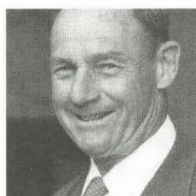


The campus community biweekly

June 17, 2004, vol. 4, no. 12



Noted Caltech geologist dies

Robert Phillip Sharp, a leading authority on the surfaces of Earth and Mars, the long-time head of Caltech's geological sciences division, and an alum, died May 25 at his home in Santa Barbara. He was 92.

Though Sharp was a renowned geologist in his own right, his most significant role was arguably his modernization of Caltech's earth-science programs during a time of unparalleled progress in humankind's knowledge of its own planet and of other worlds. Known for hiring top people, he had a strong interest in creating new interdisciplinary approaches to take advantage of the dawning age of manned and unmanned planetary exploration.

Particularly noteworthy were Sharp's support of planetary science as a vehicle for extending geological research to other planets, and his contributions toward creating the field of geochemistry—especially important in the interpretation

see Sharp, page 6

Family fun at Caltech-JPL Dodger Day

Dust off those baseball caps, polish those Louisville Sluggers, and head for Dodger Stadium, because Caltech-JPL Dodger Day is almost upon us! Caltech community members, along with their friends and family, are invited to go out to the ball game on Saturday, August 21, to watch as the Dodgers face off against the Atlanta Braves.

This is the third year that the Institute has sponsored a day at the ball park, and it's also the best value. In addition to the discounted tickets (\$4 per person, down from \$8 last year), the day at the stadium will offer a kid-friendly carnival beginning at 11 a.m., and the match between two of the hottest National League teams at 1:10 p.m. Free rally towels will be passed out at the event to every ticket holder, courtesy of the Caltech Credit Union, a co-sponsor of the event.

Tickets will be available at the Public Events ticket office, the Tech Express, the Caltech 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, in La Cañada Flintridge. For more information, call Human Resources customer service at (626) 395-3300.

NSF funds LIGO public education

The National Science Foundation has announced a \$5 million, five-year cooperative agreement with Caltech and its partners in educational outreach to establish an Educational Outreach Center as an integral part of the NSF-funded Laser Interferometer Gravitational-Wave Observatory (LIGO) in Livingston, Louisiana.

The center will support programs that communicate LIGO-related science concepts to the public, strengthen regional science teaching, and reach a broad audience of students in Louisiana and beyond.

The project brings together research scientists from the LIGO Livingston Observatory, Caltech, and MIT, as well as educators from Southern University in Baton Rouge, the Louisiana Systemic Initiatives, and the Exploratorium of San Francisco. These partners provide expertise specific to LIGO science, experience in exhibit development, connections to teacher development, and access to a statewide community of public schools.

The five-year project plan includes a series of 38 Exploratorium interactive exhibits designed to engage a broad spectrum of learners by demonstrating physical-science principles related to LIGO science. The project will draw upon the Exploratorium's expertise in using exhibits as an engaging curriculum for students and visitors.

Direct detection of gravitational radiation, the ripples in space-time produced by distant cosmic cataclysms, is one of the most exciting pursuits under way in experimental physics, says Barry Barish, LIGO director and Linde Professor of Physics at Caltech. "The potential payoffs are magnificent. Messenger gravitational waves may reveal secrets central to many questions of great interest to astrophysicists, such as mechanisms describing the coalescence of binary neutron stars, the collision of black holes, and the remnant gravitational wave signals from the early universe."

The Educational Outreach Center will reinforce public understanding of basic scientific principles. According to LIGO deputy director Stan Whitcomb, it will help people understand how they can easily explore fundamental science concepts. "People who visit the center will learn how these concepts relate to and lead to cutting-edge scientific research endeavors. The center will help us reach and inspire educators and families who are teaching the nation's future scientists and engineers."

NSF program director Beverly Berger says this educational collaboration is distinctive. "We are pleased to see this

see LIGO, page 6

All the world's a stage...



With Beckman Auditorium's white facade rising behind him, Ben Rosen '54, chairman of the Caltech Board of Trustees, presides over the Institute's 110th Commencement, held on June 11. Carly Fiorina, chairman and CEO of HP, delivered the commencement address to the more than 530 students who received their degrees that day. For more graduation photos, see page 5.

Staff will feel the love at gala

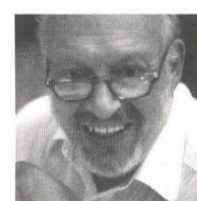
Delectable vittles hot off the grill, games, great prizes, and the chance to be served by apron-clad professors and administrators—all this and more awaits at "A Fair to Remember," the Institute's first-ever gala in celebration of staff.

On Tuesday, June 29, from 11 a.m. to 1:30 p.m., all staff members are invited to the Beckman Mall and Beckman Institute courtyard for food and fun. According to Dlorah Gonzales of Human Resources, a number of faculty and administration members have already signed up to serve barbecue lunches and ice cream bars—turning the tables and waiting on their employees for the day.

"And that's as it should be," she says, "because this occasion is all about staff and showing how much Caltech appreciates them."

Lunch will be available throughout the event, and live bands will provide a festive backdrop for the various activities. Individuals and teams will be able to compete in a balloon toss, sack race, and other contests. Those blessed with the Betty Crocker touch can bring their best pies, cakes, or cookies to be judged by chefs André Mallié of Dining Services

see Staff gala, page 6



Revel returns to deanship

Jean-Paul Revel, the Ruddock Professor of Biology at Caltech, has announced that he will continue in his post as dean of students, abandoning earlier stated plans to step down at the end of the spring term.

"Because of the serious illness of my wife, I had decided to retire in June, so I could stay home more," Revel said. "But she got worse much faster than anticipated." Revel's wife, Galina, who had been battling cancer, passed away on April 24.

He said he received much needed support from the campus community during this time of crisis, and this was one of the factors that prompted his return.

"I appreciate the expressions of sympathy that I received," he said. "It was really wonderful to hear from so many friends, colleagues, and students, even though it was a terrible way to come to realize all these feelings were there."

see Revel, page 6

NewsBriefs



Student Tamara Becher '04 and Hubert the skeleton watch as James Boyk, lecturer in electrical engineering/music, listens to a sample recording on Becher's website from the "Projects in Music and Science" course. Her project was to develop a microphone for recording binaural sound, which is sound intended to be heard via headphones instead of speakers. Boyk uses Hubert to help piano students improve mental conceptualization and physical use of their bodies.

Personals

Welcome to Caltech

May

Milagro Arias, housekeeper, Athenaeum; **Blake Buchanan**, technical aide, materials science; **David Chang**, postdoctoral scholar in biology; **John Clinton**, assistant scientist, Seismological Laboratory; **Lucita Dimaculangan**, cash management analyst, Financial Services; **Danny Estrada**, catering coordinator, Dining Services; **Kristen Forman**, medical doctor, Health Center; **Laura Glover**, cashier, Caltech Bookstore; **Kristina Hilands**, administrative assistant, biology; **Juan Lozano**, postdoctoral scholar in materials science; **Antoine Nicholson**, guest relations coordinator, Athenaeum; **Philippe Rossinot**, postdoctoral scholar in physics; **Magnolia Sabanpan**, administrative assistant, chemistry; **Ghiwa Sabih**, research technician, chemistry; **Maria Sdrolas**, visitor in geophysics; **Daniel Sellers**, operations specialist, LIGO; **Robbie Spencer**, department assistant, Campus Life; **Virginia Stratford**, office support, Student-Faculty Programs; **Robert Thompson**, staff scientist, Michelson Science Center; **Sandra Villagomez**, guest relations coordinator, Athenaeum; **Marcus Williams**, data entry technician, Dining Services; **Timothy Winkler**, construction laborer, Owens Valley Radio Observatory.

June

Joline Gosselin, staff assistant, Athenaeum; **Craig Hokanson**, research assistant, and **Sarah May**, assistant lab manager, both in biology; **William Umali**, gift and endowment accountant, Financial Services.

July

Jacob Goeree has been appointed professor of economics, effective July 1. Noted for his economic skills, he has published in the top economics and political-science journals and is widely regarded to be in a class by himself as an experimentalist who is also broadly trained as a theorist. He received his BS and PhD (in theoretical physics) from the University of Utrecht, in 1989 and 1993, respectively, and his BA and PhD (in economics) from the University of Amsterdam, in 1994 and 1997, respectively.

Andrea Mattozzi has been appointed assistant professor of economics, effective July 1. Known for both his theoretical and empirical research, he works primarily in the field of political economy with connections to both finance and public economics. Though due to receive his PhD from the University of Pennsylvania this year, he is already noted for a job-market paper that has provided an explanation for the differences between the United States and Western Europe in demand for redistributive policies. He received his BA from Bocconi University in 1997.

New positions

Elizabeth Allen, new-media specialist and Macintosh systems administrator in Caltech's Digital Media Center since July 2001, has been appointed communications coordinator for the Alumni Association, effective July 19. Prior to joining Caltech she served at her alma mater, Scripps College, as a computer consultant and consultant supervisor. She is also experienced with graphic design and studio art. She will be working with the Alumni Association's new website and various mailings and publications.

Gail Anderson, manager of electronic media publications (EMP), has been named director of EMP and will now report directly to the vice president for public relations. EMP maintains the main Caltech website as well as the online publication *Caltech Today* and other PR websites and databases, and assists other campus groups in designing and implementing Institute-level websites. Anderson received her master's degree in English from the University of Aberdeen in Scotland, and joined Caltech as manager of EMP in 2003.

Petr Vogel will become senior research associate in physics, emeritus, effective July 1. He received his PhD from the Joint Institute of Nuclear Research (USSR) in 1966 and joined Caltech's research faculty in 1970. He also served as a lecturer in physics for many years.

Deaths

Norman Keidel, a former manager of Central Engineering Services, died on May 30; he was 77. He had retired in 1995, after 29 years at Caltech. "As manager, Norm fought hard for Central Engineering Services and the men and women that worked here," said Mike Gerfen, the department's current manager, who worked with Keidel for many years. "He was extremely fair, but very determined when he made a decision regarding an action with the personnel under him or the managers over him. He was not intimidated." Keidel also had a tender side, he said—"some would say he was a pussycat. He would do whatever he could to help someone." Gerfen added, "His mechanical aptitude and problem-solving skills were exceptional, as was his chess game." Keidel is survived by his wife, Margery; his daughter, Leslie; two grandchildren; and a sister, Ruth.

Josephine Kennedy, an administrative secretary to three former Caltech presidents, died on May 21; she was 89. She worked for Lee DuBridge from 1946 to 1952, then returned to the Institute in 1965, taking a position in Development. Transferring back to the President's Office, she worked for Harold Brown and Marvin Goldberger. She retired in 1985. She was known as an accomplished pianist, cook, gardener, craftsperson, entertainer, and conversationalist, and "her smile, warmth, and humor will be missed by her daughters and many friends who treasured her." She is survived by her daughters, Patty and Barbara.

Honors and awards

Sunney Chan, Hoag Professor of Biophysical Chemistry, Emeritus, has received the William C. Rose Award, presented during the annual meeting of the American Society for Biochemistry and Molecular Biology / International Union of Biochemistry and Molecular Biology, in Boston, June 12–16. The award recognizes "his outstanding contributions to biochemical and molecular biological research and his demonstrated commitment to the training of younger scientists." A member of the Caltech faculty since 1963, Chan has served as executive officer for chemistry and as master of student houses. He received his BS and PhD from UC Berkeley, in 1957 and 1961, respectively.

Mory Gharib, Liepmann Professor of Aeronautics and Bioengineering, has been selected by the Technion, the Israel Institute of Technology, for its 2004–05 Pollak distinguished lecturer award. Two Pollak Lecturers are chosen each year for the Israel Pollak Distinguished Lecture Series, from all areas of science and engineering. Gharib received his BS from Teheran University in 1976, his MS from Syracuse University in 1978, and his PhD from Caltech in 1983. He joined Caltech as professor of aeronautics in 1992, becoming Liepmann Professor in 2002.

Peter Goldreich, DuBridge Professor of Astrophysics and Planetary Physics, Emeritus, has been elected a Foreign Member by the Royal Society, which cited him and his close collaborators for "several seminal contributions to an unparalleled range of topics in planetary science and theoretical astrophysics, including spiral arms in galaxies and planetary rings and the explanation of white dwarf oscillations." Established in England in 1660, the society is the world's oldest scientific academy in continuous existence. A member of the Caltech faculty since 1966, Goldreich received his BS and PhD from Cornell University, in 1960 and 1963, respectively.

Hiroo Kanamori, Smits Professor of Geophysics, has been selected as a recipient of the 2004 Japan Academy Prize, which is awarded "for exceptional works and other scientific achievements." The prize includes a medal and a monetary award of 1 million yen, with the presentation scheduled for June 14, with the emperor and empress of Japan in attendance. A professor at Caltech since 1972, Kanamori was director of the Seismological Laboratory from 1990 to 1998. He received his BS and his PhD from the University of Tokyo, in 1959 and 1964, respectively.

Employee Cooksey perishes in blizzard

The body of Caltech employee Wade Cooksey was recovered from a mountainous region of northern Nevada on May 31, more than two months after he was first reported missing.

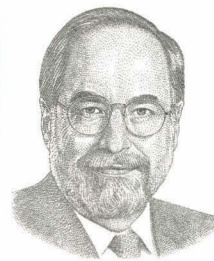
Cooksey, a geodetic technician in Caltech's geological and planetary sciences division since 1999, was working on the summit of Mount Lewis, elevation 9,600 feet, approximately 18 miles south-east of Battle Mountain, Nevada. He was repairing a communications system used to recover Global Positioning System data from remote geodetic sites throughout north central Nevada. Caltech owns and operates 53 such sites across eastern California, Nevada, Utah, and Arizona, for studying subtle motions of the earth's crust.

According to the Lander County Sheriff's Department, Cooksey became caught in a white-out snowstorm on March 5 that reduced visibility to less than five feet. The department launched an exhaustive search of the mountain, using a Navy helicopter, four-wheel-drive vehicles, dog teams, snowmobiles, and searchers on foot.

Services for Cooksey were held June 5.

Graduating students receive Fulbrights

Seniors **Rachel Medwood** and **Suzana Sburlan** have received Fulbright Fellowships for the 2004–05 academic year. Sponsored by the U.S. government, the prestigious Fulbright Program provides grants for scholars and professionals from the United States and other countries to pursue graduate study, research, and teaching abroad. Medwood, an economics major, will enroll in a master's program at the University of Amsterdam on the economics of international patent law. Sburlan, who received bachelor's and master's degrees in applied physics this month, will conduct research at the Instituto de Ciencia de Materiales de Madrid in Spain, joining a team that will study in vivo molecular imaging.



Gender equity and Caltech's academic climate

David Baltimore

In January 2001, I signed on behalf of Caltech a Statement on Gender Equity in Academic Science and Engineering, along with the presidents of eight of our peer institutions: MIT, the University of Michigan, Princeton, Stanford, Yale, UC Berkeley, Harvard, and the University of Pennsylvania. The pledge calls for all our institutions to meet the challenge of increasing the proportion of women in science and engineering in the United States, and to remove the barriers that still exist to the full participation of women in these fields. The focus is on faculty issues because everyone agreed that dealing with gender discrepancies at the faculty level will help the situation at all levels.

The statement outlines three goals. The first is a faculty whose gender diversity reflects that of the students we educate, the second is to give female faculty a larger role in university life, and the third is to better support individuals with family responsibilities. We all agreed to meet periodically and review our progress. For Caltech, the gender-equity pledge was followed by more comprehensive findings and recommendations issued in December 2001 by the Committee on the Status of Women Faculty at Caltech. This month, the Task Force on Gender and Academic Climate, which focused on gender issues at the graduate level, presented its set of findings and recommendations to me and to the Faculty Board.

What progress has Caltech made? What are our central challenges?

Caltech has made progress in a number of areas. In 2001–02, women constituted 10.7 percent of the faculty. This academic year, women constitute 12.3 percent of the faculty, an increase of five women (from 30 to 35). In this last year, two of eight new faculty recruits were women. In the specific fields of science and engineering, women constitute 11 percent of Caltech faculty. Across the nine institutions that signed the gender-equity pledge, the proportion of women in these fields today ranges from 11 percent to a high of 14 percent at the University of Michigan. In contrast, a decade ago, women constituted 6 to 8 percent of the science and engineering faculties in these same institutions. Therefore our progress is in line with the experiences at our peer institutions.

In the past three years, the Institute has doubled the number of named chairs held by female faculty from three to six, increased the number of women appointed as executive officers in their divisions, and appointed the first women in the positions of division chair, vice president for student affairs, and director of the Beckman Institute. The academic divisions have pursued new recruitment efforts to increase the pool of female candidates and have implemented mentoring and tracking programs for junior faculty. We have established a Child-Care Assistance Fund for faculty, staff, and students to aid in child-care costs. And, in May, the Faculty Board approved a maternity leave policy for graduate students.

Yet the rate of progress is still slow, and serious challenges lie ahead. Attending the most recent meeting of the nine institutions this spring, I was very disturbed to hear that at the current rate of progress in hiring and

see Baltimore, page 6

June 21–September 26, 2004

M T W T F S S

Monday, June 21

Thesis Seminar
106 Spalding Lab, Hartley Memorial Seminar Room, 2 p.m.—“Methods for Collection and Processing of Gene Expression Data,” John Murphy, graduate student in chemical engineering, Caltech.

Tuesday, June 22

17th Annual Liepmann Ludwig Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 9 a.m. to 3:45 p.m.—Introductions will be made by Hans Hornung, Johnson Professor of Aeronautics, Caltech. Speakers are from the DLR Research Center. Closing remarks will be made by Hans Liepmann, von Kármán Professor of Aeronautics, Emeritus, Caltech. Attendance is free. Registration: 395-4751 or dimity@galcit.caltech.edu. Information: www.galcit.caltech.edu/Seminars/LLS/lls04.html.

General Biology Seminar
119 Kerckhoff, 4 p.m.—“RNAi: Ancient Pathways Programmed by Small RNA,” Professor Phillip Zamore, department of biochemistry and molecular pharmacology, University of Massachusetts Medical School.

Information Science and Technology Seminar
74 Jorgensen, 4 p.m.—“An Autonomous Molecular Computer for Logical Control of Gene Expression,” Yaakov (Kobi) Benenson, Weizmann Institute of Science, Rehovot, Israel. Information: <http://netlab.caltech.edu/seminar/>.

Monday, July 5

Independence Day holiday

Tuesday, July 6

Information Science and Technology Seminar
080 Moore, 2 p.m.—“CLAMP: Maximizing the Performance of TCP over Wireless Links,” Dr. Stephen Hanly, Centre for Ultra-Broadband Information Networks, Melbourne University. Information: <http://netlab.caltech.edu/seminar>.

Institute for Quantum Information Seminar
74 Jorgensen, 3 p.m.—“Proposal for a Loophole-Free Bell Test Using Homodyne Detection,” Nicolas Cerf, University of Brussels.

Thursday, July 15

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—“The Rings of Saturn,” Dr. Linda Spilker, Cassini Deputy Project Scientist, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, July 16

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“The Rings of Saturn,” Dr. Linda Spilker, Cassini Deputy Project Scientist, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Thursday, August 19

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—“The Orbiting Carbon Observatory: Understanding Atmospheric CO₂ and Its Impact on Climate Change,” Charles Miller, Orbiting Carbon Observatory Deputy Principal Investigator, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, August 20

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“The Orbiting Carbon Observatory: Understanding Atmospheric CO₂ and Its Impact on Climate Change,” Charles Miller, Orbiting Carbon Observatory Deputy Principal Investigator, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Monday, September 6

Labor Day holiday

Friday, September 10

6th Annual PhD/Postdoc Career Conference
Beckman Institute auditorium, 8 a.m. to 5:30 p.m.—This conference provides graduate students and postdoctoral scholars an opportunity to explore career topics of interest. In addition to informational panels, attendees will also have the opportunity to network with Caltech alums and panel guests during lunch and a closing reception. The keynote speaker will be Alyson Reed, president of the National Postdoc Association, speaking on trends in science. Information and registration: www.career.caltech.edu, 395-4167, or vliding@caltech.edu.

Thursday, September 16

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—“Catching a Piece of the Sun: The Genesis Sample Return Mission,” Donald Sweetnam, Genesis Project Manager, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

Friday, September 17

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“Catching a Piece of the Sun: The Genesis Sample Return Mission,” Donald Sweetnam, Genesis Project Manager, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

CampusEvents

Tuesday, June 22

Project Management: An Approach
Brown Gym classroom, 8:30 a.m. to 4:30 p.m.—This class will present methods to streamline project planning and management. Registration: 395-8055 or diane.williams@caltech.edu.

Thursday, June 24

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.

Women's Wellness Series: Travel Health and Wellness
Caltech Women's Center, noon—"Get Ready, Set, GO! Travel Health and Wellness," presented by Dr. Marlene Coleman, attending physician at Caltech's Archibald Young Student Health Center and author of *Safe and Sound: Healthy Travel with Children*. Dr. Coleman shares her expertise and provides advice for healthy and safe travel for women on the go. Registration: wcenter@studaff.caltech.edu.

Amnesty International Monthly Meeting
Caltech Y lounge, 7:30 p.m.—Caltech/Pasadena AI Group 22 holds its monthly meeting to discuss current activities and plans. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov.

Monday, July 5

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.

Wednesday, July 7

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. Reservations: 395-6727 or safety.training@caltech.edu.

Friday, July 9

Fire-Extinguisher Training
Wilson Avenue North Parking Structure, roof, 11 a.m.—This class 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.

Tuesday, July 13

Amnesty International Letter Writing
Athenaeum Rathskeller, 7:30 p.m.—Caltech/Pasadena AI Group 22 will host an informal meeting 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.

Wednesday, July 14

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.

Sunday, July 18

Amnesty International Book Discussion Group
Vroman's Bookstore, 695 E. Colorado Boulevard, second floor, 6:30 p.m.—This month's book, *Blood Diamonds* by Greg Campbell, is about how diamond smuggling led to a rebel war that effectively destroyed the nation of Sierra Leone. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.

Monday, July 19

Standard First-Aid/CPR
Brown Gym classroom, 7:30 a.m. to 5 p.m.—Standard first-aid and CPR training will be offered by Caltech's Safety Office in conjunction with the American Red Cross. Fee: \$25 for materials. Registration: 395-6727 or safety.training@caltech.edu.

Tuesday, July 20

Adult, Child, and Infant First-Aid and CPR Training
Brown Gym classroom, 7:30 a.m. to noon—Offered by Caltech's Safety Office in conjunction with the American Red Cross. Fee: \$30 for materials. This is a two-day class; to receive certification, you must attend today and on Thursday, July 22. Registration: 395-6727 or safety.training@caltech.edu.

Wednesday, July 21

CPR/AED Recertification
Brown Gym classroom, 7:30 a.m. to noon—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.

CPR/AED Recertification
Brown Gym classroom, 1 to 5 p.m.—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.

Thursday, July 22

Amnesty International Monthly Meeting
See Thursday, June 24, for details.

Friday, July 23

Standard First-Aid/CPR
See Monday, July 19, for details.

Thursday, July 29

Reinventing Yourself
Brown Gym classroom, 8:30 a.m. to 12:30 p.m.—This class for supervisors and nonsupervisors will teach ways to redirect thinking, overcome negative behavior, and acquire skills necessary to achieve success. Registration: 395-8055 or diane.williams@caltech.edu.

Tuesday, August 10

Amnesty International Letter Writing
See Tuesday, July 13, for details.

Sunday, August 15

Amnesty International Book Discussion Group
Vroman's Bookstore, 695 E. Colorado Boulevard, second floor, 6:30 p.m.—This month's book has not yet been determined. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.

Thursday, August 26

Amnesty International Monthly Meeting
See Thursday, June 24, for details.

Wednesday, September 1

Techniques for Identifying and Correcting Mistakes in Written Communication
Brown Gym classroom, 8:30 a.m. to 4 p.m.—This class, intended for supervisors and nonsupervisors, will employ writing assignments to train participants to identify common typographical and character errors; find and correct grammatical, punctuation, and spelling errors; and use proofreading marks. This is the third in a series of three classes. Registration: 395-8055 or diane.williams@caltech.edu. Information: http://cit.hr.caltech.edu/Education/super&non_super/correcting_mistakes.htm.

Monday, September 6

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.

Tuesday, September 14

Amnesty International Letter Writing
See Tuesday, July 13, for details.

Sunday, September 19

Amnesty International Book Discussion Group
Vroman's Bookstore, 695 E. Colorado Boulevard, second floor, 6:30 p.m.—This month's book has not yet been determined. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.

Weekly events through the summer

Mondays, June 21 to August 2

Lindy Hop (Swing) Classes
Winnett lounge, 8:30 p.m.—A series of eight Lindy Hop lessons, professionally taught. The first class took place on June 14. No partner or previous dance experience is required. The cost for Caltech students and SURF students is \$6 per class, \$40 for the series; for nonstudents, the cost is \$8 per class, \$56 for the series. Refreshments.

Tuesdays, June 22 to September 21

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). Information: 584-0970.

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Sessions are free. Information: www.its.caltech.edu/~taichi/. Also meets on Fridays.

Wednesdays, June 23 to September 22

Baby Furniture and Household Equipment
234 S. Catalina, 10 a.m. to 12:30 p.m.—Available by appointment only; call 395-6174. Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Wednesdays in the Park
Tournament Park, 10 a.m. to noon—Every Wednesday there's conversation and coffee for parents and caregivers, and playtime and snacks for children. Information: 403-7163 or ktclark@caltech.edu.

Fridays, June 25 to September 24

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Sessions are free. Information: www.its.caltech.edu/~taichi/. Also meets on Tuesdays.

Meeting dates:
June 25
July 2
July 23
July 30
August 6
August 13
August 20
August 27
September 3
September 10
September 17
September 24

Caltech's 110th annual commencement



Graduates await their turn on stage.

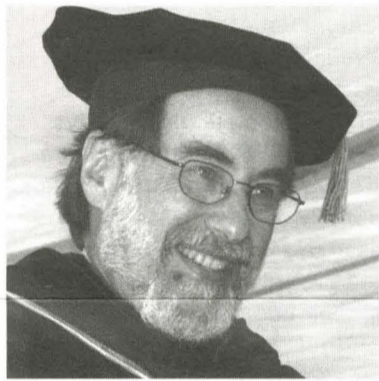
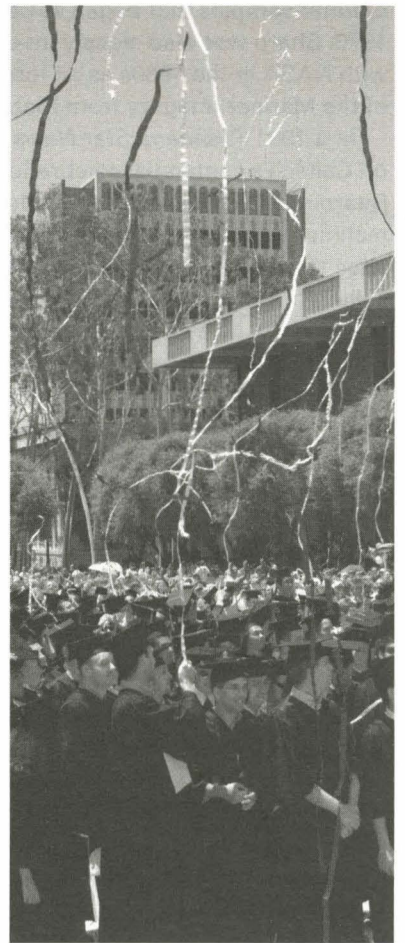
The canopy of dazzling blue sky overhead seemed to reflect soaring spirits as Caltech's degree candidates lined up for their moment in the sun on June 11.

Many elements of the Institute's 110th commencement were reliably familiar: the prelude by alum and organist Les Deutsch and processional by the Convocations Brass and Percussion Ensemble, conducted by Allen Gross; the chairman of the Board of Trustees, Ben Rosen, presiding; the applause, cheers, and intermittent clashing gong as candidates crossed the stage; and the singing of the alma mater, "Hail CIT."

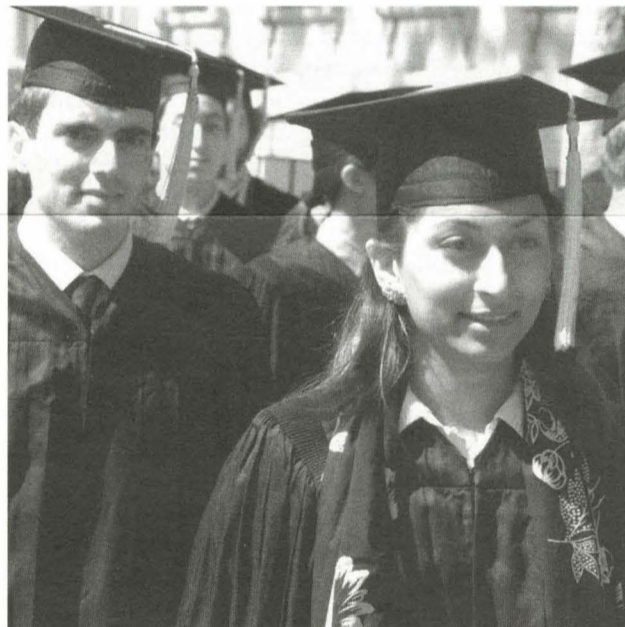
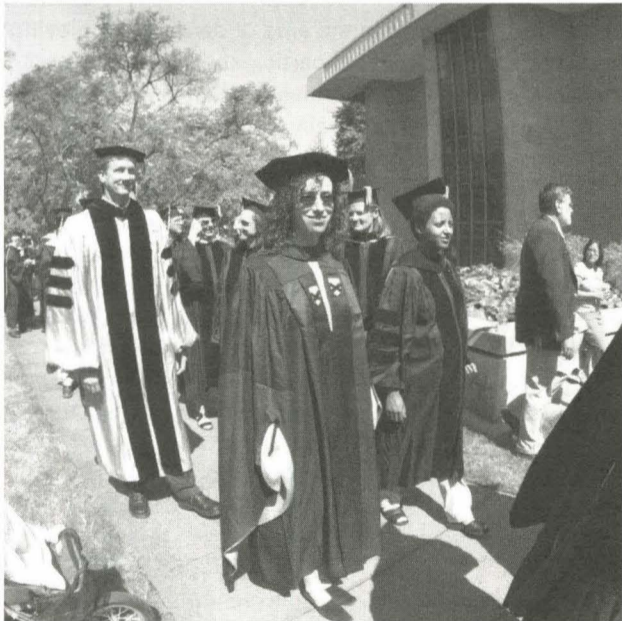
Distinctive to this year's ceremony were the moments of silence in memory of former U.S. president Ronald Reagan and the late Caltech alum and benefactor Arnold Beckman, who died May 18 at age 104; "There's Just One!", with lyrics sung to the tune of the traditional "Hallelujah Chorus"; and commencement speaker Carly Fiorina, the chair and chief executive officer of HP.

As President David Baltimore addressed the newly minted grads for the last time, he reminded them of their achievement as Caltech alums and the unique duty they are now equipped to fill, in standing for truth in the face of political pressure and in helping Americans understand the value of science and technology. He wished them happiness and fulfillment as he sent them off to make their mark in the world.

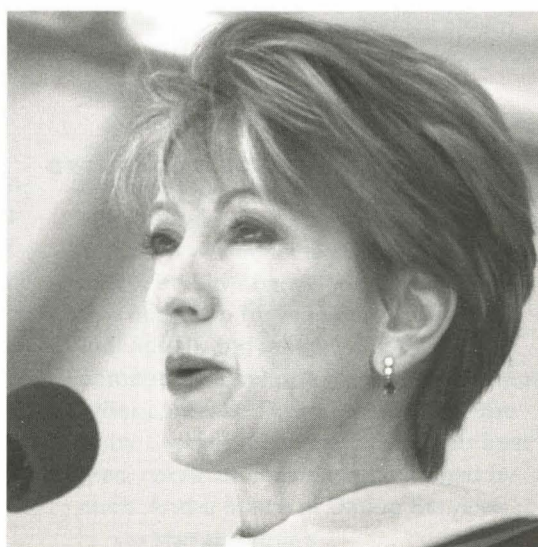
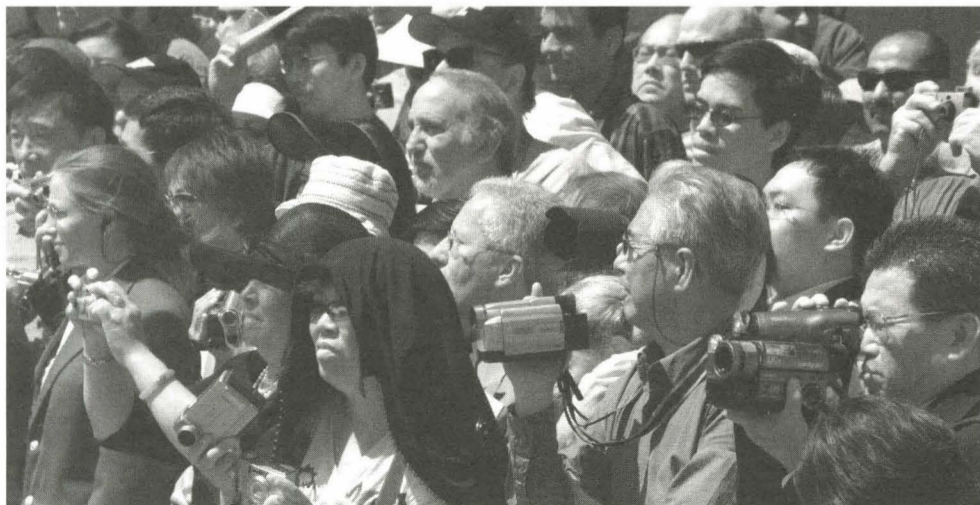
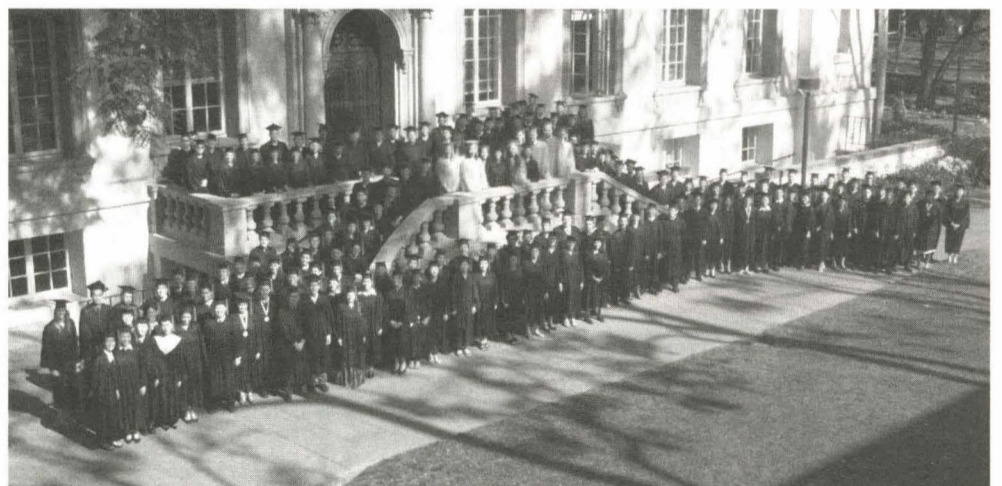
Video footage of Commencement 2004 and a copy of the program, listing all graduates and award winners, can be viewed at <http://pr.caltech.edu/commencement/04>.



Counterclockwise from above: Caltech president David Baltimore addresses the assembly. Zeinab Mousavi graduates with a bachelor's in electrical engineering, with honors. In full academic regalia (from left), Scott Fraser, Rosen Professor of Biology; Michelle Effros, associate professor of electrical engineering; and Sossina Haile, associate professor of materials science and chemical engineering, join the procession of faculty to Beckman Mall. Camera-toting family members make like amateur paparazzi to document the special day.



Above: Streamers drift down on the assembled graduates and audience at the commencement ceremony's finale. Left: Iram Parveen Bilal (right) graduates with a degree in engineering and applied science, with honors, and Jordan Lee Boyd-Graber with degrees in the fields of computer science and history, also with honors.



Above: Undergraduates gather in front of Parsons-Gates Hall for a portrait before heading to Beckman Mall. Left: In her speech, commencement speaker Carly Fiorina said that for science and technology to solve the problems that plague humankind, the graduates have the responsibility to act according to their values and to throw off the veil of anonymity that science affords them.

Sharp, from page 1

of lunar samples that began at Caltech in 1970. Sharp was also closely involved with NASA in the 1960s as an interpreter of the Mariner imagery from Mars.

In a 1991 *Pasadena Star-News* article on Caltech's centennial celebration, Sharp recalled hearing from a Mariner technician that the newly returned images showed the presence of a lake. Telling the technician that a lake on Mars was absurd, he saw that the ripples the technician had viewed on the imagery were actually sand dunes. "That was the beauty of it for me," Sharp said. "Astrophysicists, engineers, and computer guys, and they need this dumb ol', dirty fingernail geologist like me!"

In 1989, Sharp received America's highest scientific honor, the National Medal of Science, for having "illuminated the nature and origin of the forms and formation processes of planetary surfaces, and for teaching two generations of scientists and laymen to appreciate them." The White House also cited Sharp for having built Caltech's multidisciplinary Division of Geological and Planetary Sciences.

Among Sharp's numerous other honors were being named by *Life* magazine as one of 10 outstanding U.S. college teachers in 1950; the Geological Society of America's Kirk Bryan Award in 1964 and its Penrose Award—the society's top prize—in 1977; and the NASA Exceptional Scientific Achievement Award Medal in 1971. Elected to the National Academy of Sciences, he also was honored by Caltech's establishment of the Robert P. Sharp Professorship in Geology.

His many research activities included investigations of basin range structure, continental basin deposits, mountain and continental glaciation, frozen ground, erosion surfaces, desert sand dunes, and oxygen and hydrogen isotopes in snow and glacier ice, as well as surface forms and processes on Mars.

A native of Oxnard, Sharp came to Caltech as an undergraduate in 1930, and was a star quarterback at a time when the school was a competitive force in football.

In 1958 he was profiled by *Sports Illustrated* among 25 former gridiron stars who had gone on to significant careers.

At the time one of Caltech's "ablest, most popular teachers," the 165-pound Sharp lamented having been sacked so many times toward the end of his college days due to temporary rule changes that weighted the game "in favor of brute force." He remarked that football had served to show him that, as a scientist, he needed "to be determined as hell and that there is a certain poise and aggressiveness that is desirable."

After earning his BS and MS at Caltech, in 1934 and 1935 respectively, Sharp received his PhD in geology from Harvard in 1938. From 1938 to 1943 he worked in the University of Illinois geology department, and then served in the U.S. Army Air Forces for two years. A University of Minnesota faculty member from 1945 to 1947, he then returned to Caltech as a professor, chairing the division from 1952 to 1968.

Sharp retired to emeritus status in 1979 but remained active, participating in frequent field trips to geological locales with students, alumni, and other Caltech community members. Predeceased by his wife, Jean Todd Sharp, he is survived by two children, Kristin and Bruce.

Revel, from page 1

Everybody was so warm and so very kind. Becoming aware of this is the silver lining to a very dark cloud.

"I enjoy what I'm doing," he continued. "It's nice to work with the students, and I thought I still had something to offer."

Revel's duties as dean don't end at five o'clock, and on the day of commencement on June 11—which is probably Revel's busiest day of the year—he was tireless.

On the evening prior, he attended a banquet where he spoke to the graduating seniors, and on the morning of commencement, he shared breakfast with Pat Beckman, daughter of Arnold Beckman, and the student winners of the Mabel Beckman Prize, which recognizes outstanding undergraduate women.

He then spoke to the trustees, asking them to approve granting the members of the class of 2004 their bachelor's degrees.

As one of the graduation marshals, Revel marched ahead of the degree candidates and led them to Beckman Mall, where he handed a sheepskin to each one of the graduating seniors. The commencement was followed by photo sessions with the new graduates and introductions to their families.

Asked if he planned to serve as dean for another eight years, Revel replied, "Yes, I do plan to continue . . . for at least 80 more years."

LIGO, from page 1

unique partnership develop among research scientists, museum educators, formal educators, and networks of local educators from the Livingston region," she says. "Together, they will make connections between science, the research at LIGO, and the surrounding community."

The partnership between researchers and educators creates a national model for how universities, school districts, and informal learning environments can work together to motivate student and teacher learning, and support inquiry-based teaching and learning practices.

According to the Exploratorium's Bronwyn Bevan, the Center for Informal Learning and Schools (CILS), an NSF-funded center for learning and teaching at the Exploratorium, will share this partnership model with a broad range of museums, universities, and school systems collaborating in CILS. "This project allows us to explore, in particular, the potential of informal science institutions for creating windows into the world of cutting edge science research."

LIGO's Local Educator Network at Livingston Observatory, established in 2002, will involve participant educators from Louisiana and Mississippi in each step of the proposed activities: planning, development, implementation, and evaluation.

Discussions are in progress with the Louisiana Art and Science Museum in Baton Rouge on the collaborative development of hands-on LIGO science exhibits and demonstrations.

"LIGO-related resources will ultimately reach and serve an extensive population of lifelong learners," says Mike Zucker, LIGO Livingston Observatory head. "We are amazed at the level of interest already demonstrated by people of all ages in this community. This facility and related programs will greatly aid us in serving their educational needs."

Staff gala, from page 1

and Edward Ungrue of the Athenaeum. Prizes will await winners of both the games and the baking competition.

An information fair will feature representatives from the Institute's health-care providers and various campus departments. And last but not least, staff members should be sure to pick up raffle tickets, which may pay off with gift certificates for restaurants, a manicure and pedicure, and other local services; wine and wine tastings; and more.

More information, including how to preregister for games, will be mailed to staff; they may also call ext. 8661 or e-mail dlorah.gonzales@caltech.edu.

Baltimore, from page 2

tenure, it could take 60 years or more for women to reach parity with men in the faculty ranks in science, math, and engineering. A key factor is the departure of women from the pipeline at every stage of the scientific career: in the transitions from undergraduate to graduate school, graduate school to postdoctoral fellowship, and postdoctoral positions to the professoriate, and within the professoriate as well. At all of these nodes, it seems that women are leaving science, engineering, and mathematics careers at a higher rate than their male counterparts.

It is clear that some of the fault lies with the difficulties and biases that female students and scholars face in our academic environments. Unfortunately, these difficulties and biases are as present at Caltech as elsewhere. In response to the Graduate Student Council and Women in Engineering, Science, and Technology survey on quality-of-life issues, the Task Force on Gender and Academic Climate, cochaired by Professor John Bercaw and Vice President Margo Marshak, found that "a collection of underlying behavior and attitudes concerning gender has made productive life on campus difficult for many graduate students." The task force "concluded that primary responsibility for correcting this situation belongs to the professorial faculty, who must take an active and ongoing role in educating their students and research group members" about inappropriate gender-related behavior and gender bias.

Academic careers are demanding of everyone, but such behavior creates added stresses and obstacles to women's full participation in science and engineering, directly contributing to the "leaky pipeline" problem.

In its recommendations, the task force urges faculty to take a leading role "in improving the gender climate" on campus; suggests that "a comprehensive education program about gender issues and bias" be established with input from the graduate students; and proposes that "future assessments should address the concerns not only of the graduate students but of all members of the Caltech community." I wholeheartedly support these recommendations.

Gender balance is not the only challenge we face in the area of diversity. Achieving proportional participation by underrepresented minorities in science and engineering is an equally important goal. Here, we have little success to report; this is clearly a more difficult and demanding disparity to correct than gender imbalance.

On all fronts we must dedicate ourselves to the essential task of realizing greater diversity of participation than we have been able to achieve thus far.

For the text of any of the reports and statements cited in this essay, see <http://diversity.caltech.edu>.

Blood donors needed

The City of Hope is again seeking Techers willing to give blood and to have their bone marrow typed for possible future donation. Representatives from COH will hold a drive on Tuesday, July 13, from 10 a.m. to 4 p.m. in the Winnett lounge. Ongoing transfusions of blood or platelets are vital for patients with cancer and other life-threatening diseases who undergo chemotherapy, and for some patients, bone marrow transplants may be their last lifeline to recovery.

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