

# PRIMEFOCUS

Tri-Valley Stargazers

August 2006



## Meeting Info:

### What

Vemarsjusa

### Who

Naishi Min

### When

August 18, 2006  
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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## August Meeting

Vemarsjusa  
Naishi Min

Last year Naishi Min gave a talk to TVS about Chinese Astronomy. Among the items he covered was his Vemarsjusa planisphere-like invention. Instead of showing where the various constellations are throughout the year, his planisphere would show where the planets Venus, Mars, Jupiter and Saturn would be throughout the year.

At this month's meeting, Naishi will demonstrate how to use the Vemarsjusa. In this newsletter you will find a page with various circles plotted on it. Take that page and follow the instructions on page 4 to construct your own Vemarsjusa.

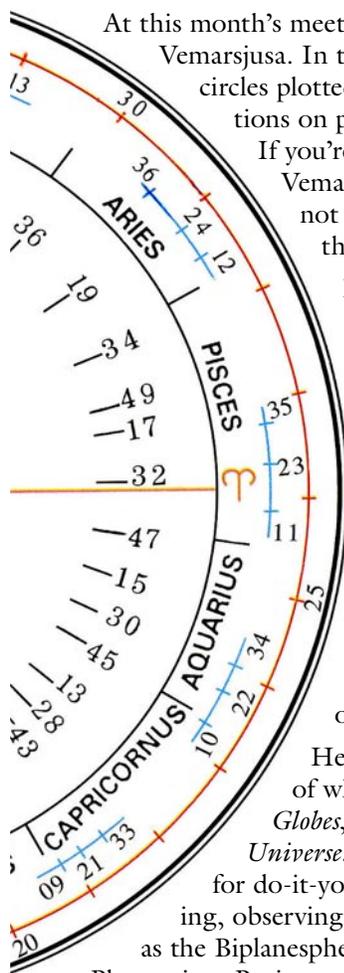
If you're coming to the meeting, please have your Vemarsjusa assembled and ready to go, as we will not be allotting any time for the construction of the planisphere.

If you don't want to mar your beautiful copy of Prime Focus, you can go to the TVS web site to download a PDF of the necessary pages.

Naishi Min was the planetarium director at the Shanghai Education Center in Shanghai, China, for more than 30 years. He's written many astronomical articles, including two he wrote in the last few months of which one was on how he developed Vemarsjusa. His books include *Introduction to Astronomy*, *Constellation Garden 101*, and *On Design of Constellation Figures*. Another book, *Beijing Planetarium 1957-2007* is planned for the 50th anniversary of the Planetarium.

He's created over twenty pop-up books, some of which are *Celestial Coordinates and Celestial Globes*, *Fascinating Starry Sky*, and *Mysterious Universe*. He plans on doing a series of pop-up books for do-it-yourself astronomical instruments for explaining, observing, and predicting astronomical phenomena, such as the Biplanesphere, Pinhole Sundial, Moon Phases Predictor, Planetarium Projector, and Vemarsjusa.

Not to be outdone, his future plans also include designing a space show on Chinese Astronomy for the Adler Planetarium in Chicago.



## News & Notes

### 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 September 3rd deadline is for the September issue).

Lecture Meeting	Board Meeting	Prime Focus Deadline
Aug. 18	Aug. 21	Aug. 20
Sept. 15	Sept. 18	Sept. 3
Oct. 20	Oct. 23	Oct. 8

### Money Matters

Treasurer **David Feindel** reports the TVS account balances (as of July 21, 2006):

Checking	\$3,329.93	
CD #1	\$3,532.16	matures 8/17/06
CD #2	\$2,496.46	matures 8/27/06

### White Mountain & Yosemite Trips

There are still a couple of spaces available for the White Mountain star party. The dates are August 18th through the 24th. Attendees can choose how many days they would like to stay at Barcroft. The cost is \$55 per person per day, which includes a bunk bed in a dormitory setting, very good food, and very dark skies. If you are interested in the excursion, contact trip coordinator **Dave Rodrigues** ASAP at 510-483-9191.

### H2O Open House

We have one last H2O Open House on Saturday, August 19th. We'll meet at the corner of Mines & Tesla at 7:00 p.m. to caravan down to the site. There is a \$3 per car entrance fee (exact change). For those of you who are unfamiliar with the site, there is no electricity and no running water. The only amenities are dark skies, a large scope, and pit toilets. Bring any food and drink required to sustain you through the evening.

### Yosemite Star Party

TVS will be doing our Yosemite public observing stint from September 1st through the 4th. Members are allowed to camp for free at the Bridalveil Campground in exchange for giving the public views through our telescopes, perched on top of Glacier Point. After the public turns in for the night, we're allowed to continue to observe until the sun comes up. A pot luck dinner takes place on one of the nights. **Dave Rodrigues** is our Yosemite coordinator, so if you're interested in attending, let him know ASAP at 510-483-9191.

### Observatory Update

The major work of re-roofing the re-roofed roof was completed last month. But there's still work left to do at the site. The building needs a good cleaning to get a year's worth of rodent and insect debris vacuumed and/or swept out. The walls could use another coat of paint over the primer coat that was put on last month. The observatory's front wall needs to have its plywood replaced and painted. And once a few minor adjustments are done to the roof, the solar panel needs to be installed and wired up to the battery. Which we will be getting soon.

### Book Review

*Reviewed by Ken Sperber*

*Conflict in the Cosmos: Fred Hoyle's Life in Science*  
By Simon Mitton, Joseph Henry Press, 2005  
Washington, DC 20001; ISBN 0-309-09313-9

If you think that the main scientific contribution of Sir Fred Hoyle was the development of the steady-state theory of the evolution of the universe, you are as mistaken as I was. As it turns out, Hoyle was one of the most forward thinking scientists of the 20th century with a theoretical insight that enabled him to make breakthrough discoveries on the life-cycle of stars, the origin of the elements, nuclear physics, and quantum mechanics. In a 2005 interview, Sir Martin Rees, the Astronomer Royal and Master of Trinity College, Cambridge, stated "...there's no doubt whatever that, over the 25 years from 1945-1970, Fred produced more creative ideas in astrophysics than anyone else in the world." He worked with some of the most astute minds of day, including Paul Dirac, Hans Bethe, Rudolf Peierls, Willy Fowler, and Geoff and Margaret Burbidge, to name a few. He was among the first theorists to embrace high-end computing, and this was an integral component of the Institute of Theoretical Astronomy that he established at Cambridge University. Importantly, he was instrumental in the establishment of the Anglo-Australian Observatory that provided UK astronomers access to world class telescopes that heretofore had been the domain of astronomers in the United States. Hoyle was also a great communicator of science to the general public via the BBC, through which he became a household name long before Carl Sagan came into our living rooms

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**Newsletter header image:** Supernova Remnant E0102 in the Small Magellanic Cloud

E0102 is the greenish-blue shell of debris just below the large pink star forming nebula, N76 (aka Henize 1956). It's about 2,000 years old.

*Photo: NASA, ESA, and the Hubble Heritage Team (STScI/AURA).  
Acknowledgment: J. Green (University of Colorado, Boulder)*

# Calendar of Events

## August 25, 8:00 p.m. to 11:00 p.m.

**What:** *Lunar Lounge*

**Who:** littleBIG, Ship, & Triangle

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

**Cost:** \$15 adults, \$10 student

Your ticket gives you access to Chabot's exhibits and viewing through the telescopes. Party under the stars and enjoy an evening of live music, a SonicVision planetarium show, telescope viewing, hands-on exhibits, giveaways and outta-this-world fun! Enjoy food from the Celestial Cafe, along with refreshments from the cash bar.

## August 26, 8:30 p.m.

**What:** *Ancient Astronomy, the First Science*

**Who:** John Dillon (Randall Museum)

**Where:** Mt. Tamalpais Mt. Theater ([www.mttam.com](http://www.mttam.com))

**Cost:** Free

The pinnacle of ancient Greek science was the amazingly sophisticated astronomy developed more than 2,000 years ago at the legendary Museum of Alexandria.

The program is FREE and open to the general public. Families, students and youth groups are encouraged to attend. The Madrone Picnic area is reserved from 6:30 p.m. and the talk will be followed by telescope viewing in the Rock Spring Parking Area until around 11:30 p.m. Dress warmly and bring a flashlight. Carpool if possible.

Sponsored by your State Park, assisted by the Mount Tamalpais Interpretive Association and telescopes courtesy of the San Francisco Amateur Astronomers.

If the weather is iffy the day of the program, call the hotline 415-455-5370. The message changes around 3:00

p.m., but only if there is a cancellation. If the programs will go as scheduled the tape will not be updated. You can also check with SFAA at 415-289-NOFOG.

## Another Star Party

One August 25-27, the San Jose Astronomical Association and Bob Ayers are hosting a night of deep sky observing at a 40-acre site southeast of Hollister. PRE-REGISTRATION IS REQUIRED as space is limited, so please send an e-mail to [craig \[at\] funastro \[dot\] com](mailto:craig[at]funastro[dot]com) to let him know if you are planning on attending. They need to know so they can prepare the site and, if necessary, encourage car-pooling.

In your email please also let them know:

- What nights you plan to attend
- Whether you plan to stay overnight each night
- What kind of telescope you'll be bringing so we can be sure you are in a good area (e.g. dobs need flatness)
- Whether you will be doing any imaging
- If you need room for a tent

If you make it on the reserved list, you will get a "directions" flyer sent a week before the star party. There will be a porta-potty, and a \$5 donation is appreciated to help offset the cost of the rental. You may camp overnight, however there is no running water.

The darkness of the sky makes it possible to see an amazing amount of naked eye detail in the Milky Way.

Consider arriving early enough to walk around and enjoy the scenery: [www.sjaa.net/ws/ridge\\_panorama.jpg](http://www.sjaa.net/ws/ridge_panorama.jpg).

### Officers

#### President:

Chuck Grant  
[cg@fx4m.com](mailto:cg@fx4m.com)  
925-422-7278

#### Vice-President:

Rich Campbell  
[r\\_photon@yahoo.com](mailto:r_photon@yahoo.com)

#### Treasurer:

David Feindel  
[feindel1@comcast.net](mailto: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:

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925-461-3003

#### Program Director:

unfilled  
Loaner Scope Manager:  
John Swenson  
[johnswenson1@comcast.net](mailto:johnswenson1@comcast.net)

#### Webmaster:

Chuck Grant

#### Observatory Director/

Key Master:  
Chuck Grant

#### School Star Party Chair:

Rich Campbell  
[r\\_photon@yahoo.com](mailto:r_photon@yahoo.com)

### Public Star Party Chair:

Rich Campbell

### Historian:

Debbie Dyke

### Mentor:

Mike Rushford  
[rushford@eyes-on-the-skies.org](mailto: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](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).

### 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 ([tvst@trivalleystargazers.org](mailto:tvst@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.

At the same time, Hoyle was a contentious figure, though in many instances the strong personalities on both sides of the argument were to blame for the bad blood that was split over the years. His arch-enemy was Martin Ryle, a pioneering radio astronomer who won the Nobel Prize in physics in 1974, and who, to the consternation of Hoyle, preceded him in being elected a Fellow of the Royal Society. Their public clashes were numerous, including opposing opinions regarding the nature of radio radiation from the sun's corona, whether "radio stars" were galactic or extragalactic, and ultimately the dichotomy between observational evidence that damned the steady-state theory, and Hoyle's defense of it to the end as a viable alternative to the Big Bang. He coined the term "Big Bang" to belittle what has become our current paradigm of the physical origin of the universe. It is widely believed that Hoyle was overlooked as a co-recipient of the 1983 Nobel Prize that was awarded to Willy Fowler, his collaborator on the investigation of the origin of the elements, for which the award was made

This biography was written by Simon Mitton, who completed a doctorate under Martin Ryle, and later was awarded a fellowship by Hoyle. I highly recommend this biography, as it provides insight into the amazing advances that occurred in astronomy in the mid-20th century, the personalities that were involved, and the excitement that they felt as they pushed back the dusky veil that obscures our view of the cosmos.

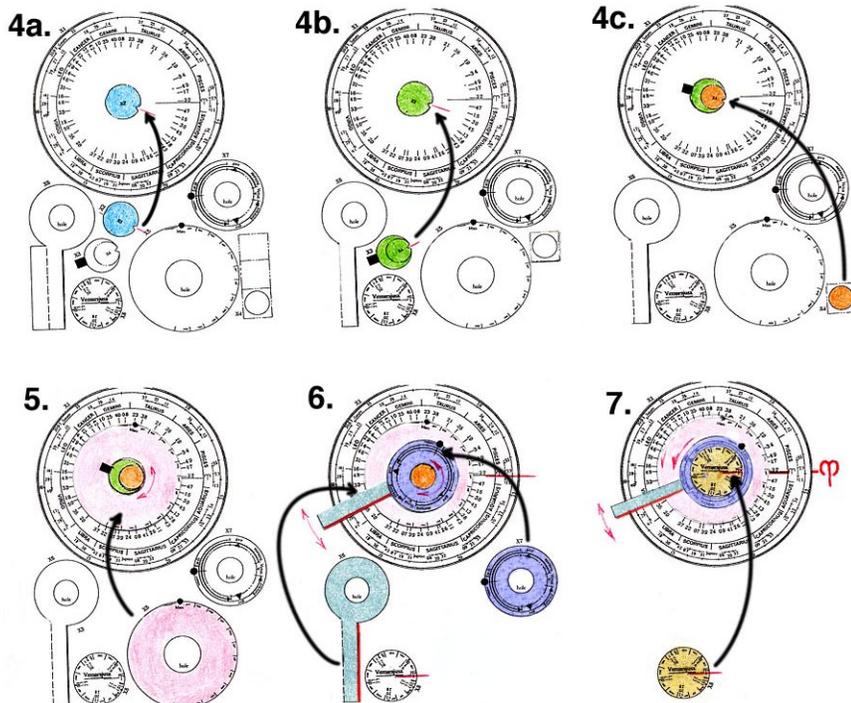
*continued page 7*

## Jupiter Transits

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

## August

Fri 11	GRS	na	9:15p	11:30p
	G	8:49p	9:58p	11:05p
Sun 13	E	na	9:34p	10:50p
	GRS	9:07p	10:50p	na
	Es	10:47p	na	na
	I	10:50p	na	na
Fri 18	GRS	na	10:05p	na
Sun 20	GRS	9:50p	na	na
Tues 22	I	na	na	9:24p
	Is	na	9:19p	10:31p
Wed 23	GRS	na	9:14p	na
Fri 25	GRS	9:00p	na	na
Tues 29	I	9:12p	10:15p	na



## How to Make a Vemarsjusa

1. Cut out X4 and fold into thirds. Glue each section to the next. Trim around the line so that you end up with a three layer circle.
2. Cut out the remaining 7 parts and cut out the holes in X5, X6 & X7. For extra stability, glue the sheet to thin cardboard, then cut out the pieces.
3. Fold over the rectangle portion of X6 and glue together.
- 4a. Glue X2 on the center of X1, lining up the notches.
- 4b. Glue X3 on to X2 (except the black square), lining up the notches.
- 4c. Glue X4 on to X3.
5. Place X5 over the X2-4 stack, with the black square of X3 sticking out over X5.
6. Place the hole of X6 around X4 (covering up the black square), and then put X7 on top of X6 so that the holes line up.
7. Glue X8 on to X4, lining up exactly the Aries symbol (♈) with the Aries symbol on the base wheel.



## What's Up *by Debbie Dyke*

All times Pacific Daylight Saving Time unless otherwise noted.

### August

- 9 Wed **Full Moon.** 3:54 a.m.  
Neptune 4° N of the Moon. 5:00 a.m.
- 10 Thur Moon at perigee (223,044 mi.). 11:00 a.m.  
Neptune at opposition. 10:00 p.m.  
Uranus 1° N of the Moon in the evening.
- 12 Sat **Perseid meteor shower peaks.** 4:00 p.m.
- 13 Sun Mercury at ascending node.
- 15 Tues **Last Quarter Moon.** 6:51 p.m.
- 16 Wed **Moon occults the Pleiades.** 6:00 a.m.
- 17 Thurs Mercury at perihelion.
- 18 Fri **Tri-Valley Stargazers general meeting.**  
7:30 p.m. at the Unitarian Universalist  
Church, 1893 N.Vasco Road, Livermore.  
Venus 0.5° S of the Beehive Cluster. 5 a.m.
- 20 Sun **Tri-Valley Stargazers discussion meet-  
ing.** 2:00 p.m. at the Round Table Pizza  
on 1024 E. Stanley Blvd., Livermore.  
1977 Voyager 2 launched toward Jupiter.
- 21 Mon **Tri-Valley Stargazers Board meeting.**  
7:00 p.m. at the Round Table Pizza in  
Livermore.  
1609 Galileo shows off his telescope to the  
Doge's navy.  
Venus just below the very thin crescent  
Moon. 6:00 a.m.
- 23 Wed **New Moon.** 12:10 p.m.
- 25 Fri 1981 Voyager 2 flies past Saturn.  
1989 Voyager 2 flies past Neptune.  
Mars 6.5° north of the very thin crescent  
Moon as they set in the west. 8:00 p.m.  
Moon at apogee (251,886 mi.). 6:00 p.m.
- 26 Sat Venus 0.5° above Saturn. 6:00 a.m.
- 28 Mon Mercury at greatest heliocentric latitude N.
- 29 Tues 1864 William Huggins discovers that  
nebulae are gas clouds.
- 31 Thurs **First Quarter Moon.** 3:56 p.m.

### September

- 1 Fri 1979 Pioneer 11 is first craft to fly past  
Saturn.
- 3 Sun 1976 Viking 2 lands on Mars at Utopia  
Planitia.
- 4 Mon **Labor Day.**

## First Light *by Richard Campbell*

### Inventive You

When is a scope more than a scope? When your inventions adorn it! From simple “fixits” to complex designs, you will find tremendous creativity in the typical amateur astronomer’s toolkit. Take these examples, please:

**Foldable Dobsonian Mount:** A local telescope maker looked at the boxy dobsonian mount, and said, “Hey, I could fold that up to a fraction of the normal size, and stow it in my trunk!” A few pieces of plywood, and some furniture hinges later, his foldable mount was born.

**Acrylic Screen:** The brightness of certain desktop planetarium programs can be maddening. If the laptop screen is too bright even in redscreen it will be impossible to view faint objects through your scope. To solve this problem, local observer Ken Sablinsky visited Tap Plastics to find a piece of acrylic dark enough to cut the brightness dramatically, but not so much he couldn’t see the star maps on his screen. He found a deep red acrylic perfect for the job. Stick a couple pieces of velcro on your laptop screen, attach the acrylic, and find a red solution.

**Gaffer’s Tape:** When you drive away from a dark-sky site in the middle of the night, you want to leave without blasting your friends with the nasty glow of your taillights. But since it’s difficult and illegal to disconnect them permanently, you need to find another way to cut their brightness. Enter gaffer’s tape—an adhesive that you can tape over your taillights as you back out, then remove as you hit the highway. Gaffer’s tape can be removed without leaving a sticky residue.

**High Contrast Stickers:** For some reason, you will find black knobs on black telescope mounts—difficult to find when you’re searching in the dark. So some observers place white, even fluorescent coloured stickers on their telescope knobs, mount knobs, and even eyepiece covers for easier location of their equipment in the dark.

**Poor Man’s Ball Mount:** The super-convenient ball mount (found on the Portaball and Astroscan brand scopes) can be fashioned at home, if you don’t mind materials found around the house. I’ve seen bowling balls, barbecue lids, even children’s beach balls used to make ball mounts with fine pointing accuracy. The trick is getting the mechanical precision of your mount to match the fine optics of a store-bought mirror. It can be done!

**Observer’s Magic Carpet:** I’ll never forget observing through a handmade 12" scope from Mount Tam, while standing on a persian carpet! Yes, if you put down a tarp, you can easily place a cheap persian carpet below your scope and accessories. There’s something magnificent, almost royal about such an arrangement. Plus, with all that cushioning of the carpet, you don’t have to worry about dropping an eyepiece. Now that’s a cosmic carpet ride.

## Celebrating 40 Years of Intent Listening

by Diane K. Fisher

In nature, adjacent animals on the food chain tend to evolve together. As coyotes get sneakier, rabbits get bigger ears. Hearing impaired rabbits die young. Clumsy coyotes starve. So each species pushes the other to “improve.”

The technologies pushing robotic space exploration have been like that. Improvements in the supporting communications and data processing infrastructure on the ground (the “ears” of the scientists) have allowed spacecraft to go farther, be smaller and smarter, and send increasingly faint signals back to Earth—and with a fire hose instead of a squirt gun.

Since 1960, improvements in NASA’s Deep Space Network (DSN) of radio wave antennas have made possible the improvements and advances in the robotic spacecraft they support.

“In 1964, when Mariner IV flew past Mars and took a few photographs, the limitation of the communication link meant that it took eight hours to return to Earth a single photograph from the Red Planet. By 1989, when Voyager observed Neptune, the DSN capability had increased so much that almost real-time video could be received from the much more distant Planet, Neptune,” writes William H. Pickering, Director of JPL from 1954 to 1976, in his Foreword to the book, *Uplink-Downlink: A History of the Deep Space Network, 1957-1997*, by Douglas J. Mudgway.



For over 40 years, the “Mars” 70-m Deep Space Network antenna at Goldstone, California, has vigilantly listened for tiny signals from spacecraft that are billions of miles away.

Mudgway, an engineer from Australia, was involved in the planning and construction of the first 64-m DSN antenna, which began operating in the Mojave Desert in Goldstone, California, in 1966. This antenna, dubbed “Mars,” was so successful from the start, that identical 64-m antennas were constructed at the other two DSN complexes in Canberra, Australia, and Madrid, Spain.

As Mudgway noted in remarks made during the recent observance of the Mars antenna’s 40 years of service, “In no time at all, the flight projects were competing with radio astronomy, radio science, radar astronomy, SETI [Search for Extra-terrestrial Intelligence], geodynamics, and VLBI [Very Long Baseline Interferometry] for time on the antenna . . . It was like a scientific gold rush.”

In 1986 began an ambitious upgrade program to improve the antenna’s performance even further. Engineering studies had shown that if the antenna’s diameter were increased to 70 m and other improvements were made, the antenna’s performance could be improved by a factor of 1.6. Thus it was that all three 64-m DSN antennas around the world became 70-m antennas. Improvements have continued throughout the years.

“This antenna has played a key role in almost every United States planetary mission since 1966 and quite a few international space missions as well. Together with its twins in Spain and Australia, it has been a key element in asserting America’s pre-eminence in the scientific exploration of the solar system,” remarks Mudgway.

Find out more about the DSN and the history of the Mars antenna at <http://deepspace.jpl.nasa.gov/dsn/features/40years.html>. Kids (and grownups) can learn how pictures are sent through space at [http://spaceplace.nasa.gov/en/kids/phonedrmarc/2003\\_august.shtml](http://spaceplace.nasa.gov/en/kids/phonedrmarc/2003_august.shtml).

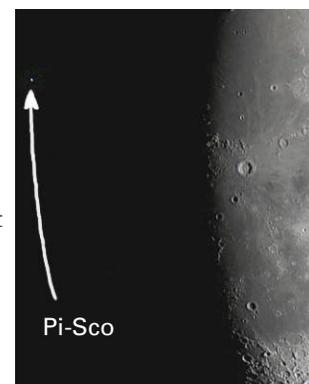
This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

## News & Notes *continued*

### Correction

In the last issue, the editor left off a photo credit. The two pictures of the Pleasanton Library star party were taken by Don Saito. Thanks for the submittal Don, and sorry I left you off the credits.

Moon occulting Pi-Sc0. Canon Rebel XT DSLR and a 4” Takahashi F10 refractor.  
Photo: Gert Gottschalk



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.  
\_\_\_\_\_ \$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 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.  
\$ \_\_\_\_\_ 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.