PRIMEFOCUS

Tri-Valley Stargazers

May 2002

Meeting Info:

What
Telescope Night

Who
You

When
May 17, 2002
Conversation at 7:00 p.m.
Observing starts at twilight.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

May Meeting

Telescope Night

Come one, come all and bring your scope! Our May meeting will be a star party in back of the church. We'll be dusting off our loaner scopes and taking them for a test drive as well. If you're new to astronomy and have a scope you don't quite know what to do with, bring it along and we'll help you sort things out. In the market for a telescope? Come to the meeting and try out a variety of scopes to see what works for you. Due to the light pollution around the church, we won't be looking at any 12th mag galaxies; but a few bright objects will be visible, making up for the lack of dark skies. Jupiter will be high in the western sky, and the waxing crescent moon (5 days old) will be even higher.

Should the skies be cloudy (they wouldn't dare, would they?), we'll bring the party indoors. We'll tape some astrophotos on the wall, and do some great deep-sky observing with all the lights on! Being indoors will also allow folks to peek under the hoods and kick the tires of various types of telescopes.

Some of the scopes we have in the telescope rental program are two modified ten inch f/4.5 Coulter Odyssey Dobsonians, a Cave six inch f/8 Newtonian on a German equatorial mount with clock drive, a Unitron three inch f/16 refractor on a German equatorial mount, and a couple of Schmidt-Cassegrains on fork mounts.

News & Notes

Logowear Available

The club has two logowear shirts still available for purchase. There is one L and one XL, both are navy blue and come embroidered with the snazzy TVS logo. The cost is $37 each. If you are interested in one, or both, of these shirts, contact **Mike Anderson**.

2002 TVS Meeting Dates

Below are the meeting dates for 2002. 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 5th deadline is for the July issue).

Lecture Meeting	Board Meeting	*Prime Focus* Deadline
May 17	May 20	May 6
June 21	June 24	June 7
July 19	July 22	July 5
Aug. 16	Aug. 19	Aug. 2
Sep. 20	Sep. 23	Sep. 6
Oct. 18	Oct. 21	Oct. 4
Nov. 15	Nov. 18	Nov. 1
Dec. 20	Dec. 16	Dec. 6

Money Matters

At the April Board meeting, treasurer **Mike Anderson** reported the current balances (as of April 22, 2002) of our various accounts:

Checking	$1,508.06	
CD #1	$3,853.54	matures 05/17/02
CD #3	$2,378.16	matures 05/27/02
CD #4	$2,031.49	matured 04/16/02

Questionnaire Results

A whopping 12 members filled out and returned our annual questionnaire. So what did we learn from those 12? Four heard about TVS through Lumicon, two through a friend. Five joined for our dark-sky site, three to learn more about astronomy, and two each to meet other amateurs, and for the presentations and speakers.

All have a PC and internet access and have visited the TVS web site. Seven have borrowed books from the TVS library and would like the library to get more books on ATM and CCD topics. Half have been interested in astronomy for more than 35 years. Nine have been members less than five years, the other three for more than five years.

Six attend the meetings at least half the time, while the other six attend on occasion or never. Some of the program topics they'd like to see in the future center around current research in astronomy, cosmology, telescope technology, CCD imaging, photometry, ATM topics, astrophotography, planetary exploration, and more topics for beginners.

Here's how the members rated the following activities, with 1 being very important and 5 no interest.

	very important . . . . . .no interest				
	1	**2**	**3**	**4**	**5**
Monthly mtgs/speakers	6	2	1	0	1
Star parties at H20	2	4	1	2	1
Public star parties	1	3	5	0	1
Field trips to Yosemite, etc.	4	2	0	2	1
Using 30" FPOA scope	0	1	3	1	4
Telescope making	2	1	2	0	4
CCD Imaging	1	2	2	1	3
Astrophotography	2	2	0	2	3
Deep-sky observing	3	3	2	0	1
School programs	0	1	4	3	1
Computer programs, internet, etc.	0	4	4	1	1

Calendar of Events

Classic Sci-Fi Film Series

Chabot Space & Science Center

Chabot continues its Sci-Fi series by showing the following movies at the 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:

The Time Machine (original 1960 version), May 10 – 12

Contact, May 31 – June 2 & June 7 – 9

The Right Stuff, July 5 – 7 & July 12 – 14

Showtimes:

Friday - Sunday on the first two weekends of each month.

Fridays – 7:30 p.m.
Saturdays – 4:30 & 7:30 p.m.
Sundays – 4:30 p.m.

Newsletter header image: M51. Image taken at prime focus with an AP 10" Mak-Cass, ST10E, Color Filter Wheel, one each 10 minute exposure of RGB, 3x20 minute L. Also employed was an experimental f/11 compressor/field flattener. *Photo: Roland Christen of Astro-Physics.*

Calendar of Events *continued*

May 15, 7:30 p.m.
Who: San Francisco Amateur Astronomers
What: *SFAA's 50th Anniversary*
Where: Morrison Planetarium, San Francisco
Cost: Free

Celebrate the SFAA's anniversary with founding members Lou Epstein and Betty Neall, who will be talking about their memories of the history of the SFAA. Also a special musical presentation (flute ensemble) playing space music to Hubble Telescope images. There will also special edible treats (think cake).

May 16, 7:30 p.m.
Who: Ken Croswell
What: *The Universe at Midnight*
Where: Chabot Space & Science Center's Tien Megadome Theater
Cost: $5.00

For those of you who missed Ken's talk at TVS, he will present his talk at Chabot. He'll be discussing his most recent book, *The Universe at Midnight.* He describes recent revelations in cosmology, including the surprising discovery that the universe's expansion is accelerating. A reception and refreshments follows the talk

For reservations and information call 510-336-7373. Tickets may also be purchased through Ticketweb.com or at the door.

May 18, 9:00 a.m. to 9:00 p.m.
Who: AANC, and the College of San Mateo
What: *AANC Conference*
Where: College of San Mateo
Cost: Adults $25 at the door, $10 for ages 10-18.

The theme for this year's conference is *Everything Under the Sun (almost)* and will feature Bill Bourucki from the NASA Kepler Mission, Dominic Tenorelli from the DART Membrane Telescope, Nicholas Ilka from Coronado Optics, and Debra Fischer from California and Carnegie Planet Search. The conference will also showcase the College of San Mateo, the AANC astronomy clubs, and give participants more time to socialize.

Activities on this day (and night) include:

- Speakers galore.
- Presentation of AANC awards for amateur, professional, commercial and special astronomer for 2002.
- Solar viewing at lunchtime, weather permitting.
- Great box lunches available for $10.00.
- College of San Mateo Planetarium Shows at lunch and after the closing remarks.
- Exhibits, club exchanges, workshops and social hour after closing remarks.
- A Spaghetti Feed from 6:30-7:45 p.m. sponsored by the San Mateo County Astronomical Society. RSVP when you register, but pay at the (spaghetti) door.
- A star party in the evening from 7:45-9:00 p.m. Telescopes courtesy of CSM, SMCAS and other local amateur astronomers, weather permitting.

Visit www.aanc-astronomy.org for more info, including an agenda for the day and a registration form.

June 4, 7:30 p.m.
Who: Valerie Connaughton (Gamma Ray Astrophysics Group, University of Alabama)
What: *Gamma Ray Astronomy*
Where: Morrison Planetarium, San Francisco
Cost: $3.00

continued next page

Calendar of Events *continued*

Gamma rays, the Universe's most energetic light, are difficult to capture in telescopes. How do astronomers study gamma rays and what do they hope to learn from them? Discover some of the stranger objects seen at this end of the spectrum.

The purchase of tickets in advance of the lecture date is recommended. Make checks payable to Morrison Planetarium. Send self addressed stamped envelope and check to:

Dean Lecture Series, Morrison Planetarium
California Academy of Sciences
Golden Gate Park
San Francisco, CA 94118

For more info, visit the Academy of Sciences:
http://www.calacademy.org/planetarium/special.html
or call 415-750-7141.

Star Parties

The summer star party season is just a month away, with some activities getting a head start on the season. Check the club's web site for updates and more information.

May 18 **Mt. Diablo Star Party**
"Why do planets align with the Zodiac?"

May 24–26 Riverside Telescope Makers Conference
For info, visit www.rtmc-inc.org or call 909-948-2205.

June 1, August 3, Sept. 28 **H20 Open House**

June 8-9 (tentative) **Camp Shelly**

June 15, July 20, Aug 10, Sept 7 (tentative)
Sycamore Grove Star Party, Livermore

July 10-15 **Shingletown Star Party**
More info at www201.pair.com/resource/resource-intl/ssp.html or contact Mark Wagner by e-mail (mgw@resource-intl.com) or telephone (408-356-1125).

July 12–13 **Yosemite**

July 19-20 **Davis Starshow**

August 9–13 (tentative) **White Mountain Trip**

NGC 7479
This lovely photo to the right was taken by **Gert Gottschalk** in July 2001 from the FBO (Fremont Balcony Observatory). NGC 7479 is an 11th magnitude galaxy in Pegasus. Equipment used: 13" f/4 Newtonian, 11x4 min with a Starlight HX516.

Astronomical Insights

by David Feindel

Unfortunately, the real world is intruding on my budding amateur astronomer career in the form of a new job that involves travel. So I'm going to be even more of what Terrance Dickinson calls an armchair astronomer than before. One armchair event on my calendar is the Lick Observatory summer visitor program, which gives you an opportunity to look through both their 36-inch Clark refractor (c. 1890) and a 1-meter reflector. No choice of targets, but the Hercules Cluster as seen through a 1-meter scope is awesome! Sign up for the $5 tickets between May 21 and June 4 using the form at www.ucolick.org/public/sumvispro.html.

Your first trip to H2O. Remember it? My first was this past month, with Gary, Raymond, and Richard (?), the latter being a long-absent TVS member who showed up around 9:30, much to our collective surprise. The first two had their 8" SCTs; Richard showed up with 14x70 binos on a parallelogram mount and a SCT of undetermined size and origin. The sky was still somewhat cloudy as we paid our $3 while discussing if it would be worth it. But the clouds moved on as darkness came on, leaving us clear skies overhead. However, there was a considerable amount of muck along much of the horizon, making it difficult (well, in actuality, impossible for me) to see Omega Centauri. Richard saw it through the binos, as did Gary and Raymond, but none of us could see it through our scopes. More of a "this muck is slightly brighter than this other muck" is how I'd describe it. So I'll wait for another opportunity to add it to my list. The other highlight was Gary finishing his M-list; congratulations to Gary! But I didn't find this out until morning; due to my discovering another observing law–sleep in on the morning of your planned H2O run. I got too tired to think straight by 2 am, and crashed. But H2O skies are clearly darker than any other local place I've found, and you can't beat the low southern horizon. I'll be back!

The web site of the month is www.astro.geekjoy.com. Lots of features, including several applets for calculating limiting magnitude, double star resolution, etc; a long discussion of deepsky studies by optimal aperture; and lots of first-hand observing reports.

Collimating Collimators *by Hugh Bartlett*

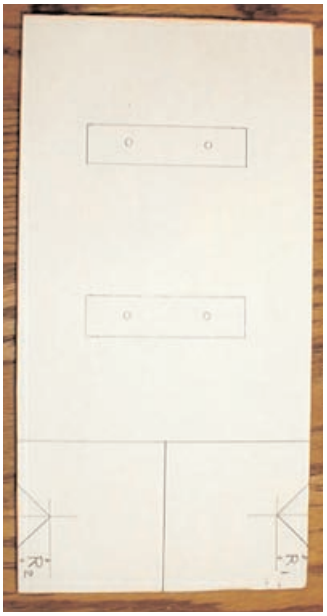
How To Test Your Laser Collimator

The best images come from the best optics, and the most effective way of improving ones optics is to get them aligned properly. The most significant advance in recent years in collimation devices is the Laser collimator. Not only is it more precise, it is simpler to move a laser dot than it is to align double images of cross hairs and dots seen in a Cheshire eyepiece. It can also be done in the dark! Furthermore, through the use of a 45 degree window, such as those in the EZCollimators (available from EZTelescope.com), one person can collimate the primary mirror from the back of the telescope without getting up and down to look through the top of the scope to see what that last adjustment did to the alignment.

That sounds like a pretty strong case for getting a laser collimator, right? But if the collimator beam is not perfectly on axis (and they do go out of adjustment just like telescope mirrors) you will be constantly mis-aligning your optics, rather than having them achieve their optimal performance. To ensure that you are not doing more harm than good, you should periodically check the alignment of your collimator. To do this, you need a jig to hold the collimator while you rotate it to check that the spot stays in one place. That is what this article is about.

Materials

All you need to test your collimator is a simple cradle. To make one, you need: a short piece of 1" x 6" pine, four #8 1.5" long deck screws, and some basic hand tools, such as a try square, “C”-clamp, hand saw, drill, screwdriver, and wood file to smooth the rough edges.

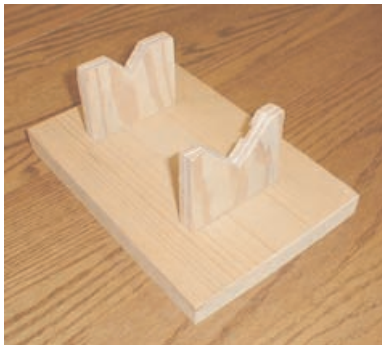


Layout and Cutting

First, lay out all your cuts in pencil (see left photo). Draw a line 3" from one end of the board. Then bisect this end down the middle of the board to form the two end supports. The remainder of the board will be the base of the cradle. Finally, lay out the notches on either side of the board that will hold the collimator. You want to support the collimator on its smoothest surface near either end. Mark a line in from each side of the board equal to the radius on each end of the collimator. Then draw a 45 degree line from the center of this line in either direction toward the edge of the board. This will ensure that the collimator contacts the two sides of the groove deep enough that it will not roll out while you are turning it.

It is easiest to make the groove cuts first, while you can hold onto the longer base portion of the board. Similarly, make the center cut down the end of the board before cutting off the end supports. Then position and mark where the end supports will go on the base plate. Mark a drill hole 3/4" in from each side of either support.

Drilling and Assembly



Now drill the four 1/8" clearance holes in the base plate. It also helps to drill out the angle for the head of the screw with a larger bit, although deck screws are designed to self-pilot and set themselves. On the bottom of the end supports, measure in 3/4" from one end, and drill a 3/32" pilot hole. All you need is one pilot hole per support to get you started; the deck screws can work their way into the support on the other hole without splitting the wood if centered properly. Insert one of the screws through the base plate and into the pilot hole. Screwing it snug, but not tight, swing the support into position and insert and tighten the second screw. Do this on the other end and you are done!

Testing and Alignment

In order to test your collimator, clamp the base to a table with a C-clamp, and aim it at a distant wall. Tape a blank paper on the wall and trace the image of the red dot. Then rotate the collimator a quarter turn at a time and see if the spot moves in a small circle. If it stays in one place, your collimator is in perfect alignment.

If the spot moves, trace it at each quarter turn. Then mark an alignment target in the center of the four dots. Using the adjustment screws on the collimator, move the red dot to this target. Test and re-align if necessary until the dot stays put.

That’s it! Now you can collimate your telescope with the confidence of knowing your collimator is working properly, and the results will be the best images your telescope can produce.

What's Up *by Debbie Dyke*

All times Pacific Daylight unless otherwise noted.

May

4	Sat	**Last Quarter** 12:16 a.m.
10	Fri	Venus 18' N of Mars, with Saturn 4.4° S of the pair at 9:00 p.m.
12	Sun	**New Moon** 3:45 a.m. Mother's Day.
13	Mon	Just after sunset, and very low in the sky, the extremely thin crescent Moon is just 3° below and to the right of Saturn and 3.5° to the left of Mercury.
14	Tues	Look low in the west around 9:00 p.m. to see Venus just 2°, and Mars just over 4°, below and to the right of the Moon.
15	Wed	The Moon now comes close to Jupiter, just 5.5° below and to the right of the big gas ball.
17	Fri	**Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore. Bring your scope! Venus at perihelion.
19	Sun	**Tri-Valley Stargazers discussion meeting**. 2:00 p.m. at the Round Table Pizza on 1024 E. Stanley Blvd., Livermore. Join your fellow members to chat about astro stuff. **First Quarter Moon** 12:42 p.m.
20	Mon	**Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.
23	Thurs	Moon at perigee (226,290 mi) 9:00 a.m.
24	Fri	Riverside Telescope Makers Conference begins. Conference ends on Sunday the 26th.
26	Sun	**Full Moon** 4:51 a.m. **Partial Penumbral Eclipse** visible from the Bay Area. The eclipse starts at 3:18 a.m., reaches maximum (about 60% coverage) at 4:40 a.m., and ends after the Moon sets.
27	Mon	Memorial Day. Mercury in inferior conjunction.
29	Wed	1919 Einstein's theory of general relativity is tested for the first time during a total solar eclipse.
31	Fri	Mercury at aphelion.

June

1	Sat	**H2O Open House. See Star Parties listing on page 4 for more info.**
2	Sun	**Last Quarter Moon** 5:05 p.m.
3	Mon	Venus 1.5° N of Jupiter low in the west around 9:00 p.m.
4	Tues	Moon at apogee (250,803 mi) 6:00 a.m. 1948 Dedication of the 200-inch scope on Mt. Palomar.
6	Thur	Pluto at opposition.
9	Sun	1812 Johanne Galle (Neptune discoverer) born.
10	Mon	**New Moon** 4:46 p.m. **Annular Solar Eclipse!** A nice crescent sun will be visible from the Bay Area. First contact at 5:07 p.m., maximum about 6:13, third contact at 7:18 p.m. The eclipse track is across the Pacific Ocean, its greatest duration is just 23 seconds long. Partial phases from eastern Asia, Australia, and most of western North America. Visit http://sun earth.gsfc.nasa.gov/eclipse/eclipse.html for more information.
12	Wed	Jupiter just 2° S of the Moon at 9:00 p.m.
13	Thur	Venus 3° S of the Moon at 9:00 p.m. 1831 James Clerk Maxwell born.

Astro Events

Jupiter Transits

Jupiter is fading fast from view. These may be your last opportunities to view its spot and moons for awhile. Below is a listing of transits times for these objects. The abbreviations are: 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., Is=Io's shadow); na means Jupiter is below the horizon at that time, or that it is up but it's still daylight.

May

Date	Object	Starts	Meridian	Ends
Tues 7	Is	na	8:15p	9:25p
Wed 8	GRS	9:00p	11:00p	na
Fri 10	GRS	10:30p	na	na
Sat 11	GRS	na	8:30p	10:30p
Mon 13	GRS	8:15p	10:15p	na
	E	na	9:00p	10:20p
	Es	9:34p	10:50p	na
Tues 14	I	na	9:15p	10:20p
	Is	9:05p	10:05p	11:15p
Wed 15	GRS	9:55p	11:45p	na
Sat 18	GRS	na	9:20p	11:20p
Mon 20	GRS	9:00p	11:00p	na
	E	10:20p	na	na
Tues 21	I	10:10p	11:15p	na
	Is	11:00p	na	na
Thur 23	GRS	na	8:35p	10:35p
Sat 25	GRS	na	10:10p	na
Mon 27	Cs	9:35p	na	na
	GRS	9:55p	na	na
Tues 28	GRS	na	na	9:40p
Thur 30	I	na	na	8:50p
	Is	na	8:30p	9:35p
	GRS	na	9:25p	na

June

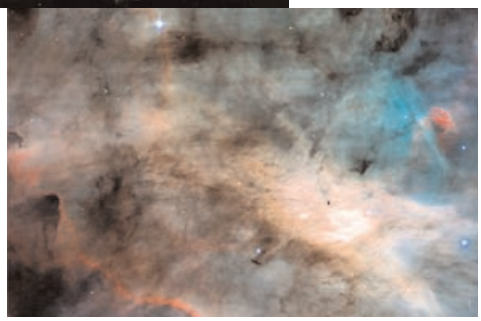
Sat 1	GRS	9:00p	na	na
Tues 4	GRS	na	8:30p	10:30p
Thur 6	I	na	9:45p	na
	Is	9:20p	10:20p	na
	GRS	na	10:05p	na
Fri 7	Es	na	8:00p	9:25p
	Gs	na	8:55p	10:30p

New Hubble Images

UGC 10214
The Tadpole Galaxy in Draco
This image is constructed from three separate images taken in near-infrared, orange, and blue filters. Photo taken on April 1 and 9, 2002.

NGC 2264
The Cone Nebula in Monoceros
This image is constructed from three separate images taken in blue, near-infrared, and hydrogen-alpha filters. Photo taken April 2, 2002.

NGC 4676a/b
The Mice in Coma Berenices
Composite of 3 sets of images taken on April 7, 2002, in blue, orange, and near-infrared filters.



M17
The Omega or Swan Nebula in Sagittarius
This image is a composite from 4 separate images taken in these filters: blue, near infrared, hydrogen alpha, and doubly ionized oxygen. Photo taken April 1 and 2, 2002.

These newly released images from Hubble come from the new Advanced Camera for Surveys (ACS) installed on Hubble during the last Shuttle mission. The ACS is a 16 *million* megapixel camera. It has double the size and resolution, and a five-fold improvement in sensitivity, of the former camera, the Wide Field Planetary Camera 2 (WFPC2). Hubble just keeps getting better with age.

PRIMEFOCUS

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

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 _____

Choose one: _____ I wish to download *Prime Focus* from the web (an e-mail notification will be sent to me when it's available for download). I understand that a paper version will *not* be mailed to me.
_____ I wish *Prime Focus* to be mailed to me.

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

Membership category: _____ $5 Student _____ $20 Individual _____ $25 Family
_____ $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.