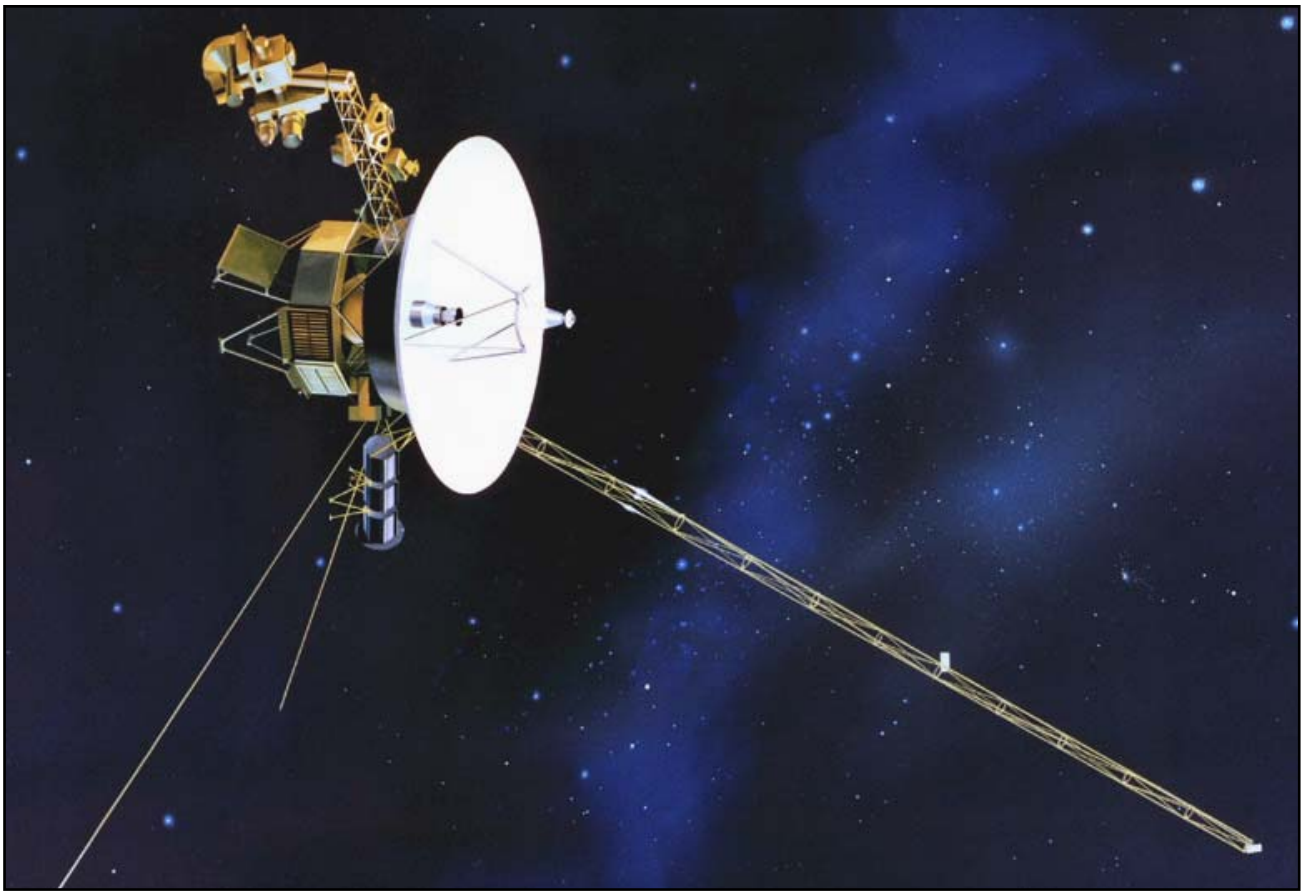
THE OBSERVER

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member THE ASTRONOMICAL LEAGUE

"Celebrating Forty-Eight Years of Amateur Astronomy"

VOLUME #48 ISSUE #08 **AUGUST 2006**



Voyager 1 logs yet another milestone in space history August 17, 2006 when it crosses an invisible boundary that marks 100 astronomical units (AU) from the Sun -- about 15 billion kilometers (9.3 billion miles) out there -- farther away than any human-made object has ever gone in space. It's headed now for interstellar space. Voyager 2, at 80 AU, is about six years behind. NASA/JPL

Club Barbecue August 19, 2006--6:00-9:30PM

"Bring Scopes for Lunar and Planetary Observing"

SAN BERNARDINO COUNTY MUSEUM

CALIFORNIA STREET EXIT FROM INTERSTATE 10

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SBVAA

CALENDER OF EVENTS 2006

Meetings held at the
San Bernardino County Museum
For information, call Chris Clarke at (909) 888-6511, ex.1458

August 19.....Club Barbecue (3rd Saturday)
August 26.....Star Party
September 16.....Meeting (3rd Saturday)
September 22-24.....Star Party (Grandview)
October 14.....Meeting (3rd Saturday)
October 21.....Star Party
November 11.....Meeting (2nd Saturday)
November 18.....Star Party

Annual Club Potluck/Barbecue

On Saturday, August 19, the club will hold its Summer Potluck at the Museum. Bring your favorite dish to share and sit down to lots of eating and talking! Everyone always enjoys this feast, and it gives us a chance to relax and socialize in a most pleasant setting.

Tina and Randy Kromas are graciously bringing their BBQ, so that we can enjoy that amenity; the rest is up to you! Setup time is 5:30 pm and the Potluck will be in full swing from 6:00 to 9:30 pm. As usual, we will be out in the back patio, near the old locomotive.

Bring a hearty appetite and your goodies to share---see you there!

CALENDARS

The 2007 "Deep Space Mysteries" calendars are here. It will be available for sale starting with the club meeting on September the 16th. We have 30 for sale on a first come first served basis. The retail for this calendar is $12.95 plus $1.00 tax or $13.95 altogether. Your cost, through the club, is $10 a savings of $4. See Fidel, the club treasurer, at the back of the room to make your purchase.

BBVAS Summer Program

During summer months the Big Bear Valley Astronomical Society (BBVAS), focuses on special programs to appeal to attendees of all ages. On Tuesday, August 8th, John Tissavary will present "Party with the Perseids / Earth under Fire". What are meteors? What are shooting stars? There's a treasure trove locked inside meteorites, rare particles older than Earth. Scientists survey the remnants of ancient impact craters on our planet's surface and what they tell us about past collisions, unlocking the history of the Solar System's past. This meeting will focus on the major types of meteorites and their basic classification. The annual Perseid meteor shower, which will peak on August 12th is typically the greatest meteor show of the year. Find out how to best view a meteor shower.

BBVAS is a member of NASA's Night Sky Network. Meetings are held at 8pm on the second Tuesday each month at the StarGazers Inn & Observatory, 717 Jeffries Road (behind the Middle School), Big Bear Lake, CA. Stargazing follows the presentation. Guests are invited to bring their own binoculars and telescopes or they may be assisted with StarGazers' and BBVAS member equipment. BBVAS meetings are free and open to the public. Seating is limited. Please call 909-878-4496 for reservations and more information.

President's Message

By Martin L. Carey
martincarey@sbcglobal.net

Hello fellow sky tourists, I hope you are having a pleasant summer that included some time looking at the sky. Lately my scopes have not seen much use due to weather and other conditions. The telescope police are going back on patrol, I hear. Arrest and seizure is determined by the thickness of the dust layers on your equipment, so be warned.

In June and early July, we had several weeks of good seeing, but the monsoon pattern brought turbulence and clouds. We were in Arizona at the Grand Canyon and Phoenix last weekend, and thunderstorms ruled the nights. We can expect that the weather will improve for our Grandview trip in September, it usually does.

Jupiter is fast sinking down into the West. Mars is gone from our views, and awaits its next opposition 12/28/07. Saturn won't be available for normal people to view until December (normal defined as the folk who sleep at night, live indoors around other humans, etc.). The moon is favorable for viewing about one week per month.

Because of these limitations to our fall viewing, I feel the need to diversify my home viewing to more esoteric pleasures, like double stars, for instance. You don't need dark sky to see many of the best samples, such as Zeta Bootes, with a separation of about .8" of arc, splittable if you have a 6" telescope or larger, and the seeing permits. Are any of the members interested in submitting an article on the best doubles?

The upcoming Grandview should be our best this year for good seeing. We may even have a 25" scope with fresh mirror coatings to climb up and look through; I'll keep you posted. It would be well worth the trouble.

This Saturday's potluck promises to have enough food to keep everyone happy with some pretty friendly company. Steve says he will bring his famous ice cream. We might catch a last peek of Jupiter from around the front of the museum. Oh yes, there are also double stars waiting to be enjoyed.

A simple survey yields a cosmic conundrum

SANTA CRUZ, CA--A survey of galaxies observed along the sightlines to quasars and gamma-ray bursts--both extremely luminous, distant objects--has revealed a puzzling inconsistency. Galaxies appear to be four times more common in the direction of gamma-ray bursts than in the direction of quasars.

Quasars are thought to be powered by accretion of material onto supermassive black holes in the centers of distant galaxies. Gamma-ray bursts, the death throes of massive stars, are the most energetic explosions in the universe. But there is no reason to expect galaxies in the foreground to have any association with these background light sources.

"The result contradicts our basic concepts of co mology, and we are struggling to explain it," said Jason X. Prochaska, associate professor of astronomy and astrophysics at the University of California, Santa Cruz.

Prochaska and graduate student Gabriel Prochter led the survey, which used data from NASA's Swift satellite to obtain observations of the transient, bright afterglows of long-duration gamma-ray bursts (GRBs). The study is based on a fairly straightforward concept. When light from a GRB or a quasar passes through a foreground galaxy, the absorption of certain wavelengths of light by gas associated with the galaxy creates a characteristic signature in the spectrum of light from the distant object. This provides a marker for the presence of a galaxy in front of the object, even if the galaxy itself is too faint to observe directly.

Prochter and Prochaska analyzed 15 GRBs in the new study and found strong absorption signatures indicating the presence of galaxies along 14 GRB sightlines. They had previously used data from the Sloan Digital Sky Survey (SDSS) to determine the incidence of galaxies along the sightlines to quasars. Based on the quasar study, they would have predicted only 3.8 galaxies instead of the 14 detected along the GRB sightlines.

The quasar analysis was based on more than 50,000 SDSS observations, so the data for quasars are much more robust statistically than the data for GRBs, Prochaska said. Nevertheless, the probability that their results are just a statistical fluke is less than about one in 10,000, he said.

The researchers examined three potential explanations for the inconsistency. The first is obscuration of some quasars by dust in galaxies. The idea is that if a quasar is behind a dusty galaxy it wouldn't be seen, and this could skew the results. "The counter argument is that with this huge database of quasar observations, the effect of dust has been well characterized and it should be minimal," Prochter said.

Another possibility is that the absorption lines in the GRB spectra are from gas ejected by the GRBs themselves, rather than from gas in intervening galaxies. But in nearly every case when researchers have taken a closer look in the direction of the GRB, they have in fact found a galaxy at the same position as the gas. The third idea is that the intervening galaxy may act as a gravitational lens, enhancing the brightness of the background object, and that thiseffect is somehow different for GRBs than for quasars. Although Prochaska said he prefers this explanation, several factors make strong lensing of the GRBs seem unlikely.

Data used in this study were obtained at the W. M. Keck Observatory, theGemini Observatory, the Very Large Telescope at the Paranal Observatory,and the Magellan Observatory. Support for this research was provided by the National Science Foundation and NASA.

MARS ROVERS UPDATES

Opportunity Approaches the Bowl of Beagle Crater

NASA's Mars Exploration Rover Opportunity acquired this false-color image of the rim of the 35-meter (115-foot) diameter Beagle Crater on Martian day, or sol, 894 (July 30, 2006) using the panoramic camera's 753-nanometer, 535-nanometer, and 432-nanometer filters. At the time the rover was about 25 meters (82 feet) from Beagle Crater, looking east-southeast. The image reveals ejecta blocks near the rover, the largest of which is about 50 centimeters (20 inches) across. The image also shows a portion of the eastern interior rim of Beagle Crater, which appears composed of jumbled, angular blocks of brighter and darker outcrop rocks. The rover will drive to the rim of Beagle and acquire an extensive color panorama of the crater rim and interior in the coming sols.

SPIRIT UPDATE: Spirit Survives Second Winter Solstice on Mars - sol 922-928, August 11, 2006:

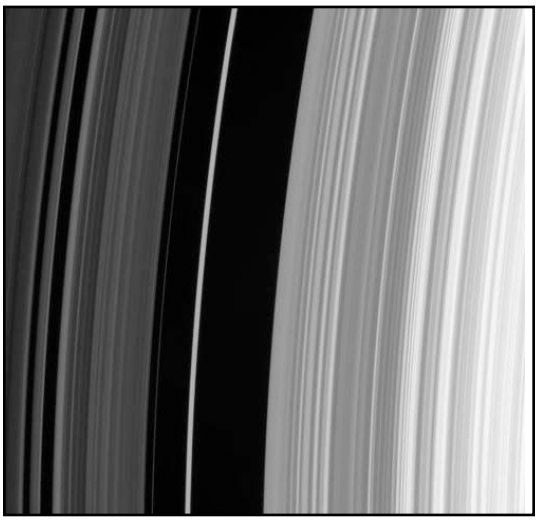
Spirit has now survived the rover's second Martian winter solstice -- the shortest day of the year with the least amount of sunlight and solar energy. The solstice arrived on the rover's 923rd Martian day, or sol (Aug. 8, 2006). Spirit is healthy and continues to make progress on its winter science campaign.

Having completed the "McMurdo mega-panorama," Spirit is currently filling cracks between frames by acquiring touch-up images (dubbed "grout" by engineers). The rover is also spending this week and next making a series of atmospheric observations at the same time each day.

Spirit continues to collect about 280 watt-hours of electrical power each sol from the rover's solar array (a hundred watt-hours is the amount of electricity needed to light one 100-watt bulb for one hour).

CASSINI UPDATE

The Huygens Gap August 15, 2006



The sharp outer boundary of Saturn's B ring, which is the bright ring region seen to the right in this image, is maintained by a strong resonance with the moon Mimas. For every two orbits made by particles at this distance from Saturn, Mimas makes one orbit. The moon's repeated gravitational tugs force ring particles away from this region.

The dark region is called the Huygens gap and it includes the bright, eccentric Huygens ringlet, also visible here near center.

See Outer B Ring Edge for a wide-field view of this region.

The image was taken in visible light with the Cassini spacecraft narrow-angle camera on July 23, 2006. The view was obtained from 15 degrees beneath the ringplane and at a distance of approximately 282,000 kilometers (175,000 miles) from Saturn. Image scale is 1 kilometer (0.6 mile) per pixel. NASA/JPL/Space Science Institute

The Planetary Society Stardust@home Launches on August 1, 2006

You've been waiting, and beginning August 1 you can start searching for interstellar dust! Think you have the right stuff to spot interstellar dust? We are looking for volunteer detectives to be part of Stardust@home – an opportunity for internet users everywhere to search for microscopic interstellar dust particles captured by NASA's Stardust spacecraft.

Data will be available starting at 11 a.m. Pacific Daylight Time, Tuesday, August 1, 2006

To participate, please point your browser to: http://stardustathome.ssl.berkeley.edu

Once on the Stardust@home site, look under "Get Started" on the left side of the page. If you already have a username and password, you can click on "login" and begin searching for interstellar dust grains.

But remember: even if you have previously completed the training course, the Stardust@home team recommends you refresh your skills by training again. New focus movies are now available in the training section, where the tracks are more realistic but harder to detect. Test your skills before trying the real thing!

Want to know more about this exciting project, go to: http://planetary.org/programs/projects/stardustathome/

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An Invitation To Join

The San Bernardino Valley Amateur Astronomers

- Monthly Meetings/Speakers
- Monthly Star Party
- The Observer Newsletter
- Learn about Astronomy
- Learn about Telescopes
- Learn about Astrophotography

Fill out and mail this form along with $30.00 Annual Membership Fee. Add an additional $33.00 to include a one (1) year subscription to “Sky and Telescope” magazine and or $29.00 for one (1) year subscription to “Astronomy” Magazine.

Make check payable to: San Bernardino Valley Amateur Astronomers.

Mail to: Fidel Hernandez, SBVAA Treasurer,
27799 21st St, Highland, CA, 92346

Name_____
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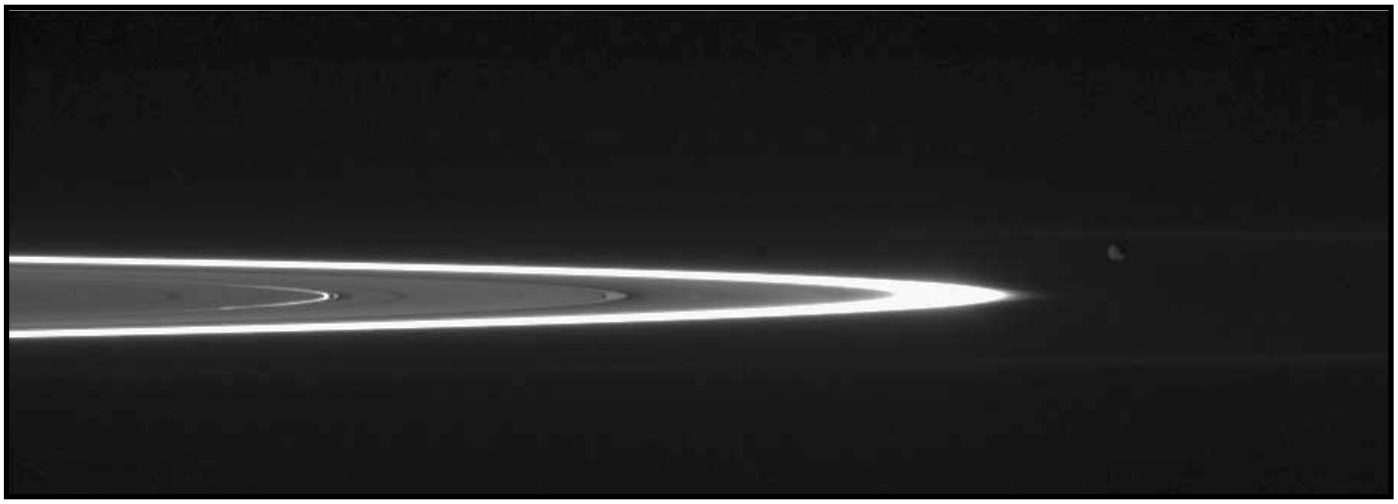
Janus Hides in Plain Sight



August 16, 2006

Tiny, dust-sized particles in Saturn's rings become much easier to see at high phase angle -- the angle formed by the Sun, the rings and the spacecraft. The brightest ring is the F ring; the next feature to the left is the outer edge of the A ring. Inward of that, and very bright, are the ringlets in the Encke gap.

Epimetheus (116 kilometers, or 72 miles across) is easy to spot just right of the outer F ring edge. Janus (181 kilometers, or 113 miles across), however, is quite a bit harder to make out; it is the dark spot located directly to the left of Epimetheus, above the gap between the A and F rings.

Within the space between the A and F rings there are two faint rings seen previously by the Cassini spacecraft. The inner faint ring (called R/2004 S1) coincides with the orbit of Atlas. The outer one forms the inner boundary of the orbit of Prometheus.

The narrow G ring is visible above and below the bright F ring.

The image was taken in visible light with the Cassini spacecraft narrow-angle camera on July 15, 2006 at a distance of approximately 2.7 million kilometers (1.7 million miles) from Epimetheus and 2.8 million kilometers (1.7 million miles) from Janus. The view was acquired at a Sun-Epimetheus-spacecraft, or phase, angle of 164 degrees. Image scale is 16 kilometers (10 miles) per pixel.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colo.

For more information about the Cassini-Huygens mission visit http://saturn.jpl.nasa.gov/home/index.cfm. The Cassini imaging team homepage is at http://ciclops.org.

NASA Space Place

Deadly Planets

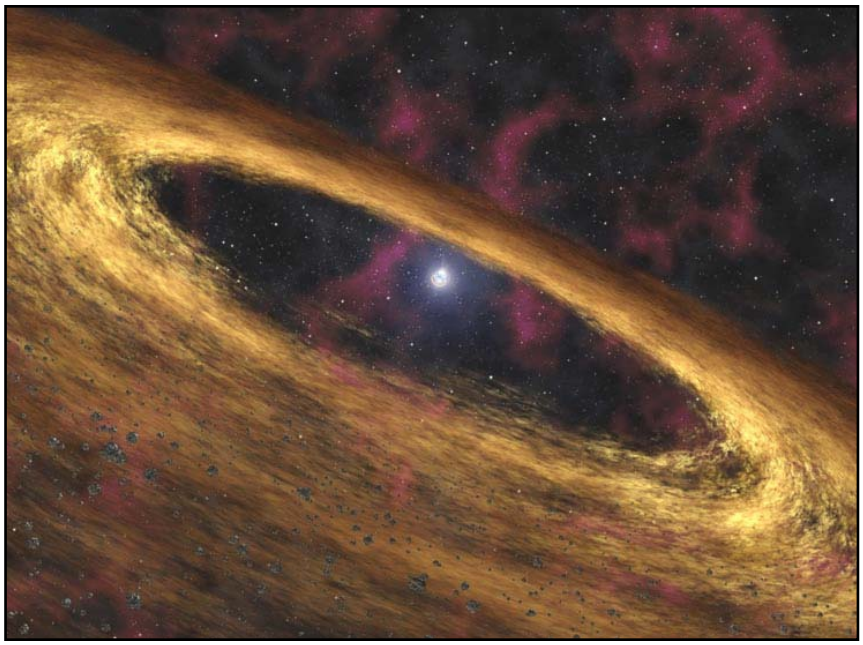
By Patrick L. Barry and Dr. Tony Phillips

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.



Artist's concept of a pulsar and surrounding disk of rubble called a "fall-back" disk, out of which new planets could form.

Our own sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

NASA's Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

More news and images from Spitzer can be found at http://www.spitzer.caltech.edu/ . In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to http://spaceplace.nasa.gov/en/kids/live/ for a great place to introduce kids to infrared and the joys of astronomy.

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

Star Party: Johnson Valley

August 26, 2006

See Tom Lawson, Star Party Coordinator,
to receive club online updates and color PDF Newsletter.

Club Barbecue August 19, 2006--7:00PM

"Bring Scopes for Lunar and Planetary Observing"

SAN BERNARDINO COUNTY MUSEUM

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CALIFORNIA STREET EXIT FROM INTERSTATE 10

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