on-the-skies.org</a>.</p> <p><b>TVS E-Group</b>          So how do you join the TVS e-group, you ask? Just send an e-mail message to the TVS e-mail address (<a href="mailto:trivalleystargazers@gmail.com">trivalleystargazers@gmail.com</a>) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.</p>
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## What's Up *by Debbie Dyke*

All times Pacific Standard unless otherwise noted.

### December

- 10 Wed The Moon occults the Pleiades (M45). 11:00 p.m.
- 11 Thur 1863 Annie Jump Cannon born. She catalogued over 300,000 stars and completed the Henry Draper Catalogue.
- 12 Fri **Full Moon.** 8:37 a.m. Largest of 2008.  
Moon at perigee (221,070 miles). 2:00 p.m.
- 13 Sat The Moon 3° from M35. 5:00 a.m.  
Geminid meteor shower peaks. 3:00 p.m.
- 14 Sun 1546 Tycho Brahe born.  
1972 Gene Cernan (Apollo 17) becomes the last man on the Moon.
- 15 Mon The Moon 3.5° from the Beehive Cluster (M44). 5:30 a.m.
- 16 Tue **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 Fri **Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.  
**Last Quarter Moon.** 2:29 a.m.  
1966 Space is declared a Nuclear Weapon Free Zone.
- 20 Sat Mercury at greatest heliocentric latitude south.
- 21 Sun **Winter Solstice.** 4:04 a.m.  
Hanukkah begins at sundown.  
**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.  
1978 Venera 12 lands on Venus. Temps hover in the 860° F range.
- 22 Mon **Tri-Valley Stargazers Board meeting.** 7:30 p.m. at the Round Table Pizza in Livermore.  
Pluto in conjunction with the Sun.  
Ursid meteor shower peaks. 12:00 a.m.
- 24 Wed 1968 Apollo 8 astronauts (Frank Borman, Frank Lovell, William Anders) are first to orbit the Moon.
- 25 Thur **Christmas Day.**  
1642 Isaac Newton born.
- 26 Fri Moon at apogee (252,092 miles). 10:00 a.m.
- 27 Sat **New Moon.** 4:22 a.m.
- 28 Sun Islamic New Year 1430 begins at sundown.

### January

- 1 Thur New Year's Day  
Saturn stationary. 12:00 p.m.  
1801 First asteroid (Ceres) discovered by Giuseppe Piazzi.
- 2 Fri 1900 Leslie Peltier born.  
1920 Isaac Asimov born.
- 3 Sat Quadrantid meteor shower peaks. 5:00 a.m.  
2004 NASA's Rover Spirit successfully lands on Mars.
- 4 Sun **First Quarter Moon.** 3:56 a.m.  
Mercury at greatest elongation E (19°). 6:00 a.m.  
Earth at perihelion (91,199,061 miles). 7:00 a.m.
- 8 Thur 1942 Steven Hawking born.  
1642 Galileo died.

## What Happened to Comet Holmes?

by Dr. Tony Phillips

One year after Comet 17P/Holmes shocked onlookers by exploding in the night sky, researchers are beginning to understand what happened.

“We believe that a cavern full of ice, located as much as 100 meters beneath the crust of the comet’s nucleus, underwent a change of phase,” says Bill Reach of NASA’s Spitzer Science Center at the California Institute of Technology. “Amorphous ice turned into crystalline ice” and, in the transition, released enough heat to cause Holmes to blow its top.

Anyone watching the sky in October 2007 will remember how the comet brightened a million-fold to naked-eye visibility. It looked more like a planet than a comet—strangely spherical and utterly lacking a tail. By November 2007, the expanding dust cloud was larger than Jupiter itself, and people were noticing it from brightly-lit cities.

Knowing that infrared telescopes are particularly sensitive to the warm glow of comet dust, Reach and colleague Jeremie Vaubaillon, also of Caltech, applied for observing time on the Spitzer Space Telescope—and they got it. “We used Spitzer to observe Comet Holmes in November and again in February and March 2008,” says Reach.

The infrared glow of the expanding dust cloud told the investigators how much mass was involved and how fast

the material was moving. “The energy of the blast was about  $10^{14}$  joules and the total mass was of order  $10^{10}$  kg.” In other words, Holmes exploded like 24 kilotons of TNT and ejected 10 million metric tons of dust and gas into space.

These astonishing numbers are best explained by a subterranean cavern of phase-changing ice, Reach believes. “The mass and energy are in the right ballpark,” he says, and it also explains why Comet Holmes is a “repeat exploder.”

Another explosion was observed in 1892. It was a lesser blast than the 2007 event, but enough to attract the attention of American astronomer Edwin Holmes, who discovered the comet when it suddenly brightened. Two explosions (1892, 2007) would require two caverns. That’s no problem because comets are notoriously porous and lumpy. In fact, there are probably more than two caverns, which would mean Comet Holmes is poised to explode again.

When?

“The astronomer who can answer that question will be famous!” laughs Vaubaillon.

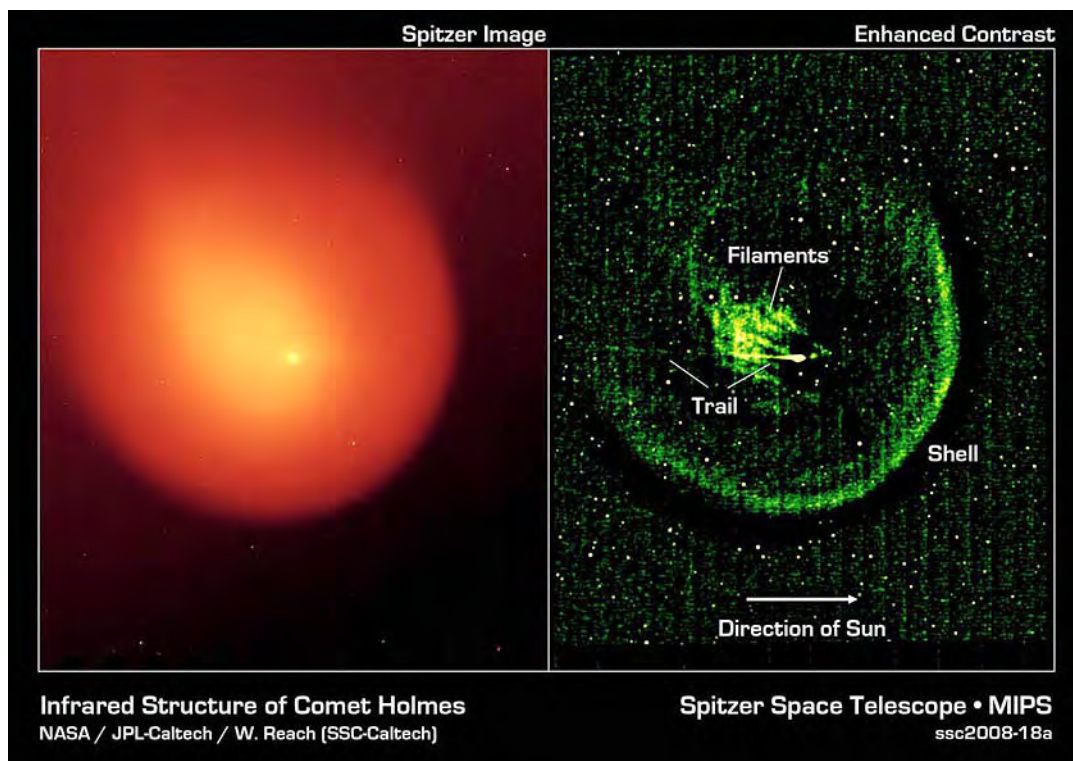
“No one knows what triggered the phase change,” says Reach. He speculates that maybe a comet-quake sent seismic waves echoing through the comet’s caverns, compressing the ice and changing its form. Or a meteoroid might have penetrated the comet’s crust and set events in

motion that way. “It’s still a mystery.”

But not as much as it used to be.

See more Spitzer images of comets and other heavenly objects at [www.spitzer.caltech.edu](http://www.spitzer.caltech.edu). Kids and grown-ups can challenge their spatial reasoning powers by solving Spitzer infrared “Slider” puzzles at <http://spaceplace.nasa.gov/en/kids/spitzer/slider>.

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



Comet Holmes as imaged by the multiband imaging photometer (MIPS) on the Spitzer Space Telescope. The enhanced contrast image at the right shows the comet’s outer shell and mysterious filaments of dust.

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.
  - \_\_\_\_\_ \$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.
  - \_\_\_\_\_ \$10 Hidden Hill Observatory (H2O) yearly access fee. You need to be a key holder to access the site.
  - \_\_\_\_\_ \$20 H2O key holder fee. (A refundable key *deposit*—key property of TVS).
  - \_\_\_\_\_ \$40 Patron Membership. Must be a member for at least a year and a key holder.
  - \_\_\_\_\_ \$34 One year subscription to *Astronomy* magazine.
  - \_\_\_\_\_ \$60 Two year subscription to *Astronomy* magazine.
  - \_\_\_\_\_ \$32.95 One year subscription to *Sky & Telescope* magazine. **Note:** Subscription to *S&T* is for new subscribers only. Existing subscribers please renew directly through *S&T*.
  - \$ \_\_\_\_\_ 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.