

FIRST LIGHT



Journal of the South Bay Astronomical Society - September 2005
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, September, 9th, 7:30 PM

Guest Speaker: Dave Vakil

A Demonstration of the El Camino Planetarium Projector



The Trip to Mt. Palomar



On August 13, 26 members and friends of the SBAS attended the 1 hour tour of the 200-inch Hale telescope atop Mount Palomar. In addition to the 23 SBAS members, we had a family from Liverpool, England join our tour! For those who made the trip from LA that morning, the sky was clouded over with the marine layer until almost to the mountain. Fourteen miles from the telescope, the sky finally cleared and turned a beautiful deep blue.

After meeting at the visitor's center, we made the short hike up to the dome. The warm summer afternoon was moderated by a cooling breeze and the sight of that massive white dome against the deep blue sky. Our tour was lead by Scott Kardell, Mt Palomar staff and the

Friends of Palomar Observatory (www.friendsofpalomarobservatory.org). The tour began in the lowest level of the dome where we were able to see the massive support structure for the 550 ton telescope above our heads. The support piers reached about a hundred feet into the ground down to solid bedrock. The engineers used both riveting and welding in making the supports as welding was a relatively new technology then.

A gallery of historical hand drawings of the telescope, done from design plans long before the scope was built, makes an interesting exhibit. We also saw the Coude Mirror which was down for refurbishment. Also, on this level were various offices and darkrooms and maintenance room. Behind one door was an absolutely essential piece equipment: a pool table! Apparently used for those rare nights when the mountain was clouded over.



The Mirror Housing

mercury, the Hale Telescope uses high-grade motor oil as the lubricant. In the early days, the oil was specially manufactured 'telescope oil' because good quality motor oil was not available. Yet, the telescope is so precisely balanced that it takes only a 1/12th horsepower motor to keep it moving to track the stars. Young Anna Lehmer was assured that even



The Catwalk

she could move the telescope. Scott showed us the control console which hasn't changed much since it was built. Before the invention of CCD cameras and computers it took two people. The astronomer usually rode in the cage at the top of the scope and called out directions to the operator on the main floor. Of course, that placed the operator much closer to the restroom! Now, both the operator and astronomer sit and a new cozy, heated, control room and watch images develop on computers. Other curious tools in evidence were duct-taped bags of lead shot. Their purpose was to hold switches down while the operator went to the

restroom.

Of course, there are always the horror stories of a night on the mountain. For example, the astronomer who spent an entire night in the cage taking one picture only to find that he'd forgotten to open the shutter. Or the guy who spent four nights taking a spectrum of a star on the old glass plate that was used then, only to stumble and drop the plate while carrying it down. We also went up to the catwalk around the inside of the dome. Scott then flipped the switch that started the dome moving. The motion was so smooth that one could easily be convinced that it was that huge telescope that had to be turning. A short trip through a door and we were outside and could clearly see that it was the dome that was moving. From the dome catwalk we could see the other telescope domes and even the cement mass-model of the 200-inch mirror used to balance the structure prior to installing the mirror. Alas, all good things must come to an end and we had to hurry back down so Scott could greet his next tour group.

restroom.



Mirror Mass Model

Not having been satisfied with building the world's largest telescope three times in a row, George Ellery Hale set out

to build an even larger scope shortly after the 100 inch Hooker telescope was completed on Mount Wilson. By 1928 he had secured funding from the Rockefeller Foundation to build a 200-inch telescope. The top of Mt. Palomar in southern California was selected and in 1929, the Schmidt Camera was completed. In 1930-1934, the site for the 200-inch scope was prepared. From 1934 to 1936, Corning Glass Works in New York cast the glass for the mirror. That process was nearly aborted by severe floods which flooded even the glass factory itself. Yet, workers were able to keep the ovens running with only a brief interruption and the mirror cooling continued until the project was complete. In 1936, construction of the dome began as the mirror began its trip across the country by rail. It was such a big news story, that as the train passed through towns, schools were let out and business people came to the tracks to see the biggest piece of glass ever cast pass through. After 14 days, the mirror arrived at Cal Tech in Pasadena. The next 10 years were spent grinding and polishing the mirror, although lots of that time was interrupted by World War II. Finally, in 1947, the mirror was moved to Mt. Palomar. It took three semi trucks, one pulling and two pushing to make the trip of the

mountain. The observatory was dedicated in 1948 and, at long last, the 200-inch mirror saw first light in 1949. Hale, sadly, did not live long enough to see his grandest creation come into service. He died in 1938.

- Ray Grace and Ken Munson



Scott Demonstrates How the Scope Moves

The August 5 Meeting

Joe Fierstein chaired the August meeting, which started at 7:35 with a request that any newcomers introduce themselves. Two people did so, and were warmly applauded by the club members. Joe then discussed the SBAS's need for a constitution, consisting of bylaws that would regulate the appointment of club officers and give some order and direction to the workings of the SBAS. For example, the club has recently been offered a 13-inch telescope, which may become a significant commitment of time and effort to relocate and refurbish. It would be easier for the SBAS Committee members to accept this big responsibility, if they felt the club members had voted them in. Regularly-scheduled elections might also encourage more members to become involved in our club's organization, which is currently run on a very informal basis.

This night's featured speaker was our very own Nora H. DeMuth, who brought along her coworkers, Lauren A. Collins and Jennifer L. Jones, to speak as well. All three are community college students who are working for the summer at the Jet Propulsion Laboratory in Pasadena as undergraduate research fellows of the California Institute of Technology.

Nora's work is on "Infrared Spectroscopy of X-Ray Selected Seyfert Galaxies". A Seyfert galaxy is a nearby galaxy that appears to have a bright, point-like nucleus. This nucleus may be a massive black hole surrounded by an enormous doughnut of orbiting material, which glows brilliantly as the material falls into the black hole. But how can we determine this, if all we see is a bright dot? The answer; by using spectroscopy, which takes the light of the pinpoint nucleus, and spreads it out into a spectrum of color that shows very sharp (and informative) emission lines. Nora has been examining the infrared spectra taken by the Spitzer Space Telescope, of Seyfert galaxies that have been detected by X-ray telescopes. This is still a work in progress, but we may hope to see Nora's name on a research paper in the future, published in a refereed astrophysics journal.


Lauren Collins then spoke on "Synthesis and Thermoelectric Properties of the Eutectic $Pb_2Sb_6Te_{11}$ in the Pseudo Binary System $PbTe-Sb_2Te_3$ ". Thermoelectric devices convert the flow of heat into a voltage difference, which can provide electric power to spaceships, and to us right here on Earth. The alloy $PbTe-Sb_2Te_3$ can perform this wonderful function, and Lauren has been able to manufacture it, but not yet with the dendrite layers that others have created. She also intends to investigate whether doping the material (adding small amounts of metals such as tin) will improve its ability to produce electricity.

Our third speaker for the evening was Jennifer Jones, who described "Research at JPL in the Solar System Visualization Team". She began by handing out red-and-blue 3D glasses, and a 3D-picture of the Mars Exploration Rover. JPL is responsible for manufacturing animations of America's work in space, and for taking the data from spacecraft and presenting it in a form that is useful for researchers and the general public. Jennifer has been working on the GIS (Graphic Information System) software to organize and integrate data from spacecraft, and model the data in both two and three dimensions. Her work has concentrated on information obtained by the spacecraft studying Mars, so the data can be properly mapped and understood.

All three speakers did an excellent job in presenting their work. We can all be proud that our community colleges are able to help educate such fine students, and that JPL is able to give our next generation of professional astronomers an opportunity to do topnotch research. Joe thanked them for their efforts, and the meeting ended at 9:27.

- Steven Morris

Astronomy For City Dwellers



Explore the Night Sky Using The Latest In
"Go To" Computerized Telescopes. Learn
The Constellations, View Planets, Galaxies
and Star Clusters
No Experience Required

6 Wed Evenings 8 to 10 pm
April 13 to May 25 (no class May 11)
To Register Call PV Adult School
(310) 541 7626 Ex 708

Instructor: Joe Fierstein

Astronomy Class

Once again, it's time for folks new to astronomy to get a little practical experience at the hobby. At least they can experience as much as can be done from inside the city. That's always a good place to start! Check out Joe Fierstein's class via the Palos Verdes Adult School.

NexStar 8 Available to SBAS Members

All members in good standing (with at least six months of continuous membership) can borrow the club's Nexstar8 for up to 7 days. The fee of \$5 for a weekend, or \$10 for an entire week, is nonrefundable and will be added to the club's Accessories Fund "Wish List" for future purchases. A fully refundable deposit of \$200 cash or check is required. Loss or damage is the responsibility of the borrower. A copy of the complete South Bay Astronomical Society Nexstar 8 Borrowing Rules and Agreement is available upon request. The **Accessories Fund "Wish List"** – Member contributions of any amount or donations will be appreciated, as will any suggestions for new purchases!

SBAS Membership Benefits

Contact John Collins for magazine subscriptions at club rates: "Sky & Telescope" \$32.95 and "Astronomy" \$29.00! Make your check payable to SBAS and mail the payment and your subscription / renewal form directly to South Bay Astronomical Society, P.O. Box 1999, Redondo Beach, CA 90278.

Part of your SBAS membership dues goes toward membership in the Astronomical League. All paid members should be receiving the "Reflector", the league's newsletter, four times a year. As a member organization, we can participate in a number of award programs they offer. These are based on completing various observing challenges. Check out the Astronomical League website at www.astroleague.org

Our SBAS Committee

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Monthly General Meetings



We normally meet on the first Friday of each month at 7:30 p.m. in the Planetarium at El Camino College. If the first Friday is on or close to a holiday, we usually defer the meeting until the second Friday of the month.

The Planetarium is on the south side of Manhattan Beach Blvd., one block west of Crenshaw Blvd. (near the center of the map at left). Click on the map to get a display that can be zoomed out for a regional view. The zoom display appears in a separate browser window, which can be closed to return to this page.

The domed roof of the planetarium is visible from the street. There is on-street parking, and we can often use campus parking: check inside to see if you need a FREE parking permit for your car. Park in northeast corner lot, temporarily, due to the construction project.

We enjoy the planetarium facilities through the courtesy of the El Camino College Administration, and have several faculty members of the Astronomy Department as members of our Club. Our meetings always include an informal opening, when new attendees are invited to introduce themselves and let us know about their interests in astronomy. Members share their latest news and observations at this time. The rest of the evening is devoted to guest speakers, who range from amateur astronomers to professional astronomers to representatives from local aerospace companies to college professors. We are fortunate to have all these talented people in our area, willing to come and talk to us.

Monthly Planning Meeting

Committee members (and anyone else with an interest in Society activities) meet each month, usually on the Monday following the general meeting. Meetings are sometimes rescheduled due to travel and other circumstances. Exact date and time of each month's meeting will be announced in the schedule of events in *FIRST LIGHT* each month, and should also be verified with a committee member. The **September 12th** planning meeting will be held at 7:30 PM at the home of Craig Gates, 902 N. Prospect in Redondo Beach. From 190th Street, turn north on Prospect and Craig's house is the second house on the east side (with the Hermosa Beach sign in the yard). There is ample space for parking in the driveway or on the street.

September - Comets & Asteroids

Date	Identification	Magnitude	Distance
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No near Earth asteroids visible in September

Comets at Perihelion in September:

Date	Identification	Magnitude
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No visible comets at perihelion.

Comets Visible In September:

Name	Magnitude	Constellation
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No comets above magnitude 11 in September.

Asteroid Occultations in September:

Date	LocTm	Durn	Star	Mag	Star	Planet
y m d	h m	secs	mag	drop	No.	No Name
2005 Sep 25	3 8.1	10.6	10.4	0.9	TYC 7444-00407-1u	42 Isis
2005 Sep 28	3 56.4	4.3	10.7	6.0	TYC 5635-00660-1u	2920 Automedon
2005 Sep 29	5 10.6	4.0	9.7	4.6	TYC 6304-00543-1u	170 Maria

Event Summary for Longitude -118.29 Latitude 33.84 (Los Angles)

Star charts for the Asteroid Occultations are available on the SBAS website! Check on the JPL Ephemeris Generator page for coordinates of objects: <http://ssd.jpl.nasa.gov/cgi-bin/eph>

- Ken Munson

Goldstone Tracking Station Tour

Joe Fierstein raised the idea of a visit to the Goldstone Tracking Station near Barstow at the August Monthly Meeting. A number of people expressed interest in making the trip. We are tentatively trying to schedule a visit in early October, preferably around the 17th. It will have to be a weekday trip as there are no public tours on the weekends. It should be an interesting visit to this historic centerpiece of the Deep-Space Tracking Network that has participated in nearly every space venture since the early days of the space program.

Observing Reports

Observatory Campground – Mt. Palomar

Dr. Steve Morris and I made the trip to Mt. Palomar a day early in order to spend the night watching the Perseid Meteor Shower and other celestial objects. Arriving well ahead of sunset, we set up camp and then took a brief tour of the area including a short hike uphill along a nature trail. Several of the campsites were already setup for use with a telescope. In the designated dark-sky part of the camp, some of the campsites had a large cement platform with a marker pointing towards north. As nice as it was to have a prepared site, they seemed a little too close to the trees for my taste. A large chunk of the western and southern skies appeared to be blocked by trees. We chose a site with a large open area to one side and a good view of the sky in all directions.

It looked as if we were in for a cold, hungry night when, upon setting up to make dinner, I found I'd forgotten the matches! Fortunately, some nearby campers were happy to let us have a box of matches in exchange for some looks through the telescope.

Shortly after sunset the observing began. The sky was very clear although not perfectly stable. We were able to show our neighbors the planets Venus and Jupiter which seemed to amaze them. Later, after full dark, some of them came back for more and we gave them a tour of various objects. As we did, some other campers out for an evening stroll also joined us and we had quite a bit of fun showing off the Ring Nebula, the Dumbbell Nebula, and M13. M13 really impressed them.

We saw several bright Perseids even before 10 PM but then they seemed to peter out. Midnight came and went with hardly any meteor activity. It seemed to pick up a bit around 1 AM but didn't last for long. Apparently, the news report that the peak would occur over Asia this year was correct. At one point during the night, a large group of Spanish speaking campers settled on the road by our campsite. You didn't have to be able to speak the language to know when an especially bright Perseid streaked overhead!

According to my listing in last month's newsletter, there were two asteroid occultations to see on this night. Sadly, I completely forgot and missed the one that occurred around 10:30 PM. I did manage to catch the 2 AM show, though. This one was unusual in that the asteroid, Julia, was pretty bright, being about 9th magnitude. It was passing in front of HIP 7948, a 7.5 magnitude star. The asteroid was moving surprisingly quickly and one could easily see it approaching the star. Three other stars in the field-of-view, provided convenient guides (two of them at mag 11, the other at mag 12) to monitor the fading of the occulted star. By 2 AM the asteroid was lost in the glare of the star. At about 2:02 AM, the star flickered and then faded down to being just barely brighter than the 11th magnitude stars nearby. After a few seconds it brightened up again to its normal magnitude. It was exciting for me to finally see a really good occultation after all these months of producing predicts for them. In the excitement of observing it though, we both forgot to time it!

We finished off the night alternating between watching Perseids, hunting obscure galaxies, and trying to see how far south we could find NGC objects. The Sculptor Galaxy was magnificent, covering more sky than would fit in my widest eyepiece. NGC 55 was the farthest south object I could locate in the constellation Phoenix. It is similar to the Sculptor Galaxy, although a little smaller. It is apparently also a nearly edge-on disk galaxy.

By then it was nearly 4 AM and time to get some sleep before heading on up the mountain the next day for the Hale Telescope tour.

- **Ken Munson**

Ridgecrest School – July 30

Summer usually means "June Gloom" over the peninsula when the marine layer blankets the Palos Verdes hills. We have, in fact, been fogged out on a couple of occasions this year. However, July 30th was not one of them. It was an especially clear night and the club responded with a turn out of 8 'scopes from 60 mm refractors to Gary Kamikubo's 7 inch Mead APO (shown in photo) and Greg's 15 inch Dob. We were able to catch Venus before it set and then Jupiter, followed later in the evening, by Neptune, Uranus and perhaps Pluto. Although Greg confirmed its location by comparing star fields with a projection from the program "Starry Night" it was asking too much of the 15 in. After all, it was barely distinguishable from the stars around it when viewed thru the 60 in on Mt. Wilson. Gary's 7 inch refractor provided exceptional views of the planets; out done only by Greg's 15 inch, proving once again, that when it comes to resolution, aperture wins. Of course we also viewed many of our favorite deep sky objects. All in

all it was a great night of viewing and more than 20 SBASers and guests took advantage of it. Those in attendance were: Greg Benecke, Ken Fossi, Gary Kamikubo, Dave Gill, Arnie Stodolsky, Joe Fiersrein, Ken and Jo Ann Lehmer & daughter Anna, Mary Malone & husband, Jill Hamedata, James, Caitlin & Cindy Wedergren, the Staal family : Nanoo, Dara, Deven, & Lauren, and several others whose names I did not get. Welcome to all of our guests come join us again at our next Ridgecrest star party on Aug 27. Clear Skies.



- **Joe Fierstein**

Amateurs Receive Asteroid-Search Grants

August 24, 2005 | Five amateur astronomers searching for asteroids and comets that can potentially hit Earth will share the Planetary Society's 2005 Gene Shoemaker Near-Earth Object (NEO) Grants, which total \$32,500.

James W. Ashley (Fountain Hill, Arizona) will use his share to fund the Minor Planet Research's education project, which helps students to discover main-belt and Earth-approaching asteroids from Lowell Observatory Near-Earth Object Search survey images; Peter Birtwhistle (Berkshire, England) will use the grant to upgrade his existing CCD camera and enhance the ongoing NEO astrometric follow-up program at his private Great Shefford Observatory; David J. Higgins (Canberra, Australia) will use the money to purchase a CCD camera and filter wheel for use in NEO astrometry and light-curve studies at his Hunters Hill Observatory in Ngunnawal; Gianluca Masi (Ceccano, Italy) will use the grant to repair and upgrade Campo Catino Observatory's 0.8-meter telescope, which he uses for photometric observations of NEOs; and Erich Meyer (Davidschalg, Austria) will use his share to purchase a more sensitive CCD camera for his 0.6-meter telescope, which he uses for astrometry of very faint, newly discovered NEOs.

For more information, go the [Planetary Society's Web site](#).

- **From the Editors of Sky & Telescope**

Relativity Explained

"When you sit with a nice girl for two hours, it seems like two minutes. When you sit on a hot stove for two minutes, it seems like two hours...that's relativity."

-- **Albert Einstein**

Schedule of Coming Events

3 September Saturday Evening	Out-of-Town Dark Sky Observing – New Moon September 2 Please contact Greg Benecke to confirm the location
9 September Friday 7:30 PM	Monthly General Meeting Dave Vakil will demonstrate the El Camino Planetarium projector.
12 September Monday 7:30 PM	Monthly Planning Meeting Refer to page 2 for directions.
13 September Tuesday 7:00 PM	Astronomy for City Dwellers Joe Fierstein teaches basic astronomy at Palos Verdes Adult School.
15 September Thursday Evening 7:00 PM	Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday) “Mars Exploration – The Past, Present and Future” In less than a decade, six robotic spacecraft, one lander, two rovers and three orbiters have explore the atmosphere, surface and interior of the planet Mars.
24 September Saturday Evening	In Town Dark Sky Observing Session – Weather Permitting: Please contact Greg Benecke to confirm that the gate will be opened! Take Hawthorne Blvd. south across Pacific Coast Hwy.; continue up the hill past Silver Spur and turn left at Highridge. Go one mile and turn left on Whitley Collins, up one block and turn left on Northbay Rd., the new parking lot is at the end on the left. Enter parking lot and turn left, the gate is at the east end (it should be open about 15 minutes before sunset) and a paved road leading into the playground where we have traditionally set up. If at all possible, drop your equipment off and park your car in the new parking lot (less than 200 feet away). If you are absolutely certain that your vehicle does <u>not</u> drip anything you can park with your equipment. <i>Drive with care</i> to avoid steel pillars supporting basketball nets
1 October Saturday Evening	Out of Town Dark Sky Observing Session Please contact Greg Benecke to confirm the location
7 October Friday 7:30 PM	Monthly General Meeting Monthly General Meeting Speaker: Dr. Art Huffman
10 October Monday 7:30 PM	Planning Meeting Location to be announced
17 October Monday	Goldstone Tracking Station Tour Possible date for this tour. More details to be announced at October Meeting
29 October Saturday Evening	Dark Sky Observing Session Contact Greg Benecke for location.

South Bay Astronomical Society

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*General Meeting at El Camino College Planetarium:
Friday, August 5th at 7:30 P.M.*

Guest Speaker: Dave Vakil

“A Demonstration of the El Camino Planetarium Projector”

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South Bay Astronomical Society
P.O. Box 1999
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