PRIMEFOCUS
Tri-Valley Stargazers

July 2006

Meeting Info:

What
Anecdotes on the History of Amateur Telescope Making

Who
Rich Combs

When
July 21, 2006
Conversation at 7:00 p.m.
Lecture at 7:30 p.m.

Where
Unitarian Universalist Church in Livermore
1893 N. Vasco Road

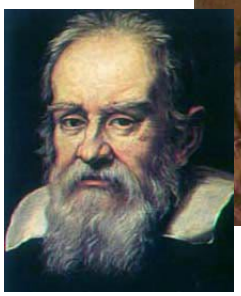
Inside

July Meeting

Anecdotes on the History of Amateur Telescope Making
Rich Combs

Although the Internet now provides a wealth of information for the enterprising amateur telescope maker, a look back at the development of ATM'ing reveals that the amateur's craft has been filled with fits and starts, innovation, breakthroughs, and a number of unique inventions. From Galileo and Newton, to now, our speaker will provide a glimpse at the development of a fascinating hobby.

What do these men have in common? A fondness for grit and glass!



H2O Gets A New Roof

A very small group of dedicated TVSers got together on July 8th and 9th to repair the storm damage to our observatory's roof. Plywood sections of the roof had to be removed and replaced with new sheets of plywood. On top of that went the nasty sticky tar. It was important that the job was done on a hot day to insure the tar was more of a fluid than a solid. After the tar was spread on the plywood, roofing material was laid over it. A few magical incantations were uttered to make sure the roof was completely repaired and in better than new condition.

A big thank you to the volunteers that were slaving away in the hot sun: **Hillary Jones** and **Roger Gathers**, who helped out on Saturday; and **Ken Sperber**, **Dave Woolsey**, and President **Chuck Grant**, who were gluttons for punishment and worked both days.

continued page 2

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**
July 21	July 24	July 9
Aug. 18	Aug. 21	Aug. 20
Sept. 15	Sept. 18	Sept. 3

Money Matters

Treasurer **David Feindel** reports the TVS account balances (as of June 19, 2006):

Checking	$3,304.93	
CD #1	$3,532.16	matures 8/17/06
CD #2	$2,496.46	matures 8/27/06

White Mountain

There are still a couple of spaces available for the White Mountain star party. The dates are August 18th through the 24th, although you do not have to stay every night.

As is tradition, the first night is spent at the Grandview Campgrounds (8,000' elevation) to get acclimated to the higher altitude. If camping isn't your cup of tea, you can also stay at a hotel at Mammoth Mountain. Friday through Thursday is spent at the Barcroft High Altitude Research Station (12,400' elevation). To get an idea of what Barcroft is like, visit www.wmrs.edu/facilities/BAR/default.htm.

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 star party, contact trip coordinator **Dave Rodrigues** at 510-483-9191. You have to be over 16 in order to attend, due to the high altitude.

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.

The previous open house had reports of viewing Omega Centauri and Centaurus A, along with detailed views of clouds on Jupiter.

Yosemite Star Party

TVS will be doing our Yosemite public observing stint during Labor Day weekend—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 telecopes, 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—510-483-9191.

Group Star Parties

We have a couple of group star parties this month.

On Thursday, July 20th, we need volunteers to help with a star party for **Camp Taylor**, part of Camp Arroyo in Livermore. The camp is a summer camp for kids with serious heart ailments (http://www.kidsheartcamp.org). Last month we did a star party for the 7 to 12 years olds at the camp. This month's group are teenagers. There is a grassy area for setting up scopes, and you can drop off your scope and park in a parking lot nearby.

We also have a request for a daytime star party of sorts on Monday, July 24th, from 12:10 to 12:45 p.m. at the May Nissen Park in Livermore. It's for the **Twin Valley Cub Scout Day Camp**, whose theme this year is "Scouts in Space". They have about 150 Cub Scouts and their families participating. They would like to have TVSers tell them about ourselves and answer any questions the Scouts might have.

They would also like to have a stargazing session on the evening of Wednesday, July 26th, at the parking lot of the Tri-Valley Church of Christ, 4481 East Avenue, Livermore. Details will be announced on the TVS eGroup and posted to our web site.

Lights, Cameras, Action!

Ron Bissinger has added some more time to his 15 minutes of fame. He reports that he and his backyard observatory, Racoon Run, were the backdrop for a segment of the upcoming film *Seeing in the Dark*, based on the book by Timothy Ferris. Indeed, Timothy and Dr. Debra Fischer, an exoplanet astronomer, were there to be filmed amongst the semi-starry skies of Pleasanton.

continued page 7

Newsletter header image: Mountains of Creation
This star forming region in Cassiopeia is 7,000 light years away from us and 50 light years across. The false-color image is similar to Hubble's famous "Pillars of Creation" image, however, this object is 10 times larger. *Photo: NASA/JPL-Caltech/ L. Allen (Harvard-Smithsonian CfA)/Spitzer Space Telescope*

Calendar of Events

July 22, 10:00 a.m. to 4:00 p.m.
What: *Living Ship Day: Apollo Anniversary*
Who: you
Where: USS Hornet Museum, Alameda (http://www.uss-hornet.org)
Cost: $14 adults, $6 youth, $12 Senior/Military/Student (with ID)

In 1969, USS Hornet CVS-12 was assigned the vital mission of retrieving the first human beings to walk on the Moon following their splashdown into the Pacific Ocean. The 37th anniversary of our nation's greatest achievement will be commemorated by bringing the historic aircraft carrier to life. Witness simulated flight operations, participate in mission briefings, and meet former crew. An authentic Apollo command module, the Mobile Quarantine Facility from Apollo 14, and the recovery helicopter from the "Apollo 13" movie are part of the featured exhibits. Special guests will be on hand to share their experiences

July 28, 8:00 p.m. to 11:00 p.m.
What: *Lunar Lounge*
Who: Total Eclipse
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. Musical guest *Total Eclipse* will drop your jaw and make you dance! An impressive mix of rock and pop tunes from the mid 70s to the new wave progression of the 80s. You also get to see SonicVision—the alternative music planetarium show.

July 29, 8:30 p.m.
What: *The Tenth Planet and Beyond*
Who: Dr. Eugene Chiang (UC Berkeley)
Where: Mt. Tamalpais Mt. Theater (www.mttam.com)
Cost: Free

Since 1992, astronomers have discovered over 1,000 icy, rocky objects beyond Neptune, one larger than Pluto. What is known about this "Kuiper Belt" of bodies and what are the implications for the formation of our planetary system?

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.

If you can help out, call Tinka Ross at 415-454-4715.

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.

August 5, 9:30 a.m.
What: *NCHALADA LXXVII*
Who: You
Where: Chabot Space & Science Center, Oakland
Cost: Free

continued page 4

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
astrodeb@comcast.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*

After coffee and puns at 9:30, the morning session, *Motions of the Moon*, will start at 10:00 a.m. chaired by Robert Garfinkle, FRAS. The afternoon topic will be *Ancient Near-East Astronomical Carving*, chaired by Nancy Cox. NCHALADA is the Northern California Historical Astronomy Luncheon and Discussion Association. www.nchalada.org

The NCHALADA meetings 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.

Another Star Party

One July 21/22, 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@funastro.com to let him know if you are planning on attending.

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. Simple 8x40 binoculars will give even more remarkable views. There are rumours that the Milky Way was observed casting shadows.

Consider arriving early enough to walk around and enjoy the scenery: www.sjaa.net/ws/ridge_panorama.jpg.

Astro Events

Jupiter Transits

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.

July

Sat 8	GRS	9:15p	11:00p	1:00a
Wed 12	E	8:30p	9:48p	11:05p
	Es	11:00p	12:03a	1:28a
Thurs 13	GRS	8:20p	10:10p	12:10a
Fri 14	I	8:42p	9:47p	10:52p
	Is	9:55p	10:46p	12:00a
Sat 15	GRS	10:00p	11:46p	1:52a
Tues 18	GRS	na	9:22p	11:20p
Thurs 20	GRS	9:15p	10:55p	12:51a
Fri 21	I	10:35p	11:41p	12:43a
	Is	11:49p	12:42a	1:54a
Sat 22	GRS	10:32p	12:38a	2:38a
Sun 23	GRS	na	8:32p	10:32p
Tues 25	GRS	8:13p	10:07p	12:11a
Thurs 27	GRS	9:50p	11:45p	1:50a
Sat 29	I	12:30a	1:31a	2:38a
	Is	1:43a	2:38a	3:48a
	GRS	11:35p	1:20a	3:26a

Pleasanton Library star party on July 12, 2006. Debbie Dyke shows M13 to the kids. Conrad Jung points to Superman, while children look at Albireo through his scope.

Sun 30	I	na	8:02p	9:07p
	GRS	na	9:15p	11:16p
	Is	8:12p	9:05p	10:18p

August

Tues 1	GRS	9:00p	10:51p	12:51a
Fri 4	GRS	na	8:27p	10:21p
	Gs	10:05p	10:53p	11:53p
Sun 6	Es	na	9:13p	10:39p
	GRS	na	10:05p	12:03a
	I	8:52p	9:58p	11:02p
	Is	10:07p	11:01p	12:13a

Astronomical Insights

by David Feindel

What got me to resume writing AI is this month's "interesting" astronomical project—find a near earth asteroid, 2004 XP14, as it flew by. The project was initiated when a couple of chat rooms first disclosed the existence of this small asteroid (expected to be 400-900m in diameter) around June 28. Sky & Tel among others published finder charts on their web site around July 1. Of special interest is that this asteroid was passing "only" about 269,000 miles from earth (1.1x the Moon's distance). Passing this close, it has a relatively high velocity, traveling about a moon diameter every 4 minutes.

The first thought, of course, is Bruce Willis and *Armageddon*. But this asteroid is much smaller than the one in the movie. It is thought to be 8 to 20 times larger than the asteroid the caused Meteor Crater (estimated to have been 50 meters in diameter) in Arizona. So if its course had been just a *bit* different…

The first difficulty in finding it is that it is dim. Very dim. Estimated to be mag 11, which makes it very problematical to see in my 8" SCT from any local (i.e., light polluted) location. The second difficulty is that it doesn't become visible until about 11:50 p.m. on July 2nd after the Moon sets and it clears the NE horizon. It first appears in Perseus and disappears from view about five hours later in Cepheus when the sky starts to lighten. Dr. Clay at the Arkansas Sky Observatories reports that it will be visible during the first week of July, but will be fading to mag 13 or 14 over this period.

There were a couple of strategies for trying to locate it. It would pass 1° west of NGC 457 (the "ET cluster") at 12:35 a.m. and within 10 arc minutes east of NCG381 at 1:10 a.m. Rather than do this, I decided to take advantage of my scope's goto capability, and try to find it at specific times at specific locations, as shown on S&T's finder charts, to give us more chances to find it. (A third possible strategy—get the orbital elements from http://cfa-www.harvard.edu/iau/Ephemerides/Unusual/SoftwareUnusual.html, download them into my AutoStar, and then let the scope track it the entire way. But I chose not to.)

My daughter and I went out to Del Valle, which has noticeably better northern horizon than our yard, as well as being a half magnitude darker. Conditions were ok, although seeing was a bit soft. We amused ourselves taking several long looks at Jupiter (all four moons were on one side, an unusual occurrence), the Moon, and various other eye candy. We used the SCT to find the Wild Duck Cluster (M11), and then taught ourselves how to star hop to it using our refractor (115mm). Seeing throughout the night was a bit soft; going above 150x caused images to degrade. Some humidity in the air also reduced the transparency a bit.

Finally, the moon set and it was time to seek out XP14. The remaining decision was what EP to choose. Larger FOV or higher magnification (i.e., darker sky)? We opted for a wide FOV (well, wide by SCT standards) and settled on one giving us 95X and a 41' FOV. We input 1h45m RA, 55.0° Dec, hit "goto" and looked. Nothing. We each looked for 3 minutes. Still nothing. Nudge the scope a bit. No. Time to move to the next position: 1h 37m RA, 56.0° Dec. This time, we put a spare jacket over our head to help darken the view. Still nothing for either of us. A third location, then a fourth, and then a fifth. Still nothing. At this point, we decided that getting a good view of M11 constituted success for the night, and packed it in. So 2004 XP14 eluded us. It will be interesting to see if other amateurs in the Bay Area saw it, and if so, with what equipment. My suspicion is that Del Valle isn't really dark enough to see mag 11 objects with an 8" scope, especially with less than very good conditions. In retrospect, I should also have downloaded the orbital elements and tried tracking. Next time!

What's Up *by Debbie Dyke*

All times Pacific Daylight Saving Time unless otherwise noted.

July

10 Mon **Full Moon**. 8:02 p.m.

11 Tues 1979 Skylab re-enters the Earth's atmosphere.

12 Wed Neptune 3° North of the Moon. 9:00 p.m.

13 Thurs Moon at perigee (225,858 miles). 11:00 a.m.

14 Fri Uranus near the Moon in the evening.
1965 Mariner 4 makes first flyby of Mars and takes pictures.

16 Sun 1994 Comet Shoemaker-Levy 9 begins plunging into Jupiter. The plunging continues through the 20th.

17 Mon **Last Quarter Moon**. 12:12 p.m.
1850 First photo of a star (Vega).

18 Tues Mercury in inferior conjunction. 12:00 a.m.
1984 Svetlana Savitskaya becomes the first woman to take a walk in space.

19 Wed 1846 Edward Pickering born.

20 Thurs **The Moon 0.4° North of the Pleiades (M45) as they rise in the East**. 2:00 a.m.
Venus 1.5° South of M35 (25° W) 2:00 p.m.
1969 Apollo 11 lands at Tranquillity, placing the first men on the Moon.
1999 Space capsule Liberty Bell retrieved from the bottom of the ocean.

21 Fri **Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.
Mars 0.7° North of Regulus (30° E). 11:00 p.m.
1925 John Scopes convicted for teaching evolution.

22 Sat 1972 Venera 8 makes the first soft landing on Venus.

23 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.
1995 Alan Hale discovers his half of Comet Hale-Bopp.

24 Mon **Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.
New Moon. 9:31 p.m.

25 Tues Mercury at greatest heliocentric latitude South.

27 Thurs Look for Mars just North of the thin crescent Moon, low in the horizon. 9:00 p.m.
S. Eta-Aquarid meteors peak. 12:00 a.m.

28 Fri 1851 First photo taken of a solar eclipse—the corona is discovered.

29 Sat Moon at apogee (251,351 miles). 6:00 a.m.

30 Sun 1971 Apollo 15 lands on the Moon. The next day, astronauts Scott and Irwin take a little spin in the Lunar Roving Vehicle.

31 Mon 1774 Oxygen is discovered. Everyone breathes easier.
1964 Ranger 7 impacts Moon, taking the first closeup views of the Lunar surface.

August

1 Tues 1818 Maria Mitchell born. She receives a gold medal from the king of Denmark for being the first to use a telescope to discover a comet.

5 Sat 1930 Neil Armstrong born.

8 Tues St. Dominic - patron saint of astronomers.

From Thunderstorms to Solar Storms. . .

by Patrick L. Barry

When severe weather occurs, there's a world of difference for people on the ground between a storm that's overhead and one that's several kilometers away. Yet current geostationary weather satellites can be as much as 3 km off in pinpointing the true locations of storms.

A new generation of weather satellites will boost this accuracy by 2 to 4 times. The first in this new installment of NOAA's Geostationary Operational Environmental Satellites series, called GOES-N, was launched May 24 by NASA and Boeing for NOAA (National Oceanic and Atmospheric Administration). (A new polar-orbiting weather satellite, NOAA-18, was launched May 2005.)

Along with better accuracy at pinpointing storms, GOES-N sports a raft of improvements that will enhance our ability to monitor the weather—both normal, atmospheric weather and "space weather."

New GOES-N satellite launches, carrying an imaging radiometer, an atmospheric sounder, and a collection of other space environment monitoring instruments.

"Satellites eventually wear out or get low on fuel, so we've got to launch new weather satellites every few years if we want to keep up the continuous eye on weather that NOAA has maintained for more than 30 years now," says Thomas Wrublewski, liaison officer for NOAA at NASA's Goddard Space Flight Center.

Currently, GOES-N is in a "parking" orbit at 90° west longitude over the equator. For the next 6 months it will remain there while NASA thoroughly tests all its systems. If all goes well, it will someday replace one of the two active GOES satellites—either the eastern satellite (75°W) or the western one (135°W), depending on the condition of those satellites at the time.

Unlike all previous GOES satellites, GOES-N carries star trackers aboard to precisely determine its orientation in space. Also for the first time, the storm-tracking instruments have been mounted to an "optical bench," which is a very stable platform that resists thermal warping. These two improvements will let scientists say with 2 to 4 times greater accuracy exactly where storms are located.

Also, X-ray images of the Sun taken by GOES-N will be about twice as sharp as before. The new Solar X-ray Imager (SXI) will also automatically identify solar flares as they happen, instead of waiting for a scientist on the ground to analyze the images. Flares affect space weather, triggering geomagnetic storms that can damage communications satellites and even knock out city power grids. The improved imaging and detection of solar flares by GOES-N will allow for earlier warnings.

So for thunderstorms and solar storms alike, GOES-N will be an even sharper eye in the sky.

Find out more about GOES-N at goespoes.gsfc.nasa.gov/goes. Also, for young people, the SciJinks Weather Laboratory at scijinks.nasa.gov now includes a printable booklet titled "How Do You Make a Weather Satellite?" Just click on Technology.

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*

Ron was able to talk with Tim and Debra during the down time between filming scenes—what a treat that must have been! He even got a speaking part, although it may be a while before he gets to star in his own movie.

To read more about it, and see some nifty pictures, visit Ron's web site and click on the "Seeing in the Dark" link. http://ronbissinger.home.comcast.net. The film will be aired on PBS stations sometime next year.

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.