FIRST LIGHT

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

Monthly General Meeting: Friday, August 3rd, 7:30 PM

Guest Speaker: TBA

"TBA"

The July 6 Meeting

President Ken Rossi opened the meeting at 7:34 by asking newcomers to introduce themselves. Eleven did, out of an audience of more than 50 people in a crowded planetarium. President Rossi then reviewed the previous and upcoming SBAS events, including a trip next April 5 to the Mt. Wilson 60-inch, for $48 per member.

Ken Munson reported observing the recent conjunction of Venus and Saturn in the evening sky. He had set up his telescope on his front lawn, and was able to see both planets in the daytime. The neighborhood kids found out about this, and Ken wound up holding an impromptu star party until 10:30 at night! Bill Eisele took a small telescope to Florida, and also showed off Venus, Saturn and Jupiter in Florida, and along the way.

After a 13-minute social break, President Rossi introduced Dr. Vince Lloyd, a professor at El Camino College who got his BA in Cornell University, and his Master's and Ph.D. at Columbia University. Dr. Lloyd gave an excellent planetarium show, on "The Precession of the Equinoxes".

The sky undergoes three apparent motions due to the motions of the Earth. The daily rotation of the Earth around its axis makes objects appear to rise in the east and set in the west. The yearly revolution of the Earth around the Sun makes the Sun appear to drift from west to east against the background of the stars, taking one year to return to the same location. The third motion is the wobble of the Earth's rotational axis once every 26,000 years around the ecliptic pole, which appears to us as the precession of the equinoxes. This precession is inconspicuous because it takes such a long time to occur, and was first detected by Hipparchus more than 21 centuries ago. It was only 3 centuries ago that the cause of this motion was discovered by Isaac Newton, as due to the gravitational pull on the Earth's equatorial bulge by the Moon and Sun.

This motion appears to us on Earth as a gradual shift of the North Celestial Pole around a circle 23.5 degrees in diameter, surrounding the constellation Draco. By great good fortune, the Pole is currently less than one degree from the second-magnitude star Polaris, making it fairly easy for us (in the northern hemisphere) to orient ourselves. In the distant past, the Pole remained at the same altitude above the northern horizon as seen from Los Angeles, but Polaris was many degrees away, changing the appearance of the sky.

At this point, the CHRONOS planetarium projector made a dramatic appearance, rising from the center of the room. Dr. Lloyd began by introducing the current sky and pointing out the Milky Way and various constellations, demonstrating both daily motion and annual motion. Thanks to precession, the astrological signs no longer match the constellations; the Sun was in Aquarius the day I was born, for example, but I am considered a Pisces. The point in the sky where the Sun crosses the celestial equator into the northern hemisphere is still called the First Point of Aries, although it is now in Pisces and is heading into Aquarius. This is indeed the dawning of the Age of Aquarius, for those of us who remember 'Hair'.

Dr. Lloyd then set the sky to 12,000 years in the future. Vega will be a pole star, and Polaris will not only be visible near the zenith, it will set below the horizon. With the planetarium set to 4,400 years in the past, the Southern Cross

and alpha and beta Centauri were visible from Los Angeles! Interestingly, the constellation Hydra stretched along one-quarter of the celestial equator. It was presumably then that this constellation and others were first invented by the cultures of the Middle East.

The Pole will return to the neighborhood of Polaris in 26,000 years, but proper motion will have moved some of the stars themselves to other parts of the sky. The sky we see now will not return. Dr. Lloyd ended the presentation by looking briefly at precession as seen in the southern sky. Ken Rossi presented Dr. Lloyd with a plaque as a token of our gratitude, and the meeting ended at 9:28.

- Dr. Steven Morris

Tones from the Deep

By

Patrick Barry and Tony Phillips

Now is an exciting time for space enthusiasts. In the history of the Space Age, there have never been so many missions “out there” at once. NASA has, e.g., robots on Mars, satellites orbiting Mars, a spacecraft circling Saturn, probes en route to Pluto and Mercury—and four spacecraft, the Voyagers and Pioneers, are exiting the solar system altogether.

It’s wonderful, but it is also creating a challenge.

The Deep Space Network that NASA uses to communicate with distant probes is becoming overtaxed. Status reports and data transmissions are coming in from all over the solar system—and there’s only so much time to listen. Expanding the network would be expensive, so it would be nice if these probes could learn to communicate with greater brevity. But how?

Solving problems like this is why NASA created the New Millennium Program (NMP). The goal of NMP is to flight-test experimental hardware and software for future space missions. In 1998, for instance, NMP launched an experimental spacecraft called Deep Space 1 that carried a suite of new technologies, including a new kind of communication system known as Beacon Monitor.

This artist's concept shows the New Horizons spacecraft during its planned encounter with Pluto and its moon, Charon. The spacecraft is currently using the beacon monitor system on its way to Pluto. *Credit: Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute (JHUAPL/SwRI)*

The system leverages the fact that for most of a probe's long voyage to a distant planet or asteroid or comet, it's not doing very much. There’s little to report. During that time, mission scientists usually only need to know whether the spacecraft is in good health.

"If you don't need to transmit a full data stream, if you only need some basic state information, then you can use a much simpler transmission system," notes Henry Hotz, an engineer at NASA's Jet Propulsion Laboratory who worked on Beacon Monitor for Deep Space 1. So instead of beaming back complete data about the spacecraft's operation, Beacon Monitor uses sophisticated software in the probe's onboard computer to boil that data down to a single "diagnosis." It then uses a low-power antenna to transmit that diagnosis as one of four simple radio tones, signifying

"all clear," "need some attention whenever you can," "need attention soon," or "I'm in big trouble—need attention right now!"

These simple tones are much easier to detect from Earth than complex data streams, so the mission needs far less of the network's valuable time and bandwidth, Hotz says. After being tested on Deep Space 1, Beacon Monitor was approved for the New Horizons mission, which is currently on its way to Pluto, beaming back a simple beacon as it goes.

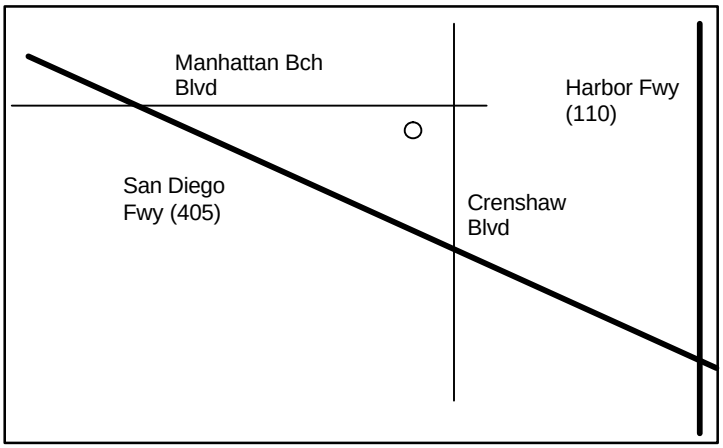
This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

SBAS Executive Board

President	Ken Rossi	515-1586	ken_a_rossi@yahoo.com
Vice-President	Greg Benecke	217-1512	beneckerus@aol.com
Secretary	Steve Pedersen	378-6479	epsonstlyusc82@earthlink.net
Treasurer & Astronomical League Rep.	Arnie Stodolsky	937-0220	astodols@ix.netcom.com

SBAS Committees

Program Chairman	Greg Benecke	217-1512	beneckerus@aol.com
Astronomical League Liaison	Bill Eisele	542-5070	Astronomy131@msn.com
Newsletter Reproduction	John Collins	- - -	westcoast@runbox.com
Publications Committee:			
SBAS Website Webmaster	Alex Athas	- - -	sbas_elcamino@yahoo.com
***First Light* Editor**	Ken Munson	782-0873	kenmunson333@sbcglobal.net
Observing Committee	Greg Benecke	217-1512	BeneckeRUs@aol.com
	Craig Gates	376-6387	- - -
Membership Committee	Ray Grace	370-1913	Rgrace1@roadrunner.com
Publicity Committee	Joe Fierstein	377-9834	Joefiers@verizon.net
	Arnie Stodolsky	937-0220	astodols@ix.netcom.com
Property Committee	Arnie Stodolsky	937-0220	astodols@ix.netcom.com
Outreach Committee	Joe Fierstein	377-9834	Joefiers@verizon.net



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 August 6th planning meeting will be held at 7:30 PM at the home of Greg Benecke. From Crenshaw Blvd., head West on 182nd St. Shortly after going under the 405 overpass you will see a Fire Station on the right. Turn right into the cul-de-sac just after the Fire Station. From Prairie Ave., head East on 182nd St. Go one block past the second traffic light (Yukon Ave.) and make a left into the cul-de-sac just before the Fire Station. You are making the correct turn if you see a sign saying "Park Place" on the white fence on the Northwest corner next to the Fire Station. Greg's house is the first one on the left side of the cul-de-sac 18161 Patronella Ave., Torrance.

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!

SBAS Membership News

Welcome new club members:

Susanna Bosrock of Carson and Jeffrey Chavez of El Segundo

Attention members and prospective members! See the website http://www.geocities.com/membership.html for Membership Application forms, Renewal notices, Dues Schedule and Change of Address.

How about receiving the FirstLight via email? It will help reduce the cost of postage and printing. If you would like to receive the FirstLight via email, call or E-Mail to Ray Grace, Membership Committee.

User-Friendly Autoguider Software

Although I've spent a lot of time learning and enjoying my Meade DSI to take astrophotos, I've really been longing to use my Nikon D100 DSLR camera. However, the need to manually guide or having to spend $1000 or more to buy a guider precluded that. Well, thanks to fellow club member, Freddy Limas, I found out about some software that might be useable for autoguiding my telescope. PHD Guiding (http://www.stark-labs.com/phdguiding.html) shows a great deal of promise. Written to utilize a Meade LPI or DSI as well as several other webcams, PHD provides a very good, low-price option for people wanting to get into long-exposure astrophotography. It has a very simple, easy to follow interface and uses the same ASCOM software that Starry Night uses to control several different types of telescope. So, if you've already used SN to point your telescope, you're already halfway there!

PHD is a very user-friendly piece of software and was extremely easy to use. There are, literally, only 5 buttons to push: Camera Select, Scope Select, Loop (takes quick snapshots to allow the user to focus), Guide and Stop. Thanks to this program, I think I now know why my Pictor never worked. With PHD I could finally see what the camera sees via the off-axis guider. As I'd thought, it is very, very difficult to get an image to focus when you can't see it! With PHD, it took only a few minutes of tinkering to get set of faint stars to show up on the screen, even though I was in my backyard here in the city. From there all I had to do was click on a star and PHD went through

an automatic calibration where it learned how to move the scope. I thought this was a very powerful idea since so many other guiders and software I've seen required a certain orientation of the guider in order to work. PHD doesn't care. It looks at the star and moves the scope around to figure out exactly what it needs to do in order to guide. Having learned how to move the telescope, it shouldn't be necessary to do another calibration unless you disturb the guide camera.

The one caveat to be aware of is that the very first time the software is run, it comes up with a set of parameters that are used to fine tune the control of the scope. These may not be right for a particular scope and it may take several iterations to find the right settings. Fortunately, the website contains some FAQs which also happened to include a set of recommended settings for a Celestron telescope. When I tried those, I was immediately successful in guiding on a star. The total time I spent learning how to make it work was only about 2 and a half hours spread over a couple of nights.

Links to this software and a few others can be found at:
http://www.skyinsight.net/wiki/index.php/Autoguiding_Software

- ***Ken Munson***

A Visit to a Local Observatory

Greg and Patty Mayfield recently moved to the Palos Verdes Peninsula from Arizona and purchased a home in Rolling Hills. Not just any home; this beautiful home is located on 9 lovely acres including 2 horse corrals & barns, a large detached club house, and would you believe - a large roll off roof observatory equipped with a 16 inch Celestron pier mounted scope! The roof is motorized and rolls off at the push of a button. The scope is computerized using Celestron's CompuStar control system. Unfortunately the Mayfields have no background in astronomy or telescopes, but are eager to learn. A friend who was at an SBAS star party at Cornerstone School suggested they get in touch with us.

So, on Tues July 17th Jacques Linder and Joe Fierstein visited the Mayfields. We had no idea what to expect. To say we were surprised is putting it mildly. Not being familiar with the Compustar system we could not be of immediate help in operating the scope, but we did give them some general background and left a stack of literature for getting started in astronomy.

The Mayfields daughter, 8 year old Mansfield, is in the Girl Scouts and they would like SBAS to provide a star party sometime in the future when they are more settled. In the meantime they loaned us the manual for the CompuStar System and we are going to try to get a rep from Celestron to come out and instruct us in its use. If anyone has experience in using this system please let us know. Any help in getting the system operational will be appreciated.

The Mayfields expressed some interest in allowing the club to utilize the scope in return for instruction and star parties. This scope, being equatorially mounted, would make an excellent platform for astrophotography - bring your own camera. All in all it was an interesting experience and has the potential for becoming a mutually beneficial relationship. If we do get invited to use the facilities you shouldn't miss the chance. It will sharpen your desire to have an observatory of our own. Stay tuned, we'll keep you posted.

- Joe Fierstein

August – Comets & Asteroids

Comets Visible in April:

Comet	**Mag**	**Constellation(s)**
None		

Asteroid Occultations:
None

Planetary Occultations:
None

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

Observing Reports

Venus-Saturn Conjunction – On Saturday, June 30, Venus and Saturn were passing by each other in the western sky. Since that evening was their closest approach to each other, I set my telescope up on the sidewalk in front of my house. I got set up a couple hours before sunset because I was sure I could fine Venus during the daylight and there was a high probability of finding the sun in daylight. With these two objects as alignment points, I would have a good chance of finding anything else. Sure enough, Venus was easy to spot but Saturn was a bit tougher to see with the sun still in the sky. As neighbors were out for their evening walks, I invited them over to get a look at this rare astronomical event. Many neighbors stopped to take a look and all were impressed with the incredibly steady view of Venus and faint Saturn at the extreme edges of the FOV of my 35mm Panoptic eyepiece. They were really impressed that they could see these planets even before the sunset. After sunset the view became even better. One mother sent her teen-age son down and we had a really excellent conversation about astronomy and science. He was so excited by it that he went home and called his friends. Not only did they get to see Saturn and Venus, but also Jupiter and a selection of double stars. Epsilon Lyra 1&2 really grabbed their attention when I showed how different they looked at low power and again at high power, where the closer doubles could be resolved. Since I had been hiking up in the San Gabriel Wilderness during the day, I had only intended to stay out until about 8:30. The star party was such a hit with the teens, I ended up staying out until nearly 10:30 PM!

- ***Ken Munson***

Pacific Crest – The lure of dark skies and warm weather called me away to the Pacific Crest on Saturday, the 7th of July. For the first time this summer, it seems to have gotten back to its usual lonely quiet. Unlike my previous outings there, which were interrupted by a nearly constant stream of cars going to parties at one or more campgrounds up the road, this night only had about 5 cars go by. One car pulled into the parking lot and they turned out to be an elderly couple, one of whom was associated with the Stony Ridge Observatory nearby, who had come up to do some visual stargazing. Unfortunately, they caught me in the middle of doing my drift alignment, so I was unable to show them anything although I did let them use my image-stabilized binoculars which quite impressed them.

It took me an unusually long time to get the drift alignment done. Once it was done, I ended up wasting a couple of hours trying to get my old Meade Pictor 201XT autoguider to work. Once again, although it went through the correct steps, it would never quite track. Having been thoroughly frustrated, I settled back into using the Meade DSI with no guiding at all. With little more than an hour and a half before the moon rose, I was able to get a couple of really good images. The best of the evening was M17, the Swan Nebula, which turned out surprisingly good in spite of having to look southward through LA's light dome. Since the scope and DSI were working well, I went after another difficult target, Stephan's Quintet. It turned out surprisingly good for having only 35 minutes of exposure time.

By this time, the moon had risen and the faint fuzzies were getting hard to see. As it was now after 2 AM, I decided to pack it in.

- Ken Munson

Redrock-Inyokern Road – On Saturday, the 14th, club members Greg Benecke, Arnie Stodolsky, Craig Gates, Ken Rossi and I made the trip out to the Redrock-Inyokern road site for the monthly dark-sky trip. The day did not bode well with the sky partly clouded but the prediction was for clearing after sunset. As the sun set, the sky did begin to clear. I got my Nexstar 11 set up and did a fake align and then re-aligned using the sun and Venus as anchor points. Once I had those two, I did a slew to Jupiter and replaced the Sun with it. Now I had two, much tighter alignment references. With that, I was able to slew down to Antares and up to Arcturus, both of which were visible with the sun still well above the horizon! Venus and Jupiter were both very crisp as the sky was amazingly stable at sunset.

As the sun set, Jupiter's giant moon, Ganymede, slowly separated from the planet's disk. At 8:43 PM, Ganymede's shadow began traversing the face of Jupiter. Once again, the seeing was surprisingly good, in spite of the intermittent clouds. While waiting for the sky to get dark enough for a proper polar alignment, I alternated between visual observing and DSI imaging of Jupiter.

Unfortunately, I ended up wasting the best part of the evening struggling to do a drift alignment. For some reason, things just didn't want to work right and I ended up taking nearly 2 and a half hours to get the drift alignment done. I wanted to have a good polar alignment, as this would be my first field-test using my DSI as an autoguider with the PDH Guiding software. For my first image of the night, I slewed over to an easy target, M8 – the Lagoon Nebula. After getting the image in the Nikon D100 focused and finding a guide star, I had the PDH software start guiding and opened the shutter. Alas, two minutes later I had to close the shutter as M8 became obscured by clouds. That became the pattern for the rest of the night. It seemed that whatever clear parch of sky I pointed the telescope at became clouded over within a minute or two of opening the shutter.

I finally surrendered to the sky gods and gave up using the camera. Fortunately, I'd also planned, just in case, some visual targets. I'd heard that with various magnifications, one can make out different details on the Cat's Eye nebula in Draco. Unfortunately, no lens I had provided anything more than a bright fuzzy ball. M33, on the other hand, was absolutely the most spectacular I've ever seen it. In my Panoptic 35mm lens, the spiral arms were clearly visible, extending to the edge of the FOV and beyond. Even the huge star forming nebula NGC 604 in M33 could be seen.

By 3:00, I had gotten fed up with fighting the clouds and went to sleep in the car. However, I left the scope aimed at Mars. When I got up at sunrise, I checked the scope and found that Mars was right in the largest open patch of sky. Amazingly, it was the steadiest view I've had of Mars in a long while. With very little atmospheric distortion I was able to use my 10mm eyepiece with a Barlow lens. Unfortunately, the dust storm that is now raging on Mars reduced surface visibility to nearly nothing. I could only see faint traces of surface markings. After that, the sky closed in again and I packed up. To add even more insult, as I left, it began to rain!

Maybe better luck next time.

- Ken Munson

Schedule of Coming Events

3 August Friday Night 7:30 PM	**Monthly General Meeting** Speaker: TBA Topic: TBA
4 August 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.**
6 August Monday Night 7:30 PM	**Monthly Planning Meeting** Location: See Page 4.
11 August Saturday Evening	**Out of Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
16 August Thursday Evening	**Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday)** "Launching Science into Space" Erik Conway. In 1952, a group of American scientists decided the world scientific community should undertake a third International Polar Year (IPY), building on those carried out in 1882–1883 and 1932–1933. The idea of launching an artificial scientific satellite during the IPY took hold and the event was renamed the International Geophysical Year, or IGY.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, August 3rd at 7:30 P.M.

Guest Speaker: TBA

"TBA"

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South Bay Astronomical Society
P.O. Box 1937
Redondo Beach, CA 90278