

# Sonoma Skies

Newsletter of the Sonoma County

A nonprofit scientific and

www.sonomaskies.org



Astronomical Society

educational organization

August 2004

Volume XXVII No. 8



The author and your president showing their "best" sides. Photo by Len Nelson

## SCAS Star-B-Que August 7

Come to our annual outing at the Robert Ferguson Observatory at Sugarloaf Ridge State Park! This event is one of our most fun-filled activities of the year. Ed Megill (of the SRJC Planetarium) will conduct a sky tour, pointing out the different constellations and many interesting features and names in our Summer Sky.

It's a good time for beginners to get help learning the sky or using a telescope. Striking Sparks winners are especially invited. Bring your telescope and its instruction manual, your planisphere, a list of questions you'd like to ask, and some red cellophane for your flashlight.

**To find Sugarloaf Ridge State Park,** take Hwy. 12 from Santa Rosa toward Sonoma. Turn left onto Adobe Canyon Rd. just before you reach Kenwood. It is 8.6 miles from Fourth and Farmer's to the Adobe Canyon Rd. turnoff. From Sonoma, it's a right turn after Kenwood. The Park is 3.4 miles farther.

At the entrance kiosk identify yourself as part of the Sonoma County Astronomical Society headed for the Star-B-Que at the Observatory (however, if you're an RFO docent, please identify yourself as such). There will be no entry fee for the first 20 cars/50 guests; thereafter the Park fee is \$6, so plan to come early. Pets must be kept on a leash, with a \$1.00 charge for each animal.

**Parking:** Parking is limited, so please carpool if possible. Park by backing in to minimize jarring white light from backup lights if you leave in the dark. Park close together, with just enough room to open your door. Parking on pavement and grassy areas prohibited. If you arrive after 8:30 PM, or if campground parking is full, park next to the group campsite entrance gate, about 100 yards away.

**Times:** We are allowed in at Noon. Solar viewing will begin at 2:00 PM. The barbecue fire will be started about 5:00 PM so we can begin cooking around 6:00 PM.

*continued page 6*

## Yosemite 2004: SCAS Pilgrims' Rock Party

by John Whitehouse

This July several SCAS members went on an annual pilgrimage to the icon of California's natural wonders: Half Dome. But instead of bowing to the sacred rock in the east, they bent to their eyepieces to revel in the celestial splendors offered by the dark skies over Glacier Point in Yosemite National Park.

Judging by reports of disappointing weather for our Yosemite star parties the past few years, we must have done something right this year. Perhaps our resident shamans made sacrifices pleasing to the gods of the summer constellations. Or maybe our event coordinator, Len Nelson, put fresh batteries into the clear sky clock!

In any case, both nights' observing on July 9-10 was very good. A few afternoon clouds lingered near the eastern horizon on Friday, but the beautiful glow visible on the ground testified to how bright the Milky Way was, thanks to Glacier Point's dark night sky. Seeing was also excellent. Only while splitting Lyra's double-double with Len's magnificent 130mm AstroPhysics refractor at ridiculous magnification (500+x) did I see any twinkling of the stars. Perhaps almost as wonderful as the pageantry of summer's

*continued page 6*

Young Astronomers: See page 7

### REMINDER

There is NO August 11 meeting at Proctor Terrace School. The Star-B-Que replaces the August meeting.

## SCAS MEMBERSHIP

### MEETINGS AND STAR PARTIES

**Membership Meetings** take place at 7:30 PM on the second Wednesday of each month, in the Multipurpose Room of Proctor Terrace Elementary School on Bryden Lane near Fourth Street in Santa Rosa, unless otherwise announced in this publication. The public is invited.

**Star Parties** are held monthly on the Saturday nearest the 1st quarter moon at Youth Community Park in Santa Rosa.

**Access to Geysers Observing Site:** The site is locked to public access. For use during monthly star parties, SCAS members can obtain the combination to the gate lock to the site by contacting any board member listed to the right.

### DUES

Membership dues are \$25, renewable June 1 of each year. New members joining between December 1 and May 31 may pay partial-year dues of \$12.50.

### DISCOUNT SUBSCRIPTIONS

SCAS offers discount subscriptions to *Sky & Telescope Magazine*. New subscribers, send a check for \$32.95 payable to "SCAS", along with your complete mailing address, directly to: Larry McCune, 544 Thyme Place, San Rafael, CA 94903. For renewals, send him your check with the completed renewal card and return envelope.

Discount subscriptions to *Astronomy Magazine* occur yearly in October. Check *Sonoma Skies* for details.

### RENTAL TELESCOPES

SCAS members are eligible to borrow telescopes for a \$5 per week donation. Five telescopes are available: 8" and 5" Celestron SCTs, each complete with clock drive and inverter; 8" and 12.5" Newtonians on Dobsonian mounts; an 80mm refractor on motorized equatorial mount. Contact Joan Thornton at 707-762-0594.

### NEWSLETTER

*Sonoma Skies* is the newsletter of the **Sonoma County Astronomical Society (SCAS)** and is published each month. Subscription is included as part of membership to the Society.

Articles, news items and member announcements for *Sonoma Skies* are welcome. Submissions must be typed or, if on computer media, in a commonly used word processing and/or graphics format, and may include graphics (pictures, drawings, etc.) They are published on a first come, first served basis, space permitting, and may be edited.

**The deadline for submissions is the last Wednesday of each month.**

Mail To: SCAS, P.O. Box 183, Santa Rosa, CA 95402  
Editor: Cecelia Yarnell, [ceceliy@sbcglobal.net](mailto:ceceliy@sbcglobal.net)

[www.sonomaskies.org](http://www.sonomaskies.org)

## SCAS ELECTED BOARD

### PRESIDENT

Keith Payea 566-8935 [kpayea@bryantlabs.net](mailto:kpayea@bryantlabs.net)

### VICE-PRESIDENT & PROGRAM DIRECTOR

June Ferguson 762-7064 [justica809@bigfoot.com](mailto:justica809@bigfoot.com)

### TREASURER

Larry McCune (415)492-1426 [llmccune@comcast.net](mailto:llmccune@comcast.net)

### SECRETARY

Loren Cooper 525-8737 [lorenco@sonic.net](mailto:lorenco@sonic.net)

### MEMBERSHIP DIRECTOR

Harry Linder 542-9167 [harry@sonic.net](mailto:harry@sonic.net)

### COMMUNITY ACTIVITIES DIRECTOR

Len Nelson 763-8007 [lennelsn@comcast.net](mailto:lennelsn@comcast.net)

### PUBLICATIONS DIRECTOR

Cecelia Yarnell 569-9663 [ceceliy@sbcglobal.net](mailto:ceceliy@sbcglobal.net)

## SCAS APPOINTED POSITIONS

### AMATEUR TELESCOPE MAKING

Steve Follett 542-1561 [sfollett@sonic.net](mailto:sfollett@sonic.net)

### YOUNG ASTRONOMERS ADVISOR

Gary Jordan 829-5288 [SieraMolly@aol.com](mailto:SieraMolly@aol.com)

### STRIKING SPARKS PROGRAM COORDINATOR

Len Nelson 763-8007 [lennelsn@comcast.net](mailto:lennelsn@comcast.net)

### LIBRARIAN

Joan Thornton 762-0594 [phonyjoanie@earthlink.net](mailto:phonyjoanie@earthlink.net)

### PUBLIC STAR PARTY COORDINATOR

Bruce Lotz 576-7833 [ablotz@sonic.net](mailto:ablotz@sonic.net)

## LIBRARY

SCAS has a library of astronomy books that may be checked out by members at SCAS meetings. College textbooks donated by Joe Tenn of SSU are available. Books may be borrowed for a period of one month and returned at the next meeting. Videotaped lectures on astronomy are available for rent at \$3 per month. Requirements: SCAS membership and your name and phone number.

For more information, contact Joan Thornton at 762-0594, [phonyjoanie@earthlink.net](mailto:phonyjoanie@earthlink.net)

## SCAS EGROUP URL

Any SCAS member is welcome to join. Hosted by Robert Leyland at [r.leyland@verizon.net](mailto:r.leyland@verizon.net) the majority of traffic is about going observing, observing reports and astronomy-related news. We get news items from AANC and Sky & Telescope and chat about astronomy.

To join, either visit <http://groups.yahoo.com/group/scas> and click the "Join" button, or send an email to [scas-subscribe@yahoo.com](mailto:scas-subscribe@yahoo.com)

# The Semirius Astronomer

by Herb Larsen



*Well, son it looks like you are all set for the Perseid Meteor shower.*

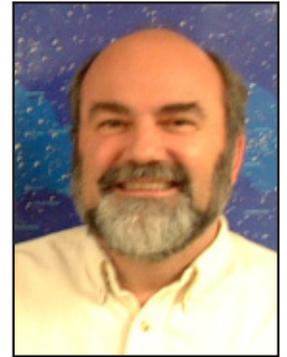
## President's Column

# Science Fiction Museum

by Keith Payea

At the end of a very tiring business trip to Seattle last month, I had a few hours to kill before heading for the airport. I decided to check out the newly opened Science Fiction Museum (SFM) at Seattle Center. I'm sure glad I did.

The SFM was founded by Paul Allen, and it occupies a corner of the same building which houses his "Experience Music Project"—a suitably futuresque home. Many of the items in the museum come from his personal collection, and the displays include an impressive variety of artifacts from science fiction movies over the ages. There are hundreds of books and magazines, including a first edition of Jules Verne's *Paris in the 20<sup>th</sup> Century* (in French, of course). My personal favorite was the robot from the *Lost in Space* television series: "Danger Will Robinson!" In addition to the movie props, there were also a number of items from the US and Russian space programs.



The exhibits are arranged around several themes, such as Robots, Cities, Post Apocalypse, Mars, and so-on. There was also a large mural on one wall with a time line, explaining the different phases that the genre went through, and the world events which influenced Science Fiction through the years. In one area, they had a collection of Science Fiction Art, including several by Chesley Bonestell, one of the masters of the genre.

And of course, what museum like this would be complete without an entire Star Trek section. I think the highlight of this area was the commander's chair from the Enterprise, used in the TV series.

I highly recommend the Science Fiction Museum, especially if you can get a chance to visit the Pacific Science Center, just on the other side of the Space Needle from the SFM. To learn more, and to take a small virtual tour, check out <http://www.sfhomeworld.org>.

## REFRESHMENT PERSON NEEDED FOR SCAS MONTHLY MEETING

Gary Flowers is stepping down from handling refreshments for the SCAS monthly meetings, and we are grateful for his efforts this past year. Now we're looking for a volunteer. Coffee and tea are instant, so it's just a matter of gathering and setting out the ingredients and heating water.

For your efforts, SCAS offers one year of free membership as a thank you. If you'd like to help, please contact any board member listed on Page 2.

## MEMBERSHIP NEWS

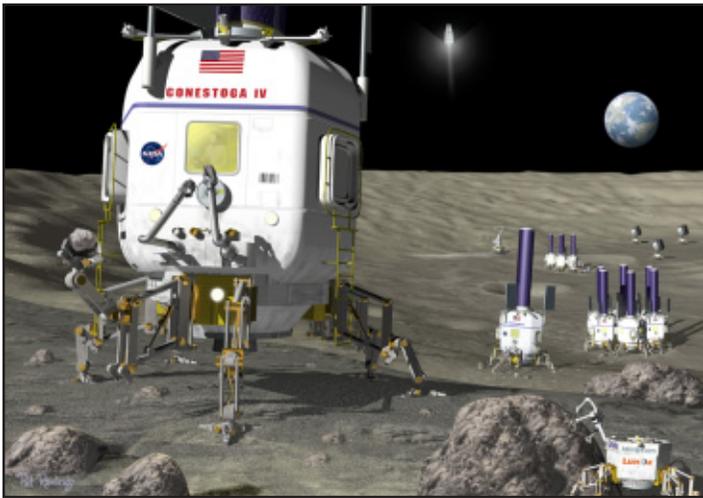
We are pleased to welcome the following new members: Frank Mattas, Jenny Shipp, Linda Vincent, and Tristan Donlevy. In addition to the ten 2004 Striking Sparks winners, we now have 174 dues-paying members. (This number may drop next month, since many have not renewed their membership).

If you have address or email changes, contact our Membership Director, Harry Linder, at 542-9167 or via email at [harry@sonic.net](mailto:harry@sonic.net)

## SCOPE CITY New Member Bonus!

Scope City at 350 Bay Street, San Francisco, is offering a **\$25 merchandise discount to new members** when joining SCAS. Sam Sweiss, Manager of Scope City, has been a supporter of SCAS and the Striking Sparks project by donating merchandise for the awards. Scope City offers a huge selection of telescopes, binoculars, microscopes and accessories.

Obtain a receipt from Harry Linder, Membership Director, to show that you have paid the \$25 SCAS membership dues. To arrange for your merchandise discount at the store, contact Sam at 415/421-8800, or email [sanfrancisco@scopecity.com](mailto:sanfrancisco@scopecity.com)



*“Hobot” Robotic Habitat*

## NASA RESEARCHERS CONSIDER MOBILE LUNAR BASE CONCEPTS

Landing mobile bases on the moon is an idea whose time has come, according to a NASA researcher.

Lunar bases that can travel on wheels, or even legs, will increase landing zone safety, provide equipment redundancy and improve the odds of making key discoveries by enabling crews to visit many lunar sites, according to Marc Cohen, a researcher at NASA’s Ames Research Center, in California’s Silicon Valley. Cohen recently presented his concept in a research paper at the 2004 American Institute of Physics Forum in Albuquerque, N.M.

“If you set up a base at a fixed location on the moon, you are very limited in the sites of scientific interest that you can reach,” Cohen said. “What it comes down to is if you’re landing a habitat on legs and wheels, it doesn’t take a lot more investment to make it highly mobile, provided you have enough energy resources that would enable it to travel great distance across the moon with or without the crew onboard,” Cohen explained.

Linked mobile moon habitats might travel like treaded trains without tracks, or they could cross the moonscape in a line like Conestoga wagons crossing the American West. Walking or rolling habitats could dock to one another, or circle close together, when they reach a rest or research site, according to designs suggested by engineers over that last three decades, Cohen noted.

In contrast, a common scenario for exploration of the moon is that one or more astronauts would travel to a remote site in a pressurized or unpressurized ‘rover.’ An unpressurized rover trip would only last hours because the astronauts would be in spacesuits for the entire trek. A pressurized rover could sustain astronauts for a much longer trip, lasting days or weeks.

“If you are trying to conduct research with pressurized lunar vehicles, you run into many safety issues,” Cohen said. To avoid life-threatening or other compromising situations that might occur with only one rover traveling to a remote place, a second rover might travel with the first.

“But what if the second rover runs into a problem, too — the same or a different problem? Well, that means a third rover. So, why not

make the entire base mobile, so that all the resources, reliability and redundancy of the lunar mission move with the excursion crew?” Cohen reasoned.

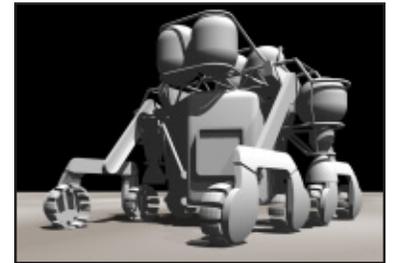
“In addition, there’s risk if you land lots of immobile modules in one spot — there is a danger you’ll have a very long commute to a place of scientific interest, or can’t get there. Then you’ve wasted billions of dollars. Mobile habitats greatly reduce the risk of finding yourself on the wrong place on the moon,” Cohen added.

Another advantage of mobile moon habitats is that they will be able to move out of the lunar landing zone, which could be hazardous.

“The landing zone poses the problem that once a habitat lands on the moon, it is not prudent to land another vehicle within several kilometers because of safety concerns from ejecta in a normal landing, and in case of an explosive failure on impact,” Cohen said.

Cohen suggests that mobile habitats must have robust radiation shielding for them to be practical. “Radiation protection remains a challenge and a potential showstopper, as it does for all lunar base and rover concepts.” However, there are potential shielding concepts that may well be reasonable, according to Cohen.

More information about space architecture is on the Internet at: <http://www.spacearchitect.org>



*Mobitat in surface deployed configuration*

## August Observing Notes

**August 11-12: Perseid meteor shower:** Peak occurs at 4:00 AM August 12. This year promises to be a good show, partly because bright moonlight will not interfere as in past years, and also because Earth might encounter a heavier concentration of meteoric debris, astronomers predict, leading to better than normal meteor activity.

Perseid meteors are bits of debris—typically no larger than sand grains but sometimes up to marble size—left behind during repeated passes of comet Swift-Tuttle. The comet crosses the inner solar system once every 128 years as part of its elongated orbit around the Sun.

Forerunners of the Perseid shower began to appear around July 17. You’ll see only a few per hour at best, but the numbers will begin to increase during the second week of August.

At the height of the event, you might spot one to two per minute, and sometimes even more. The last Perseid stragglers may still be spotted as late as August 24.

Early morning hours generally provide the best viewing, typically offering up twice as many meteors as in the evening. In the predawn, you’re standing like a hood ornament on the side of Earth facing the oncoming traffic, as compared to the evening hours when you’re on the trailing edge of the stream.

# Events

## SCAS PUBLIC STAR PARTY

Saturday, August 21

These are public events—all are invited. Members with scopes are encouraged to attend. Great for planetary astronomy with fellow observers at an easily accessible site.

**Sunset:** 7:56 PM PDT

**End Astronomical Twilight:** 9:32 PM PDT

**Moonset:** 10:57 PM PDT

Youth Community Park in Santa Rosa, on the west side of Fulton Road, between Guerneville Road and Piner Road, just opposite Piner High School. Contact: Bruce Lotz, Coordinator (707) 576-7833, [ablotz@sonic.net](mailto:ablotz@sonic.net)

## THE GEYSERS STAR PARTY

The Palmieri family has asked that the observing site not be used during deer hunting season. The site will be closed from Saturday, August 14 through Sunday, September 26, 2004. The next observing session will be announced in *Sonoma Skies*.

## LICK OBSERVATORY SUMMER VISITORS PROGRAM

For a limited number of summer evenings, Lick Observatory offers public viewing through both the 36-inch refracting telescope and 40-inch reflecting telescope. Each evening features two speakers, who present programs even if clouds or fog prohibit viewing.

Activities start at sunset with the first talk and continue until everyone has had the opportunity to view through both telescopes.

Tickets are still available for September 10 and 11. For more information about the program, call 408-274-5061, between 12:30 and 5:00 PM, or email [giftshop@ucolick.org](mailto:giftshop@ucolick.org).

Lick Observatory is located on the summit of Mt. Hamilton east of San Jose. From Interstate 680 or Interstate 101, take Alum Rock Avenue to Mt. Hamilton Road (California Route 130). Allow at about one hour from San Jose, and please drive carefully as the road is good, but winding.

At 4209 feet, evenings can be cool, so bring a sweater or coat. Parking is limited so please car pool, if possible.

## WEB SITE TO SHARE?

If you would like to share astronomy-related stories and photos from your web site, send an email to one of the Board members listed on Page 2. We can create links to your site for other members to enjoy.

Sonoma Skies, August 2004

## ROBERT H. FERGUSON OBSERVATORY

**Perseids Meteor Shower**

Viewing begins August 11 at 9:00 PM

**Public Viewing: August 14 and 21**

Solar Viewing: Noon - 4:00 PM

Night viewing: Begins 9:00 PM

Three scopes are operating: The 14-inch SCT with CCD camera in the east wing, the 8-inch refractor under the dome and the 24-inch Dobsonian in the west wing.

There is no admission fee for the solar viewing, but donations are appreciated. The Park charges \$6 per vehicle for entry. A \$2 donation is requested from adults 18 and over for admission to the observatory during the night viewing sessions. SCAS members are welcome to set up telescopes in the observatory parking lot to assist with public viewing. Automobile access closes at dusk, so arrivals after dusk need to carry their equipment in from the parking area by the horse stables.

### Classes

Sept. 9: Introduction to Astronomy & Observing, 7:00 PM

Sept. 13: Introduction to Astronomy & Observing, 7:00 PM

Sept. 14: Night Sky Fall Series, 7:00 PM

Sept. 21: Night Sky Fall Series, 7:00 PM

Classes are held at the Observatory. Reservations required for classes. Contact: (707) 833-6979, or visit <http://www.rfo.org>

## SONOMA STATE UNIVERSITY SERIES “WHAT PHYSICISTS DO”

**Mondays at 4:00 PM**

*Darwin Hall Room 108*

### Sept. 13—Magnetic Recording

Dr. Hongtao Shi of Sonoma State University will discuss the history of magnetic recording and the novel materials which promise to dramatically increase the density of magnetic data storage in the near future

Contact: (707) 664-2267

<http://www.phys-astro.sonoma.edu/wpdl/>

## FOR SALE

8" Celestron Star Hopper Dobsonian Telescope with Telrad Finderscope. Good condition. \$300. Call to see in Sonoma (707) 996-5898.

rich star clouds, clusters, and constellations were the happy evenings with friends watching magnificent sunsets play out over the world-class scenery.



Jacob Gaynor, 2003 Striking Sparks Winner and Young Astronomer. Photo by his Dad, Bruce.

Len kindly made arrangements for some supplemental sky sights for our entertainment. In addition to the countless stars, he conjured up at least three well-placed, bright passes of the International Space Station, as well as several Iridium flares. As Saturday evening fell, we watched a team of three climbers making their approach pitches to summit Half Dome, and we saw their flashlights winking like stars moving up the rock face as they completed their climb at night.

Our little group of astronomical ambassadors from Sonoma

County included recent winners of our Striking Sparks program, with their scopes and families. The winners present were Paisley Kilimann (2004 winner), Jacob Gaynor (2003 winner), Eli Asay (2003 winner) and Justin Zelaya, Mario's son, using the scope his brother Adrian won in 1997. The young astronomers' intelligence, energy, and enthusiasm impressed me. They were always eager to show off their discoveries with their shiny new telescopes.

A bit older, perhaps, but demonstrating as much enthusiasm for sharing his scope with others was Mark Mickels. He brought his recently completed 12.5" Dobsonian reflector. Mark is an obviously meticulous machinist and craftsman whose first telescope-making effort won a couple of top awards at this year's Riverside Telescope Makers' Conference. The views through his telescope, with its innovative features and high quality optics, were just as gorgeous as the view of the scope itself. Mark has made a couple of visits to RFO recently, and members ought to take a look at his new prize, if they get the chance.

Park Ranger David Balogh gave a good interpretive introduction to astronomy and the Park's program of inviting astronomical clubs to give volunteer programs. The crowd really seemed to enjoy seeing the wonders of the night sky, both through telescopes and with naked eye. We were kept busy answering many questions.

But as the ranger explained the program to the public, I was concerned he might "blow our cover." While we all enjoy sharing our affection for the stars with others, this fact remains: It's a free star party! Volunteers get free admission to Yosemite National Park with a free group campground. That leaves us free to enjoy the park—hiking, biking, swimming, sight-seeing, or just hanging out in camp with our friends. Not an unpleasant way to rest and recharge while waiting to enjoy a spectacular night sky, star-partying at the "Rock of Ages."

**What to Bring:** SCAS will provide the barbecue fire and marshmallows. You bring the marshmallow sticks, food to barbecue, a favorite potluck dish to share, other food, drinks, table cover, plates and utensils, chocolate bars and graham crackers for S'mores if you like, and a measure of good cheer.

Bring your telescope for learning and sharing, and plan to set it up between 4:00 and 6:00 PM. Bring a flashlight with red cover to avoid light pollution. Before dark, gather all your picnic items and store them in your vehicle so the space is cleared for observing.

**Camping:** Immediately around the Observatory is the Group Campground parking area, campsites, running water, large barbecue pits, and outhouses. You may camp overnight (no RV hookups). Everyone must leave by noon Sunday. Please remember the Star-B-Que is for SCAS members, their families and a few guests, and Striking Sparks winners, of course.

Call Len Nelson at 763-8007 or email [lennelsn@comcast.net](mailto:lennelsn@comcast.net) if you have questions.

## Telescope Raffle

A Bushnell Sky Chief Jr. telescope, which has been donated to SCAS by Fred and Vivian Bernhart, will be raffled at the SEPTEMBER meeting of the SCAS. Tickets will be sold both at that meeting and also at the August 7th SCAS Star-B-Cue at the Robert Ferguson Observatory. It's a 60mm refractor (700mm focal length), on an alt-azimuth mount, with tripod and carrying case. It has two eyepieces (20mm and 5mm), a 2x Barlow lens, a star diagonal and an erecting prism.

**Come to the Star-B-Cue and try it out. The raffle tickets will be offered at \$1.00 each or 6 for \$5.00.**



## YA CALENDAR

The Young Astronomers regular meetings will resume in September and will be announced in *Sonoma Skies* and by email or telephone. Bring your telescope to the SCAS Star-B-Que August 7. We hope to see you!

### YA OFFICERS

- President: Melissa Downey 632-5661
- Vice-President/Program Director: Mark Bellinger
- Recorder: Darren Davis 575-8369
- Newsletter Editor: Mark Bellinger 763-7554
- Librarian: Clayton Alderson 833-6423
- Adult Adviser: Gary Jordan 829-5288

# Young Astronomers

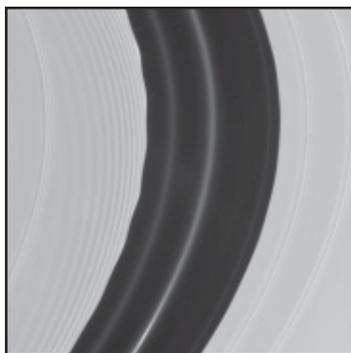


NASA Space Place

## Waiting for Cassini's "Safe Arrival" Call

The evening of June 30, 2004, was nail-biting time at Cassini Mission Control. After a seven-year journey that included gravity assist flybys of Venus, Earth, and Jupiter, Cassini had finally arrived at Saturn. A 96-minute burn of its main engine would slow it down enough to be captured into orbit by Saturn's powerful gravitational field. Too short a burn and Cassini would keep going toward the outer reaches of the solar system. Too long a burn and the orbit would be too close and fuel reserves exhausted.

According to Dave Doody, a Cassini Mission Controller at the Jet Propulsion Laboratory (JPL) in Pasadena, California, there was a good chance the Earthbound Cassini crew would have to wait hours to learn whether or not the burn was successful. Of the three spacecraft-tracking Deep Space Network (DSN) complexes around the globe, the complex in Canberra, Australia, was in line to receive



Right after entering Saturn orbit, Cassini sent this image of the part of the Encke Gap in Saturn's rings. Image credit NASA/JPL/Space Science Institute.

Cassini's signal shortly after the beginning of the burn. However, winds of up to 90 kilometers per hour had been forecast. In such winds, the DSN's huge dish antennas must be locked into position pointed straight up and cannot be used to track a tiny spacecraft a billion miles away as Earth turns on its axis. "The winds never came," notes Doody.

The DSN complex at Goldstone, California, was tracking the carrier signal from Cassini's low-gain antenna (LGA) when the telltale Doppler shift in the LGA signal was seen, indicating the sudden deceleration of the spacecraft from the successful ignition of the main engine. Soon thereafter, however, Goldstone rotated out of range and Canberra took the watch.

After completion of the burn, Cassini was programmed to make a 20-second "call home" using its high-gain antenna (HGA). Although this HGA signal would contain detailed data on the health of the spacecraft, mission controllers would consider it a bonus if any of that data were actually captured. Mostly, they just wanted

to see the increase in signal strength to show the HGA was pointed toward Earth and be able to determine the spacecraft's speed from the Doppler data. If possible, they also wanted to try to lock onto the signal with DSN's closed-loop receiver, a necessary step for extracting engineering data.

Normally it takes around one minute to establish a lock on the HGA signal once a DSN station rotates into range. Having only 20 second's worth of signal to work with, the DSN not only established a lock within just a few seconds, but extracted a considerable amount of telemetry during the remaining seconds.

"The DSN people bent over backwards to get a lock on that telemetry signal. And they weren't just depending on the technology. They really know how to get flawless performance out of it. They were awesome," remarks Doody.

Find out more about the DSN from JPL's popular training document for mission controllers, Basics of Space Flight ([www.jpl.nasa.gov/basics](http://www.jpl.nasa.gov/basics)) and the DSN website at [deepspace.jpl.nasa.gov/dsn](http://deepspace.jpl.nasa.gov/dsn). For details of the Cassini Saturn orbit insertion, see [www.jpl.nasa.gov/basics/soi](http://www.jpl.nasa.gov/basics/soi). Kids can check out The Space Place at [spaceplace.nasa.gov/en/kids/dsn\\_fact1.shtml](http://spaceplace.nasa.gov/en/kids/dsn_fact1.shtml) to learn about the amazing ability of the DSN antennas to detect the tiniest spacecraft signals.

—Written by Diane K. Fisher and by JPL/NASA

---

## Are You Interested in Being a YA Officer?

The Young Astronomers has a board of officers who manage and direct the activities for YA. As we will resume our meetings in September, now is the time to consider whether you would like to serve as a YA officer during the next school year. YA Officer positions include president, vice-president/program director, recorder, newsletter editor, and librarian.

**Officer Responsibilities:** The president is responsible for planning and running YA board meetings, conducting the general YA business section of our monthly public meetings, and representing YA in interactions with SCAS board members and the general public. The vice-president assists the president in the above-mentioned responsibilities, and performs them in the president's absence. The vice-president also acts as program director, helping plan and arrange our monthly topic presentations/activities for our public meetings. The recorder is responsible for taking notes at the monthly YA meetings, and issues minutes to serve as an official record of the meetings. The newsletter editor receives and reviews articles submitted by YA members, and submits them for publication in the YA section of *Sonoma Skies*. The librarian maintains a record of library materials (books, videos, etc.) that are available for checkout, and coordinates getting these items to the requesting YA members.

**Need More Information?** If you are interested in being an officer, or would like more information, please contact Gary Jordan at 829-5288.

**Sonoma County  
Astronomical Society**

P.O. Box 183  
Santa Rosa, CA 95402



**August 2004 *Sonoma Skies***

**AUGUST 7**

**\* Star-B-Que \***

**at RFO**

**See Page 1**

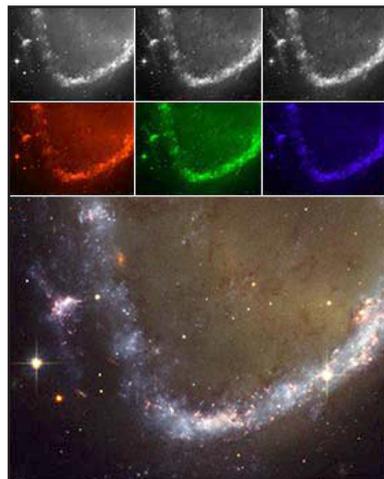
## **PROCESS ASTRONOMICAL IMAGES ON YOUR HOME COMPUTER JUST LIKE THE EXPERTS**

—*The Space Telescope Science Institute Astronomy: News Alert*

Anyone with a desktop computer running Adobe® Photoshop® or Adobe Photoshop Elements software can try their hand at crafting astronomical images as beautiful as Hubble Space Telescope's. A free software plug-in being released today for Photoshop makes the treasure of archival astronomical images and spectra from Hubble Space Telescope, NASA's Spitzer Space Telescope, The European Southern Observatory's Very Large Telescope, the European Space Agency's XMM-Newton X-Ray Observatory and many other famous telescopes accessible to home astronomy enthusiasts.

Imaging scientists at NASA, The European Space Agency and the European Southern Observatory developed the free software, called the Photoshop FITS Liberator. The term FITS stands for File Image Transfer Software. This single file format archives nearly all images of stars, nebulae and galaxies produced by major telescopes around the world. Until now this file format has been accessible to very few people other than the scientists themselves using highly specialized image processing tools.

The ESA/ESO/NASA Photoshop FITS Liberator is freely available for download from: [http://www.spacetelescope.org/projects/fits\\_liberator](http://www.spacetelescope.org/projects/fits_liberator)



*Image credit: NASA, ESA and The Hubble Heritage Team (STScI/AURA)*

This is an example created using the ESA/ESO/NASA Photoshop FITS Liberator. The image of a portion of the ring galaxy AM0644-741 was made using Hubble's Advanced Camera for Surveys. Top: original black and white images obtained through filters isolating red, green and blue light. Middle: the separate images reassigned the primary colors red, green and blue. Bottom: the combined full color image.

To see and read more, please visit <http://hubblesite.org/newscenter/newsdesk/archive/nuggets/1089291600>, or <http://www.spacetelescope.org/>