

## Computer upgrade to aid asteroid tracking

By DIANE AINSWORTH

NASA astronomers conducting a monthly sweep of the night sky to identify previously unknown asteroids and comets will be able to double their coverage and the number of discoveries they make, thanks to new, state-of-the-art computer and data analysis hardware.

The new equipment was purchased with funds from NASA, which recently doubled its resources for near-Earth object research.

The new real-time analysis system, which serves a fully automated charged-couple device (CCD) camera and telescope atop Mt. Haleakala, Maui, Hawaii, is part of the Near-Earth Asteroid Tracking (NEAT) project, based at JPL. The new system features four 300-megahertz processors that will be devoted solely to the enormous amount of data coming back from the NEAT telescope on a nightly basis.

"This new system will speed up the processing of data and allow us to analyze up to 40 gigabytes of data each night, or the equivalent of nearly 70 CD-ROMs," said Dr. Steven Pravdo, NEAT project manager at JPL. "We will be able to double the amount of sky we search each night, which is currently 500 square degrees, as well as the number of new asteroids and comets we find during each monthly observation cycle."

Installed in 1995, the NEAT camera uses a very large, very sensitive 4,096-by-4,096-pixel CCD chip. The camera is located on a 1-meter-diameter (39-inch) telescope operated by the U.S. Air Force and located at an elevation of 3,000 meters (nearly 2 miles) above the Pacific Ocean. With stable climate, clear, dry air and little light pollution, the NEAT tracking system has been highly successful and continues to operate six days out of each month. With additional support, the project hopes to increase this six-day observational run to 18 nights of observations each month.

Asteroids are considered relics of the formation of the early solar system. Most of them are rocky materials, with some composed of nickel and iron. Most range in size from boulders up to

See Asteroids, page 3

## NASA begins Astrobiology Institute

*JPL is among first members of project, which will launch a major component of Origins Program*

JPL is one of several NASA centers selected as the initial members of the agency's new Astrobiology Institute, thus launching a major component of the Origins Program.

NASA last week named 11 academic and research institutions to be the initial partners in the venture. The selected institutions represent the best of 53 uniformly first-class proposals submitted, according to NASA officials. Given that the institute members will remain at their home organizations, the partnership among the members and NASA will be carried out primarily via the Internet. This electronic "virtual" institute will bring together astrophysicists, biologists, chemists, physicists, planetologists and geologists to conduct interdisciplinary research on the multifaceted issue of life in the universe and its cosmic implications. It will also help to train young scientists in this emerging field.

"These initial members of NASA's Astrobiology Institute will be at the forefront of the increasingly important link between astronomy and biology, which has been a fundamental interest of mine for the past several years," said NASA Administrator Daniel Goldin. "The 'office hallways' of this virtual institute will be the fiber optic cables of the Next Generation Internet, and the groundbreaking research that this group generates will help guide our space exploration priorities well into the 21st century."

Astrobiology Institute members will conduct a broad range of interdisciplinary and synergistic research on topics including:

- The formation of organic compounds important to the origins of life, such as from meteorites;
- The formation and characteristics of habitable planets;
- The emergence of self-replicating systems

and possible pre-biotic worlds;

- How the Earth and life have influenced each other over time, including the evolution of ancient metabolism and the interplay of evolved oxygen;

- The evolution of multicellular organisms and the evolution of complex systems in simple animals; organisms in extreme environments such as hydrothermal vents; and

- The identification and development of biomarkers to determine terrestrial and extraterrestrial biosignatures.

JPL's role in the five-year project will be managed by senior research scientist Dr. Kenneth Nealson. JPL will lead a consortium of 20 principal investigators responsible for three broad themes of study: Earth as a laboratory for understanding life and its relationship to its host planet; Mars as an analog; and the identification of biosignatures that can be used to detect and identify life.

Nealson said that among the "world class" experts from various disciplines comprising the program are JPL scientists Dr. Mark Allen, Dr. Diana Blaney, Ken Herkenhoff, Dr. Daniel McCleese, Dr. Gene McDonald and Dr. Jeffrey Plescia. Joining them will be representatives of Caltech, the United States Geological Survey in Tucson, Ariz., the University of Wisconsin (Madison and Milwaukee campuses), Carnegie Institution, Washington, D.C., the University of Rochester (New York) and NASA's Marshall Space Flight Center.

"Our biosignature program will include the development of methods for detecting life, and the testing of those methods on extreme environments here on Earth—places like Antarctica, dry and cold deserts, very hot areas and alkaline or hypersaline lakes," Nealson said.

The analysis of Martian meteorite ALH8400 over the last two years, Nealson pointed out, "taught us that we don't know how to distin-



Senior research scientist Dr. Kenneth Nealson heads a JPL-led consortium that will contribute to NASA's new Astrobiology Institute.

guish life from non-life. If we knew how to do that, scientists wouldn't still be arguing about it. We don't want to be in the same situation when we bring samples back to Earth."

He said scientists analyzing alien samples will need methods that will not only be safe but will show unequivocal evidence that past life either was or

was not present. "Up to now, no one's bothered to develop those methods. That's the major push of the biosignatures part of our work."

In Nealson's field of microbiology, "it's unusual for a microbiologist to think 10 years into the future," he added, noting that indeed the first samples from Mars will not be returned until 2008.

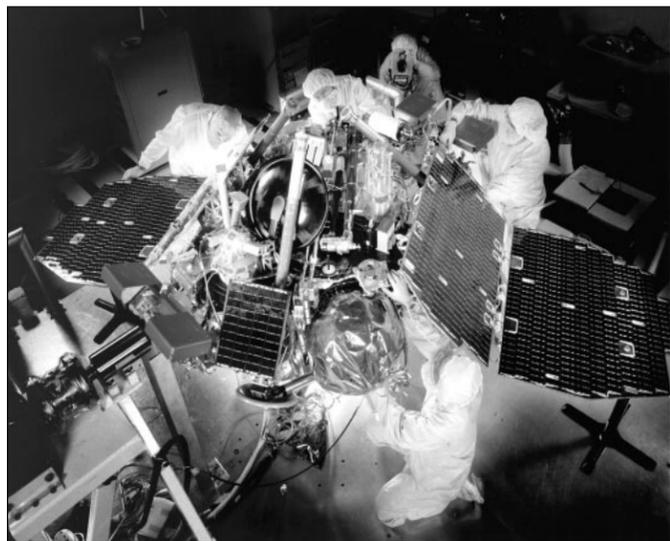
"We also hope to get very heavily involved with in-situ science," he noted. "But the first mission for which we would use our methods would probably not be launched until 2007."

"We really believe that Earth is the laboratory—we know there's life, we know how to study it, and we can use the places where the signals of life are really subtle to test our methods."

"In some ways, this is the perfect job for an environmental microbiologist, because you get to keep doing your science, but you get to think about other things while you're doing it. You get to look down the road to the future and

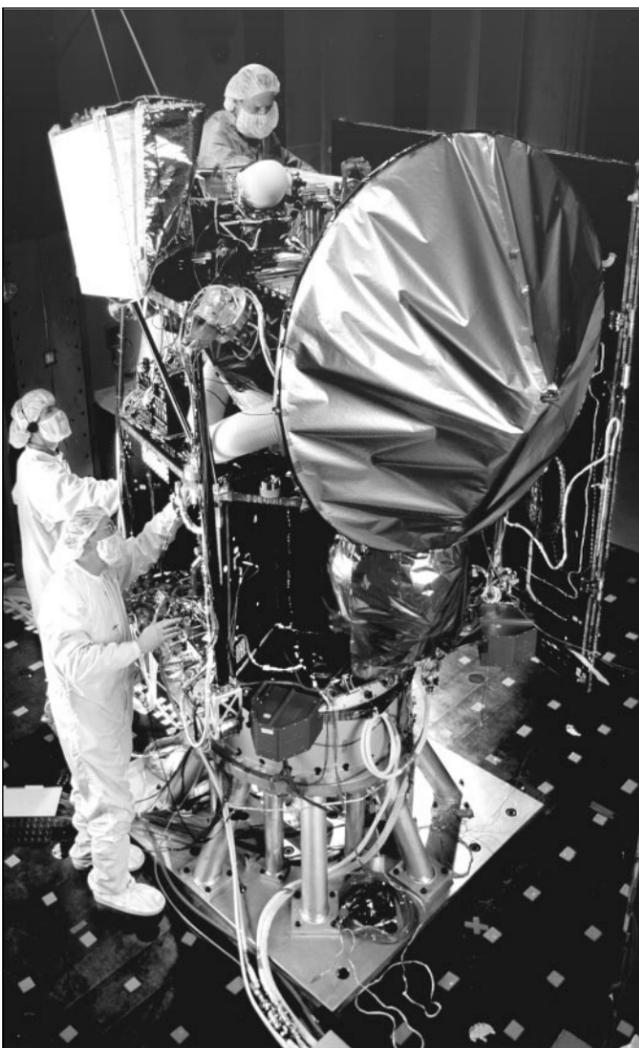
See Astrobiology, page 2

## Work progresses on Mars '98 orbiter, lander



The Mars Surveyor '98 Climate Orbiter and Polar Lander, set for launch in December 1998 and January 1999, are entering the final stages of testing this summer at Lockheed-Martin Astronautics, Denver. To the right is the Climate Orbiter as it was undergoing acoustic testing recently to simulate conditions that might occur at launch. The Polar Orbiter, above, is shown during deployment and testing of its surface solar panels. The 1998 mission will address the behavior of Martian volatiles, such as water vapor and ground ice, and reveal more about the history of Mars' climate and current resources.

PHOTOS COURTESY OF LOCKHEED MARTIN ASTRONAUTICS



## Open house here May 30-31

Up to 50,000 visitors are expected for JPL's annual open house May 30-31. The event will be open both days from 9 a.m. to 5 p.m.

The majority of exhibits and displays will be presented in the mall and nearby areas, which will be divided into the following regions:

**Area A, Solar System:** Area A1, the Cassini display, will be the closest to the main gate. A2, Mars Exploration, will be next, followed by A3, Small Bodies.

**Area B, Earth:** All of JPL's Mission to Planet Earth projects.

**Area C, Children's Activities:** Hands-on activities for all ages.

**Area D, Universe:** Current, future and proposed astrophysics missions.

**Area E, Technology:** Deep Space Network, New Millennium Program, Technology and Applications Program, X-2000 and more.

Lab buildings housing exhibits: 79, 111, 148, 150, 167, 168, 170, 179, 180, 186, 230 and 301.

Parking is available in the east and west parking lots. Shuttle service to the Lab will be provided. □

## Security services outsourced

By MARK WHALEN

JPL has announced the outsourcing of its guard force and the physical security function.

The Laboratory has selected Florida-based Wackenhut Services Inc. to take over the physical security functions for the Oak Grove site, effective June 22, said Joe Charles, manager of the Security and Protective Services Section 665.

See Security, page 3

## News Briefs

**Sylvia Miller**, manager of JPL's Mars Surveyor Preprojects Office and a graduate of Rutgers University's Douglass College, has been elected to the New Jersey university's Douglass Society in honor of her career achievements.

Miller joined JPL in 1968, the same year she graduated from the college. She has served as mission design manager for the Comet Rendezvous Asteroid Flyby (CRAF) project, and also as team chief on the Infrared Astronomical Satellite (IRAS) mission, for which she was awarded the NASA Exceptional Service Medal. □

Due to the fact that many people have changed e-mail systems in recent months, some original subscribers to the monthly e-mail newsletter ICIS News Bytes may have been dropped from the distribution list.

Those who suspect they may have been dropped from the list, or never subscribed and would like to, may subscribe online at <http://icis.jpl.nasa.gov/iis/resources/bytes.home.htm>.

ICIS News Bytes, which contains information technology highlights, warnings, announcements and upcoming events, is also posted to [JPL.bulletin](http://JPL.bulletin) and the ICIS home page. □

Nearly 300 people attended JPL's semiannual Briefing for Industry May 14 at the Doubletree Hotel in Pasadena.

The event provides an update to industrial partners and suppliers on JPL's programs and procurement opportunities. It also provides a forum for companies to make new contacts and network with key JPL personnel.

Key themes included the fact that JPL and its partners need to reduce cycle time together; more programs and a smaller Laboratory mean more work for industry; and the transitioning to the Develop New Products project implementation process, especially model-based design, which requires effective alignment with partners.

Co-sponsoring the event with JPL was the National Space Club, with participation from the NASA Management Office. □

## The latest in office safety and comfort

Ergonomically configured key-boards, new furniture and state-of-the-art computer mice are some of the features of the new ergonomic viewing area in Building 171-104.

JPL employees may try a number of items on for size, including under-the-table keyboard holders; computer tables, some with corner units; contour chairs and several types of footrests.

Also available in the viewing area are catalogs that describe the new furniture and equipment. Char Fliege of the Safety Operations Section noted that employees wishing to order from the Just-In-Time system should first have an "ergonomic evaluation" of their workstation.

For more information, call Fliege at ext. 4-4396 or Alison Weisbin at ext. 4-8527, or go online to <http://techinfo.jpl.nasa.gov/jpl/safety>. □



JPL PHOTO LAB

**Char Fliege of the Safety Operations Section tries out a new chair and footrest in the ergonomics viewing area.**

## Way wins NASA's Silver Snoopy; KidSat, IPEX teams honored

Dr. Jo Bea Way, team leader for JPL's KidSat project, was awarded NASA's Silver Snoopy award in mid-May.

Part of NASA's Space Flight Awareness Program, the Silver Snoopy is selected and presented personally by astronauts to employees for outstanding performance. Former JPL engineer and current astronaut Stephanie Wilson bestowed Way with the Silver Snoopy during a ceremony that also honored the entire KidSat flight team with the Space Flight Awareness Program team award.

The KidSat team was responsible for mission planning, flight software development, test and integration, astronaut crew training, image data system development and operations for three KidSat shuttle missions: STS-76, STS-81, and STS-86.

KidSat team members: Laraine Amy, John Beck, Nevin Bryant, Kris Capraro, Sherry Casson, Chris Cordell, Eric De Jong, Michael Devirian, Greg Earle, Tim Fogarty, Richard Fretz, Greg Goodson, Zareh Gorjian, Jeffrey Hall, Dave Hodges, Ben Holt, Robert W. Johnson, Steve Levoe, Myche McAuley, Fred O'Callaghan, Sheryl Owen, Fredrick Shair, Shigeru Suzuki, Marguerite Syvertson, Mark Wensnahan, Gail Yopez, Stephanie Zeluck.

Also receiving the the Space Flight Awareness



PHOTO BY DUTCH SLAGER, JPL PHOTO LAB

**For her work as team leader on the KidSat project, Dr. Jo Bea Way, with daughter Annie in tow, accepts NASA Silver Snoopy award from astronaut Stephanie Wilson on May 15. Wilson, a former JPL employee who was an attitude control engineer on the Galileo project, has been in astronaut training since 1996.**

Program team award was the Interferometry Preparatory Experiment I (IPEX-I) Flight Team, which developed the IPEX software, hardware and electronics with significant reuse of the flight equipment from the Brilliant Eyes Ten-Kelvin Sorption Cryocooler Experiment (BETSCE).

IPEX-I team members: Parker Cowgill, Roger Klemm, Lermont Khachikyan, Marie Levine, Jeffrey Umland, John Waters. □

## 3,500 attend Family Day

About 3,500 family members of JPL personnel enjoyed a day just for them at the Laboratory on May 16 as they celebrated Family Day.

Nancy Kapell of the Human Resources Directorate said she received numerous positive responses from employees, who indicated their appreciation on behalf of themselves and their families.

"Everyone seemed to have a great time," Kapell said. "Many people said they would love for Family Day to be an annual event."

Employees brought visitors to their work areas, and family members were also allowed access to a number of facilities, operations areas and laboratories. Everyone received gifts and a complimentary lunch.

Kapell said one employee told her "I have to say that this was the nicest

thing JPL has ever done for its employees. It was obvious that a lot of thought and planning went into making this event such a success. Normally, this kind of effort is some-

thing we only see done for the public or for high-ranking personnel."

"The hats were an excellent idea—I can't tell you how many peo-

**See Family, page 3**

## Astrobiology

Continued from page 1

develop methods that will lead you where haven't been before."

Funding for the institute will begin with \$9 million in 1999 and \$20 million in 2000. This total is expected to grow as research directions are developed and the capabilities of the Next Generation Internet are expanded and fully utilized.

In addition to the JPL consortium, the selected initial members of the institute are:

**Universities:** UCLA, Harvard University, University of Colorado, Arizona State University, Pennsylvania State University.

**Research institutions:** Scripps

Research Institute, La Jolla; Carnegie Institution, Washington, D.C.; Woods Hole Marine Biological Laboratory, Woods Hole, Mass.

**NASA centers:** Ames Research Center, Moffett Field, Calif.; Johnson Space Center, Houston.

The selection of the members, encompassing academic institutions and government labs, was based on a competitive evaluation process that began with the release of a cooperative agreement announcement last October. The next solicitation opportunity for new members will take place in about a year.

The institute's director and staff will reside at NASA Ames. For further information on the institute and the field of astrobiology, go online to <http://astrobiology.arc.nasa.gov>. □

# Special Events Calendar

### Ongoing

**Alcoholics Anonymous**—Meeting at 11:30 a.m. Mondays, Tuesdays, Thursdays (women only) and Fridays. For more information, call Occupational Health Services at ext. 4-3319.

**Codependents Anonymous**—Meeting at noon every Wednesday. For more information, call Occupational Health Services at ext. 4-3319.

**Gay, Lesbian and Bisexual Support Group**—Meets the first and third Fridays of the month at noon in Building 111-117. For more information, call employee assistance counselor Cynthia Cooper at ext. 4-3680 or Randy Herrera at ext. 3-0664.

**Parent Support Group**—Meets the fourth Tuesday of the month at noon. For location, call Jayne Dutra at ext. 4-6400.

**Senior Caregivers Support Group**—Meets the second and fourth Wednesdays of the month at 6:30 p.m. at the Senior Care Network, 837 S. Fair Oaks Ave., Pasadena, conference room #1. For more information, call (626) 397-3110.

### Friday, May 29

**"Decision Theory and Psychological Models"**—This lecture by Colin Camerer, Caltech professor of business economics, will illustrate how crucial experiments have in some cases turned researchers away from theories based on optimizing, into new directions, while maintaining mathematical rigor and empirical focus. At 4 p.m. in the

campus' Baxter Lecture Hall.

**Bowl of Fireworks**—Last day to purchase tickets at the ERC for the Hollywood Bowl's annual 4th of July fireworks show, which starts at 7:30 p.m. Tickets are \$18.

**Dodgers Baseball**—Last day to purchase tickets at the ERC for the Dodgers' June 9 game against the Oakland A's (Beach Towel Night) and the June 14 game against the Colorado Rockies. Tickets are \$12.

**JPL Dance Club**—Meeting at noon in Building 300-217.

**JPL Genealogy Club**—The club will hold a special meeting at noon in Building 180-101 with guest speaker Bill Dollarhide, a noted genealogist from Salt Lake City whose topic is "American Migration Trails." The meeting is open to anyone interested in genealogy, family history or general American history.

### Fri., May 29—Sun., May 31

**"Someone Who'll Watch Over Me"**—This Theater Arts at Caltech production explores the minds of three innocent Middle East hostages attempting to come to terms with their situation. Held in the Underground Theatre, located in the basement of the campus' Student Activities Center, Friday and Saturday at 8 p.m., Sunday and Monday at 2 p.m. Tickets are \$8. For information, call (626) 395-4652.

### Sunday, May 31

**Jazz Special**—This free program at

3:30 p.m. in Caltech's Dabney Lounge will include a short lecture on the history of west coast jazz, followed by a concert of some of the leading practitioners of that jazz form.

### Tuesday, June 2

**JPL Gamers Club**—Meeting at noon in Building 301-227.

### Wednesday, June 3

**Associated Retirees of JPL/Caltech**—Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

**JPL Drama Club**—Meeting at noon in Building 301-127.

### Thursday, June 4

**JPL Dance Club**—Clogging class will be held at noon in Building 300-217.

**JPL Gun Club**—Meeting at noon in Building 183-328.

### Friday, June 5

**JPL Dance Club**—Meeting at noon in Building 300-217.

### Fri., June 5—Sun., June 7

**"Someone Who'll Watch Over Me"**—This Theater Arts at Caltech production explores the minds of three innocent Middle East hostages attempting to come to terms with their

situation. Held in the Underground Theatre, located in the basement of the campus' Student Activities Center, Friday and Saturday at 8 p.m., Sunday and Monday at 2 p.m. Tickets are \$8. For information, call (626) 395-4652.

### Tuesday, June 9

**JPL Scuba Club**—Meeting at noon in Building 168-427.

**JPL Stamp Club**—Meeting at noon in Building 183-328.

### Wednesday, June 10

**Grand Challenge Initiative**—An informal follow-up discussion will be held from 11:30 a.m. to 1:30 p.m. in the Building 167 conference room to answer any questions regarding the initiative and provide an open forum for anyone who wants to present a concept and have it discussed.

**JPL Amateur Radio Club**—Meeting at noon in Building 238-543.

**JPL Drama Club**—Meeting at noon in Building 301-127.

**JPL Toastmasters Club**—Meeting at 5:30 p.m. in the Building 167 conference room.

**SESPD Lecture Series**—Muses-CN Project Manager Ross Jones will speak at 11 a.m. in Building 180-101.

### Thursday, June 11

**JPL Dance Club**—Clogging class will be held at noon in Building 300-217.



## Heritage Week starts June 1

"One Nation, Many Cultures" is the theme for this year's rendition of JPL's annual American Heritage Week celebration, which will take place from Monday, June 1 to Thursday, June 4.

The events, sponsored by the Advisory Committee on Minority Affairs, will take place from 11:30 a.m. to 1 p.m. each day. In addition, the traditional International Cuisine Night will be offered on Thursday from 4:45 to 7 p.m., when JPLers and their families and friends may sample foods from a variety of cultures.

Twelve groups representing JPL's diversity will provide entertainment during the four-day event. A group from Elliot Middle School will also perform.

One of the highlights of the celebration will be the Wheel of Scientific Knowledge, which identifies scientific accomplishments of the various groups represented.

For more information, call event chairs Eileen Pablo at ext. 4-8670 or Carmen Bustamante at ext. 4-4739. □

# Lab helps bring tomorrow(land) up to date

*Disneyland's new attractions debut with a definite JPL flavor*

For space buffs who also like amusement parks, the Happiest Place on Earth just got quite a bit happier, thanks to JPL.

The much-anticipated debut of Disneyland's new Tomorrowland last week showed off not only new rides, attractions and restaurants, but also included an unveiling of an area titled "The American Space Experience," with exhibits from JPL and NASA.

JPL Director Dr. Edward Stone and selected other guests from the Laboratory attended opening ceremonies for the updated attraction and got the first look at Disney's version of tomorrow.

The Lab's contributions to the area include full-scale models of the Pathfinder spacecraft and Sojourner rover, both within a faux Martian landscape. Dipping into the past just a bit to compare the spacecraft of JPL's early history to those of today and tomorrow, models of Pioneer and Explorer are also on hand.

JPL also provided three Internet home pages—describing Origins, planets and comets/asteroids—in addition to interactive displays on the Deep Space 2 mission and Earth Science Enterprise, featuring TOPEX/Poseidon, the Shuttle Radar Topography Mission (SRTM), QuikScat and LightSAR, in addition to other radar and future Earth science missions.

Non-JPL contributions from NASA include a model of the space suit that could be worn by astronauts onboard the international space station next century, as well as ongoing NASA TV broadcasts and space shuttle information.

The JPL displays will be kept intact in Tomorrowland for at least a year. □



Visitors check out JPL's contributions to Tomorrowland's new American Space Experience. In foreground are models of the Pioneer spacecraft (in case at left) and the Explorer spacecraft aboard its launch vehicle (far right). At the top center of the picture is a model of JPL's Shuttle Radar Topography Mission (SRTM) within a space shuttle; further right is a TOPEX Poseidon model. NASA and JPL exhibits in the background, from left, showcase Deep Space 2, an international space station spacesuit, monitors showing up-to-the-minute NASA TV and space shuttle information, the Earth Science Enterprise, and a web site display including JPL-created home pages for Origins, planets and comets/asteroids.

PHOTOS COURTESY OF GEORGE SHULTZ



At left, JPL Director Dr. Edward Stone accepts a gift of a crystal sculpture—reminiscent of Snow White's castle at Disneyland—from the park's president, Paul Pressler, at the new Tomorrowland's debut. Above, as Mickey Mouse, Pressler and Pathfinder Project Scientist Dr. Matthew Golombek look on, Stone cuts a cake shaped like Pathfinder's Sojourner rover.

## Lab partners with Mattel for new Hot Wheels Galileo toy

By JOHN G. WATSON

A toy version of JPL's Galileo spacecraft will be produced under a licensing agreement between JPL and Mattel Inc.

Mattel plans an early 1999 debut for the new Hot Wheels Jupiter/Europa Encounter Action Pack, a highly detailed reproduction of the Galileo spacecraft. Also included in the set are reproductions of the Galileo descent probe that entered Jupiter's atmosphere in 1995 and of one of the giant ground-based antenna dishes now used to communicate with the spacecraft.

The toy marks the second time Mattel has partnered with JPL for a Hot Wheels toy. Under a previous

licensing agreement, Mattel produced a Hot Wheels JPL Sojourner Mars Rover Action Pack Set based on the Mars Pathfinder mission that landed in 1996.

Both toys came into being thanks to JPL's Technology Affiliates program. Through the program, corporations form alliances with JPL either to license intellectual property, as is the case with Mattel, or to gain access to JPL's engineers and scientists to help solve a range of technological problems. To date, more than 120 companies, large and small, have utilized the program to solve upwards of 200 specific technology challenges.

"The Mars rover Hot Wheels toy  
See Toy, page 4

## Security

Continued from page 1

Charles said 44 section employees—37 guards, six supervisors and one clerical staffer—will join Wackenhut. No employees will be laid off or terminated, he added.

"All who were working at JPL will remain here and they are assured of employment for at least one year," Charles said. "We came away from negotiations with a strong assurance that the staff who want to remain here do so for as long as they wish, depending on their job performance.

"This transition also offers opportunities for growth within the Wackenhut organization, because JPL's guard force is so small and growth opportunities have not been as abundant here within the organization," he added.

JPL retirement and medical plans

for the affected staff members will terminate in this transition, but Charles said that Wackenhut's benefits are comparable to those offered at JPL.

The outsourcing is part of the Lab's efforts to reducing its infrastructure to help attain its goal of about 4,800 contractors and employees by fiscal year 2000.

According to Charles, JPL took a "more humane" approach by outsourcing, rather than having large layoffs and terminations. "This gives the guard force a very slight change in the way they've worked," he said. "It gives the Lab a chance to utilize billets for what JPL is famous for. We don't lose employees; they just change status. It helps us meet standards levied by NASA and Congress.

"Wackenhut has worked very closely with us to make it all go smoothly," he said. Guards' uniforms will be very much the same as before,

## Asteroids

Continued from page 1

the largest main belt asteroid, Ceres, which is approximately 965 kilometers (600 miles) in diameter. Comets, on the other hand, are bodies of ice with embedded rock and organic materials that heat up and become active, spewing gases and dust as they approach the sun.

The NEAT telescope detects these small bodies by observing the same part of the sky three times during an interval of about one hour and comparing the three images to determine the location of objects moving across the sky. Since its inception, this fully automated system has detected more than 25,000 objects, including 30 near-Earth asteroids, two long-period comets and the unique 1996 PW, which has the most eccentric orbit of all objects discovered to date. More information about NEAT discoveries, along with black-and-white images of the objects, is available at <http://huey.jpl.nasa.gov/>

and the force will gradually transition into Wackenhut's training program, which Charles said is similar to JPL's guard training. Also, support of JPL's hazardous materials squad and fire department will remain unchanged. Myron Hitch, the current supervisor of plant protection, will service as the technical contract manager.

Wackenhut has about 45,000 employees and serving business, industry and government and has operations in every state and nearly 50 countries. Charles said that honors garnered by the well-renowned firm include the Department of Energy Central Training Academy's National Performance Service/Reinventing Government Hammer Award and the National Safety Council Award in 1996.

JPL's contract with the company is a three-year, fixed-price, perfor-

~spravdo/neat.html .

Most recently, the NEAT team has discovered two new Earth-crossing asteroids. One, designated 1998 HT31, is a relatively small Apollo-type asteroid 270 meters (800 feet) in diameter; the other, 1998HD14, is the 30th Aten to be discovered since JPL astronomer Eleanor Helin first identified this class of asteroid 22 years ago, and the fifth discovered with the NEAT tracking system. Both are classified as potentially hazardous asteroids because their orbits come within 5 million kilometers (3 million miles) of Earth, or about 20 times the distance of the moon.

However, neither currently poses a threat to Earth.

"Atens are a rare class of asteroid because of their small orbits, which are smaller than that of Earth's, and which never allow them to wander far from our planet," said Helin, who is the principal investigator of the NEAT program. "1998 HD14 passed within 5 million kilometers (3 million miles of Earth) just a week after we discovered it on April 29. This is

relatively close but poses no threat in the foreseeable future. Atens are of particular interest to us because they stay so close to Earth's orbit."

Along with near-Earth asteroids, astronomers are also interested in tracking long-period comets, which travel vast distances from the Oort Cloud, a region far beyond Pluto's orbit, which is believed to house trillions of incipient comets. These objects travel in very long paths through the solar system, and can appear unannounced, with no calling cards.

"We are particularly interested in these comets because they give us little time before appearing in Earth's vicinity," Helin said.

Astronomers dedicated to discovering and tracking near-Earth objects are eager to find all of the potentially dangerous asteroids and comets long before they are likely to approach Earth. For instance, the NEAT team at JPL is developing two new CCD cameras and hopes to install them at Mt. Haleakala or other facilities.

"With additional telescopes, longer observational runs and our new operating system, we will be able to detect 90 percent of the Earth-crossing asteroids that are larger than 1 kilometer (6/10 of a mile) in diameter in the next 10 years," Pravdo said. "As our knowledge about these objects grows, we will be able to provide better information which can be used in studies of ways to divert Earth-crossers on threatening orbits toward Earth." □

## Family

Continued from page 2

ple expressed excitement when we told them that was the gift," added another employee. "The whole plan was perfect, and perfectly executed."

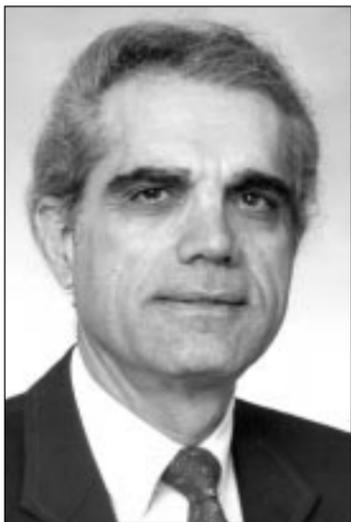
"A big thank you goes out to all those who made it happen," Kapell said. "It was a real team effort." □

# SP-100 manager Truscello dies

**Dr. Vincent Truscello**, who managed two JPL projects for the Department of Energy as part of a career that spanned nearly 30 years at the Laboratory, died of cancer May 11 at his home in South Carolina. He was 61.

Truscello joined the Laboratory in 1968 and did early work in the development of radioisotope thermoelectric generators (RTGs) that would later be used extensively on JPL spacecraft. In 1976 he was appointed manager of the Solar Thermal Power Systems Project, a DOE program to develop the technology and applications for the use of solar energy to generate electricity.

In 1983 he was appointed manager of the Space Power 100 Project. This work sought to develop a 20- to 300-kilowatt space reactor power system for nuclear electric propulsion outer-planetary missions and surface power for manned lunar and Mars missions. Truscello retired in 1996. He is survived by his wife, Joann, daughter Ann Marie and Mary, and grandson Nicolas.



**Dr. Vincent Truscello**

Services were held May 13 in Conway, S.C. □

# Anniversaries

Service award ceremonies were held May 7 to honor the following JPL employees, who have completed 20 or more years of service:

## 45 years

Jay Bondi.

## 40 years

George Jaivin, Dennis Carpenter, George Fraschetti, George Ladner Jr., Harry Reilly Jr., Takeshi Sato, Robert Tausworthe, Marc Trummel.

## 35 years

Reinhard Beer, Franz Borncamp, Robert Conover, David Curkendall, Marshall Gram, Clyde King, Brian McGlinchey, Wesley Menard, Rodney Stanley, Hugo Velasquez, Joseph Witt.

## 30 years

Sylvia Amrick, Henry Doupe, Kenneth McGraw, Neil Mottinger, Donald Palmieri, Ronald Ross Jr., Michael Sander, Ronald Slusser, Fred Soltis, Gary Stevens, John Wellman.

# Timekeeping training to start at end of June

By STEPHEN MARTINEZ  
*New Business Solutions Project*

All JPL employees should plan on attending training during the week their section is scheduled to begin to use the new timekeeping system.

Training is set to begin the week of June 29.

For non-exempt employees, training

will be on Mondays, with exempt employees scheduled for Fridays. Every organization has a liaison to NBS, who will send out notifications about specific training dates and times. The contact list is on the NBS training home page at <http://eis/ibs/training/nbstraining.html>.

Each training session is scheduled to last 60 to 90 minutes in von

Kármán Auditorium and will consist of a demonstration on how to use the new system (i.e., how to enter regular time, vacation time, sick time, leave without pay, etc.). Employees who miss their scheduled training date can view the NBS training schedule on the Internet and select another session. Sign-up will not be required.

## LETTERS

My family and I would like to thank all of my friends and co-workers for their prayers, condolences and donation to the memorial fund on the recent passing of my mother, Mrs. Rose Chu. Your kindness and sympathy has given us great comfort at this time.

Debbie Shimoda

□□□

My friend, Marti Brande, and I wish to express our deepest appreciation to the kind people who donated their United Plus airline mileage to Dalmation Dreams, enabling Marti to travel first class to Orlando in April. Marti's trip was solely dependent on the donations of others and because of your generosity and the Dalmation Dreams program, Marti's hopes and prayers were realized. She had the most wonderful and memorable time. Our thanks also to those who offered their prayers on Marti's behalf. Thank you all so much.

Jennifer Kesterson and Marti Brande

□□□

Carol and I wish to thank our friends at JPL for their support and empathy during the illness and subsequent death of my father, Dr. Logan Jackson. Also, thank you to ERC for the beautiful lily plant we received in his name.

Shannon Jackson

## FOR SALE

AIR CONDITIONER, window style by Goldstar, cools up to 400 sq. ft., exc. cond., incl. all manuals and mounting hardware; \$250/obo. 909/592-4458, eves.

BABY ITEMS: backpack, Gerry, exc. cond., \$25; potty, \$5. 355-9733, after 6 p.m. or leave msg. BED FRAME plus headset, mattress and box, qn. size, Ethan Allen, all for \$450/obo; 2 matching nightstands optional. 626/792-8272, Alice.

## NOTICE TO ADVERTISERS

All housing and vehicle advertisements require that the qualifying person(s) placing the ad be listed as an owner on the ownership documents.

## Universe

### Editor

Mark Whalen

### Photos

JPL Photo Lab

Universe is published every other Friday by the Public Affairs Office of the Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109.

Ads must be submitted on ad cards, available at the ERC and the Universe office, Bldg. 186-118, or via e-mail to [universe@jpl.nasa.gov](mailto:universe@jpl.nasa.gov). E-mail ads are limited to six lines.

Ads are due at 2 p.m. on the Monday after publication for the following issue.

For change of address, contact your section office or the HRS Help Desk at ext. 4-9559 (on-Lab personnel) or Xerox Business Services at (626) 844-4102 (for JPL retirees and others).

BICYCLE RACK, ultra heavy-duty, for hatchback or vans, bought new at REI for \$125 last year, in exc. cond., \$75; SKI RACK, Bearcrafter, holds 6 pr. skis or comb. of skis and snowboards, \$50. 626/791-2321.

BICYCLE, Univega Sport Touring, chrome alloy frame, Shimano component set, exc. cond., \$350. 626/446-0165.

BRICKS, red, 4" x 8" x 0.5"; perfect for walkways; quantity of 550; \$15 each or \$75 for whole set/obo. 626/568-8298.

CANISTERS, ceramic, for tea, sugar, coffee; two 5" diameter and two 6" diameter; white w/blue flower designs; all four for \$15/obo. 626/568-8298.

CHAIRS (2) and ottoman, overstuffed, matching; very clean/exc. cond.; high quality furniture, lg. plaid w/white weave pattern, w/teal blue, rust and beige colors; sold as a set; \$300. 626/339-5511.

COFFEE TABLE and end table, Lane, solid walnut, vg cond., \$125 for both. 249-4603.

COFFEE TABLE, white marble, 23" x 69", \$120. 626/797-6982.

COFFEE TABLE, wood frame w/glass inserts, 2' x 6'; \$20. 547-0705.

COMFORTER, brocade, king size (will fit Cal. king), recently dry-cleaned, w/king shams and bed ruffle; beige, w/varying light colors, mauves, etc.; 1 yr. old; worth over \$250, sell \$100. 626/357-6155, after 6:30 p.m.

COMPUTER CD SOFTWARE for Macintosh, call for list, all \$25 and under. 790-3899.

COMPUTER DESK, oak w/black top; shelf underneath for books; vg cond.; nice piece of furniture; \$100. 364-9726.

COMPUTER PRINTER, laser, Epson Action Laser II, needs photoconductor unit; as is \$100. 626/797-6089, Bob.

COMPUTER, 486DX/33, 8 MB RAM, 210 MB HD, 15" monitor, 14.4 modem, SB Pro sound, mouse, keyboard, lots of software, \$225. 550-7555, Rob.

COUCH, 9-ft. oatmeal colored, all hdwd. frame, reupholstered, hardly used; pd. over \$2,000 new, sell \$300/obo. 626/449-9747, eves.

COUNTRY CLUB MEMBERSHIP for Braemar Country Club (Encino), 367-7869, Lottie.

DASHBOARD COVER for '78 Volvo 242DL; \$30. 310/618-8977.

DESK, composition w/dark laminate wood grain, 5 drawers; gd. cond.; \$65. 364-9726.

DINING ROOM TABLE and 4 chairs, glass top table w/black finish base plus 4 chairs w/black finish and upholstered seats and backs, \$150/obo. 626/398-7090.

EXERCISE MACHINE, Body by Jake "Hip & Thigh," w/instructional video; \$40/obo. 367-0969.

FILE CABINET, 2 drawer metal; \$15. 364-9726.

FILM, 35mm negatives and slides, professional/amateur, Fujii/Kodak, 50/100/200/400 ISO, kept in a cool and dry place, expire mid-'99, much cheaper than stores. 548-9274.

GUITAR AMPLIFIER, Peavey 5150, half stack w/slant cab, Eddie Van Halen model, exc. cond., \$900. 626/446-0165.

MAGAZINES, Astronomy, 1973 (Vol. 1, no. 1) to 1983 complete, exc. cond.; \$50/obo. 367-7869, Ken.

MATTRESS, ex-long twin, box frame, exc. cond., Sealy Posturepedic, \$125. 626/794-2047.

MOVING SALE: girl's 5 pc. bd. set, vintage 50's sec. living rm. w/table and lamps, 6' walnut stereo cabinet w/speakers, new Cardio Force exercise machine; best offer for each individual item. 790-2570.

MOVING SALE: TV, Zenith 27" console, w/remote, \$50/obo; 2 washing machines (name brands), \$100 ea./obo; dryer (name brand), \$100/obo; short surf board, \$200/obo; gas stove, \$75/obo; refrigerator (name brand), \$150/obo; all in exc. cond. 626/442-8615, Dan.

ORGAN, Yamaha 415 electronic console w/13 pedals, 3 keyboards, 144 rhythm patterns, pd. \$7,500, sacrifice for \$3,000. 790-3899.

PALM, giant sago, still in the ground; 5 ft. high, 6 ft. spread, very healthy; will help you dig it out; need a smaller one; \$200. 626/339-5511.

PERSONAL INFORMATION MANAGER, Seiko "Phone-Pal"; \$25. 790-3899.

PLAYER PIANO, antique, manual pump, upright; 90 piano rolls; gd. cond.; \$1,000 for all. 248-5678.

RECORDS, tons of old 78 RPM, from about 1906-1950s, lots of Big Band, low prices; Victoria needles, \$3 pkg. of 100. 248-5282.

RIMS for Jeep, complete set of 5 orig. star-spoke aluminum; nice upgrade to all Wranglers and Cherokees; \$250/obo. 626/794-5349.

SATELLITE DISH, 10 ft., Uniden UST 4800 Receiver with VideoCipher II+, \$225/obo. 550-7555, Rob.

SEWING MACHINE CASE, 1 yr. old, never used; \$20. 364-9726.

SKIS, Blizzard Thermo VR20's 190 cm, Solomon 857 bindings; exc. cond.; \$75. 248-5568.

SLEEPING BAG, North Face Super Kazoo 550 Down, rated to 10 F, \$125. 790-9681.

SWEATER, Coogi, from Australia, new, cost \$325 at Nordstrom, sell \$100. 790-3899.

TABLE, for dining or workspace; 60L x 36W x 30H, oak top, white detachable legs, exc. cond.; \$60. 547-0705.

TICKETS, Dodgers, season location, 7/24, 7/26, 8/11, 8/25, 8/27, 9/16. 626/445-7443.

TV, Zenith 27" console, w/remote, \$50/obo; WASHERS (2), \$100 ea.; SURFBORD, short, \$200; STOVE, \$75; REFRIGERATOR, \$150; all exc. cond. 626/442-8615.

WASHING MACHINE, top-of-the-line Whirlpool (2 spds., 4 cycles, perm. press); needs new motor; \$250/obo. 626/568-8298.

## AUTOS / MOTORCYCLES

'89 ALFA ROMEO Spider Graduate convertible, red, black top, 4 cyl., 5 spd., 85K mi., \$5,200/obo. [http://members.tripod.com/~Alfa\\_Romeo\\_Graduate/](http://members.tripod.com/~Alfa_Romeo_Graduate/) or 626/237-4153.

'80 BMW 633 CSI, 140K mi., V6, 5 spd. manual, a/c, pwr. str./win./locks, AM/FM/cass. stereo, 2nd gas tank, alarm, custom wheels/tires, snrf., new front upholstery, clean classic, \$3,950. 790-3367.

'95 CADILLAC Sedan DeVille, exc. cond., 44K mi., 4.9L, white diamond finish, shale leather, CD/cass., loaded, \$21,500. 626/794-2047.

'94 FORD Explorer XLT, V6, a/c, auto, AM/FM/cass., trans. cooler, \$13,500/obo. 248-9693.

'91 GEO Storm, 73K, dark blue, 5 spd., a/c, AM/FM/cass. stereo, gd. cond., fun to drive, \$3,900. 893-6084.

'88 GMC 1-ton extended cab, loaded, very clean, 61,000 miles, camper shell and carpet kit, orig. owner, \$10,750. 957-7554.

'93 HARLEY DAVIDSON, heritage softail custom, lowered, saddle bags, windshield, + many chromed access.; \$15,900/obo. 626/798-5477.

'86 HONDA Accord XL, 4 drs., low mi., exc. cond., a/c, pwr. windows, cruise cont., tan inside/out, drives and feels like new, \$3,995/obo. 626/584-0552.

'85 HONDA Prelude Si, red, auto, great running and body cond., well-maintained in/out, pwr. windows/sunroof/steering, AM/FM cass. stereo, cruise control, a/c, alarm, 127K mi., \$2,800/obo. 548-9274.

'81 HONDA GS500 motorcycle, V-style eng., runs great, full fairsing, windshield, stereo cass., ruck, trunk, custom seat, vg cond., \$1,400/obo. 310/286-0861, Joe.

'89 ISUZU Trooper II, 4WD, 5 spd., a/c, p/s/b, brushguard front bumper, removable trlr. hitch; rebuilt; trans., radiator, injectors; new: head, exhaust, manifold, fuel/water pump, timing belt, clutch, clutch fan, all paperwork, Sony faceless am/fm str. w/remote 10-CD chng. + amp., \$5,900/obo. 626/303-4939, John.

'90 JEEP Cherokee Laredo, exc. cond., V6 4.0L, new tires, AM/FM/cass., tow pkg.; pwr.: steering, windows, seats; tinted windows, orig. owner, very clean; \$8,700/obo. 213/257-9732.

'89 JEEP Cherokee Laredo, 4x4, low mi., pwr. brakes, shocks, tires; a/c, auto, all pwr., tow pkg.; etc., 4.0L eng., \$9,950. Pasadena, 626/797-8776.

'89 MAZDA MPV, V6, runs great, new paint & tires, all records; blue book \$7,000, sell \$5,500/obo. 626/799-0109.

'83 MERCEDES 300TD station wagon, exc. cond., drives like a new car, pwr. windows etc., sunroof, roof rack, built-in phone, \$5,900/obo. 805/250-0456 or pager 805/222-4390.

'89 PLYMOUTH Colt/MITSUBISHI Pricis, 5-speed, 2-dr. + hatch, new time belt, white, 109K mi., \$2,200. 248-8030.

'85 PLYMOUTH Voyager SE Sport minivan, 7 pass., 2.6L, auto, air, pwr., orig. owner, clean, never hit, \$2,100. 213/663-0769.

'88 VOLVO 240 GL, 4 dr., spd., 110K, gray, exc. cond., needs paint, good tires & battery, \$5,800.

## 25 years

Barbara Anderson, Larry Bergman, Alan Brothers, Paul Esposito, Larry Hovland, Tim Mcstay Kaufman, Kenneth Klaasen, James Lesh, Susan Lavoie, Katherine Moyd, Gail Robinson, Andrey Sergeevyevsky, Ellen Sherman, William Stromberg, Frank Surber.

## 20 years

Barbara Amago, Cindy Coryell,

## Toy

### Continued from page 3

helped educate kids and parents alike about the Mars Pathfinder mission in the most user-friendly fashion imaginable," explained Joan Horvath, a business alliance manager with JPL's Technology Affiliates Program. "Along the way, it also helped alert the business community to the many facets of JPL's technology transfer programs."

The Technology Affiliates program provides a streamlined way

Those who cannot attend a training session can contact their local subject matter expert for coaching on how to complete the time card. Subject matter experts are JPL employees, such as administrators, who have volunteered to become content knowledge leaders (e.g., in time-keeping) for their section/groups. If they cannot answer a question, they will forward it to the next level.

In order to ensure that training

Ron Dotson, David Escoto, Dennis Flower, Steven Friedman, Rizalina Gordon, Linda Graham, Carl Guernsey, Stanley Krauthamer, Kristan Lattu, Richard Levin, Jean Lorre, Michael Marcucci, Sharon Miller, Dusan Petrac, Baltazar Rosales, Richard Rudd, Mary Helen Ruiz, Lawrence Seeley, Mahadeva Sinha, George Stephan, Bobby Williams, William York, Lawrence Young. □

for JPL to do business with the private sector. The payoff: Technologies developed for the space program prove beneficial back on Earth and—in the case of the Mattel toys—help educate and enthuse the public about the space program.

"Through this long-term partnership with JPL, we continue to demonstrate a commitment to making science and space exploration more fun and accessible to children nationwide," said Jim Wagner, Mattel's senior vice president of Hot Wheels marketing and licensing. □

materials are up to date and everyone has access to them, NBS will be making the materials available electronically through the NBS training home page. Before attending training, employees will need to copy and bring the training materials for their session.

For further information, view the NBS training home page or contact Kathy Harris, the NBS training manager, at ext. 3-4831 or 4-3752. □

## WANTED

COMPUTER CHIP, Intel 387SL math coprocessor. 625-9964.

"HOOKED ON PHONICS" or phonics game. 248-3640.

JUICER, Juiceman II and/or Juiceman Jr. 891-6836, Steve.

SPACE INFORMATION & memorabilia from U.S. & other countries from past & present. 790-8523, Marc.

STOVE, apt.-sized. 248-3640.

VANPOOL RIDER, full-time, for vanpool #20 with stops in Northridge and Granada Hills. Ext. 4-0307, Marilyn.

VOLLEYBALL PLAYERS, coed, all levels of play; every Tuesday night from 8-10 at Eagle Rock High School; \$4/night. 956-1744, Barbara.

## LOST & FOUND

Lost: Prescription eyeglasses in case and one empty case; lost from 171 basement. Ext. 4-6678.

## FREE

FILL DIRT, clean (mostly gravel like); several cu. yds.; take as little or as much as you like; located 3 blks. ESE of NY & Hill, Altadena. 798 5152.

KITTENS (2) rescued, approx. 3-4 wks. old, in exc. health; need permanent home when ready for adoption (at 8 wks.). 626/796-3466.

## FOR RENT

GLENDORA, young professional looking for same to split huge home with lg. fenced yd. in a quiet cul-de-sac; extra rm. is a fully equipped office; 25 min./JPL; pets OK; gardener incl., \$425 + 1/2 expenses. 626/335-4409.

LITTLE ROCK, near Palmdale, furnished rm. in 3-bd. home; laundry facil., 2 ba., full house privileges, \$425 + 1/4 util. 805/944-3732.

MONTEOSE, studio, furn. or unfurn., quiet, many trees, no pets, for a single person, 4 min./JPL, 2332 Montrose Ave., 210 West to Ocean View, 1 blk. south; \$495. 249-7793.

N. ALHAMBRA, lg. 1 bd. duplex in gd. residential area; 700 sq. ft., clean, hdwd. floor, 1-car garage; stove, window a/c, refrig., washer; water, trash and gardener provided; \$600. 683-9935, eves.

PASADENA condo, professional male looking to share 2 bd/2 ba., plus den, compl. furn., centrally located, 3 blks. from Old Town; incl. own bd. and ba., full house benefits, with all amen., pool, Jacuzzi, off st. secured parking; prefer non-smoker, no pets; responsible and employed; avail. June 1; \$450 + 1/2 utils. 626/584-5999.

PASADENA, E. Del Mar, across/Caltech, 1 bd. in nice townhouse to share with a JPL frgn. and a Caltech PhD stdt.; furn., laundry, shared ba., all hse. privileges, nice bkyd., garage, vg garden, no pets; long term prfrd.; \$340 + 1/3 utils. 626/795-5284.

PASADENA, near Old Town, roommate needed to share 2 bd., 2 ba. apt.; f/p, c/a, Indry. facil., garage; female preferred, non-smoker; avail. June 1; \$462.50 + 1/2 utils., sec. dep. \$462.50. 626/564-9885.

ROOMMATE (student or professional) to share charming Spanish home, near PCC and Caltech; furn., newly decorated, lg. bkyd., \$550 incl. utils. 626/793-1759.

SIERRA MADRE apt., 1 bd., \$500. 626/355-6395.

SIERRA MADRE apt., 2 bd., 1 ba., small quiet bldg., views, \$700. 626/355-7318.

SOUTH PASADENA, bungalow studio apt., furn., good area on 1718 Huntington Dr. near Marengo; electric heat/air cond., parking and laundry facil.; non-smoker; \$565 incl. utils. 626/792-9053, Marilyn.

## REAL ESTATE

LA CRESCENTA, by owner, custom 3 bd. + conv. den, 1 3/4 ba., designer kitchen; pool, lg. covered patio; cul-de-sac of tree-lined priv. street w/view; open floor plan great for entertaining; new paint/carpet, new c/a/h; copper plumbing; 2311 Pickens Canyon Rd.; priced to sell quickly at \$435,000. 957-8835.

BIG BEAR, new cabin 2 blks. from lake, 2 bd., 2 ba., mud/laundry rm., \$129,000. 909/585-9026.

GREEN VALLEY LAKE, a secluded village in the

San Bernardino Mtns.; custom 3-story log home and buildable adjacent lot; beautiful 180 deg. view w/lg. decks, shade trees; walk to lake and skiing; cabin \$149,000, adjacent lot \$19,900. 303-1927.

LOS ANGELES/GLENDALE adjacent, charming house, 2 bd., 1 ba., detached bonus rm., dining rm., indoor and outdoor fireplaces, 2 patios, lg. enclosed yd., laundry rm., view; close to JPL, Caltech; \$174,900. 549-4140.

PASADENA, 3-level townhouse, Altadena Dr./Orange Grove, across Victory Pk; 3 bd., 2.25 ba., f/p, balcony, pool, spa and sauna, 1,300 sq. ft.; sharp, close to JPL; no agents; \$160,000. 626/398-5303.

SUNLAND townhouse, Alpine Meadows complex, 2 bd., 1.5 ba., 2-story, 2-car garage, pool, spa, tennis ct., rec. rm., well-maintained; \$110,000. 248-0178.