PRIMEFOCUS

Tri-Valley Stargazers

July 2003

TVS

Tri-Valley Stargazers

Meeting Info:

What
Binocular Observing

Who
Jay Reynolds Freeman

When
July 18, 2003
Conversation at 7:00 p.m.
Lecture starts 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

July Meeting

Binocular Observing

Jay Reynolds Freeman

Many people think that you need a telescope in order to see astronomical objects in the night sky. Not true! It's surprising how much you can see with just an ordinary pair of binoculars. As with telescopes, the trick is knowing where to point them.

Jay Reynolds Freeman is a well noted Bay Area amateur astronomer. If anyone can do the Herschel 400 with binoculars, he can. If you're just getting into astronomy and not sure where to begin, come to the meeting and learn a few tips on observing the heavens with a simple pair of binoculars. Once you've learned your way around the night sky, you'll know where to point your telescope.

If you're interested in learning more about binocular observing, there are several books out there that you can read. One is *Touring the Universe through Binoculars* by Philip Harrington, another is *Exploring the Night Sky with Binoculars* by David Chandler. Both books are in the TVS library and can be checked out by members at the meeting. Visit Phil's web site for a taste of what his book offers http://www.philharrington.net/sw8.htm. To get a head start in observing, visit http://www.philharrington.net/tub1.htm to see Phil's July/August binocular objects (M4 & M80 globular clusters in Scorpius) and print out a chart to help you locate them.

H2O Open House

Our July H2O Open House will be on the 19th. There will only be one more Open House (in September), so if you want to visit the club's dark sky site, don't put it off much longer. A caravan will depart from the corner of Mines and Tesla in south Livermore around 7:00 p.m. — about an hour and a half before sunset. It takes an hour to drive down to the site, so that leaves you about 30 minutes to set up while the sun is still up. There is a $3 entrance fee, so bring exact change. H2O is a primitive site (i.e., no electricity, no running water, pit toilets) so come prepared. What H2O lacks in amenities, it makes up for in great views of the night sky. It has a very good view to the south, so viewing all the goodies rising from the Teapot's spout is a must.

News & Notes

2003 TVS Meeting Dates

Below are the next few TVS meeting dates. The lecture meetings are held on the third Friday of the month, with the Board meeting on the Monday following the lecture meeting. The *Prime Focus* deadline applies to that month's issue (e.g., the July 6th deadline is for the July issue).

Lecture Meeting	**Board Meeting**	***Prime Focus* Deadline**
July 18	July 21	July 6
Aug. 15	Aug. 18	Aug. 3
Sept. 19	Sept. 22	Sept. 7

Money Matters

At the June Board meeting, Treasurer **Gary Steinhour** gave us the account balances (as of June 22, 2003) of several TVS accounts:

Checking	$1,390.04	
CD #1	$3,911.19	matures 08/17/03
CD #2	$2,413.74	matures 08/27/03
CD #3	$2,056.40	matures 07/16/03

June BBQ

Our Summer BBQ and Potluck was a success! Below are a few pictures taken by **Gary Steinhour**.

From top left, moving clockwise: Our fearless cooks, John Swenson and Jim Alves. Stan Isakson and Roger Gathers. *Astroinsights* writer David Feindel and Ray Maldonado. TVS Vice-President Frank Rogue standing guard over the Weber.

Our Astro Wizard Dave Rodrigues entertains the crowds at the TVS star party on top of Glacier Point, Yosemite. *Photo: David Feindel.*

Welcome

A big welcome to TVS's newest members, **Richard Webb and Family**.

continued page 3

Calendar of Events

Classic Sci-Fi Film Series

Chabot Space & Science Center

The movies are shown in their original theater format at the 60' Tien MegaDome Theater. Tickets are $5 per person and are available at the door, at TicketWeb.com, or the Chabot Box Office, 510-336-7373.

Movies:

War of the Worlds (1953), every Friday & Saturday night in July; no Sunday shows.
Mars Attacks (1996), August 1-2; no Sunday show
Batman, October 3-5

Showtimes:

Friday – Sunday on the first weekend of each month.

Friday & Saturday – 7:30 p.m., Sunday – 4:00 p.m.

Newsletter header image: LMC N 49

This Hubble picture of supernova remnant LMC N 49 was taken on three separate dates in three separate years for a total of a 3.1 hour exposure composited together. The supernova remnant is located in the constellation Dorado and is about 160,000 light years away.

Photo: NASA and the Hubble Heritage Team

Calendar of Events *continued*

July 10, 7:30 p.m.
What: *Water and the Martian Landscape*
Who: Taylor Perron (UC Berkeley)
Where: Chabot Space & Science Center, Oakland
Cost: $7

The quest for locating water on Mars is the key to understanding its past, interpreting its present and humanizing its future. Taylor Perron will take us through that journey and discuss the current status of this exploration.

July 24, 7:30 p.m.
What: *Mars Exploration Rovers*
Who: Nathalie Cabrol (NASA)
Where: Chabot Space & Science Center, Oakland
Cost: $7

Dr. Cabrol is a Planetary Geologist and a Principle Scientist with NASA's Mars Exploration Rovers. She'll provide an update with the latest on the Mars Exploration Rover missions.

July 26, 8:30 p.m.
What: *A Personal View of the Big Bang*
Who: Dr. Arno Penzias, 1978 Nobel Prize in Physics
Where: Mt. Tam
Cost: $3

The first-hand story of the detection of the "radiation echo" of the Big Bang, showing that the universe did indeed begin in an unimaginably hot, dense, explosive state.

The lecture is held in the Mountain Theater, telescope viewing is in the Rock Springs parking area. For more information and directions, call 415-455-5370 or 415-388-2070, or visit www.mttam.net.

August 9, 7:00 p.m.
What: *Mars: The Search for Life on the Red Planet*
Who: Dr. Chris McKay (NASA)
Where: Chabot Space & Science Center, Oakland
Cost: $7

Dr. McKay is part of the team that announced the possibility that fossilized microbes exist inside Martian Meteorite ALH84001. He will tell us about that experience and what it means to our understanding of the history of the solar system.

News & Notes *continued*

Mars

If you haven't heard already, at the end of August Mars will be coming in for its closest approach to Earth (at 34,646,418 miles) in thousands of years. Batten down the hatches for a news media storm of anything Mars related.

Amateurs have already begun imaging the planet. Alas, a dust storm is just beginning to form in the Hellas Basin area. Time will tell if this storm dies down or turns into a global dust storm.

To start getting you in the Mars Mood, there are plenty of web sites with Mars info. Try Jane Houston-Jones' list of links at http://www.whiteoaks.com/june/Mars/. Another all-around good site is http://spaceweather.com. Also, the Chabot Space and Science Center is hosting a Mars lecture series – see *Coming Events* in the previous column for details.

continued on page 5

Astro Events

Star Parties

H2O Open House
July 19; September 20

For TVS members who would like to check out our club's dark sky site, the H2O Open House offers them just that chance. For more info, see page 1.

White Mountain High Altitude Star Party
July 24-30

View celestial wonders in a very dark, low oxygen environment, with wonderful food to boot. Our annual high altitude star party is at the Barcroft Lab (altitude 12,435') in the White Mountains northeast of Bishop, CA. We'll have up to 5 nights of observing. This is a joint activity of TVS and the EAS (Eastbay Astronomical Society).

The first night of the trip will be at the Grandview Campground (8,600') for altitude acclimation. If you don't like to camp, you may spend the night at Mammoth Lakes (8,000'). On Friday the 25th, everyone makes their way to Barcroft. Most people will stay there for 3 nights and return home on Monday, but you do have the option of staying until Wednesday. Meals and bunk beds are provided for $55 per day per person.

We are limited to 20 people, so priority will be given to those staying 3 nights or more. Send your check, payable to **Dave Rodrigues**, to Dave at 1633 Graff Ct., San Leandro, CA 94577. If you have any questions, contact Dave at 510-483-9191 or davevrod@aol.com.

Sycamore Grove Park
August 2; September 6

TVS, in conjunction with the LARPD, will be hosting two public star parties at Sycamore Grove park in Livermore. **Rich Campbell** will give a presentation about the Mars opposition at the August star party, and one about the summer Milky Way at the September star party. For those who wish to help out with telescopes, please be at the part at 7:30 or before to set up your scopes. The talks start at 8:00. For more info, contact Rich.

Starry Starry Nights
August 15-17; 22-24

Don Machholz is the host for a series of star parties taking place in the Sierra Nevadas. Visit www.geocities.com/donmachholz/StarryStarryNights2003.html for info.

The Third Annual California Star Party (CalStar)
September 25-27

CalStar, hosted by the San Jose Astronomical Association, will be held at Lake San Antonio. Visit www.sjaa.net/calstar2003.html for details.

NASA's Space Place

Monster Trucks on Mars

by Patrick L. Barry and Dr. Tony Phillips

We all know what Mars rovers look like now: Robotic platforms, bristling with scientific instruments, trundling along on small metallic wheels. Planetary rovers of the future, however, might look a little different-like miniature monster trucks!

Enormous, inflatable tires can easily roll right over the rocks and rugged terrain of alien planets, just as they bound over old cars like as many speed bumps.

That's the idea behind a novel concept for robotic planetary rovers known as the "big wheels inflatable rover." Unlike rovers similar to the Sojourner robot that explored the surface of Mars in 1997 that depend on instructions sent from Earth or complex programmed intelligence to steer through rough terrain, this rover has three beach ball-like tires roughly five feet across that make it a true off-road vehicle.

"We sent this rover out to Death Valley, to a place called Mars Hill that has a general geological formation like Mars, and nothing could stop it," says Jack Jones, the mastermind of the inflatable rover concept at JPL. "It just kept going and going and going."

Lots of current research is devoted to developing advanced robotic intelligence that allows rovers to detect rocks in their path and maneuver around them. The alternative to such on-the-spot intelligence is tedium: Ground controllers on Earth working out the maneuvers by hand and waiting an hour or more for the instructions to travel to the distant planet.

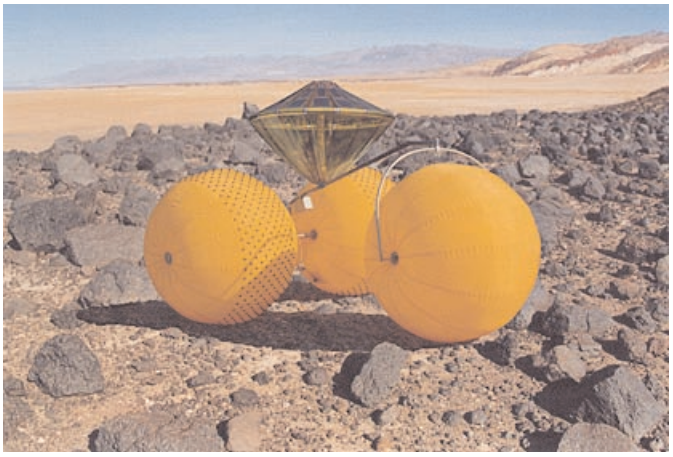
A "big wheels" rover would need such computer intelligence to avoid very large boulders, but Jones asks, "Why worry about every little rock, pebble, and crack when you can just roll right over most of them?"

Jones imagines a scenario where multiple inflatable-wheel rovers could be sent out to explore the Martian terrain-easily and quickly traversing the rugged terrain. Samples gathered by the rovers could be returned to a central, stationary laboratory module for detailed analysis.

"The Martian surface is really very, very rough with a lot of rocks, and to be banging this laboratory equipment up and down over all of these rocks aboard the rovers doesn't make much sense," Jones says. "I suspect it might be better to leave it in a central location."

At the moment it's all very speculative; NASA currently has no definite plans to send inflatable rovers to Mars. But who knows, one day monster truck-like vehicles could be zipping over Mars' rough, red surface.

Kids can baffle their friends with a robot puzzle (includ-



The "Big Wheels" inflatable rover doesn't mind a few boulder-sized rocks, no matter what planet they're on!

ing a "Big Wheels" rover) they make themselves at http://spaceplace.nasa.gov/robots/robot_puzzle.htm. For adults, find out more about NASA's inflatable rover program at http://www.jpl.nasa.gov/adv_tech/rovers/summary.htm.

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*

Running an After-School Astronomy Program Part 1: Getting Started

by Hugh Bartlett

"100 years from now, no one will care what your bank balance was, what kind of car you drove, or what kind of house you lived in, but the world might be a better place because of the difference you made in the life of a child." - *Unknown*

People have a great number of misconceptions about astronomy, and many confuse it with astrology. When another after-school instructor heard of my class, she told me, "I think it's great you are teaching a class! I did not know you were into astrology." My Aunt's caregiver, who is very into astrology, tried to convince me Jupiter was in Leo, when I knew it was in Cancer because it is right next to the Beehive Cluster (M44). Then she tried to tell me that they knew about Pluto in 1900, and showed me an astrological table for 1906 with Pluto in it! Clearly, there is a need for greater public awareness of basic astronomical concepts.

Last November, I was reading an Astronomical Society of the Pacific (ASP) article on how to run an after-school astronomy club, and thought "Hey, I could do that!" I knew my son's elementary school had after-school enrichment classes, so I contacted the program coordinator. She needed more science classes, so she jumped at the prospect of an astronomy class. After explaining I had no teaching experience, and that this was just an idea, she still wanted me to start right away! Fortunately, it was winter, and I convinced her that spring would have better observing weather. That gave me some time to put together my curriculum, plan some activities, and order supplies. The following is based both on my experience, and that of Louis Mayo as reported in his ASP article "Running an After-School Astronomy Club" (*Mercury Magazine*, Nov.–Dec. 2002, pp. 14–22).

Initial Steps

A lot of schools shut down during the summer, so it can be a challenge to find the right person to contact. In addition, many schools lack the facilities, interest, or parent involvement to run after-school programs. During the school year, you can call the school office and find out if they have such a program and who the coordinator is. During the summer, you will need to contact the coordinator directly. Most such programs are run by the Parent Teacher Association (PTA), and most parents have a copy of the PTA directory, which should have a number for the director of the after-school programs.

Introduce your concept, perhaps a 1–2 hour session, once a week for a semester. Prepare a draft curriculum of the basic topics you will be covering, and some of the activities you have in mind. The coordinator will also want to know what your qualifications are for teaching the class. That was a real challenge for me, because I had never taught before, had little formal training in astronomy, and had no relevant employment history! Nevertheless, I had helped out in my son's class, and had an engineering degree. In my case, the coordinator was so eager to have a science class, that she took a chance with my relative lack of experience.

Try to find out as much as possible about school policies pertaining to such activities on school grounds. For example, you may be required to have a teacher co-leader, depending on what school policies are regarding outside adults being with students in the classroom. Having a co-leader will enable you to manage a larger class. If you are fortunate enough to have a teacher/assistant, be sure to involve that person in designing the activities. That person will feel more a part of the class if he or she has a role in its development.

The program director will also want to know how much you will charge for your course. Before you decide what the fee will be, find out if there is an activity fee for use of

continued page 7

What's Up *by Debbie Dyke*

All times Pacific Daylight Savings Time unless otherwise noted.

July

10 Thurs Moon at perigee (226,390 mi/365,145 km) 3:00 p.m.

13 Sun **Full Moon** 12:21 p.m.

14 Mon 1965 Mariner 4 makes first flyby of Mars and takes pictures.

16 Wed 1994 Comet Shoemaker-Levy 9 begins plunging into Jupiter.

17 Thur Mars just 0.5° from the waning gibbous Moon as Wednesday turns into Thursday.
1850 First photo of a star (Vega).

18 Fri **Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.

19 Sat **H2O Open House**. See page 2 for details.

20 Sun **Last Quarter Moon** 12:01 a.m.
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.
1969 Apollo 11 lands at Tranquillity, placing the first men on the Moon.
1976 Viking 1 makes first robotic landing at Chryse Planitia on Mars.

21 Mon **Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.

22 Tues Moon at apogee (250,683 mi/404,328 km) 1:00 p.m.
1972 Venera 8 makes the first soft landing on Venus.
1994 The last bits of Shoemaker-Levy 9 fall into Jupiter.

24 Thurs Start of the TVS/EAS White Moutain Trip. Details on page 4.

26 Sat Saturn at perihelion. Look for the waning crescent Moon to pass north of Saturn in the pre-dawn sky.

27 Sun S. Delta-Aquarid meteors peak at 10:00 p.m.

28 Mon **New Moon** 10:53 pm.
1964 Ranger 7 impacts Moon, taking the first closeup views of the surface.

30 Wed Just after sunset look for the Moon, Mercury and Jupiter low in the west. Mercury is just 1° away from the star Regulus in Leo.

31 Thurs 1971 Apollo 15 lands on the Moon at Irma Haley.

August

1 Fri Stellafane Convention in Springfield VT begins. The fun ends on Saturday the 2nd.
1818 Maria Mitchell born.

2 Sat **Sycamore Grove star party**. See page 4 for details.

4 Mon **First Quarter Moon** 12:28 a.m.
Neptune at opposition (4348 million km from Earth) 6:00 a.m.

6 Wed Moon at perigee (229,048 mi/369,433 km) 7:00 a.m.

8 Fri St. Dominic – patron saint of astronomers.

school facilities. Check out the room you will be using to see what equipment you will need. The school may be able to supply an overhead projector and/or slide projector. The room should have blackboards, a projection screen, and window blinds to darken the room. Will you have access to a kitchen area with a sink and oven? A sink can be particularly helpful in cleaning up after activities.

Budget a little extra for pencils, paper, and notebooks, because students tend to forget them. Kids love handouts, so include an allowance in your course fee for plenty of these as well. I used the ASP catalog and Edmund Scientific's for ordering constellation books, planispheres, and make your own cardboard telescopes and spectrographs kits. Other expenses, such as slides and models, are a one-time investment. No matter what I did, each class seemed to cost at least $20 for miscellaneous expenses.

Once your proposal is accepted, you need to design a flyer describing the pertinent details, such as when and where it meets, what grade levels and total number of students you are accepting, the fee, and some of the more enticing aspects of the course. I know I hooked a lot of prospective students with my Constellation Cookies idea! I also listed a lot of the handouts to help justify the cost of the course. The parents will also want to know what your qualifications are for teaching the class. I got around this one by describing myself as an amateur astronomer and a parent who has a lot of enthusiasm for the subject, and is never far from one of his three telescopes!

The last part of the flyer is the application. A couple important details to include here are: a deadline for payment, e-mail addresses for the parents, and who is authorized to pick up the child. I forgot to mention a deadline, and did not know half of the kids that were enrolled until the day of the first class!

Next month, I will describe some of the fun activities I included in my program, and how well they succeeded in educating my students about the basic principles of astronomy.

Double Visions

by Richard Campbell

Nature loves pairs. We have male and female, sun and moon, day and night. When we look through a telescope, we see the pairing pattern extends to the stars, as we discover twin suns orbiting each other in a gravitational dance, or bright stars with faint companions hiding in their glare. While this might seem an unusual arrangement, it turns out *most stars* are double or multiple star systems! Double stars are easy targets for beginning telescopes and an endless source of fascination.

During the summer there are scores of doubles awaiting your discovery. Here are just a few:

Albireo

You'll find this pair in the beak of the constellation Cygnus the Swan, placed high in the sky. This is an *optical double*, meaning the stars only appear to be related but are actually placed at radically different distances from us. They simply share a similar line of sight from Earth. If your school colors are blue and gold, you'll love this one, because Albireo glows with vivid hues reminiscent of ocean azure and shiny brass. It's easy to find in any telescope at low magnification.

Nu Draconis

This is a classic "Cat's Eye double" since both stars appear equally bright, like feline eyes. To find it, look in the head of the circumpolar constellation Draco the Dragon. You'll find each component of the double gleams pearly white. Look out! Nu is *looking back at you.*

Companion to Polaris, The North Star

Most amateur astronomers know this field of stars like the back of their hand, since finding Polaris means accurately aligning your telescope mount. What some amateurs don't know is Polaris is a gorgeous double, showing a faint companion nearby. This fainter star is a good test of your telescope's light gathering capability and quality. If you can see it, your optics are pretty good for an amateur telescope.

The Double Double: Epsilon Lyrae

If you want a double that will strut your telescope's stuff, try Epsilon Lyrae, found in the musical constellation Lyra the Lyre. Naked eye views will show one star. Binocular views will show it's really two stars. Telescope views will show you, no, it's actually 4 stars! Each component is itself a double. One of the pairs is closely spaced as double stars go, so if you can split it cleanly, your optics are pretty good and the atmosphere is very stable. You will also have permission to adjust your belt and grunt, or breathe on your fingernails a couple times then stroke your shoulder with your knuckles in mock disinterest as the crowd goes "Ooooooooh".

I hope you enjoy these views, and discover some doubles of your own!

Astoinsights

Alas, there is no Astroinsights this month. But don't despair, it will return next month.

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

PRIMEFOCUS

Tri-Valley Stargazers Membership Application

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

Name _____ Phone _____ e-mail _____

Address _____

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

Membership category: _____ $5 Student.
_____ $25 Basic. You will receive e-mail notification when the PDF version of *Prime Focus* is available for download off the TVS web site.
_____ $30 Regular. You will receive a paper version of *Prime Focus* in the mail.
_____ $32.95 Subscription to *Sky & Telescope* magazine.
_____ $29 Subscription to *Astronomy* magazine.
_____ $20 Hidden Hill Observatory (H2O) refundable key deposit (key property of TVS).
$_____ Tax deductible contribution to Tri-Valley Stargazers.

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

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