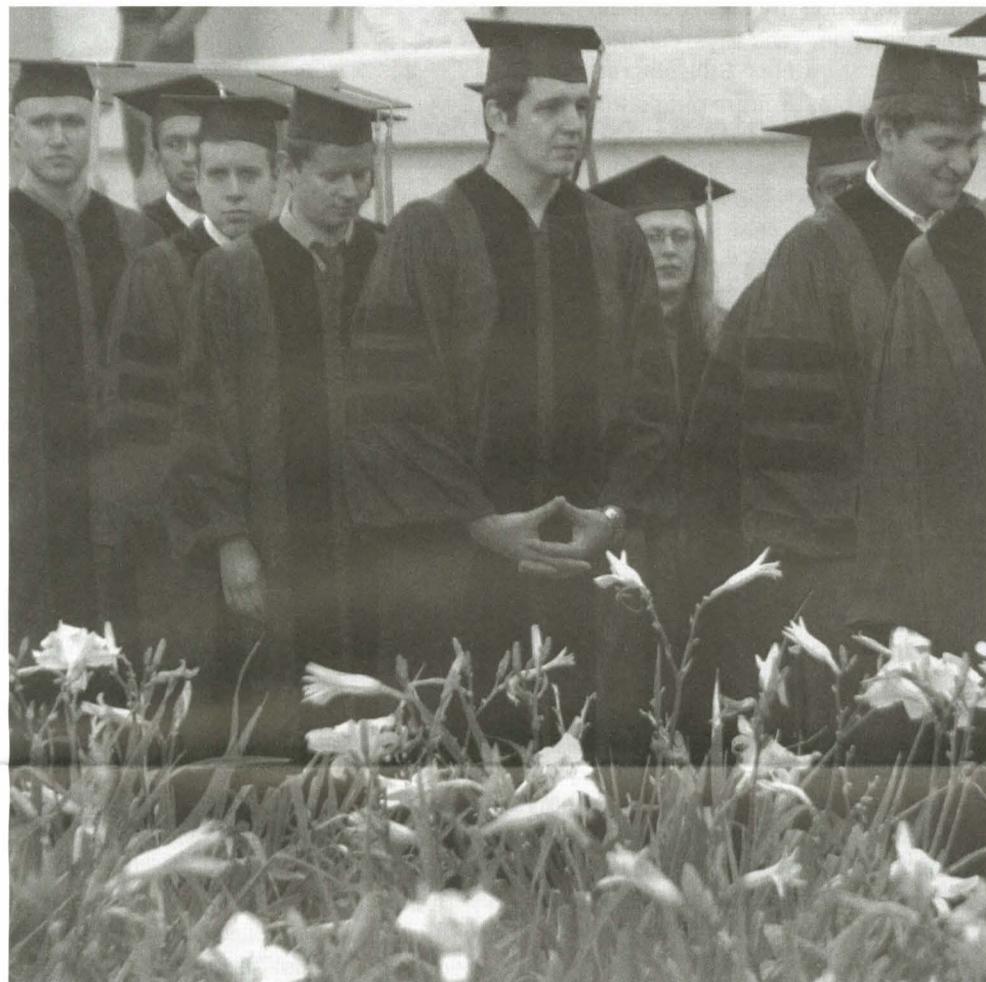


Caltech336

T F S S M T W T F S S M T W

The campus community biweekly
June 19, 2003, vol. 3, no. 12

Doctor, doctor!



Caltech PhD candidates approach Beckman Mall prior to the Commencement exercises on June 13. For more graduation photographs, see pages 2 and 5.

Students persist in ISP protest

In the wake of the recent Student Affairs reorganization, protesting students are continuing in their attempts to have administration members acknowledge their objections.

The students are upset by the loss of International Student Programs (ISP) director Parandeh Kia, whom they value highly, and by the growing feeling that their needs are being ignored in administrative decisions.

"This is a very emotional issue," says Julian Revie, a biochemistry graduate student. "ISP, and Parandeh in particular, have played a huge part in improving life on campus, especially in terms of diversity and acceptance. She has been a pillar of support, not just for international students, but all graduate students, and by far has been the most visible face for us in the administration."

Physics graduate student Daniel Wagenaar calls Kia "a very strong voice for the needs of students" and says she will be greatly missed "as someone you could talk to about any issue . . . That is one of the reasons why many students feel so personal about it." She helped numerous students through difficult times, he says, particularly those whose

see Student Affairs, page 6

Hydrogen could harm stratosphere

According to conventional wisdom, hydrogen-fueled cars are environmentally friendly because they emit only water vapor—a naturally abundant atmospheric gas. But a new Caltech study shows that leakage of the hydrogen-gas fuel could cause problems for the upper atmosphere.

In an article in last week's issue of *Science*, Tracey Tromp, John Eiler, Yuk Yung, and Run-Lie Shia of Caltech and Mark Allen of JPL report that leaked hydrogen gas inevitably resulting from a hydrogen economy could accumulate and indirectly cause up to a 10 percent decrease in atmospheric ozone.

If hydrogen were to replace fossil fuel entirely, the researchers estimate that, assuming a 10 to 20 percent leakage rate, 60 to 120 trillion grams of hydrogen would be released yearly—about four to eight times the amount now humanly generated. It would also double or triple the total hydrogen input (both natural and human sources) to the atmosphere.

Because molecular hydrogen freely moves up and mixes with stratospheric air, it would create additional water at high altitudes and, consequently, increased dampening of the stratosphere.

see Hydrogen, page 6

More campus clout for Koonin

Faced with fulfilling Caltech's ambitious fund-raising campaign goals in uncertain economic times while running the Institute's academic and administrative arms, Caltech president David Baltimore recently delegated major budgetary and decision-making authority to Provost Steve Koonin.

Under this new arrangement, Koonin, a professor of theoretical physics, will retain his provost's duties while assuming broad oversight of several administrative offices. In addition to the six division chairs, several of the vice presidents will now also report directly to him. Gary Dicovitsky, the vice president for development and alumni relations, and Charles Elachi, vice president and director of JPL, will continue to report to Baltimore.

"The major motivation for this change is to give me more time to focus on the campaign," Baltimore said. "We also want to bring together the administrative activities of Caltech into a more unified whole under the provost."

Koonin, who called the changes "a broadening of my responsibilities," expressed confidence in his ability to perform his added duties and to continue to guide the Institute's academic activities.

"There is a need to bring a continued sense of coherence and teamwork across the upper administration, and that requires real hands-on attention," Koonin added. "The president is, and will necessarily be, increasingly consumed by the demands of the campaign, so it has fallen to me to take on that coordinating role."

Within the new administrative structure, Al Horvath, vice president for business and finance, Margo Marshak, vice president for student affairs, Robert O'Rourke, vice president for public rela-

tions, and Harry Yohalem, the general counsel, will report directly to Koonin.

"None of these people or organizations is a stranger to me," he said. "Before this change my principal role was academic administration. Of course I did meet with the vice presidents with some frequency, but I'll have a greater coordinating, problem-solving role now than I did before, a more formal responsibility."

"The president is ultimately responsible for the running of the Institute and that has not changed. But this arrangement does delegate day-to-day operating authority to me. The president will be kept informed of the important events and issues as they develop."

This sort of arrangement is new to Caltech, but this kind of division of authority on college campuses is a growing trend. Increasing amounts of administra-

see Admin, page 6



Brest named new trustee

Paul Brest, president of the William and Flora Hewlett Foundation in Menlo Park, California, has been appointed a member of Caltech's Board of Trustees.

Since last year, Brest has headed the foundation, established by the late William Hewlett; his wife, Flora Lamson Hewlett; and their son, Walter. The organization's mission is to promote human well-being by supporting work in areas such as conflict resolution, education, the environment, the performing arts, and global affairs.

For more than 30 years, Brest was a faculty member at Stanford Law School, where he was the Montgomery Professor of Public Interest Law. Serving as dean from 1987 to 1999, he spearheaded the expansion of the school's curriculum in business, environmental law, high technology, and negotiation, and led a \$115 million capital campaign. Brest's research and teaching focused on constitutional law and decision making, and his writings include articles on constitutional interpretation, race discrimination, and affirmative action. He also coauthored a book, *Processes of Constitutional Decision Making*.

Early in his career, Brest served as a clerk to Supreme Court Justice John M.

see Brest, page 6

They weren't lost, but now are found

A group of Caltech hikers was brought home safely from the Angeles National Forest after concerned family and friends reported they hadn't returned as planned on Sunday, June 8.

The 13 grad students, postdocs, visitors, and faculty from Theoretical Astrophysics and Relativity were surprised by rescuers early Monday morning—they hadn't considered themselves lost, but the hikes just took longer than anticipated. "We had warm clothing and flashlights just in case we had to be there at night," said Peter Goldreich, DuBridge Professor of Astrophysics and Planetary Physics, Emeritus. Many of the hikers had cell phones, but reception was nonexistent.

see Found, page 2

NewsBriefs



At the Athenaeum through June 29, *Einstein's Dilemma* is artist Jennifer Steinkamp's contribution to the *NEURO* exhibition.

Personals

Welcome to Caltech

May

Anastasia Alexov, applications developer, Infrared Processing and Analysis Center; **King Li**, visitor in planetary science; **Sophia Rodriguez**, front-office clerk, and **Dana Thompson**, dishwasher/general helper, Athenaeum; **Haiming Zhang**, postdoctoral scholar in chemistry.

June

John Battle, visitor in physics; **Dominique Cantwell**, administrative aide, Development and Alumni Relations; **Damien Faivre**, visitor in geobiology; **Stephen Flaherty**, MRI technology manager, biology; **Takafumi Kubo**, visitor in biochemistry; **Raphael Yoram Rubin**, research assistant, computer science; **Alice Slancova**, Caltech postdoctoral scholar in JPL's geophysics and planetary geosciences elements; **Werner Sun**, assistant scientist, high-energy physics.

Retirements

Dallas Oller will retire on July 1. A network designer in Information Technology Services, he will have been with Caltech for 40 years.

Deaths

Leverett Davis Jr., professor of theoretical physics, emeritus, died on June 15; he was 89. Having received his BS from Oregon State College in 1936 he came to Caltech, where he earned his MS in 1938 and his PhD in 1941. He immediately joined Caltech's faculty as an instructor, becoming assistant professor in 1946, associate professor in 1950, and full professor in 1956. He retired to emeritus status in 1981. His research interests included solar physics and the characteristics of magnetic fields and plasmas in interplanetary space, and he participated in developing experiments for Pioneer and Mariner spacecraft. A fellow of the American Physical Society, the American Astronomical Society, the American Geophysical Union, and the American Association for the Advancement of Science, he was president of the International Astronomical Union from 1967 to 1970 and received NASA's Exceptional Scientific Achievement Award in 1970. He is survived by his wife, Vicki, and by three children.

James Wright, a former senior instrument specialist in the Division of Physics, Mathematics and Astronomy, died on May 8 in Covina, California; he was 85. Moving with his family from Canada to the United States, he joined Caltech in 1963 and retired in 1984. He is survived by Jean, his wife of 49 years; two sons, David and Douglas; and three grandchildren.

Honors and awards

Caltech's Scholarships and Financial Aid Committee has announced the winners of the 2003–04 continuing-student merit awards, which are based on outstanding scholastic achievement, research, and extracurricular involvement. Made possible through generous donors, this year's awards are provided by the Stuart Foundation (Carnation Scholarships); Lew and Edie Wasserman (Upperclass Merit Scholarships), the John Stauffer Merit Scholarship, and the Rosalind

W. Alcott Merit Scholarship. More than \$1 million was awarded to 32 undergraduates, who will receive scholarships ranging from three-quarters tuition to full tuition plus room and board for the upcoming year. A list of winners is in the 2003 Commencement program at <http://pr.caltech.edu/commencement/03>.

Caltech's **Athenaeum**, the club for the teaching, research, and administrative staffs of the Institute and the Huntington Library, has been selected as a Platinum Club of America for 2003 by *Club Leaders Forum*. Every three years the newsletter conducts a survey of 6,000 U.S. club managers and club presidents "to identify America's most highly regarded private clubs" in terms of "quality of membership, tradition and heritage, amenities, governance, and professional management and staff." The Athenaeum "stands among the top four percent of America's 5,000 private clubs in terms of perceived excellence." Crystal Thomas, CCM, is the Ath's general manager.

Alexander Kechris, professor of mathematics, is a corecipient of the 2003 Carol Karp Prize, which he shares with Greg Hjorth, a mathematics professor at UCLA. Awarded by the Association for Symbolic Logic, the prize is given every five years for a "connected body of research, most of which has been completed in the time since the previous prize was awarded," and this year recognizes the recipients' work on Borel equivalence relations. The prize consists of a cash award. Kechris received his MS from the National Technological University of Athens in 1969 and his PhD from UCLA in 1972, and he has been a member of the Caltech faculty since 1974. He served as executive officer for mathematics from 1994 to 1997.

Re'em Sari, associate professor of astrophysics and planetary science, has been chosen by the Caltech Graduate Student Council to receive this year's Mentoring Award. Sari received his BSc in physics in 1991 and his BSc in mathematics in 1992, both from Ben-Gurion University of the Negev, and his MSc and PhD from Hebrew University, in 1994 and 1998, respectively. A Fairchild Senior Research Fellow at Caltech since 1998, Sari was appointed associate professor this year. The award included the presentation of a plaque at the faculty meeting of June 11.

GALEX honors *Columbia*

NASA's Galaxy Evolution Explorer, the first NASA mission to lift off since the *Columbia* space shuttle tragedy, gathered its first celestial images on May 21 and 22—a "first light" milestone dedicated to the *Columbia* crew. Launched April 28 from Cape Canaveral, Florida, the ultraviolet survey mission made the observations using its onboard telescope. To honor the *Columbia* astronauts' contributions to science during their 16-day mission, GALEX observed an area of the sky in the constellation Hercules that was directly above the craft at its last contact with NASA Mission Control on February 1.

"We're really pleased with the 'first light' images captured by the telescope," said James Fanon, GALEX project manager at JPL. With the telescope cameras tuned to two colors, the far and near ultraviolet, the images (<http://photojournal.jpl.nasa.gov/mission/galex>) capture more than 400 stars and star-forming galaxies in the far ultraviolet and more than 1,500 in the near ultraviolet, though each comprises just four minutes of observing time. Over the course of the 28-month mission, millions of galaxies may be observed.

It's all a game to them

Graduate student in chemistry Andy Hejl was one of three Techers who recently competed on television game shows. He won two rounds of *Jeopardy!* and placed second on the third day, ending up with \$37,000. Hejl, who "grew up watching *Jeopardy!*," plans to save most of his winnings and possibly pay off his car. "It was a great experience," he says. His second day on the show was the most memorable—he earned almost \$30,000 and won the "Daily Double" question, which just happened to be on chemistry.

Chemistry grad student Erin Guidry, Hejl's colleague, competed on *The Price Is Right* last fall. The show, which picks audience members to guess the prices of items, selected Guidry from a group of Caltech students to bid on water skis and a karaoke machine. "The moment my name was called my brain could no longer function," she says, calling both of her bids "horrible." Still, she received a DVD player, a furniture gift certificate, and an autographed photo of host Bob Barker. "It was a blast," she says.

Freshman Bing Huo also appeared on *The Price Is Right* when he attended a taping with fellow Ruddock students. A longtime fan, he said, "It was very surreal, because it was ME who was up there . . . It was just kinda unbelievable the whole way through." He won a slew of prizes, including golf clubs, a dining set, a year's supply of Domino's pizza, and two cars—a Pontiac Sunfire and Ford Focus. Already zipping around in the Focus, Huo will give most of the take to his parents. He will probably sell the Sunfire to pay taxes—"upwards of \$10,000," he estimates—on the winnings.

Found, from page 1

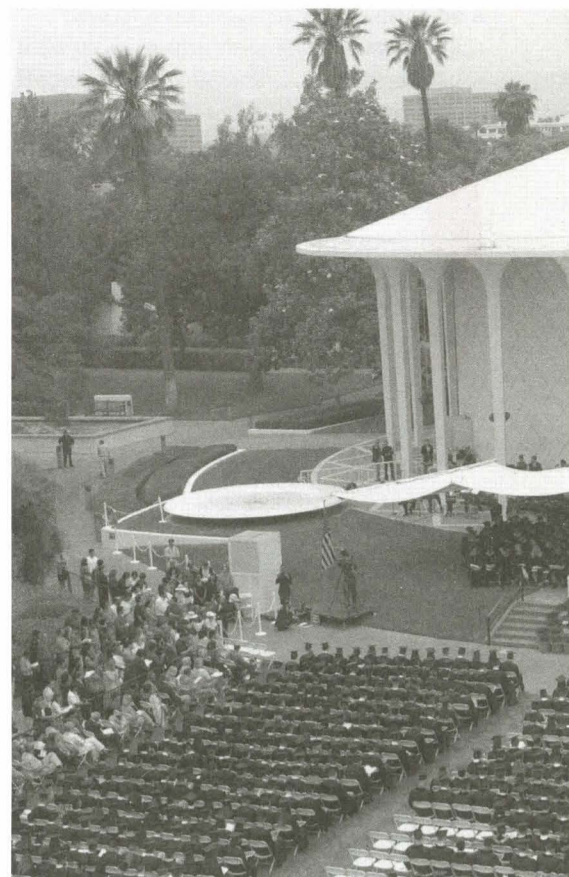
The hikers were in two groups—six of them heading upstream along the east fork of the San Gabriel River, the other seven downstream. The downstream group was about 30 minutes from their destination when darkness fell and they decided to camp out. According to the *Pasadena Star-News*, the San Dimas Mountain Rescue team located the group about 2:30 a.m. June 9, and escorted them to their destination. The six upstream hikers took a wrong turn and also decided to make camp as darkness fell. At daybreak they were back on the correct trail when an L.A. County Sheriff's helicopter spotted them at about 6:40 a.m.

Preschool dance fun

This summer, three- to five-year-olds in the Caltech and JPL community can learn rhythm, balance, coordination, and interpretive movement in a fun setting. Sponsored by the Caltech Dance Troupe, "Fun With Movement" will meet on Sundays, June 29 through August 17, from 1 to 1:45 p.m. in the Braun Athletic Center.

The cost is \$60 (\$45 for children of graduate students), which must be paid in full at the first class. A parent or guardian must accompany each child to every class and wait in the lobby. Please note that children must be ages three to five—no exceptions will be made. Parents must belong to the Caltech gym; for membership information, contact the Recreation Office at 395-3252.

To register for the class, e-mail your child's name, age, and birth date and your contact information to sarahh@caltech.edu, with "Fun With Movement" as the subject, by June 25. Enrollment will be limited to 15.



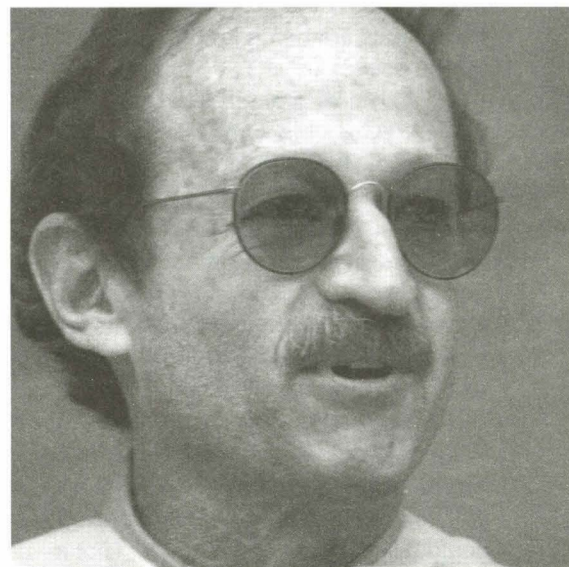
Commenceme

Even the clouds above Beckman Mall couldn't dampen spirits as the degree candidates came marching in. Caltech's 109th commencement ceremony opened with the traditional organ prelude by alum Les Deutsch and processional music by the Convocations Brass and Percussion Ensemble, conducted by Bill Bing.

Ben Rosen, chairman of the Board of Trustees, greeted the crowd and highlighted several standout events of 2002–03: the capital campaign launched last fall; an uncertain economy and campuswide financial challenges; purchase of the former St. Luke's Hospital property; and signing of a new five-year contract to manage JPL. He then introduced keynote speaker Harold Varmus, a Nobel laureate and the president and chief executive officer of Memorial Sloan-Kettering Cancer Center in New York.

Speaking at Caltech felt like a homecoming, Varmus noted, with his scientific accomplishments having been "firmly grounded" in previous work by Institute researchers. At a past commencement address at Harvard, he said, he had spoken about how "science serves society." Here at Caltech, he would focus on the inverse message—how society serves science—using as a starting point Vittore Carpaccio's painting *Saint Augustine in His Study*.

Carpaccio placed the fifth-century philosopher in the artist's own early 16th-century setting, surrounded by books, manuscripts, and other scholarly trappings. In the background, religious objects show the church—the "society" of Carpaccio's time—as the source of Augustine's support, both "his NIH and his Caltech." The painting seems to imply the patronage of a beneficent donor with "the self-



Commencement speaker Harold Varmus, president of Memorial Sloan-Kettering Cancer Center and the former director of the National Institutes of Health, urged graduates to imagine themselves as players in the grand tradition of scientific inquiry.

June 23–September 21, 2003

M T W T F S S

Friday, July 4

Independence Day holiday

Thursday, July 17

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—
“Searching and Crawling: A Few JPL
Research Robots,” Robert Hogg, robot-
ics engineer, autonomy and control sec-
tion, JPL. Admission is free. Information:
www.jpl.nasa.gov/lecture.

Friday, July 18

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado,
the Vosloh Forum (south of Colorado on
Bonnie), 7 p.m.—“Searching and Crawl-
ing: A Few JPL Research Robots,” Robert
Hogg, robotics engineer, autonomy and
control section, JPL. Admission is free.
Information: www.jpl.nasa.gov/lecture.

Wednesday, July 23

**A Public Forum of the Sixth
International Mars Conference**
Beckman Auditorium, 8 p.m.—“A Mars
Picture Gallery: Every Picture Tells a
Story,” Mike Malin, president and chief
scientist, Malin Space Science Systems,
and Phil Christensen, professor, geologi-
cal sciences, Arizona State University.
Sponsored by Caltech, JPL, the Lunar
and Planetary Institute, NASA, and the
Planetary Society. Admission is free.
Information: [www.lpi.usra.edu/meetings/
sixthmars2003](http://www.lpi.usra.edu/meetings/sixthmars2003).

Thursday, August 21

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—
“The Mars Exploration Rovers: Robotic
Geologists,” Peter Theisinger, program
manager, Mars Exploration Rover Project,
JPL. Admission is free. Information:
www.jpl.nasa.gov/lecture.

Friday, August 22

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado,
the Vosloh Forum (south of Colorado on
Bonnie), 7 p.m.—“The Mars Exploration
Rovers: Robotic Geologists,” Peter
Theisinger, program manager, Mars
Exploration Rover Project, JPL. Admis-
sion is free. Information: [www.jpl.nasa](http://www.jpl.nasa.gov/lecture)
[.gov/lecture](http://www.jpl.nasa.gov/lecture).

Monday, September 1

Labor Day holiday

Friday, September 12

**2003 PhD/Postdoc Career
Conference**
Beckman Institute, 8:30 a.m. to 6 p.m.—
The annual career conference for PhD
students and postdoctoral scholars is
sponsored by the Caltech Career Devel-
opment Center and the Alumni Associa-
tion. Information: 395-4167.

Monday, September 15

**Center for the Science and
Engineering of Materials (CSEM)
Third Annual Meeting**
Beckman Institute auditorium, 8 a.m. to
5 p.m.—The keynote lecture, “Nanoscale
Mechanical Properties: Engineering and
Biological Materials,” will be presented
by Subra Suresh, Ford Professor of Engi-
neering and professor of mechanical
engineering, MIT. Presentations on ma-
terials research at Caltech will be given
by Professors Johnson, Tirrell, Kornfield,
and Haile. Jointly sponsored by Chemis-
try and Chemical Engineering and by
Engineering and Applied Science. Regis-
tration and information (available in
early July): www.csem.caltech.edu.

Thursday, September 18

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—
“Galileo’s Odyssey: The Worlds of Jupi-
ter,” Rosaly Lopes-Gautier, research
scientist, Galileo NIMS Science Team,
JPL. Admission is free. Information:
www.jpl.nasa.gov/lecture.

Friday, September 19

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado,
the Vosloh Forum (south of Colorado on
Bonnie), 7 p.m.—“Galileo’s Odyssey:
The Worlds of Jupiter,” Rosaly Lopes-
Gautier, research scientist, Galileo NIMS
Science Team, JPL. Admission is free.
Information: www.jpl.nasa.gov/lecture.

Caltech hosts
special AAS meet

In 1994, the American Astronomical
Society endorsed a broad range of goals
calling for improvements in opportuni-
ties and working environments for
women in astronomy. On June 27 and
28, the AAS will cohost a conference at
Caltech to assess the progress that has
been made in the last decade.

“Women in Astronomy II” will address
issues such as retention, disadvantages
for women and minorities in the field,
myths and misconceptions that hinder
equity, current demographics, and ways
to effect institutional change. The event
is cosponsored by JPL, the Carnegie
Observatories, NASA, Associated Uni-
versities, Inc., the Association of Univer-
sities for Research in Astronomy, and
the Research Corporation. Alice Huang,
senior councilor for external relations at
Caltech, is also a sponsor.

According to Judith Cohen, professor
of astronomy at Caltech, the 1994 endorse-
ment followed recommendations set
forward two years earlier in Baltimore by
a committee formed to address problems
that women encounter in their careers.
The work of the Committee on the Status
of Women in Astronomy was an impor-
tant milestone in promoting equity for
women in science, Cohen says.

“I think things are better, but the
question is how much better,” says
Cohen. “One matter particularly impor-
tant to me is the percentage of women
in astronomy and physics at various
stages, from graduating high school to
obtaining PhDs and beyond, in their
careers. You can’t hire women if they’re
not there.”

In addition to Cohen, the other local
organizers are Barry Madore, an astrono-
mer affiliated with the Infrared Process-
ing and Analysis Center (IPAC) on the
Caltech campus, and Wallace Sargent,
who is the Bowen Professor of Astronomy
at Caltech. Speakers will include Charles
Elachi, director of the Jet Propulsion
Laboratory; Alice Huang; Anneila Sargent,
professor of astronomy at Caltech; and
Virginia Valian, author of the book *Why
So Slow?* Additional information about
the upcoming conference is available
online at [http://www.aas.org/~cswa/
WIA2003.html](http://www.aas.org/~cswa/WIA2003.html).



CampusEvents

Monday, June 23

NEURO: An Art and Science Collaboration

Works by six contemporary artists, who drew on the technology resources of Caltech and the knowledge of the Center for Neuromorphic Systems Engineering (CNSE) scientists, will be on display in the Athenaeum lobby and at the Art Center College of Design's Williamson Gallery through June 29. Admission is free. Information: www.artandscience.us.

Baby Furniture and Household Equipment Pool

234 S. Catalina, 10 a.m. to 12:30 p.m.—**Open every Monday and Wednesday throughout the summer, except September 1.** Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Salsa Lessons

Dabney Lounge, 7:30 p.m.—**Eight weeks of salsa lessons held every Monday through August 11.** Open to people of all dancing levels. Refreshments. Fee for Caltech/SURF students: \$6 per class; \$5 per class for the series if paid at the start; \$4 per class for both the salsa and the tango dance series (see Thursday, July 3) if paid at the start. Fee for nonstudents: \$8, \$7, and \$6, as above.

Tuesday, June 24

Preschool Playgroup

Tournament Park, 10 a.m. to noon—Song and storytime, crafts and free play for toddlers and preschoolers (from walking to age 4). **For the summer schedule and other information, call 792-7808 or e-mail julia@astro.caltech.edu.**

Caltech Tai Chi Club

Winnett lounge, 7 p.m.—**Meets Tuesdays and Fridays weekly throughout the summer.** Sessions are free. Information: www.its.caltech.edu/~taichi.

Wednesday, June 25

Wednesdays in the Park

Tournament Park, 10 a.m. to noon—Conversation and coffee for parents and caregivers, and playtime for children. **For the summer schedule and other information, call 355-3874 or e-mail lcklavins@hotmail.com.**

Asbestos Awareness Training

118 Keith Spalding Building, 3 p.m.—This course is designed to enhance employee awareness of asbestos and its potential health hazards, as well as to provide guidelines for safely working around asbestos-containing materials. The Institute procedures for identifying and managing asbestos-containing building materials will also be discussed. Registration: 395-6727 or safety.training@caltech.edu. **This class will be held again on August 6.**

Thursday, June 26

Video Compression for Presentations, Web, and CD/DVD

NewMedia Classroom, 363 S. Hill Avenue, 10 a.m. to noon—Learn why and how video is compressed for playback on a computer. There will be hands-on exercises with Cleaner 5 software, and demonstrations of other compression software such as Premiere and Sorenson Squeeze. Fee: \$50. Reservations: wenyee@caltech.edu. Information: <http://muri.caltech.edu/nmc/index.htm>. **This class will be held again on July 31 and August 28.**

Caltech Architectural Tours

Athenaeum, 11 a.m. to 12:30 p.m.—Meet in the entry hall of the Athenaeum. Led by members of the Caltech Architectural Tour Service. Reservations: Susan Lee, 395-6327 or suze@caltech.edu.

Amnesty International Monthly Meeting

Caltech Y lounge, 7:30 p.m.—Caltech/Pasadena AI Group 22 holds monthly meetings to discuss current activities and plans. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov. **The next scheduled monthly meetings are July 24 and August 28.**

Sunday, June 29

Dance Troupe Children's Dance Class

Braun Gym, multipurpose room, 1 p.m.—This class for 3- to 5-year-olds teaches the basics of rhythm, balance, coordination, and interpretive movement. It will be held for eight Sundays. The fee is \$60 (\$45 for grad students). Reservations and information: sarahh@caltech.edu or www.its.caltech.edu/~troupe (click on Current Class Offerings).

Wednesday, July 2

Emergency Preparedness Training

118 Keith Spalding Building, 3 p.m.—This course will describe the campus emergency operations plan, including information about the emergency operations center, evacuation, fire prevention and protection techniques, behavioral principles during an emergency, and personal preparedness. Space is limited. Please call 395-6727 or e-mail safety.training@caltech.edu to reserve a place.

Thursday, July 3

Tango Lessons

Dabney Lounge, 7:30 p.m.—**Eight weeks of tango lessons held every Thursday through August 21.** Open to people of all dancing levels. Refreshments. Fee for Caltech/SURF students: \$6 per class; \$5 per class for the series if paid at the start; \$4 per class for both the salsa (see Monday, June 23) and the tango dance series if paid at the start. Fee for nonstudents: \$8, \$7, and \$6, as above.

Friday, July 4

Independence Day holiday

Credit Union Closure

All branches of the Caltech Employees Federal Credit Union will be closed in observance of the Independence Day holiday.

Tuesday, July 8

Amnesty International Letter Writing

Athenaeum Rathskeller, 7:30 p.m.—Caltech/Pasadena AI Group 22 hosts informal meetings to write letters on human-rights abuses around the world. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov. Visit our website at www.its.caltech.edu/~aigp22. **The next scheduled letter-writing meetings are August 12 and September 9.**

Wednesday, July 9

Laboratory Safety 101

118 Keith Spalding Building, 3 p.m.—This course is designed to prepare incoming researchers to work in a laboratory at the Institute. Issues include laboratory organization, emergencies, injuries, general laboratory safety, and more. Space is limited. Please call 395-6727 or e-mail safety.training@caltech.edu to reserve a place.

Thursday, July 10

Scanning Essentials

NewMedia Classroom, 363 S. Hill Avenue, 10 a.m. to noon—Learn the proper techniques for scanning to get the result you want the first time in this hands-on workshop. Resolution and output, basic photo enhancements in Photoshop, and saving your file in the right format will be demonstrated. Fee: \$50. Registration: 395-3420 or wenyee@caltech.edu. Information: <http://muri.caltech.edu/nmc/index.htm>. **This class will be held again on August 7 and September 4.**

Tuesday, July 15

Photoshop Class

NewMedia Classroom, 363 S. Hill Avenue, 10 a.m. to noon—Learn the important functions of Photoshop, such as selection, layers, image enhancement, and correct file formats. The emphasis is on research images, but the information is useful to anyone working with images. This two-day class will continue on Thursday. Registration: 395-3420 or wenyee@caltech.edu. Fee: \$100. Information: <http://muri.caltech.edu/nmc/index.htm>. **This two-day workshop will be held again on August 12 and 14 and on September 9 and 11.**

Thursday, July 17

Photoshop Class

NewMedia Classroom, 363 S. Hill Avenue, 10 a.m. to noon—A continuation of Tuesday's class.

Women's Wellness Series: Hormone Replacement Therapy Q&A

Steele House (carriage house), noon—Anita Nelson, associate professor in the department of obstetrics and gynecology at UCLA, will answer questions about hormone replacement therapy.

Friday, July 18

Fire-Extinguisher Training

Wilson Avenue North Parking Structure, 11 a.m.—This class, which will meet on the roof, will teach basic fire safety and include hands-on training on how to use a fire extinguisher. Class size is limited; please call 395-6727 or e-mail safety.training@caltech.edu to reserve a place. **This class will be held again on September 12.**

Sunday, July 20

Amnesty International Book Discussion Group

Vroman's Bookstore, 695 E. Colorado Boulevard, 2nd floor, 6:30 p.m.—This month's book is *The Dressing Station: A Surgeon's Chronicle of War and Medicine*, by Jonathan Kaplan. All are welcome. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.

Tuesday, July 22

Premiere Video Editing Class

NewMedia Classroom, 363 S. Hill Avenue, 10 a.m. to noon—Learn about digitizing video for use on your computer, including basic editing techniques, adding titles, and using effects and transitions. Output your final project to tape or to file. This two-day class will continue on Thursday. Fee: \$100. Registration: wenyee@caltech.edu. Information: <http://muri.caltech.edu/nmc/html/index.htm>. **This two-day workshop will be held again on August 19 and 21 and on September 16 and 18.**

Wednesday, July 23

Watch Your Back! Back Safety Training

118 Keith Spalding Building, 3 p.m.—This course includes a brief discussion on back anatomy and proper methods and realistic approaches to handling and moving materials. There will be a video presentation and hands-on lifting. Space is limited. Please call 395-6727 or e-mail safety.training@caltech.edu to reserve a place. **This class will be held again on September 17.**

Thursday, July 24

Premiere Video Editing Class

NewMedia Classroom, 363 S. Hill Avenue, 10 a.m. to noon—A continuation of Tuesday's class.

Tuesday, July 29

Standard First-Aid and CPR Training

Brown Gym classroom, 5:30 to 10 p.m.—Adult, child, and infant first-aid and CPR training will be offered by Caltech's Safety Office in conjunction with the American Red Cross. Fee: \$20 for materials. This is a two-day class; to receive certification, you must attend tonight and on Thursday, July 31. Registration: 395-6727 or safety.training@caltech.edu. **This class will be held again on August 1.**

Wednesday, July 30

CPR Recertification Training

Brown Gym classroom, 7:30 a.m. to noon—CPR recertification training will be offered by Caltech's Safety Office in conjunction with the American Red Cross. There is a small fee for materials. Information and registration: 395-6727 or safety.training@caltech.edu. **This class will be repeated today from 1 to 5 p.m.**

Sunday, August 17

Amnesty International Book Discussion Group

Vroman's Bookstore, 695 E. Colorado Boulevard, 2nd floor, 6:30 p.m.—This month's book, *Outcast*, by José Latour, is a crime novel set in Havana and Miami. All are welcome. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.

Wednesday, August 20

Bloodborne Pathogen Training

118 Keith Spalding Building, 3 p.m.—This course, designed for individuals who are exposed to blood or other potentially infectious agents, presents information on preventing exposure to bloodborne pathogens, including hepatitis B and human immunodeficiency viruses. Requires registration; call 395-6727 or e-mail safety.training@caltech.edu.

Wednesday, August 27

Laboratory Safety for Continuing Researchers

118 Keith Spalding Building, 3 p.m.—This refresher course, for researchers continuing their work in laboratories, will review issues including laboratory organization, emergencies, injuries, fire, earthquake, chemical and radioactive material incidents, general laboratory safety, chemical storage, transporting chemicals, preparation for experiments, electrical safety, mechanical safety, and Safety Office services. Registration: 395-6727 or e-mail safety.training@caltech.edu. (New researchers should register for Lab Safety 101.)

Monday, September 1

Labor Day holiday

Credit Union Closure

All branches of the Caltech Employees Federal Credit Union will be closed in observance of the Labor Day holiday.

Wednesday, September 10

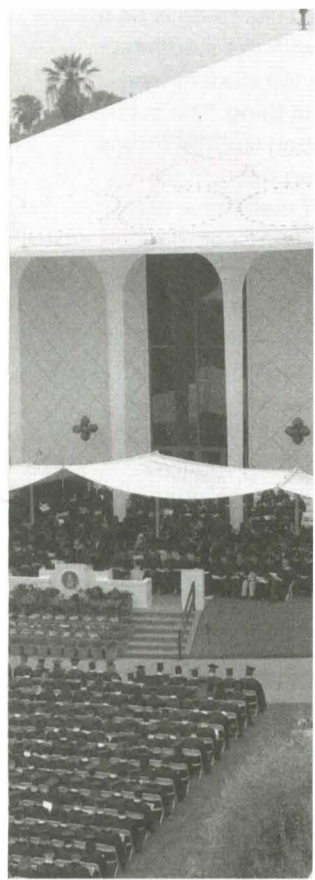
Office Ergonomics Training

Brown Gym classroom, 2 p.m.—This course discusses ergonomic design of office environments, specifically computer use. Low-budget techniques are emphasized in assisting computer users to alter their workstation to a "user-friendly" environment. If you would like to sign up for this class, please contact the Safety Office at 395-6727 to reserve your place.

Sunday, September 21

Amnesty International Book Discussion Group

Vroman's Bookstore, 695 E. Colorado Boulevard, 2nd floor, 6:30 p.m.—All are welcome. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.



Degrees awarded:
490 total
242 BS
111 MS
137 PhD



Left: Friends and family of the graduates flocked to the Caltech Bookstore table for gifts, souvenirs, and bouquets of flowers. Above: Equipped with a mallet and ceremonial gong, these Lloyd House undergrads came out swinging. The instrument was struck every time a graduating friend's name was called.

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confidence to provide intellectual freedom"—a situation that reversed itself just a century after the painting, when the church labeled Galileo a heretic.

Fortunately, current U.S. political and societal support for science is very favorable, Varmus said. "Still, if we are to maintain a beneficial relationship between science and its patrons, we need to recall the Galileos and be sensitive to early signs of potentially damaging change." These signs, he said, may be emerging—massive tax cuts, a weak economy, fears of terrorism and war—and, he believes, such a political climate "is unlikely to bring out the best in science."

However, on such a celebratory occasion as commencement, Varmus proposed a more positive way to assess the climate of scientific support: to ask whether research remains "an exhilarating experience, not just a grim duty." As illustrations of "the spirit that society should strive to sustain in its scientists," he cited astronomer and poet Rebecca Elson, who died at age 39 in 1999, and his friend Ira Herskowitz, a biochemist and 1967 Caltech alum, who died in April at 56. Elson eloquently captured the wonders of astronomical research in poems and essays published after her death. Similarly, Herskowitz, a renowned UC San Francisco professor, never lost a "simple sense of joy" over his insightful experiments in yeast genetics. These two lives, like Carpaccio's portrait, he said, "illustrate the state of science in our society," examples of that fragile yet remarkably synergistic relationship.

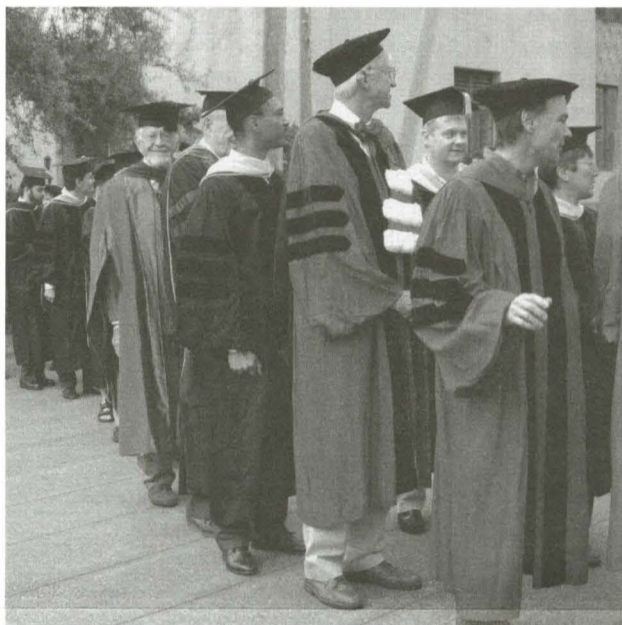
In drawing to a close, Varmus had the grads imagine themselves in Carpaccio's painting, and what thoughts might be in their minds—perhaps thoughts similar to ones credited to Augustine in another Renaissance depiction, this one by Botticelli. In that portrait, wrote the 16th-century art historian Vasari, the philosopher has the wise appearance of those who continually ponder "topics of the highest order and the greatest difficulty."

Varmus concluded, "This is my wish for each of you today: that society will treat you well enough that you can devote at least some of your thoughts to 'topics of the highest order and the greatest difficulty.'"

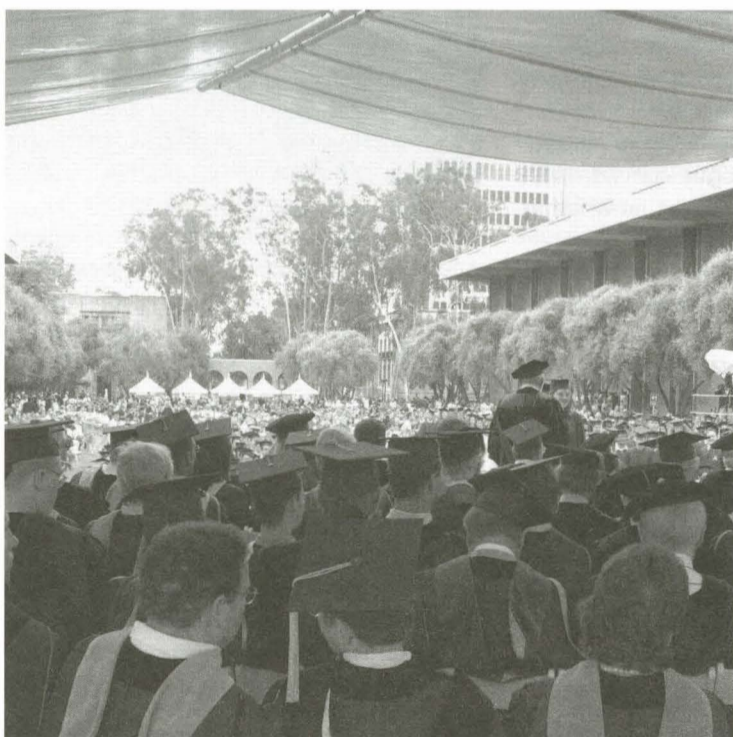
"Thanks for listening, and for thinking."

Following Varmus's speech, the Glee Clubs, led by Donald Caldwell, gave a rousing rendition of Handel's "Hallelujah Chorus" before President Baltimore stepped up to begin conferring degrees. Emotions ran high as the nearly 500 candidates each had their moment on stage—for many, if not most, the crowning achievement of their academic career to date.

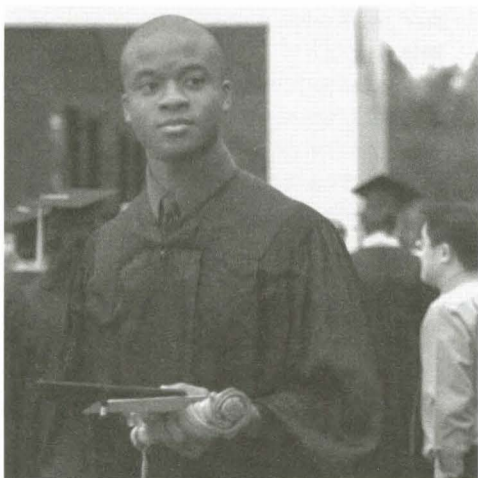
When every diploma had been received, Baltimore announced the winners of awards



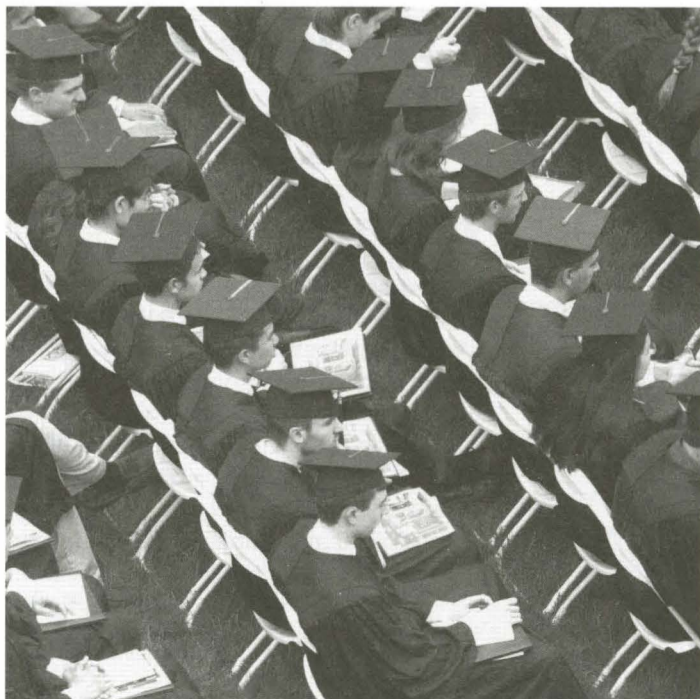
Left: Faculty from the Division of Chemistry and Chemical Engineering, clad in ceremonial regalia, stroll across the campus toward the Institute's 109th commencement exercises on Beckman Mall. From left are Jack Roberts, Steve Mayo, Fred Anson, Richard Roberts, Doug Rees, and Mitchio Okumura.



Left: Caltech faculty members, trustees, and other dignitaries presided over the ceremonies from the stage. Below: Senior Oana Tocoian received her BS in engineering and applied science.



Above: Graduate student John Dabiri received his master's degree in aeronautics and will continue on at Caltech to perform work toward his PhD in bioengineering.



for academic excellence and civic contributions and also congratulated parents on their role in their children's success. Addressing the graduates, he then voiced concern that the number of Americans trained in science and engineering is dropping far behind demand, and noted that Caltech graduates' "special understanding of the role of technology in society" uniquely positions them to help reverse the trend. "It is not institutional pride or parochialism, but patriotism that forces us to ask how we can get more of America to do what Caltech does so well," Baltimore said. Exhorting the grads to help their fellow citizens recognize the value of technology, he wished them success and happiness as he sent them into the world.

To see the 2003 Commencement program, with a list of all graduates and award winners, and video footage of the ceremony, visit <http://pr.caltech.edu/commencement/03>.

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Hydrogen, from page 1

This in turn would result in a cooling of the lower stratosphere and a disturbance of ozone chemistry. In this respect, hydrogen would be similar to chlorofluorocarbons, once widely used in air conditioning and refrigeration, which leak into the atmosphere and attack the ozone layer.

Whether or not hydrogen is causing damage hinges on the planet's ability to consume excess hydrogen, explains Eiler, an assistant professor of geochemistry. The human-made hydrogen might either be absorbed by soil or react with other atmospheric compounds. "The balance of these two processes will be key to the outcome," says Eiler. "If soils dominate, a hydrogen economy might have little effect on the environment. But if the atmosphere is the big player, the stratospheric cooling and destruction of ozone modeled in this *Science* paper are more likely to occur." Determining which process is dominant, Eiler believes, "should be a solvable problem."

Ideally, vehicles using hydrogen fuel cells have no environmental impact, producing energy by combining hydrogen with oxygen from the atmosphere, and emitting water as a byproduct. By comparison, internal combustion engines use fossil fuels and produce many pollutants, including the "greenhouse gas" carbon dioxide. While an economy based on hydrogen fuel cells would almost certainly improve air quality, it has the potential for unexpected consequences due to hydrogen leakage from cars and production facilities and during transport.

The Caltech team says that unlike CFCs and other chemicals released into the environment before their consequences were known, the current situation gives society an opportunity to understand potential effects well in advance.

"We have an unprecedented opportunity this time to understand what we're getting into before we even switch to the new technology," says lead author Tromp, a physics research scientist. "It won't be like the case with the internal-combustion engine, when we started learning the effects of carbon dioxide decades later."

Even if hydrogen is shown to be a potential environmental hazard, Eiler and Tromp don't believe the move toward hydrogen-fueled cars should necessarily be abandoned. "If it's the best way to provide a new energy source for our needs, then we can, and probably should, do it," Tromp says, noting that any knowledge of hydrogen's negative effects should then direct technology development and investment toward minimizing leakage.

Student Affairs, from page 1

cultural backgrounds led them to shun traditional counseling. "There is much grief to see her go, and the circumstances make it worse."

News of the restructuring, including elimination of the associate dean for graduate studies position, came in a May 13 memo from Vice President for Student Affairs Margo Marshak. According to Wagenaar, because the memo did not mention the ISP director position—Kia's other, better-known role—many people didn't know she was affected and were "shocked" to eventually realize she was leaving. Adding to the confusion, says Graduate Student Council chair Marissa Mock, was the lack of up-to-date campus mail codes for graduate students, which delayed or prevented the memo's delivery; many first learned of the changes by word of mouth and rumor.

Once the situation became clear, students began circulating a petition requesting the reinstatement of Kia as ISP director and of the office as "a distinct entity." (ISP now administratively falls under Human Resources' International Scholar Services office, but will remain in the Student Services building.) As of press time, the document had approximately 650 signers, including more than 300 grad students, 100-plus undergrads, 79 postdocs, and six faculty members. The students also held a protest rally May 23, drawing an estimated 200 to 250 people, and presented the petition to President David Baltimore and Provost Steve Koonin at the May 27 faculty board meeting.

The response from Marshak and other administration members has not been unsympathetic, but they maintain that the changes are necessary for budgetary reasons and that it is inappropriate for students to have a say in such actions. The students disagree. "It's not just a personnel matter," Wagenaar says. "A restructuring of Student Affairs has a direct impact on communication between students and Caltech . . . Students should have input into this office. It is essentially about destruction of service."

The students are continuing to pursue appointments and dialogue with administration members. Revie says that whether or not their protests ultimately have any effect, the students "believe very strongly this is the only right thing to do . . . We are willing to take this as far as we can."

336 takes a breather

This is the last *Caltech 336* for the academic year before our annual hiatus. The 336 staff wish all a good summer, and we look forward to meeting again when we resume publishing on September 18.

Admin, from page 1

tive responsibility are being placed on the shoulders of provosts as presidents find they must devote more time to trying to trigger the philanthropic response in potential benefactors.

The tactic is also a necessary one. With Caltech's five-year fund-raising campaign well into its sixth month, the Institute is making steady progress in the face of a lackluster national economy and elusive donations.

"The campaign is going well but somewhat more slowly than we had hoped," Baltimore said. "We already have almost \$850 million in pledges and receipts toward our \$1.4 billion goal. The slumping economy has made fund-raising difficult, and we are concentrating on attracting new friends to Caltech."

The capital raised during the campaign is crucial to supporting a list of programs and projects throughout the Caltech universe, including undergraduate financial aid and graduate fellowships, the construction of new buildings and the renovation of existing ones, and the funding of powerful new telescopes and microscopes.

As second in command in Caltech's administrative structure, Provost Koonin has indicated that he is considering delegating some authority himself.

"It could be that one of the ways in which we will try to accommodate my own increased responsibilities is to have some or all of the division chairs play a broader role than they have previously," he said. "I have a very good group of division chairs, they are all very good citizens of the Institute as a whole, and we may rely on their abilities more than we have in the past."

Koonin will also chair and meet weekly with the new decision-making Administrative Management Council, which includes Baltimore and the vice presidents.

"I think they understood the reasons for the change," Koonin said of the faculty's reaction to the news of his broader powers. "I think they're concerned as we all are that all aspects of this job get done effectively. And whether it's too much remains to be seen."

Over his eight-plus years as provost, Koonin said, his office has made positive and substantive changes in the way the provost interacts with the division chairs.

"I think we have engaged the division chairs more than they have been in a long time in the running of the Institute," he said. "I think we have a much greater transparency and professionalism in parts of the administration than we've had in the past."

As a Caltech alumnus (BS 1972), Koonin said he knows that students often view administrators as uncaring bureaucrats, a misperception he hopes to correct.

"One of the things I'd like to do is be a little more interactive with the students. Regular meetings with the student leadership might be a useful thing," he said. "I think this will be a good change for the Institute, and I'm looking forward to building a team of staff that I have come to know well, and to helping coordinate them with the division chairs." Perhaps befitting the provost of a leading educational institute, Koonin took an empirical view of his greatly expanded role.

"We think this is what will work now; whether it will or not we shall see in the next six months or a year. You know, we're all scientists—we try something and hope it works. If it doesn't work we'll make modifications."

Brest, from page 1

Harlan and practiced civil rights litigation with the NAACP Legal Defense Fund, in Jackson, Mississippi. He received an AB from Swarthmore College in 1962 and an LLB from Harvard Law School in 1965.

The holder of honorary degrees from Swarthmore and from Northeastern Law School, Brest has been a visiting professor at Yale Law School and a fellow at Stanford's Center for Advanced Study in the Behavioral Sciences, and is a fellow of the American Academy of Arts and Sciences.

Dodger Day this Saturday

The second annual Caltech-JPL Dodger Day is this Saturday, June 21, and tickets are still available—including some with a free Dodger-cap voucher, courtesy of the Caltech Credit Union. For just \$8 per person, Caltech and JPL community members and their guests will enjoy a special pregame carnival at 11 a.m., with children's activities, before watching the Dodgers take on the world champion Anaheim Angels at 1:10 p.m. (Please note that no bags or packs larger than 13 inches square will be allowed in the park.)

Tickets can be purchased at the Caltech ticket office, the bookstore, and Human Resources; at the JPL store and the Credit Union office at JPL; and at the main Caltech Credit Union office, 528 Foothill Boulevard, La Cañada Flintridge. For more information, call Human Resources customer service at (626) 395-3300.