Following a couple of days’ delay due to weather, a NASA robotic geologist named Spirit began its seven-month journey to Mars on June 10 when its Delta II launch vehicle thundered aloft from Cape Canaveral Air Force Station, Fla. The spacecraft, first of a twin pair in NASA’s Mars Exploration Rovers project, separated successfully from the Delta’s third stage about 36 minutes after launch, while over the Indian Ocean. Flight controllers at JPL received a signal from the spacecraft at 12:49 a.m. Pacific time via the Canberra, Australia, antenna complex of the Deep Space Network. The project announced on Thursday, June 12, that Spirit successfully reduced its spin rate as planned and switched to celestial navigation using a star scanner. All systems on the spacecraft were reported to be in good health. As of 48 hours after the launch, Spirit had traveled 3,600,000 kilometers (3.5 million miles) and was at a distance of 610,000 kilometers (380,000 miles) from Earth.  

After separation from the third stage of its Delta II launch vehicle on June 10, Spirit was spinning 12.03 rotations per minute. Onboard thrusters were used June 11 to reduce the spin rate to approximately 2 rotations per minute, the designed rate for the cruise to Mars. After the spinning slowed, Spirit’s star scanner found stars that are being used as reference points for spacecraft attitude. Navigators and other flight team members at JPL will be deciding soon when to perform the first of several trajectory-correction maneuvers planned during the seven-month trip between Earth and Mars. “We have plenty of challenges ahead, but this launch went so well, we’re delighted,” said JPL’s Pete Theisinger, project manager for the Mars Exploration Rovers. Spirit is due to land on Mars on Jan. 4, 2004, Universal Time (Jan. 3 in the United States), and will roam an area called Gusev Crater, which bears evidence of a wet history. The rover will examine rocks and soil for clues to whether the site may have been a hospitable place for life.  

Gusev is an attractive landing site because of a 900-kilometer-long (550-mile) meandering valley that enters the crater from the southeast. This valley is believed to have been eroded long ago by flowing water. The water likely cut through the crater’s rim and filled much of the crater, creating a large lake not unlike current crater lakes here on Earth. The lake is gone now, but the floor of Gusev Crater may contain water-laid sediments that still preserve a record of what conditions were like in the lake when the sediments were deposited. Spirit’s twin, Opportunity, is being prepared for launch as early as 12:27 a.m. Eastern time June 26 (9:27 p.m. Pacific time on June 25), and will be targeted to Meridiani Planum, near Mars’ equator and halfway around the planet from Gusev. Opportunity has been hoisted atop the Boeing MER-B Delta II heavy launch vehicle at Kennedy Space Center. Installation of the fairing around the spacecraft is scheduled for June 23, and fueling of the Delta second stage with its complement of storable propellants is planned for June 23. The rovers’ cruise through space comes at a time when Mars and Earth will be closer together than at any time in many thousands of years. “Mars is closer to the Earth than it has been in approximately 13,000 years. I find that an amazing number,” said JPL’s Nagin Cox, deputy chief of the mission’s spacecraft/rover engineering team. “We’re close enough and the geometry works out that we have an excellent data return,” she said. “That means we can bring more pictures, more information about Mars back to the people of Earth.” Information about the rovers and the scientific instruments they carry is available online at http://mars.jpl.nasa.gov.

In the control rooms in Building 230, Harry Stone and Nagin Cox react to the successful launch of the Spirit rover:  

TWIN ROBOTIC GEOLOGISTS NASA IS SENDING TO Mars will embody in their newly chosen names—Spirit and Opportunity—two cherished attributes that guide humans to explore. NASA Administrator Sean O’Keefe and 9-year-old Sofi Collis, who wrote the winning essay in a naming contest, unveiled the names June 8 at NASA’s Kennedy Space Center, two days prior to the launch of the first rover, Spirit. “Now, thanks to Sofi Collis, our third grade explorer-to-be from Scottsdale, Ariz., we have names for the rovers that are extremely worthy of the bold mission they are about to undertake,” O’Keefe said. Sofi read her essay: “I used to live in an orphanage. It was dark and cold and lonely. At night, I looked up at the sparkly sky and felt better. I dreamed I could fly there. In America, I can make all my dreams come true. Thank you for the ‘Spirit’ and the ‘Opportunity.’”  

Hers was selected from nearly 10,000 entries in the contest sponsored by NASA and the Lego Co., a Denmark-based toymaker, with collaboration from the Planetary Society, based in Pasadena. Sofi was born in Siberia. At age 2, she was adopted by Laurie Collis and brought to the United States. “She has in her heritage and upbringing the soul of two great spacefaring countries,” O’Keefe said. “One of NASA’s goals is to inspire the next generation of explorers. Sofi is a wonderful example of how that next generation also inspires us.”  

Sofi’s dream of flying now takes the form of wanting to become an astronaut. Meanwhile, she enjoys playing with her older sister, swimming, reading Harry Potter stories, and her family’s three dogs and one cat. “The early days of space exploration stimulated the creativity of an entire generation, expanded our imagination and encouraged us to push our limits, making us better and braver human beings,” noted Lego President Kjeld Kirk Kristiansen. “With this project, the Lego Co. wants to bring part of that magic back. Everything we do is aimed at giving children that same power to create, and by involving children in the Name the Rovers Contest and other related playful learning activities, we hope to motivate and inspire the next generation of explorers.”
From left: Congressman Jerry Lewis, Tom Meseroll of AlliedSignal, Rick Perry of the Lewis Center.

**JPL Stories—JPL colleagues Robert Nelson and William Smythe will present “The JPL and Caltech Amateur Radio Club’s field day June 28–29.” The JPL and Caltech Amateur Radio clubs’ field day June 28–29 will provide a tour of the varied environments in Utah and the Colorado plateau. You will see that the radio will be popular tutored operations for amateur radio operators. They will be located 30 miles north of (JPL by car and can be reached via Angeles Crest Highway. This annual event is designed to test amateur radio operators’ ability to provide emergency communications support when normal communications capabilities are either over-stressed or nonexistent. Ham radio operators have traditionally provided this type of support during emergencies like tornadoes, hurricanes, floods and wildfires. The club plans to operate four stations, and the effort will include voice and Morse code. Also available will be popular tutored operations for those wishing to try out amateur radio. Registration is now available through the Goldstone Apple Valley Radio Club’s field day. Call (626) 794-3119.

Sign up for confer ence by July 1. Registration is now available through the Goldstone Apple Valley Radio Club’s field day. Call (626) 794-3119 or JAY HOLLODAY at 4-7758.

**GAVRT receives donation**

The Goldstone Apple Valley Radio Telescope (GAVRT) project, which gives students an opportunity to use a 24- meter antenna previously used in the Deep Space Network, recently received a $5,000 donation from AlliedSignal. Honeywell, which maintains the structure.

**GAVRT, based at the Lewis Center for Educational Research in Apple Valley, is a partnership between the Lewis Center, NASA, JPL and Honeywell.**

Honeywell wholeheartedly supports NASAs mission to communicate the relevancy of science in everyday life, for students, teachers and parents,” said TOM MESEROLL, Honeywell’s senior executive for Pasadena operations.

“Fraternal partnerships are important to the Lewis Center and the GAVRT project,” said RICK PERRY, the founder, president and chief executive officer of the Lewis Center. “This is unique because they are young ages and receive their love for learning. We would like to thank Honeywell for their long-term partnership with the Lewis Center and for their contribution to bringing the universe to America’s classrooms. Also in attendance was Congressman JERRY W. RIEP (R-Redlands), for whom the research center is named.

**Radio clubs’ field day**

The JPL and Caltech Amateur Radio Clubs will host their annual Field Day on the peak of Mount Gleason the weekend of june 28. This event is designed to test amateur radio operators’ readiness to provide emergency communications support when normal communications capabilities are either over-stressed or nonexistent. Ham radio operators have traditionally provided this type of support during emergencies like tornadoes, hurricanes, floods and wildfires. The club plans to operate four stations, and the effort will include voice and Morse code. Also available will be popular tutored operations for those wishing to try out amateur radio. Registration is now available through the Goldstone Apple Valley Radio Club’s field day. Call (626) 794-3119.

Sign up for confer ence by July 1. Registration is now available through the Goldstone Apple Valley Radio Club’s field day. Call (626) 794-3119 or JAY HOLLODAY at 4-7758.

**CEC Wine Tasting—Benefit**

The Caltech Junior Professionals Organizational Development and Educational Fund will hold a wine tasting to benefit the Caltech Junior Professionals Organizational Development and Educational Fund. The event is scheduled for Friday, June 20 from 6:30 to 9 p.m. at the California Institute of Technology’s Athenaeum front hall, 551 S. Hill St., Los Angeles. The event will feature five wines from the Chard Elena Quartet. Guided tours will be offered to view the wine items and take their chances at the gaming tables. All proceeds from the event will directly benefit the nonprofit organization, which has been providing intragroup and intergroup care and educational outreach services since 1979. General admission tickets are $35; students and faculty include entry into a private tasting room for pro and non-pros, and a Silent Auction. Tickets are available at the JPL Store and at the CEC, 140 Foothill Blvd., Suite 107. JPL employees also may be purchased at the door the evening for an additional $10. For more information, call (626) 395-4652 or visit http://www.jpl.nasa.gov/cec.

**Special Events Calendar**

**Wednesday, June 25**

**Investment Advice—Fidelity will provide one-on-one counseling appointments. For an appointment, call (800) 642-7111.

**JPL Toastmasters Club—Meet at 5 p.m. in the 167-117. Call Roger Carlson at ext. 4-2295 for information.**

**Volunteer Professionals for Medical Advancement—Meet at noon in Building 306-302. For more information, call (626) 395-8212.**

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

**Thursday, June 26**

**Caltech Architectural Tour—The Caltech Women’s Club presents this free service, which is open to the public. The tour begins at 11 a.m. and lasts about 1 1/2 hours. Meet at the Athenaeum front hall, 551 S. Hill St. For reservations, call Susan Lee at (626) 395-8212.**

**JPL Stories—Pls. collaborate Robert Nelson and William Smythe will present “Discovery of Sulfur Dioxide on Jupiter’s Satellite Io: A Personal Perspective of Two Scientists” at 4 p.m. in the Library, Building 111-104. If you have questions, call (626) 395-4652 or visit cma.announce@jpl.nasa.gov.**

**Friday, June 27**

**Caltech Folk Music Society—Bluegrass musicians John Wilcox, Danny Wheel- er and David West will perform at Caltech’s Dabney Lounge Hall at 8 p.m. Tickets are $15 for adults and $5 for students and faculty. For more information, call (626) 395-4652 or visit http://www.folkmusic.caltech.edu.**

**Wednesday, July 2**

**“X Prize: A Generation of Private Spacefaring”—Dr. Peter Diamandis, founder and chief executive of X Prize Foundation, will lead this Caltech Management Associ- ation Leadership Forum at 4-45 p.m. in von Karman Auditorium. The X Prize is a competition that offers $10 mil- lion to the first private enterprise to build and fly a spacecraft on two consecutive flights to 100-kilometer altitude carrying a human being. Twenty- four teams from seven nations are competing, and the next flight is expected in the next six to 12 months. In addi- tion to the X Prize, a variety of other space tourism efforts are working to make space accessible to the public. One such effort is being led by Zero Gravity Corporation, which will soon be offering FAA- approved commercial flights. Diaman- dis will discuss the history of the X Prize teams and taking, and their current status.**

**For additional in- formation visit http://www.xprize.org and http://www.aerojpl.com.**

**For more information about this event, e-mail cma announcio@jpl.nasa.gov or call (626) 395-4652.**

**Thursday, July 3**

**Caltech Ballroom Dance Club—Summer tango class will end July 14. A eight-week summer session of salsa classes will be held in Dabney Lounge from 7:30 to 9 p.m., with practice time afterwards. Beginners are welcome. Refreshments served. Cost for non-students: $8 per lesson. If all lessons are pre-paid at the start of the series.**

**Tuesday, June 24**

**JPL Hiking Club—A slide show titled “Utah, Between the National Parks” will be presented by John Tal.**

**Power of the JPL Library, who is also an amateur photographer, will be the show will provide a tour of the varied environments in Utah and the Col- orado plateau. You will see that the national parks are not the only areas of immense beauty in the American Southwest. Nonmembers are welcome.**

**Monday, June 23**

**Caltech Ballroom Dance Club—An eight-week summer session of salsa classes will be held in Dabney Lounge from 7:30 to 9 p.m., with practice time afterwards. Beginners are welcome. Refreshments served. Cost for non-students: $8 per lesson. If all lessons are pre-paid at the start of the series.**

**Ongoing**

The Social Security representative will no longer offer one-on-one counseling appointments on Lab. Call the Benefit Office at ext. 4-3760 to arrange a telephone counseling appointment.**
The first overview analysis of a year’s worth of high-resolution infrared data gathered by the Thermal Emission Imaging System (THEMIS) on JPL’s Mars Odyssey spacecraft is opening Mars to a new kind of detailed geological analysis and revealing a dynamic planet that has experienced dramatic environmental change.

**Odyssey thermal data reveal a changing Mars**

The report by THEMIS’s science team will appear in an upcoming issue of Science and was released on June 5 in the magazine’s online preview, Science Express (http://www.sciencemag.org/scienceexpress/recent.shtml).

“THEMIS is creating a set of data that is going to revolutionize our mapping of the planet and our idea of the planet’s geology,” said lead author and THEMIS Principal Investigator Philip Christensen of Arizona State University. “It will keep Mars scientists busy for the next 20 years trying to understand the processes that have produced this landscape.”

THEMIS is providing planetary geologists with detailed temperature and infrared radiation images of the Martian surface. The images reveal geological details that were impossible to detect even with the high-resolution Mars Global Camera on JPL’s Mars Global Surveyor and that have 300 times higher resolution than Global Surveyor’s Thermal Emission Spectrometer. Among the significant findings noted in the report is the detection of layers in the Martian surface that indicate major changes in past environmental conditions.

“With a wide-angle camera, I can take a picture of a lava flow, but even with the highest resolution cameras that we have today the smallest thing we can see is the size of a bus and in order to do geology I need to have more detail,” said Christensen.

“The camera on Mars Global Surveyor takes exquisite images that show layers, but it doesn’t tell me anything about composition—-is it a layer of boulders with a layer of sand on top? I have no way of knowing. With the THEMIS temperature data, I can actually get an idea because the layers vary—and each layer has remarkably different physical properties.”

Daytime and nighttime temperature data can also scientists to distinguish between solid rock and a variety of loose materials, from boulders to sand and dust. As any beach-goer knows, fine-grained sand heats up more rapidly at the surface than solid stone (which transmits more heat inward) but it also cools off more rapidly at night, when solid materials retain heat.

“We have seen layers, each with dramatically different physical properties, in places like Terra Meridianis,” Christensen said. “Why do the physical properties in the different layers change? They change because the environment in which those rocks were deposited changed. It’s very difficult to say exactly what happened in any particular place, but what we’ve found is that in many places on Mars it hasn’t just been the same old thing happening for year after year for billions of years. These data have been so remarkable and so different from all of our previous experience that it has taken time to sift through the images and figure out what we’re seeing.”

Among the details that have stood out so far are kilometer-wide stretches of bare bedrock that Christensen notes were unexpected, given Mars’s known dustiness. Large areas of exposed rock indicate that strong environmental forces are currently at work, “scouring” the surface and keeping sediments free of any new material that might be falling from the atmosphere.

Also unexpected is the finding that accumulations of loose rock are stretching of bare bedrock that Christensen notes were unexpected, given Mars’s known dustiness. Large areas of exposed rock indicate that strong environmental forces are currently at work, “scouring” the surface and keeping sediments free of any new material that might be falling from the atmosphere.

Also unexpected is the finding that accumulations of loose rock are common on Martian mountains, indicating recent processes of weathering continuing to affect the planet. “If those rocks had been made a billion years ago, they’d be covered with dust,” Christensen pointed out. “This shows a dynamic Mars— It’s an active place.”

However, despite Odyssey’s past findings of significant Martian ice deposits, there are also indications that, in many places on the planet, water may not be one of the active causes behind the observed geological features.

Analyzing the spectra from the 10 different bands of infrared light the instrument can detect, the THEMIS team has begun to identify specific mineral deposits, including a significant layer of the mineral olivine near the bottom of a 4-1/2-kilometer deep canyon known as Ganges Chaos. “Olivine, Christensen notes, is significant because it decomposes rapidly in the presence of water.”

“This gives us an interesting perspective of water on Mars,” he said. “There can’t have been much water— ever—in this place. If there was groundwater present when it was deep within the surface, the olivine would have disappeared. And since the canyon has opened up, if there had ever been water at the surface it would be gone too. This is a very dry place, because it’s been exposed for hundreds of millions of years. We know that some places on Mars have water, but here we see that some really don’t.”

Overall, Christensen notes that the emerging diversity and complexity of the planet point to the likelihood of future surprises and keep enlarging the possibilities for discovery on Mars.

“With Odyssey, we are looking at Mars in its entirety, in context,” he said. “It’s remarkable how much this has already changed our view of the complexity and richness of the planet. We discovered that it has a really dynamic geologic history. It has far more ice and water than we thought— we’re now seeing snow and gullies, layers—and there are also processes involving volcanoes, impact craters and wind. It’s a fascinating place.”

In addition to Christensen, the authors on the paper include Anton Ivanov and Kenneth Neelson of JPL, along with Joshua Bandfield, James Bell, Noel Gorelick, Victoria Hamilton, Bruce Jakosky, Hugh Kieffer, Melissa Lane, Michael Malin, Timothy McConnell, Alfred McEwen, Harry McSween, Greg Neitzel, Jeffrey Moosch, James Rice, Mark Richardson, Steven Ruff, Michael Smith, Timothy Titus and Michael Wyatt.

JPL manages the 2001 Mars Odyssey mission for NASA’s Office of Space Science. Investigators at Arizona State University, the University of Arizona and NASA’s Johnson Space Center, Houston, operate the science instruments. Additional science partners are located at the Russian Aviation and Space Agency and at Los Alamos National Laboratories, New Mexico. Lockheed Martin Astronautics, Denver, is the prime contractor for the project, and developed and built the orbiter. Mission operations are conducted jointly from Lockhead Martin and from JPL.

Additional information about 2001 Mars Odyssey is available on the Internet at http://mars.jpl.nasa.gov/odyssey.
Passings

ALFRED SIEGMETH, 92, a former manager of the Deep Space Network, died May 25 in Alhambra, Calif. Siegmeth earned master's degrees from the Technical University of Vienna, Austria, and joined JPL in 1966, and served as the technical operations manager for the Deep Space Network for more than 30 years. Siegmeth earned NASAs Exceptional Service Medal for his contributions to Pioneer, and was also honored as the 1992 JPL Orbit and Mission Series Artist. His contributions to Pioneer at the Smithsonian Institute. Siegmeth was the husband of Eva Liske and Kathy Siegmeth, five grandchildren and nine great grandchildren.

GEORGE TENNANT, 85, a retired PL on duty in 1955 and 1957, had a heart attack and died in 1979. He was survived by sons Steven, Kenneth, Michael and Ralph. Funeral services were held May 29 at Mountain View Cemetery in Altadena.

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Jim Kowalski, a senior engineer in the Mission Analysis and Design Section at JPL, died June 12 in a car accident in Burbank, Calif. He was 56.

Letters

Words express how thankful I am for the JPL all the roofs & walls for your care & support throughout the prayer and collection of the great grandchildren.

Bob Doblas

I wish to thank my friends and co-workers at JPL for their kindness and well wishes in the wake of my recent surgery, and on the next step on my career path. I will be very fortunate to find a group as fine as you to work with, and I appreciate all you all continued success.

Eugene DePipes

We would like to thank our PL family for all of your support throughout the prayer & collection. Our support, from the JPL Design, Mission Planning, and other groups have been very much appreciated.

Sincerely, Rigo and Marcos Falcon and Families

Jim Kowalski, a senior engineer in the Mission Analysis and Design Section at JPL, died June 12 in a car accident in Burbank, Calif. He was 56.

classifieds@jpl.nasa.gov

Classifieds

For Sale

AQUARIUM stand, 110 gal, glass, Fengen, $250. 996/791-7088.

BASEBALL CARDS, Post Card set from 1980s, $15. 996/791-7088.

BASEBALL CARDS, various baseball cards, $1 each. 996/791-7088.

BASKETBALLSoldo, portable, local sale, for $10, 3-10-81, 4-20.

BEATLES/JOE JUDD, set, complete, washable, used a couple of times, $30, 116/74/73.

BETTY FURMAN, turn of century, claw foot, prior to be registered, 655/57-1577.

BEDS and BEDDING, queen size, mattress size, 3 pr, 10-20, 3-10-81.

BICYCLES, women's, lake brand hybrid, 13 in. frame, $95. 996/791-7088.

BLACK & DECKER, cordless, canister, all metal, very collectible, 655/57-1577.

BICYCLES, men's, lake brand hybrid, 13 in. frame, $95. 996/791-7088.

BUDWEISER, 11 oz, aluminum, 36 oz, 60 oz, 996/791-7088.

COFFEE TABLE, solid wood black Chinese, 147 in. round, covered in the most elegant, $240. 655/57-1577.

COMPUTER, Macintosh, 16 MB, RAM 1 MB, CD-ROM, $500. 996/791-7088.

COMPLETE SEAT KIT, with windshield and floormat, $125. 996/791-7088.

COMPLETE SEAT MINI KIT, with windshield, $75. 996/791-7088.

COFFEE MUGS, Set of 4, blue and white, $30. 996/791-7088.

COMFORTER, polyester, white, $100. 996/791-7088.

COSMETICS, 100 lbs, cosmetics, beauty, vanity, $200. 996/791-7088.

CUTTING BOARD, anti-slip, black, 2 in. wide, 14 in. long, $5. 996/791-7088.

DARK TABLE, solid wood black Chinese, 147 in. round, covered in the most elegant, $240. 655/57-1577.

A front page of a document is shown with text extracted for it. The text is in English and appears to be a classified ad section for sale items. The document contains various advertisements for different items such as furniture, electronics, and clothing, with prices and contact information provided. The text is formatted in a standard classified ad layout, with each item listed on a separate line, including a description of the item, its condition, and the price. The contact information for each seller is also included, typically a phone number, with some items having additional details such as a description of the location or the availability of the item. The styles of the ads vary, some are more detailed, describing the item’s condition and use, while others are more concise, only providing basic information. The document appears to be a single page, and the text is formatted in a way that makes it easy to scan and find specific items of interest. Overall, the classified ad section is typical of what might be found in a newspaper or a classified advertisement website, offering a variety of options for buyers seeking to purchase or sell items. Without further context, it is difficult to determine the exact nature of the items or their relevance, as the text is presented in a straightforward, utilitarian manner typical of classified ads.