FIRST LIGHT

Journal of the South Bay Astronomical Society – June 2007
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, May 4th, 7:30 PM

Guest Speaker: Dr. Steven Morris

"Astronomy and Creationism"

The May 4 Meeting

Nina Whiddon presents Perry Hacking and El Camino College with the first annual Bill Whiddon Memorial Fund for Astronomy Students

Vice-President Greg Benecke opened the meeting at 7:42 by welcoming newcomers John Rose and Jim Wisman. Joe Fierstein reviewed past and future outreach efforts and observing sessions of the Society, and Arnie Stodolsky noted that the Society still has one copy of Deep Sky software that is available for purchase at a discount. Walter Prue described his recent observations from Tucson, and Ken Munson reported on the Astronomy Day events at the local farmer's market, which included viewing Venus at noon, much to the astonishment of many passersby. Mona Delitsky distributed the April issue of her Science Newsletter.

A memorial fund for El Camino College is being set up in memory of Bill Whiddon, a founding member of the SBAS who died of cancer a few years ago. Jim Wertz, Joe Fierstein and Greg Davidson spoke fondly of working beside Bill and of observing with him, and Greg Benecke showed an assortment of Bill's astrophotos. Professor Perry Hacking then accepted a $250 cheque from the SBAS on behalf of El Camino College, presented to him by Bill's widow, Nina.

After a ten-minute break, our very own Ken Munson gave the evening's lecture, on "Introduction to Geostationary Space Operations 101". Geostationary satellites are located 22,300 miles above the Earth's surface, where they orbit the Earth once every 24 hours. First envisioned by Arthur C. Clarke back in 1945, such satellites remain above one line of longitude of the Earth and are valuable for large-scale earth imaging and for communications.

Keeping these satellites operating in such a harsh environment is a continuing problem. Sunlight is an ample source of power, but erodes the surfaces as well. Electric charges can gradually build up, then suddenly discharge and damage electrical components. Satellites plunge into darkness as they enter the shadow of the Earth or the Moon, draining the batteries and creating thermal stress. The extreme vacuum of space can alter the chemical behavior of components, causing system failure.

Simply keeping the satellites in place can be a problem. Each orbiter is assigned a slot 0.05 degrees on each side, but the Sun, Moon and Jupiter twist the orbits, causing drift. Multiple ground stations are used to monitor the distances to satellites precisely, and thrusters, magnetic fields or radiation pressure are used to push the satellites back into position.

Jim Wertz, founder of SBAS, Remembers Bill Whiddon

Even routine maintenance can be a problem, with no hands-on repair possible. Batteries must be reconditioned, sensors and gyroscopes calibrated, thermostats adjusted, clocks synchronized and propulsion systems monitored to detect leaks. With each satellite generating ten million dollars a month in revenue, all this effort must be made.

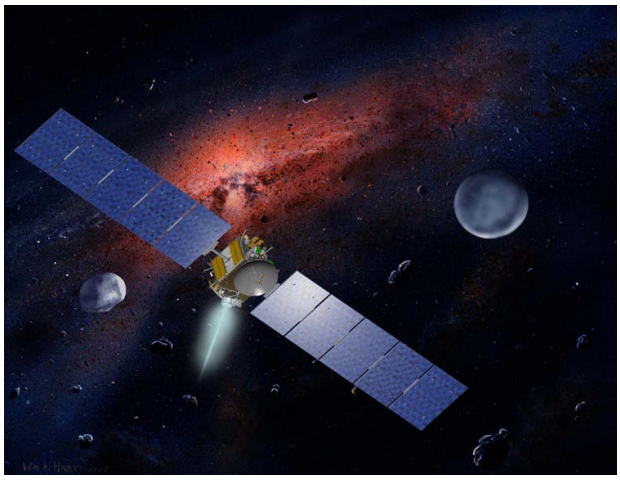
Ken Munson ended by pointing out that in the satellite business, a dull day is a good day. Ken answered a few questions from the audience, and the meeting ended at 10:17***.***

- Steven Morris

The Ions of Dawn

by Patrick L. Barry

This summer, NASA will launch a probe bound for two unexplored worlds in our solar system's asteroid belt—giant asteroids Ceres and Vesta. The probe, called Dawn, will orbit first one body and then the other in a never-before-attempted maneuver.



Artist's rendering of Dawn spacecraft, with asteroids. Largest are Vesta and Ceres. Credits: Dawn spacecraft—Orbital Sciences Corporation; background art—William K. Hartmann, courtesy UCLA.

It has never been attempted, in part, because this mission would be virtually impossible with conventional propulsion. "Even if we were just going to go to Vesta, we would need one of the largest rockets that the U.S. has to carry all that propellant," says Marc Rayman, Project System Engineer for Dawn at JPL. Traveling to both worlds in one mission would require an even bigger rocket.

This is a trip that calls for the *un*conventional. "We're using ion propulsion," says Rayman.

The ion engines for the Dawn spacecraft proved themselves aboard an earlier, experimental mission known as Deep Space 1 (DS1). Because ion propulsion is a relatively new technology that's very different from conventional rockets, it was a perfect candidate for DS1, a part of NASA's New Millennium Program, which flight-tests new technologies so that missions such as Dawn can use those

technologies reliably.

“The fact that those same engines are now making the Dawn mission possible shows that New Millennium accomplished what it set out to,” Rayman says.

Ion engines work on a principle different from conventional rockets. A normal rocket engine burns a chemical fuel to produce thrust. An ion engine doesn't burn anything; a strong electric field in the engine propels charged atoms such as xenon to very high speed. The thrust produced is tiny—roughly equivalent to the weight of a piece of paper—but over time, it can generate as much speed as a conventional rocket while using only about 1/10 as much propellant. And Dawn will need lots of propulsion. It must first climb into Vesta's orbit, which is tilted about 7 degrees from the plane of the solar system. After studying Vesta, it will have to escape its gravity and maneuver to insert itself in an orbit around Ceres—the first spacecraft to orbit two distant bodies. Dawn's up-close views of these worlds will help scientists understand the early solar system.

“They're remnants from the time the planets were being formed,” Rayman says. “They have preserved a record of the conditions at the dawn of the solar system.”
Find out about other New Millennium Program validated technologies and how they are being used in science $issions at http://nmp/TECHNOLOGY/infusion.html . While you’re there, you can also download “Professor Starr’s Dream Trip,” a storybook for grown-ups about how ion propulsion enabled a scientist’s dream of visiting the asteroids come true. A simpler children’s version is available at http://spaceplace.nasa.gov/en/kids/nmp/starr.

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

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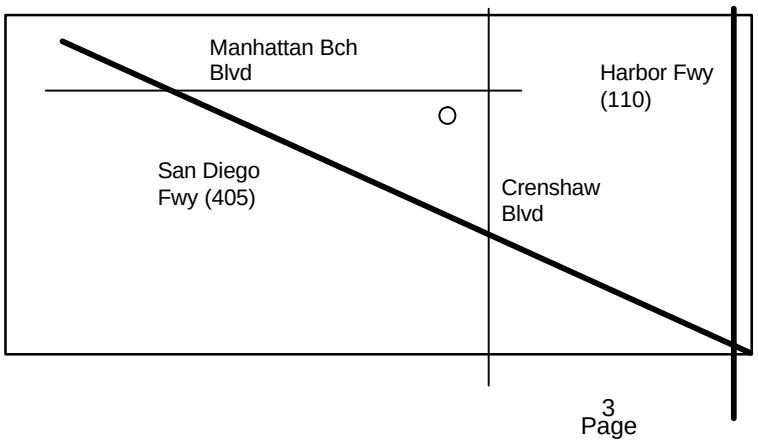

Monthly General Meetings

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).

The planetarium is the only round, domed building on campus. 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.

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 June 4th planning meeting will be held at 7:30 PM at the Ray Grace, 2706 Spreckels Lane in Redondo Beach (310) 370-1913. Take Hawthorne Blvd to 190th St., turn West to Inglewood Ave., then turn North (right) and proceed two blocks to Spreckels Lane and turn Right. If driving South on Inglewood Ave., Spreckels Lane is two blocks south past the light at Ralston Ave., and turn Left, to the 4th house on the right (South side). Parking is available on both sides of the street..

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 Arnie Stodolsky for magazine subscriptions at club rates: "Sky & Telescope" $32.95 and "Astronomy" $34.00/1 year or $60.00/2 years!

Changes to Sky & Telescope Renewal Procedures

For SBAS members who subscribe to Sky & Telescope at the ***member's rate***, may now renew by mailing your renewal notice with payment directly to S&T. Alternately, you can renew via phone at 1-800-253-0245. Payment at time of renewal is required.

New subscribers or members wishing to renew their subscriptions at the member's rate should send their check (made out to SBAS) to the P.O Box (include renewal notice if applicable). The member rate is $32.95/year.

Procedures for Astronomy Magazine remain unchanged. Make your check payable to SBAS and mail the payment and your subscription / renewal form directly to South Bay Astronomical Society, P.O. Box 1937, 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.

SBAS Membership News

Welcome new club members: John Rose.

June – Comets & Asteroids

Comets Visible in April:

Comet	**Mag**	**Constellation(s)**

None

Asteroid Occultations:
None

Planetary Occultations:

Local Date	Local Time		Durn	Star	Star	Planet
D M Y	Hr		m/sec	mag	No.	No
5-Jun-07	3	51.3	144m	8	HIP 82734	Jupiter

Check the JPL Ephemeris Generator page for coordinates of these objects at:
http://ssd.jpl.nasa.gov/horizons.cgi#top

Observing Reports

Asteroid 2006 VV2 Passes by the Earth - I don't usually pay much attention to asteroids, but in early March, Ken Munson pointed out to me that asteroid 2006 VV2 would be passing near the Earth at the end of the month, and that we should try to see it. As it turned out, Ken had family commitments and couldn't spare the time, but I decided to observe it on Friday, March 30.

It looked for a while as if I wouldn't be able to observe it either, as a brush fire erupted in the early afternoon just north of the Hollywood sign, casting a pall of smoke over the Los Angeles basin, reaching into Torrance. California; come for the earthquakes, stay for the fires. In the days of my youth, up in Canada, I was more concerned with frostbite than forest fires when practicing amateur astronomy in the month of March. By evening, the smoke had abated, although a smell of burning wood lingered in the air as I set up my telescope.

I had a look at Saturn and its six brightest satellites (Dione, Enceladus, Iapetus, Rhea, Tethys and Titan) and the almost-full Moon, 30 degrees away from the asteroid. Fortunately, I had plotted the position of the asteroid ahead of time in the Millennium Star Atlas, so I found it easily enough. While no speed demon, the asteroid moved at a respectable one degree per hour, making its motion noticeable as it passed near a faint star. There are advantages to owning a 24-inch telescope; a tenth-magnitude asteroid can't hide behind the light of the Moon and Los Angeles. There are also advantages to owning modern star atlases and computer software; in the olden days (the '60s), finding asteroids and separating planetary moons from background stars was much more of a chore.

There are two ways of thinking about watching an asteroid go by. One is to contemplate that this expanse of rock racing through the vacuum of space at a distance eight times greater than the distance to the Moon, is a Near-Earth Object that could some day crash into our planet, creating devastation of the sort that has ushered in new eras of life on Earth in the past. Or, you could look at this as a slow-moving dot in an eyepiece. Amateur astronomy is more fun if you take the first view, as so much of what we see through our telescopes is either a dot or a faint smudge of light, of no interest unless you think of what this seemingly trivial view actually is.

And on that philosophical note, I called it a night.

- Dr. Steven Morris

Angeles Crest – Since I may not be able to make the dark sky trip this month, I chose to get the darkest sky I could on the weekend of the in-town observing session. I headed up to my old observing site along the Angeles Crest Highway. It appears that this site is not as good as it used to be. The two times I've been up there this year, there has been a steady stream of cars going by all night long, well into the early hours of the morning. Apparently, from talking with a carload of people who stopped by, one of the camps down the road has become the site of a weekend

party. I think I shall have to look around for another, quieter site.

The weather conditions were not the most auspicious. At sunset a high altitude cloud stretched overhead and others could be seen to the southeast. As the sun set, though, the clouds cleared and the wind died down and the observing conditions were pretty good. Early on, the images of Saturn and Venus were quite good and I was able to make out a fair amount of detail on Saturn, easily pickup up the 5 major moons.

As the sky darkened, I decided to try some experiments with my autoguider and Nikon camera. Unfortunately, I discovered that my guiding eyepiece had a dead battery, so I could only get a close polar alignment but not as perfect as I would normally do. After going through the instructions and running the Pictor autoguider through its calibration cycle, it seemed to be working. However, judging from the photos, it wasn't quiding all that well. The stars all had streaks in one direction. Was this due to an inaccurate polar alignment? Hard to say for sure. One of the Pictor's displays is supposed to show the XY correction that it is making. However, that continued to read 00 all the time, which seems to indicate that it wasn't making any correction at all. Oh, well, I will experiment some more next time.

After that fiasco, I went back to using the Meade DSI. The first target of the night was Comet Lovejoy, which had been a fairly bright comet while visible in the southern hemisphere. It's now faded to 10th magnitude but was still nice to see. After that I tried to get some galaxy photos. NGC 2903 in Leo is a very nice, nearly face on spiral which is very photogenic. However, it was already too low and I was only able to get about 10 minutes exposure before it was hidden by a tree. M57 came out looking really nice, though as I already had several pictures of it, I didn't take a lot of time on it. NGC 4724 was an interesting surprise. It appears to be a 'ring' galaxy, i.e., a bright core surrounded by a ring of stars with no apparent spiral arms. I was only able to get about 5 minutes worth of exposure time before clouds moved in again so I can't be sure my description is correct. This one will be high on my target list for next time!

By 12:30 high clouds began moving in again so I called it a night, packed up and headed for home, completely forgetting that the next day was Mother's Day!

- ***Ken Munson***

Ridgecrest School - The night at Ridgecrest was attended by Ken Lehmer and son Will, Feddie Limas and his family, Steve Pedersen, Michael Harrison, Joe Fierstein, Tim Moore, Shawn Belveal and his family, Bill Eisele, and one other gentleman that was not a member but came on motorcycle with a backpack scope, and yours truly, Ken Rossi. We did have a number of visitors that viewed Saturn, Venus and some other objects. The night was clear and cool, the seeing was maybe a 3. High clouds began to move in around midnight. We attempted to find a comet in the area of Ursa Minor but were not successful. I did get to see globular clusters M13 in Hercules, M5 in Serpens Caput, M4 in Scorpius, M3 in Canes Venatici, and toward the end of the night Jupiter with one moon emerging from the back side. All in all, a fairly good night.

- Ken Rossi

Solar Happenings

Ever wonder what's going on with the sun? There's any easy way to find out, in more ways that one can usually see with a backyard telescope. The SOHO spacecraft has been working for years providing near real-time solar imagery in a wide range of frequencies. The main SOHO website (http://sohowww.nascom.nasa.gov/) is a great place to start. There are links to images and movies on this site. Two of the main experiments on board are the Large Scale and Spectrographic Coronagraph (LASCO) and the Extreme-ultraviolet Imaging Telescope (EIT). The Naval Research Laboratory is the primary investigator for these instruments. For some really fantastic images of the sun from the corona down through the photosphere in multiple colors check out the LASCO/EIT site at http://lasco-www.nrl.navy.mil/. You'll see the sun in a whole new light!

Schedule of Coming Events

1 June Friday Night 7:30 PM	**Monthly General Meeting** Speaker: Dr. Steven Morris Topic: Astronomy and Creationism
4 June Monday Night 7:30 PM	**Monthly Planning Meeting** Location: See Page 4.
4 June Monday	**Dodson Middle School Presentations and Solar Viewing** SBAS will be supporting an astronomy-related science weeks for Dodson Middle School 8th graders with presentations and solar observing. The school is located at 28014 Monteraina Drive, Rancho Palos Verdes.
9 June Saturday 2:18 AM	**Double Shadow Transit on Jupiter** Ganymede begins crossing the face of Jupiter around 12:30 AM. Io joins in and by 2:18 both shadows will be visible on the face of Jupiter.
9 June Saturday Evening	**In Town Dark Sky Observing Session at Ridgecrest Middle School–** 28915 NortbBay Rd. RPV, 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 not drip anything you can park with your equipment. *Drive with care* to avoid steel pillars supporting basketball nets**. Note: If you a visitor, not bringing a scope, it is requested that you park in the small parking lot on Northbay Rd.**
16 June Saturday Evening	**Out of Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
19-20 June Saturday & Sunday	**JPL Open House** View images from Mars, Saturn and the Universe! Get run over by a Mars Rover. Lots of things to see and do at the JPL Open House. 4800 Oak Grove Drive, Pasadena, Calif. 91109.
21 June Thursday Evening	**Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday)** "Phoenix: A Science and Weather Station on Mars" Dr. Leslie Tamppari. Launching in August 2007 for arrival in late May 2008, the Phoenix mission will bring 11 science experiments to explore the northern near-polar environment on Mars.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, June 1st at 7:30 P.M.

Guest Speaker: Dr. Steven Morris

"Astronomy and Creationism"

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South Bay Astronomical Society
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