

universe

Jet Propulsion Laboratory

September 14, 2001
Volume 31 Number 18

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Elachi makes statement on terrorist attacks

The American flag flies at half-staff at JPL's entrance in honor of the victims of the terrorist attacks of Sept. 11.

JPL opened for business on Thursday, Sept. 13, two days after the tragic terrorist attacks on the United States on Sept. 11. In the wake of those events, JPL Director Dr. Charles Elachi expressed to Lab employees his "deep concern for the victims of (the) terrorist acts. Our thoughts and prayers go out to those who have lost their lives, to the injured, to all of the families and loved ones, and to all who are struggling so valiantly in rescue efforts."

The director addressed a number of concerns that have arisen from Tuesday's events.

As of Wednesday, he said, "we know of no JPL employee who was traveling on any of Tuesday's four airline flights that met such tragic endings. However, this hopeful news is tempered by the knowledge that with such massive casualties on the East Coast, some of us at JPL may have lost friends or loved ones on the planes or the buildings that were destroyed.

Photo by Enrico Piazzola



"We cannot undo what happened on Tuesday, but it is in our power to decide how we respond today and in the days ahead," Elachi added. "Out of this tragedy we can re-dedicate ourselves to the principles and values that make us proud to be Americans and proud to work at institutions like JPL and NASA. One of those values is respect for diversity and for

all who work here. People from around the world, from different backgrounds, religions, and ethnicities have come to our Laboratory, bringing with them their special talents and creativity. Let us make sure that one of our responses is to remember to respect all who work here."

Elachi reminded JPLers who are troubled or grieving, or need assistance for whatever reason, to call the Lab's Employee Assistance Program at ext. 4-3680.

Elachi also reassured JPL staff that the Lab is responding to this tragedy by "redoubling our commitment to safety. Our security and facilities people have done an excellent job to secure and protect the Laboratory and its people. Please know that with all that is being done, your safety and that of the public is foremost in our minds," he said.

Because of heightened security, there will be "necessary changes regarding access and package and vehicle inspections," Elachi said. "I urge you to stagger your arrival times between the hours of 6 and 9 a.m. for the rest of this week [through Sept. 14] or until further notice is given. Please be certain to wear your JPL badge above the waistline. I expect nothing less than your full cooperation with all of these requirements in the days ahead."

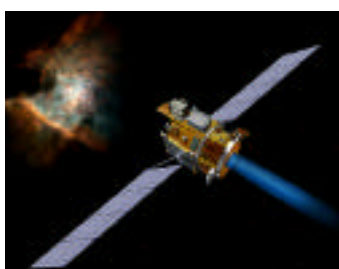
Also, due to heightened security for travelers, Elachi directed that no work-related air travel from the Los Angeles region be undertaken by any JPL employee prior to Tuesday, Sept. 18. "As for those who are currently away from the Lab, we are asking you to use your best judgment based upon your individual circumstances regarding either returning or staying," the director said. "Either way, I do not wish you to feel under any work pressure to make an uncomfortable decision." He urged those with questions or concerns to contact their immediate supervisor.

Elachi also reminded staff that the most immediate information will be available via JPL's internal communications web site, The Daily Planet, at <http://dailyplanet>, and that Labwide e-mails and brief Labwide voice mail messages will be sent out as required.

Those who do not have remote access to the Laboratory network at home were urged to contact the "State of the Lab" recordings at (800) 303-4575 and (818) 354-8601. In the event of major breaking news, notices may also be posted on JPL's external home page at www.jpl.nasa.gov.

Deep Space 1 to earn extra credit at comet

By Martha Heil



Artist's rendering of the Deep Space 1 spacecraft.

SOLAR SYSTEM

JPL's Deep Space 1 spacecraft, famed for bringing science fiction's ion engine technology to life, is preparing to fly daringly close to a comet on Saturday, Sept. 22. At 3:30 p.m. Pacific Daylight Time that day, Deep Space 1 will attempt to pass inside the unknown environment just 2,000 kilometers (about 1,200 miles) from the nucleus of comet Borrelly. The spacecraft may tell us more about comets and their place in the solar system. The robotic explorer will attempt to investigate the comet's environment when it tries to fly right through the cloud of gas and dust surrounding the comet's nucleus, known as the coma.

"Deep Space 1 is like a slugger trying to pile up extra home runs after breaking the world record," said Project Manager Dr. Marc Rayman. "Its mission to test new technologies is already highly successful. It has been a tremendously rewarding effort for the small Deep Space 1 team to keep this aged and wounded bird aloft. Any science we get at the comet will be a terrific bonus."

By the time of the flyby the spacecraft will have completed three times its intended lifetime in space, and the risks involved in gathering science data are very high, so results of this latest venture are unpredictable.

The spacecraft will be traveling through a cloud of gas, dust and comet pieces to collect its data. Since Deep Space 1 wasn't built to go to a comet, it does not carry a protective shield. "We expect to be hit by debris from the comet, and at 16.5 kilometers per second (36,900 mph), even a tiny particle might prove fatal," said Rayman. "But this is an adventure too exciting to pass up."

If all goes well, scientists will use the comet chaser's measurements to find out the nature of

Borrelly's surface and to measure and identify the gases coming from the comet. The spacecraft will also attempt to measure the interaction of solar wind with the comet, a process that leads to formation of the beautiful tail.

Borrelly makes a good target for study now, as it is just 1.34 astronomical units (about 200 million kilometers or 125 million miles) from the Sun—the closest it will get for another seven years. The Sun's heat will make the gases escaping from the nucleus flow faster and thicker, so they will be easier to study. The icy nucleus and the spacecraft will flash past each other at 16.5 kilometers per second (more than 36,900 miles per hour).

The flight team is also wondering whether Deep Space 1 will have enough gas to get to the comet. The long-lived spacecraft keeps itself pointed correctly by firing small thrusters of hydrazine gas. When the hydrazine runs out, Deep Space 1 will be unable to keep itself pointed correctly and the spacecraft will die. The flight team has an estimate of how much gas is left, but a few hours' worth of gas could make all the difference in the comet encounter.

As it approaches the center of the coma, the spacecraft will face its greatest challenge: to obtain pictures and infrared measurements of the nucleus. Deep Space 1 can't tell exactly where the nucleus is or what it will look like. The craft will have to locate the nucleus on its own and try to point the camera toward it as it streaks by.

In late 1999, after the successful end of its primary mission, Deep Space 1 lost its star tracker, which helps determine the spacecraft's orientation. Faced with what could have been a mission-terminating injury, the controllers performed a spectacular ultra-long-distance

rescue. They reconfigured the spacecraft to use the photographic camera to orient itself by the stars around it.

In order to take pictures of Borrelly, the camera cannot align the spacecraft and snap photos of the comet at the same time. Instead, the spacecraft will have to rely on its fiber-optic gyroscopes to help maintain its orientation. But the gyros are not accurate enough by themselves, so engineers designed complex new software to try to correct for those inaccuracies. The software is designed to help the camera stay pointed at the comet's nucleus during the critical few minutes that the probe will be close enough to the nucleus to try to get a view of it.

The ion and electron monitors, together known as the plasma experiment for planetary exploration, will attempt to identify the composition of the coma and measure the comet's interaction with the solar wind. Deep Space 1 will also strive to make infrared measurements of the nucleus. Its spectrometer breaks light into its individual colors, similar to looking through a prism. The spectrometer on Deep Space 1 works in the infrared, and the resulting data allow scientists to determine, among other things, the chemical composition of the object in view.

Deep Space 1, launched in October 1998, completed its primary mission to test ion propulsion and 11 other high-risk, advanced technologies in September 1999. NASA extended the mission, taking advantage of the ion propulsion and other systems to target a chancy but exciting encounter with Borrelly.

More information is online at <http://nmp.jpl.nasa.gov/ds1>.

News Briefs

Photo by Dutch Slager / JPL Photo Lab



JPL staff check out The Wellness Place, which opened Sept. 10.

The Wellness Place opens

The grand opening of The Wellness Place, JPL's new fitness and wellness facility, located in Building 167-111, adjacent to the Red Planet Cafe and the 167 conference room, was on Monday, Sept. 10. Yoga classes began on Sept. 11, with tai chi and aerobics classes planned for the future.

Meetings for Weight Watchers and Working Parents Support Group also will be held at the new facility.

Yoga classes are organized into two types: session-based and daily. Session-based classes meet twice a week for six weeks. These classes will take place before work and after work.

After completing the health screening, employees can sign up for classes via Registrar. A fitness class screening is not required for JPL employees previously screened and approved for gym access within the past 12 months.

For comments or questions, call Suzanne Bradfield, ext. 3-4067 or Bertha Hines, ext. 4-3706, or visit <http://eis/sec614/reward/wellnessplace>.

Public asked to rename SIRTf

To move away from cryptic acronyms, NASA is asking for the public's help to find a user-friendly name for the Space Infrared Telescope Facility (SIRTf).

The observatory will allow scientists to study objects from within our solar system to the distant reaches of the universe. It will see these objects by looking for the heat they radiate in the infrared wavelength. For example, the mission will look for dusty discs around other stars where planets might be forming.

"We are hoping to tap the creativity of the public to find a name suitable for this important mission that will help enrich our knowledge of the universe," said education and public outreach representative Doris Daou.

Employees of JPL, NASA and Caltech—and their immediate families—are ineligible for the contest.

The deadline for nominations is Dec. 20, 2001. The winner will be flown to Kennedy Space Center in Florida to witness the launch of the observatory, planned for next year. Up to 200 semifinalists will receive a letter of recognition and an educational kit. All contest participants will be able to print a personalized certificate of participation upon submission of a valid entry.

A short essay explaining the reasons for the suggested name must accompany all submissions. Following NASA's guidelines, names of current or proposed space missions cannot be used, and if the observatory is to be named after a person, that person must be deceased. Submissions are only accepted electronically.

To enter the naming contest or for more information on the mission, log on to <http://sirtf.caltech.edu>.

Lunchtime classes are being incorporated into future curriculum. Class capacity will be 25 employees.

Due to space constraints, this program is available to JPL employees only. As part of the Employer of Choice initiative, all initial classes (yoga, aerobics, tai chi) will be paid for with Caltech award fee money.

The prerequisite to participate in any fitness class is a basic 15-minute health screening with Occupational Health Services. To select a screening date, employees must enroll via the Registrar on-line class scheduling system system. A follow-up phone call to OHS at ext. 4-3319 is required to schedule time of screening.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Codependents Anonymous—Meeting at noon every Wednesday. 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 125-133. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parent Support Group—Meets the third Thursday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Senior Caregivers Support Group—Meets the first Tuesday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Friday, September 14

TIAA/CREF Workshop and Enrollment—"Income Options" will be presented from 1 to 3 p.m. in Building 180-101 for employees who are within seven years of retirement. The presentation reviews the amount of income needed in retirement, replacement ratio, annuity vs. non-annuity, and cash options. For those newly eligible for Caltech/JPL Retirement Plan participation, the monthly enrollment meeting will be held at noon in Building 180-101. Assistance in selecting investment options and completing enrollment forms will be available.

Tuesday, September 18

JPL Hiking+ Club—Meeting at noon in Building 238-543.

"Secure Communications"—Virginia Choate of the ICIS Enterprise Applications Office will discuss myths about the communication world outside JPL, how people at JPL can confidently share discreet information and how software developers can support secure communications for the JPL community. At noon in von Kármán Auditorium.

Wednesday, September 19

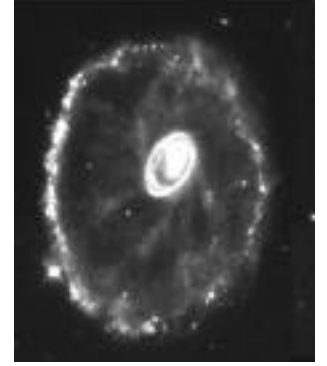
Prostate Cancer Screening—The Cancer Detection Center will conduct screenings for men 40 and over at JPL Occupational Health Services, Building 310-202, at the corner of Surveyor and Explorer Road. A limited number of screenings will be scheduled from 8 a.m. to noon. Allow up to 30 minutes for the screening, which will consist of a questionnaire, digital rectal examination and a prostate specific antigen blood test, followed by a letter explaining the results. Cost: \$25 for JPL employees, \$35 for affiliate personnel, payable at the time of the screening. For an appointment, call ext. 4-3319. Hosted by Occupational Health Services and Human Resources.

Thursday, September 20

Parent Support Group—"Teaching Your Child Financial Responsibility" will be presented by a representative from Consumer Credit Counseling Service of Los Angeles at noon in Building 167-111, the Wellness Place. For more information, call ext. 4-3680.

Von Kármán Lecture Series—JPL Astrobiologist Dr. Pamela Conrad will discuss the search for life in a lecture titled "Extraterrestrial Life:

Imagining Colors You've Never Seen" at 7 p.m. in von Kármán Auditorium. Open to the public. The lecture will be webcast live; log on to <http://www.jpl.nasa.gov/events/lectures/sep01.html>.



Friday, September 21

Latino Heritage Month—JPL's Amigos Unidos will present artist George Yepes, speaking on "JPL Murals and Artwork in the Community." At noon in von Kármán Auditorium.

Von Kármán Lecture Series—JPL Astrobiologist Dr. Pamela Conrad will discuss the search for life in a lecture titled "Extraterrestrial Life: Imagining Colors You've Never Seen" at 7 p.m. in The Forum at Pasadena City College, 1570 E. Colorado Blvd. Open to the public.

Saturday, September 22

Caltech Women's Club Potluck—To be held from 10 a.m. to 1 p.m. at Tournament Park in Pasadena. Bring your family and a potluck dish; plates, cups, utensils and drinks will be provided. Twinkles the Clown performs at 11 a.m. and a bounce house will be available for children under 12. Learn about the club and its family activities, such as the babysitting co-op, preschool playgroup and Wednesdays in the park. For more information, call Katie Clark at (626) 403-7163.

Wednesday, September 26

Investment Advice—Fidelity will hold individual counseling sessions in T-1720. For an appointment, call (800) 642-7131.

JPL Toastmasters Club—Meeting at 5 p.m. in the Building 167 conference room. Guests welcome. Call Joy Hodges at ext. 4-7041.

Thursday, September 27

JPL Golf Club—Meeting at noon in Building 306-302.

JPL Stories—Dr. Bobby Williams, Near Earth Asteroid Rendezvous navigation team chief, will present "The Story of NEAR Navigation: Extreme Partnering for JPL" from 4 to 5 p.m. in the customer services area of the Library, Building 111-104. For information about the JPL Story series or to participate, call Teresa Bailey at ext. 4-9233.

Tuesday, October 2

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

JPL Genealogy Club—Meeting at noon in Building 301-271.

Poetry Reading—Renowned author and poet Robert Bly will appear at 8 p.m. in Caltech's Beckman Auditorium. Admission is free. For information, call (626) 395-4652.

Thursday, October 4

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

SOLAR SYSTEM

Space physicists predict gusty winds for the next few months at the Sun's north pole, an area that was observed when the Ulysses spacecraft passed over it starting Aug. 31.

This pass over the pole occurs at a time of solar maximum, when the Sun is more active. "The solar wind is patchier—gustier—during solar maximum, because the sources of the wind are more irregular," said Dr. Ed Smith, the JPL project scientist. The mission is managed jointly by JPL and the European Space Agency.

This will be Ulysses' second pass over the Sun's north pole. Launched in 1990, it completed a circuit of the Sun in 1996 when the Sun was less active, then passed by the Sun's south pole last fall when the Sun was much more active. Now scientists will use what they've learned from previous passes to analyze data in the coming months.

Earth's magnetic field reverses itself only once every 200,000 years or so, but the Sun's internal magnet flips every 11 years, associated with a rise in solar activity. As it flips, the magnetic field becomes disordered, and the surface of the Sun becomes more active, shooting out bubbles of gas and energy called coronal mass ejections in every direction. The reversal of the magnetic field has a particularly dramatic effect on the poles. The Sun's magnetic field will be weak and X-ray coronal holes at the north pole should have shrunk during this solar maximum, because the magnetic field is unevenly spread around the surface of the Sun.

In 1995, Ulysses saw strong and

simple magnetic fields at both poles of the Sun. Large, dark X-ray coronal holes formed in the solar atmosphere over the polar caps. The solar wind is fast and hot when coronal holes in the Sun remain open over long periods of time, as they do at solar minimum.

As Ulysses passed by the south pole of the Sun a few months ago, scientists expected to find that magnetic lines were pointing outward, because observations from Earth show that the magnetic field has already reversed at the Sun's surface. Instead, they found that the magnetic lines were still pointing inward, just as they had been throughout solar minimum. They theorize that this could be caused by the magnetic lines forming small, closed loops next to the pole instead of escaping into space. For now, the magnetic field and solar wind seen over the pole appear to originate near the Sun's equator rather than from the polar cap.

The Ulysses science team will also study energetic charged particles—a regular feature of solar maximum—which speed away from the Sun's surface and escape into space. "These energetic solar particles can be as hot as 100 billion Kelvin (180 billion degrees Fahrenheit) and can cause damage to spacecraft," said Dr. Bruce Goldstein of JPL, the deputy project scientist. "However, they still follow the magnetic field lines."

For more information, visit <http://ulysses.jpl.nasa.gov> or the European Space Agency's Ulysses site at <http://helio.estec.esa.nl/ulysses>.

Ulysses forecasts gusty winds at Sun's north pole

By Martha Heil

A few well-known people require only a first name to identify them. At JPL, just mention “Larry,” and almost everyone will know who you mean. The Lab’s deputy director for the last nine years, Larry Dumas will retire at the end of September. He reminisces with Universe about his distinguished career of almost 40 years at the Lab.

As you look back on your JPL career, is there a defining moment you will remember best over all others?

L D Well, I’ve been blessed to have been here during the entire period of planetary exploration. There have been so many thrilling moments that it’s hard to pick one; it’s like picking the favorite among your children. To narrow it down, I’d point to the Mariner 2 flyby of Venus, the 21 grainy photos of Mars returned by Mariner 4, the first orbit of Mars by Mariner 9, Galileo going into orbit around Jupiter.

Voyager, of course, is one of the defining missions in the Lab’s history, and each of its encounters had its own special significance. I worked on Voyager during its early stages of development, then went back to work with the Deep Space Network at the time of the Neptune encounter, so that one was perhaps the most special for me.

Have your years as deputy director been the most fulfilling for you, or were some of the earlier years more special?

L D Every job I’ve held has been fulfilling in some way. Each job I’ve held was appropriate at that time in my career, and I feel that each job prepared me for the deputy director job. I have been the sort of person who tended to get restless in jobs—when I wasn’t learning anymore, I looked to move, so I’ve held lots of jobs as a result and have learned a lot.

What are you going to miss the most? The day-to-day operation of the Lab’s business, mission milestones, the people?

L D Well, I’ve never gotten jaded on the thrill of launches and encounters, and the “aha” of discovery. But it’s definitely the people I’ll miss most. I’ll miss things like walking across the mall and hearing people say, “Hello, Larry.”

I define JPL as the people of JPL. This is a special

community where we are all volunteers – we choose to work here. It’s been a special experience to work shoulder-to-shoulder with people as capable and committed as they are here.

What about JPL has surprised you the most?

L D Where science is concerned, it’s been delightful to see Mother Nature again and again upset our notions of what we thought the solar system is like.

It’s been a pleasant surprise in recent years to discover how important Caltech has been in influencing the shaping and structure of the Lab. In a very positive way, under the leadership of the institute and its board of trustees, Caltech’s culture has been imprinted on JPL. It probably goes back to the roots of the Laboratory in the 1930s. It’s the environment of open debate, people’s work being defensible to peers, and where everyone has a commitment to excellence. The bond between JPL and the campus is stronger now than it has been at times in the past, and JPL is getting more attention from the Institute’s leadership now than in the past.

What do you think JPL will be like in the future—in 10, 20, 50 years, and beyond?

L D It’s not possible for me to predict what JPL will be doing in the distant future. But I believe the Lab will still be in the business of discovery—I’m not sure what tools will be used, but it’s likely those tools will be developed here.

In terms of the character of the Lab, I can name a few things that will allow us to endure: high expectations for ourselves and others we work with; an unwillingness to sweep things under the rug, the notion that any problem or challenge can be met with a sufficient amount of intellectual effort; and the fact that peer review is built into how we operate.

Throughout JPL’s history, people have had an air of self-confidence, an ability to understand things at a deep level and get to the root of problems. The attitude is, “If we can’t do it, nobody can.”

When you leave JPL next month, how will you spend your time?

L D There’s no master plan. At this point, I just don’t know how I’ll fill that hole in my life that was JPL. My wife and I haven’t planned any trips around the world, and I don’t play golf. There are lots of interesting things out there, and I’ll find something I care about to devote myself to.

How is Gene Tattini’s transition to deputy director working out? What kind of advice or words of wisdom are you giving him?

L D I believe the transition has been going extremely well. Gene has been here for a couple of months now, and has had the opportunity to meet a lot of people on Lab. As far as I can tell, Gene has hit the ground running. And with his experience, he will bring some things to JPL that we sorely need.

I’ve tried not to burden him with specific advice, but to offer him information rather than opinions.

What’s been the most enjoyable part of your job as deputy director?

L D I’ve greatly enjoyed recognizing Lab employees and affiliates for their service and exceptional contributions to JPL’s mission. We have such high expectations for each other that we sometimes forget to stop and say thanks for extraordinary efforts. Representing the Lab by presenting honors and awards was a special experience for me.

I’ve also had the opportunity to be the Lab’s “representative” to visiting VIPs and organizations. That’s been an amazing and gratifying experience.

People are in awe of what we do here, and sometimes immediately put us up on a pedestal. The Lab is truly respected in the community—not just the public at large, but with our peers in the scientific and engineering communities as well. This place just has a special aura. It’s been a lot of fun for me to represent the Lab.

“I define JPL as the people of JPL. This is a special community where we are all volunteers — we choose to work here. It’s been a special experience to work shoulder-to-shoulder with people as capable and committed as they are here.”

— Larry Dumas



FAREWELL, LARRY

by Mark Whalen

'Silver Snoopys' awarded

Astronaut Janice Voss presents Silver Snoopy awards to Howard Eisen and Kendra Short.

JPL's Kendra Short and Howard Eisen have received NASA's Silver Snoopy award, part of the agency's Space Flight Awareness Program, which recognizes and motivates employees and contractors and to increase awareness in the Space Shuttle/Space Station Program.

The pair received the award last month in recognition of their work on JPL's Shuttle Radar Topography Mission, which flew on the Space Shuttle Endeavour in February 2000 and created the most extensive 3D map of the globe ever created. Using two radars on a 60-meter mast that extended out of the shuttle's payload bay—in conjunction with another two radars in the payload bay—the nine-day mission mapped almost 80 percent of all the land on Earth.

The Silver Snoopy is personally presented to the employee by an astronaut, since the award represents



the astronaut's own recognition of excellence. Astronaut Janice Voss, who was crew member on SRTM, surprised Short and Eisen with her visit Aug. 10 to present citations to the pair.

To meet the criteria for this award, the recipient's job



performance must be oriented to flight safety or mission success. It must be of an outstanding nature to distinguish the individual in his or her particular area of responsibility, and it must be meaningful in its contribution to flight safety or success of the mission.

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JPL's online news source

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Universe is published every other Friday by the Office of Communications and Education of the Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109.

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Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission. 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. Ads are due at 2 p.m. on the Monday after publication for the following issue.

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

Letters

Thank you for your support, both during my father's last days and afterwards. We truly appreciate the beautiful memorial plant from the ERC.

Amy and Stephen Jurewicz

Dear JPL family: I have been very blessed with a wonderful career at JPL. Thanks to everyone in my group, section and to the Tuition Reimbursement and USC-DEN program participants for your support and kindness. Thanks also for the beautiful gifts and send-off as I move to the next phase of my life in Colorado. I will miss you.

Barbara "Cookie" Kotulla
Section 247

My husband and I would like to thank my friends in Section 340 for their support during the recent passing of my husband's mother and for their contribution to a memorial fund in her name. I would also like to thank the ERC for the beautiful plant.

Susan and John Green

My husband and I would like to thank everyone for the compassion and kind words during the recent illness and passing of his father, James F. McGahan. The flowers sent by Division 180 were beautiful, and thanks to the ERC for the plant we received in his memory.

Angela and Bob McGahan

Classifieds

For Sale

AREA RUG, white berber, 9.5 x 13 ft., exc. cond., just cleaned, \$100/obo. 626/796-4111.

BABY CARRIER, Evenflo Snuggly Legacy model, can carry baby 3 diff. ways, never used, like new, bought \$40, sell for \$15. 562/420-2313.

BEDROOM SET, girls, charming, incl. headboard, twin bed w/canape, bedspread, sheets, etc., dresser, mirror, nightstand + many accessory pieces, all matching, \$400/obo. 626/791-1581.

BICYCLE TRAILER, seats 1-2 children, lightweight, foldable, like new, \$85. 626/797-0704.

BIKE, mt., GT Zaskar 19", Deore XT, grip shift, Rock Shock "Judy," \$800. 626/441-2150.

BOX SPRINGS/MATTRESS SETS, 2, twin, Sealy Elan Plush Posturepedic, w/wide wheels support, exc. cond., \$495. 626/793-3561.

CHAIR, LaZBoy rocker/recliner, rose/mauve plush, perfect, no longer matches carpet, \$150. 434-6048, Mary.

COMPUTER, Sun SparcStation, 5-85MHz, 128 MB RAM, 4G hard drive, 20" Sun monitor, type 5 keyboard and mechanical mouse, one 24-bit and one 8-bit frame buffer, Solaris 8 pre-loaded, no media, \$500. 626/582-8562.

COMPUTER, classic Mac IIcx, full keyboard & color monitor, syst. 7.5.5 loaded w/software, games, special effects; external CD-ROM, Zip drive, modem, speakers, backup floppies and software CDs; original manuals, Imagewriter II printer; supplies like printer paper & printer ink ribbons, operating perfectly, but needs floppy drive repair, great for children or grandchildren, \$400/obo. 248-3154.

COMPUTERS: Pentium III, 600 MHz PC, with Sony 200sf 17" monitor & Microtek ScanMaster X6 scanner, new in box, 128 MB SDRAM, 20GB IBM 7200 rpm hard drive, CD-RW ROM drive, DVD ROM drive, SCSI, 32 MB RAM video, Sound Blaster Live, 56K V.90 USB Modem, \$1,195; IBM ThinkPad, 12.1" TFT w/case, \$650; HP OmniBook 14.1" TFT w/dock station, \$850. 626/396-0122.

COMPUTER EQUIPMENT: Harman Kardon powered subwoofer, iSub for iMac, plug-n-play, USB connection, new, in orig. box, w/all acces-

sories, never used, exc. cond., \$60. 542-6953.

COOLERS, Coleman, 2, large, used once, \$15/ea.; BICYCLES, 4, children's, \$15/ea.; SHOVELS, 6, compact, squarepoint, \$5/ea.; REFRIGERATOR, GE, beige, 17 yrs. old, side-by-side, \$100. 626/357-8210.

DINING SET, cherry wood, 6' x 3' table, 6 Queen Anne chairs, seats covered in orig. plastic, vg cond., \$600. 956-2234.

DRESSING TABLE, antique, Art Deco, wood, circa '30s, vanity w/mirror, 5 drawers, great cond., \$350. 368-9520.

DRUM SET, Tama Grandstar, black, 5 pc., great for beginners or intermediate, exc. cond., all double-braced hardware, 2 clashes, splash, hi-hats and ride cymbals included, \$1,500/obo. 370-6402.

ENTERTAINMENT BOOKS, 2002, offered by Arcadia Elks Ladies Auxiliary to raise funds for disabled children in CA and HI, include 50% off and 2-for-1 offers, San Gabriel books only \$20, other areas avail. 793-1466 or 447-7817.

EQUIPMENT RACKS, three, 24" x 79" tall, low profile casters, custom alum. drawers, can remove drawers to house 24" rack-mounted equipment, only 1 rack has both side panels, others no side panels, all have louvered/hinged back doors, \$200 each/obo. 626/582-8562.

FURNITURE: bedroom set, mahogany, including 2 dressers, 1 mirror, full-size bed frames w/headboard, 2 night stands, \$350; sofa bed, full size, \$250; chairs, 3 bar stools, back support, \$15/each. 790-7982.

HOME THEATHER SYSTEM, AudioFile, allows you to upgrade any stereo system to true home theater, includes Dolby surround decoder w/remote, center channel and surround speakers in orig. box, exc. cond., \$130. 626/441-2357.

LUGGAGE, Jordache, 4-piece tapestry set, includes pullman, 2 carpet-bag styles and carry-on tote, exc. cond., \$100. 626/791-7645.

MOVING SALE: large, 9-drawer dresser & matching mirror both w/wicker accents, med. brown stain, quality hardwd., very well made, gd. cond., \$200/obo; full sz. bed w/lg. antique-style off-white metal scroll headboard w/brass knobs, very attractive, \$50; sleeper couch, \$50; Glendora area. 626/446-4969.

OLYMPICS TICKETS, 2002 Salt Lake. 562/420-2313.

ORGAN, electric, Lowery Lincolnwood, fine console, circa 1950s, works, \$450. 626/305-3172.

PIANO, upright, Straube, need tuning, perfect for student, \$295. 661/718-8483.

REFRIGERATOR, works well, icemaker, large size, \$75. 626/797-9004.

REFRIGERATOR, 12 yrs. old, works great, almond color, freezer on top, \$75/obo. 626/796-4111.

RUGS, Chinese set, machine made, 5 x 8 & 8 x 11, floral, brgndy/beige, 1 yr. old, paid \$600, sacrifice \$300/both; SOFAS, 2 green floral, seats 3 each, 1 yr old, vg cond., \$650/both. 956-2234.

STOVE, Kenmore, retro 1950, works, great cond., \$175. 661/718-8483.

TABLE, leaf and matching chairs, light pine, with white tile tabletop, good cond., \$85. 323/257-8640.

TABLE, dining, w/chairs, golden oak round claw-foot with 3 leaves and 5 chairs, exc. cond., \$875/obo. 952-8455.

TABLE, dinette, square glass top 5' x 5' w/metal feet and 4 matching chairs, \$700/obo; BAR STOOLS, four matching, metal frame, all in superb cond., \$300/obo. 626/398-3480.

TABLES, coffee, octagonal, + 2 end tables, oak w/bevelled glass inset, exc. cond., \$100/all. 661/254-7443.

TABLES, coffee, fair cond., + 2 end tables, good cond., cherrywood, \$50/all; dining room, 4 chairs, cherry wood/black combo, \$100; REFRIGERATOR, GE, white, 15 yrs old, \$100; SOFA/SLEEPER, makes into queen bed, abstract stripe design in black, blue and mauve, good cond., \$300. 626/357-8210.

TELESCOPE, 8" Celestron, C8 Schmidt-Cassegrain, 6, 17, 25, 40 mm eyepieces, Pellin case, bought in 1996, like new \$1,500. czrider@pacbell.net, 626/798-4016.

VIDEO GAMES, for Playstation: Omnisha Warlords; Midnight Club; X-Squad; Orphen: Scion of Sorcery; Fantavision; NBA Live 2001; Ridge Racer V; Shadow of Destiny; Gradus III & IV, \$160/all. 368-9520.

Vehicles/Accessories

'86 ACURA Integra, gray, hatchback, 5 spd., a/c, am/fm, gd cond., \$1,900. 323/377-5365.

'97 BMW 740iL, white, loaded, all possible extras, exc. cond., \$31,500. 360-6364.

'87 BMW K75S motorcycle, < 9K mi., exceptional cond., corbin seat, removable luggage,

stairtune performance & orig. exhaust incl., Aeroflow windshield, recently had full maint. including seals and spline, great bike, need money for school, \$4,700/obo. 323/341-4448, jwall@oxy.edu.

'97 DODGE Stratus, 87K mi., exc. cond., 150 hpw, auto, a/c, all powered, am/fm/tape, silver, \$5,600/obo. 367-1063.

'87 DODGE Ram Charger, 4 X 4, 360, V8, gd. eng., blue/white, fast pwr., 130K mi., pwr. windows/locks/steering, a/c, new seat covers, tilt wheel, cruise control, fair cond., 1 owner, \$1,500/obo. 323/839-8950, Tim or bentley@usc.edu.

'01 FORD Taurus LX plus sedan, 15K mi., 4 dr., silver, exc. cond., loaded incl. auto, a/c, am/fm/cass., keyless remote, 5-spoke alum. wheels, \$16,000/obo. 213/276-8755.

'95 FORD Probe Hatchback, black, 2 dr., a/c, p/s, am/fm stereo/cassette, tilt wheel, dual airbags, 57,200 mi., new tires, brake pads & car cover, super clean, must sell, \$5,000/obo. 626/799-5368, after 5 p.m. or weekend, lv. msg.

'86 FORD F-250 extra-cab, 1 owner, extra clean, 109K mi. (most highway), auto, a/c, V8, heavy-duty tow pkg., air shocks, EZ-Lift sway bar kit, elect. "over-under" gear changing unit, dual 18-gal. tanks, and hi-lo Guidon camper shell, \$3,500/obo. 310/374-3266.

'67 FORD Mustang, 390, 4 spd., S code, new paint, new interior, orig. LA model, 80% restored, runs great, \$9,000/obo. 626/339-9353.

'00 HONDA Civic EX Sedan, 4 dr., auto trans, air, power steering/windows/locks, tilt wheel, cruise control, dual airbags, ABS, keyless entry, moon roof, \$18,700. 626/355-9707.

'98 HONDA Civic DX, 36K mi., 1 owner, exc. cond., all maint. records, new tires and CD player, tilt steering wheel, Kelly bluebook \$12,400, sell \$11,000/obo. 805/234-0323, www.begrific.com/honda.

'92 HONDA Accord EX, auto, a/c, ABS, airbags, rear spoiler, am/fm/cass., tint, sunroof, 1 owner, 93.5K mi., \$7,500. 909/860-0491.

'87 HONDA LX, 127,000 mi., 5 speed, orig. owner, \$2,400/obo. 626/791-1581.

'85 HONDA Accord LX, gray, 2 dr., hatchback, 5 spd., 141K mi., orig. owner, runs great, \$1,200. 626/447-1095.

'86 LINCOLN Town Car, 86,750 orig. mi., loaded, sandalwood w/tan leather interior, am/fm/cass., synthetic oil only, \$3,250/obo. 661/424-9441.

'00 MERCURY Cougar, V6, exc. cond., auto, a/c, CD, pwr everything, security syst., alloy wheels, spoiler, gray fog metallic, 12K mi., factory warr. thru 8/03, sacrifice at wholesale Blue Book price, \$14,500. 364-8862.

'88 MITSUBISHI Galant, V6, 4 dr., blue, clean in and out, \$1,200/obo. 626/797-6814.

'90 NISSAN 240SX SE Fastback, red, 5 spd., flip-up/removable sunroof, pwr steering, tilt wheel, cruise, AM/FM stereo, single-owner, well-maintained, all records, runs/handles great, 100K mi., good cond., \$3,600/obo. 323/467-4742.

'88 SEA RAY boat, 23' cuddy cabin, 185 orig. hrs., 5.7 L motor, Mercruiser outdrive, new upholstery, ship to shore radio, live bait tank, \$11,000/obo. 626/339-9353, Greg.

TRANSMISSION, 3 spd., unassembled, fly wheel, new clutch and presser plate for 1955 T-Bird, \$100. 626/447-5353.

'98 YAMAHA V-Star 650 motorcycle, 9,300 mi., red/maroon, saddlebags, fwd. controls, many chrome acc., orig. owner. 626/446-7508 or pmk@pacbell.net.

Wanted

ANTIQUE LINENS, white on white, hand embroidered, preferably monogrammed (any monogram), must be in exc. cond. 980-1638.

CARPOOLER for existing 4-person car pool, each person drives 1 day/week, meet at the Diamond Bar Park and Ride on Diamond Bar Blvd, work hours: M-Th, 7:30-4:15, Friday leave at 4 p.m. Ferne Griffin 4-8583 or Sandy Itatani 4-6954.

SKATES, women's, in-line RollerBlades or skates, size 8.5 or 9, new or used in gd. cond. 626/355-3886, Katherine.

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

Free

DOG, older, outdoor, friendly, gets along with kids and other pets, moving to condo with no yard. 626/282-8284.

For Rent

ALTADENA house, 2 bd., 1.75 ba., office, detached play/workout rm., a/c, cent. heat, wash-

er/dryer hookups, fireplace, newly refinished hardwd floors, new paint inside/out, new linoleum, new stove, nice area nr Altadena Golf Course, no pets, non-smokers, \$1,800, gardener & water incl. 626/296-2659.

BURBANK, 2-bd. house to share, beautiful, new paint, built-in shelves, formal dining, Verdugo hillside, fine old neighborhood, lg. shaded yd w/pool, spa, fruit trees; fem. prof. pref., housecln. & water pd., will consider dog, \$740 + 1/2 elec. & gas. 434-6048, Mary.

LA CANADA, priv. entr. to furn. bedroom & bath in lovely home, parking, some kitchen privileges. 952-3382.

LA CANADA/FLINTRIDGE, separate, small room, w/bathroom, a/c, partially furn., gated separate entr., temporary ok, close to JPL, very private, \$650. 790-1893, lv. msg.

MONTEREY HILLS townhouse, 2 bd., 2 ba., 2-car attached gar., a/c, washer/dryer, dishwasher, refrig., microwave, appliances 1 yr. old, new carpeting, patio w/view, skylights, fireplace, pool, spa, water pd., end unit, well-maint. complex, 58 units, 15 min. to JPL & dwtwn. L.A., \$1,500. 626/794-1716.

MONTROSE apt., lg. 1 bd., 10 min. from JPL, \$725. 626/445-0884.

PASADENA, rm. in a furn. 2-bd. apt. near Lake Ave. district, treetop and mtm. view, tree-lined st., near shopping, PCC, Caltech, underground secure parking, laundry facility, pool, util. pd., female preferred, \$475. 626/796-8982.

PASADENA, 1 bd., private ba., avail. in new 2-bd., 2.5-ba., townhome, \$650. 626/796-8709.

SHERMAN OAKS, 3 bd., 2 ba., den, 2-car gar. w/storage rm., lg. yd., 1 bl. N. of Fashion Sq. shopping center, walking dist., avail. Oct. 1, \$2,100. 626/791-0585, Ulvi or Ayse, evenings.

SOUTH PASADENA, studio apt., 1718 Huntington Dr., betw. Marengo and Milan Sts., fully furn., util. pd., car space, laundry, no pets, non-smoker, \$750. 626-792-9053, Marilyn or Ray.

Real Estate

PASADENA, executive condo next to Caltech, totally remodeled, 2 bd., 1.75 ba., 1,200 sq. ft., newly refinished hardwood floors in din. rm., newer appliances, carpet & paint, lg. balcony, just redone, overlooking beautiful trees, top floor unit in park-like setting, walk to S. Lake Ave., nice pool & spa, \$249K. 626/585-9048.

PASADENA, Rose Bowl-area townhome, 2 bd., 2.5 ba, vaulted ceilings, fireplace, skylight, 2 decks, cent. air, 1,180 sq. ft., lots of storage, gated complex w/pool & spa, newly remodeled outdoor waterscape, convenient to Old Town, 8 minutes to JPL, \$225K. 626/793-5879.

SAN GABRIEL VALLEY area, 2 bd., 1 ba., dining rm., living rm., fire place, new roof, new paint, 2-car detached gar., fenced yd., rm. for addition, convenient location, \$189,500. 626/266-3785, 626/287-4357, cell.

Vacation Rentals

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bd. suite, sleeps 6. 949/786-6548.

HAWAII, Maui condo, NW coast, on beach w/ocean view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, 4/15-12/14 \$105/nite/2, 12/15-4/14 \$120/nite/2, \$10/nite/add'l person. 949/348-8047.

MAMMOTH, Chamonix condo, at lifts 7, 8, 16, 17, walk to Warming Hut, 2 bd., 2 full ba., sleeps 6, fully equipped elec. kitchen, incl. microwave & extras, fireplace & wood, color TV, VCR, cable, fm stereo, pool & sun areas, o/d Jacuzzi, sauna, game, rec. & laundry rms., play & BBQ areas, conv. to lifts, shops, hiking, summer events, daily/weekly rates, summer rates thru Oct. 249-8524.

MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, sleeps 6-8, fully equipped kitchen incl. microwave, d/w, cable TV, VCR, phone, balcony w/view to mtns, Jacuzzi, sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455.

OCEANSIDE, on the sand, charming 1-bd. condo, panoramic view, walk to pier & harbor, pool/spa, game rm., sleeps 4. 949/786-6548.

OCEANSIDE condo, fully furn. 2 bd., 2 ba., fireplace, full kitch.; quiet, relaxing, beautiful beachside setting; BBQ, pool, spa, game room; great ocean vw., easy walk to pier and restaurants, slps. 6; weekly or monthly, 909/981-7492, Jim or Darlene or dfhaug@yahoo.com.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.

SAN FRANCISCO, Nob Hill honeymoon suite, sleeps 2 max, full kitchen, maid, concierge, \$125/nite, \$750/week. 626/254-1550.