

Caltech336

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

The campus community biweekly

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A meeting of the minds



Senior Nick Knouf, former Associated Students of Caltech president Martha-Helene Stapleton, and current president Ted Jou were key players in the successful 2002 Student-Faculty Conference.

Kids get a taste of science, culture

Javier Marquez and Daryn Kobata

Scientists work under the assumption that every natural phenomenon has an explanation that can be reached through methodical observation and the testing of hypotheses. But to many children, it's all about magic. During their April 25 visits to the labs of Sally Newman and Paul Asimow on Take Our Children to Work Day, fourth- and fifth-graders could hardly get over the tricks the researchers played.

The five girls and three boys and their adult chaperones did their best to follow along. In tiny, cramped 09 Church, they watched Newman, a member of the professional staff in Geological and Planetary Sciences, standing at a nifty network of glass tubing, turning knobs and adjusting gauges as she performed a procedure that pulls pollutants from the air. Then she reached for a canister of liquid nitrogen.

The kids squealed with delight as the super-cold substance fizzed when poured into a metal canister, and played with dust as it washed across the floor. A green leaf immersed in it turned as hard as glass.

"That was my favorite part, when she dipped the leaf and it froze and she dropped it and it shattered," said Jasmin Hernandez, a fifth-grader from Norma Coombs Alternative School in Pasadena.

Next, during their visit to 362 Crellin, the youngsters learned how scientists

mimic tremendous underground pressures. Paul Asimow, an assistant professor of geology and geochemistry, told them about one of the high-pressure instruments he works with. Plain and boxy, the hydraulic press is the strongman of its kind, capable of squeezing incredible levels of pounds per square inch into an area no bigger than a marshmallow.

"This machine can lift 500 pickup trucks," Asimow declared as the big press hummed serenely. "There's some lava in there right now!" Somebody gasped.

After tossing around terms like atmospheres, tungsten carbide, and octahedrons, Asimow led the group to a nearby lab, where he displayed a trove of gemstones. These he placed inside a cabinet and closed the door. Then he passed a green laser through the gems to inspect their molecular composition because, he explained, a gem may be something entirely other than what it looks like.

He determined that his sparkling diamond was a lowly cubic zirconium. His aquamarine was actually a radiation-treated topaz. And presto! For his finale, he revealed that an eye-popping two-carat diamond was, in fact, another tweaked topaz. The young gemologists were impressed.

"This is my first year and I'm amazed at the lengths that Caltech goes to expose
see Children, page 6

Four faculty elected to NAS

Four Caltech professors were among the 72 new members and 15 foreign associates named to the prestigious National Academy of Sciences at the organization's 139th annual meeting in Washington, D.C., April 30. Established in 1863 by President Lincoln, the academy acts as an advisory body for the federal government on scientific matters.

The new members from Caltech are Barry Barish, Linde Professor of Physics and director of the Laser Interferometer Gravitational-Wave Observatory (LIGO) Laboratory; Jacqueline Barton, Hanisch Memorial Professor and professor of chemistry; Jeff Kimble, Valentine Professor and professor of physics; and Anatol Roshko, Von Kármán Professor of Aeronautics, Emeritus. The four bring to 67 the number of living Institute professors and professors emeriti who have earned the honor.

An experimental high-energy physicist, Barish has been involved with a number of high-profile international projects, including the Superconducting Supercollider and the search for magnetic monopoles. He was responsible for the definitive experiment at Fermilab that provided evidence of the "weak neutral current," the linchpin of the electroweak theory for which Sheldon Glashow, Abdus Salam, and Steven Weinberg won the Nobel Prize.

In 1994 Barish began working on the LIGO project, an NSF-funded collaboration between Caltech and MIT for detecting gravitational waves from exotic sources such as colliding black holes, and he has been director since 1997. He is also currently involved in the neutrino experiment inside Minnesota's Soudan Underground Mine. Barish came to Caltech in 1963, after receiving his BS and PhD from UC Berkeley.

see NAS, page 2

Jenkins resigns as executive VP

Bill Jenkins, executive vice president for administration, has resigned from his position. Jenkins joined Caltech in July 1999.

President David Baltimore said in a May 13 announcement to the Caltech community, "Earlier today I accepted with sorrow the resignation of Bill Jenkins as Caltech's Executive Vice President for Administration. With Bill's permission, I am sharing his letter of resignation, which speaks for itself.

"While Bill made the right decision, his departure will be a huge loss for
see Jenkins, page 6

Serra art planned for Broad Center

As the Broad Center for the Biological Sciences nears completion, attention is turning to the expanse of ground to the south, along Wilson Avenue—the site of a proposed artwork by renowned sculptor Richard Serra.

Entitled *Vectors*, the sculpture will consist of four steel plates, each three inches thick and sixty feet long, which will join together and fall diagonally across the lawn, following its slope from the northeast to the southwest corner.

Serra has a tradition of similar landscape pieces dating back to the *Pulitzer Piece* in St. Louis (1970–71); *Shift*, a sculpture in King City, Ontario (1970–72); and *Schunnemunk Fork*, at the Storm King Art Center in New York (1991). Each work is created in relation to the natural features of the surrounding environment.

Vectors will be commissioned in accordance with Caltech's involvement in the city of Pasadena's Art in Public Places program, says Robert Rosenstone, professor of history and chair of the Institute Art Committee, an advisory board to President Baltimore. "As part of the program, the Institute has a clause in its master plan stipulating that academic and administrative buildings over a certain size must have one percent of their construction costs dedicated to public art," Rosenstone says, noting that a minimum number of artists must be considered, preferably including some local ones. Additional funding for *Vectors* is being raised from private donations.

According to Hall Daily, assistant vice president and director of government and community relations, "Caltech is required to take specific steps to meet the public art requirement, and the plan is to present the Broad Center proposal to the Arts Commission for review in July." The center is the second campus building to have qualified; the first was Moore Laboratory, and its associated artwork is *Moore's Stone Volute* by Lloyd Hamrol, the circular sculpture west of Beckman Laboratories.

The art committee, comprising faculty and staff members, began the selection process in September 2000, when it gave a list of proposed artists to Pasadena's Arts Commission. Over time, the committee agreed on the proposal by Serra, whom the *New York Times* has called "the greatest living sculptor."

Rosenstone predicts that *Vectors* will become a landmark—a site for weddings and more. "I greatly admire the prospective work—I think it's heroic. It will add tension and dynamism to a lawn that's a big blank space that says nothing. Serra will make our experience of the space much more interesting."

Contrary to popular belief, the lawn was not part of the Beckman Institute (BI) bequeathal by Arnold and Mabel
see Sculpture, page 6

NewsBriefs



"First bubble"—Formally dedicated on May 2, the Sturtevant Memorial Spa commemorates the late Bradford Sturtevant, Liepmann Professor of Aeronautics, who died in October 2000. A legendary swimmer, Sturtevant was active for many years on the faculty athletic committee and was a key figure in the Braun Athletic Center planning and construction.

Personals

Welcome to Caltech

April

Ohannes Arakelian, associate systems specialist, Physical Plant; **Youichi Aso**, visitor in physics (Laser Interferometer Gravitational-Wave Observatory); **Imre Barta**, assistant biologist, biology; **Bruce Bell**, information services generalist, biology; **Elizabeth Bobadilla**, server, Athenaeum; **Christine Bolash**, assistant lab technician, biology; **LaToya Brunston**, clerical assistant, high-energy physics; **Katrina Carter**, operations specialist, Laser Interferometer Gravitational-Wave Observatory; **Norma Davalos**, administrative assistant, Student-Faculty Programs Office; **Paolo Focardi**, postdoctoral scholar in JPL's submillimeter-wave superconductive sensor group; **Andri Gretarsson**, postdoctoral scholar in physics; **Dani Guzman**, electronics engineer, Palomar Observatory; **Ryusuke Hayashi**, postdoctoral scholar in biology; **Chang Hee Ree**, visitor in physics; **Anthony Leboissetier**, postdoctoral scholar in JPL's thermal and propulsion engineering systems section; **JaeDong Lee**, postdoctoral scholar in materials science; **Marc Morales**, mechanic's aide, Physical Plant; **Sanefumi Moriyama**, postdoctoral scholar in physics; **Jonathon Muliang**, technical aide A, Space Infrared Telescope Facility; **Brian Palmer**, technical aide A, chemistry; **Hung Quach**, technical assistant, condensed-matter physics; **Johan Richard**, visitor in physics; **Matthias Scholz**, assistant scientist, applied physics; **Chee-Seng Toh**, postdoctoral scholar in chemistry; **Jennifer Tung**, research assistant, geological and planetary sciences; **Martin Valencia**, host, Dining Services; **Jean Shin**, marketing coordinator, Athenaeum; **Elizabeth Vela**, department clerk, Purchasing and Payment Services.

Honors and awards

Michael Ortiz, professor of aeronautics and mechanical engineering, has been selected to receive a Humboldt Research Award for Senior U.S. Scientists. The Alexander von Humboldt Foundation of Germany "grants up to 150 Humboldt Research Awards annually to foreign scholars with internationally recognized academic qualifications. The award is intended as a lifelong tribute to the past academic accomplishments of award winners. Furthermore, award winners are invited to carry out research projects of their own choice in Germany in cooperation with German specialist colleagues for periods of between six months and one year." Ortiz's award is in the amount of 65,000 euros.

Jonas Peters, assistant professor of chemistry, has received a 2002 Camille Dreyfus Teacher-Scholar Award from the Camille and Henry Dreyfus Foundation. Only 15 Teacher-Scholars were chosen. The program "is designed to provide external support to young faculty members at early stages of their academic careers. It is the Foundation's expectation that this award will assist these outstanding scientists to continue the high level of accomplishment in education and research that they have demonstrated thus far." The award to Peters is for \$60,000.

SLC fund announced at Student-Faculty Conference

The first Student-Faculty Conference in five years, held on April 29, saw President **David Baltimore** announce the establishment of the Student Life at Caltech Fund. The fund will be endowed by \$3 million of the gift recently pledged to the Institute by Gordon and Betty Moore.

Associated Students of Caltech president **Ted Jou** was pleased at the news. "It sounds like it's a very good thing," he said. "It's a lot of money, and I'd like to hear more about how it will be administered and how to apply for it."

Baltimore said the fund's annual return of about \$150,000 to \$200,000 will be disbursed based on proposals from students and groups. He asked **Gary Lorden**, acting vice president for student affairs, to convene a group of students, faculty, and staff to recommend an allocation system by midsummer.

"The idea is to enrich student life by supplying types of funding that are not available through the usual channels," Lorden said. "This could include programs, activities, equipment, visitors, and educational ideas that are outside the existing academic program."

Kiewiet steps down as graduate dean

Dean of graduate studies **Rod Kiewiet** will be departing his position at the end of June to return to full-time teaching and research as a professor of political science.

Gary Lorden, acting vice president for student affairs, said in an announcement to the campus community, "In his two years as graduate dean, Rod has been energetic and creative in pursuing the Institute's goals of getting the very best graduate students to come to Caltech, increasing the diversity of our campus community, and giving our students the strongest support. We are grateful for his service and his many contributions."

Kiewiet has also served as dean of undergraduate students, from 1992 to 1996. He arrived at Caltech as an assistant professor in 1979, and became an associate professor in 1982 and a full professor in 1989. He received his BA from the University of Iowa in 1974 and his PhD from Yale University in 1980.

Leaving "the best job on campus"

Little did Helen Tuck know what was in store when she heard about a job opportunity at Caltech back in 1971.

The theoretical physics group was looking for technical secretaries, who "type in all those equations that physicists use," she said. Being an expert in the specialized skill, she applied—and for the next three decades found herself working with some of the best-known scientists in the world.

Tuck retired on May 10, her 75th birthday ("Strictly coincidence," she said). But as she and Gordon, her husband of 50 years, relocate to Lake Havasu City, Arizona, she'll depart the Institute with a myriad of memories and friendships.

Her former bosses, Nobelists Richard Feynman and Murray Gell-Mann, used to stand in her office and argue about what "the old man"—Einstein—would say. When Stephen Hawking was in town, Tuck made sure there was an office available. And at her retirement dinner, Robert Christy, Institute Professor of Theoretical Physics, Emeritus, gave her a card signed, "Caltech will not be the same without you. With regret."

Said Tuck, "I've had a wonderful time working for Dr. Feynman and Murray. But I loved them all. This group has been wonderful, hardworking, kind, and fun—what more can you ask for? You're really made to feel like part of the group, not just the secretary."

"Carol Silberstein [who is replacing Tuck] is a very lucky person. I have friends all over the world—I get e-mail from Sweden, Japan, you name it. People come for a year to do their research, and stay in touch. There aren't many jobs like this around."

Tuck retired from the same office in which she started, 452 Lauritsen, with a clear view of the San Gabriel Mountains. Her original chair will go with her; a photo collage of Feynman will be sent to Sandor Kovacs, a former graduate student and good friend of his.

Looking back at her years in the tight-knit department, she said, "I'm a pretty calm person, and nothing very traumatic has happened. But it was difficult to lose Professor Feynman and Professor [Fredrik] Zachariasen."

Of Feynman, who died of cancer in 1988, Tuck said, "I had 10 years to get used to it after his first surgery." But Zachariasen's death from a heart attack in 1999 was a blow. "I talked with him the day before he died, and he had no inkling—he thought it was just asthma." She adds, "Murray, thank heavens, is fine. He keeps in touch every now and then."

Some of her memories were recently brought to life in the play *QED*, based on Feynman's life. In preparation for his role, actor Alan Alda visited Tuck in her office to get a sense of what the physicist was like. She saw the play twice and thought Alda "did a wonderful job." Fondly, she recalled how the man she always called "Dr. Feynman" or "RPF" would hide in her office from pesky visitors, and play her file cabinets like bongo drums.

Although Tuck looks forward to settling in Arizona—finding a bridge club, volunteering, spending time with her son and her three dogs—her departure is not without mixed feelings. The very relationships that have made her work so enjoyable also make leaving bittersweet. "I used to say I had the best job on campus, and I still believe it," she said. "I will miss these people terribly."



Helen Tuck retired on May 10 after 30 years in Theoretical Physics.

NAS, from page 1

Since joining Caltech in 1989, Barton has pioneered the application of synthetic transition-metal complexes as tools for probing DNA. These complexes have been useful in clarifying fundamental chemical principles, developing new diagnostic tools, and laying a foundation for the design of novel chemotherapeutics and biosensors. Barton has also carried out seminal studies that provide a completely new approach to the study of DNA structure and dynamics, studies that may be critical to understanding the chemical consequences of radical damage to DNA within cells.

An alumna of Barnard College, Barton obtained her PhD in chemistry from Columbia University, and was on the faculty there before joining Caltech. A recipient of numerous awards, medals, and honorary doctorates, including the prestigious MacArthur Fellowship in 1991, she is a member of the American Academy of Arts and Sciences and the American Philosophical Society.

Kimble is an expert in quantum optics and has made groundbreaking discoveries relating to quantum measurement and to the new science of quantum information. A continuing theme of his research has been the generation and application of novel quantum states such as "squeezed" light, work that has led to a number of important discoveries. Exploiting the basic techniques of light squeezing provided the foundation for his group's attainment of unconditional quantum teleportation in 1998. He and his colleagues have also done seminal work in establishing the experimental foundations of quantum information science and have made major contributions to theoretical physics.

A 1978 graduate of the University of Rochester, Kimble held the Sid Richardson Regents' Chair in Physics at the University of Texas at Austin, before joining Caltech in 1989. He is winner of the Franklin Institute's Albert A. Michelson Medal and the Optical Society of America's Max Born Award, and is a corecipient of the Einstein Prize for Laser Science.

Roshko is known for his research in several areas of gas dynamics and fluid mechanics. He has made contributions to problems of separated flow, bluff-body aerodynamics, shock-wave boundary-layer interactions, shock-tube technology, and the structure of turbulent shear flows.

A native of Canada, Roshko earned his doctorate from Caltech in 1952 and has spent his career at the Institute. He also served as acting director of Caltech's Graduate Aeronautical Labs from 1985 to 1987. Already a member of the National Academy of Engineering, Roshko is also a fellow of the American Academy of Arts and Sciences, the American Physical Society, the American Institute of Aeronautics and Astronautics, and the Canadian Aeronautics and Space Institute, and an honorary member of the Indian Academy of Sciences. He is a founding director of Wind Engineering Research, Inc.

May 20–26, 2002

M T W T F S S

Monday, May 20

Aeronautics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 1 p.m.—“Aero Capture Technology,” Dr. Jeffrey Hall, JPL. Information: www.galcit.caltech.edu/seminars.shtml.

Thesis Seminar
Room 115, Beckman Institute, 1 p.m.—“Quantum Monte Carlo: Quest to Get Bigger, Faster, and Cheaper,” Michael Todd Feldmann, graduate student in chemistry, Caltech.

Geology and Planetary Sciences Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—Topic to be announced. Michael Bender, professor of geosciences, Princeton University. Information: www.gps.caltech.edu.

Inorganic-Electrochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Chemistry of Si Nanocrystals and Nanowires for Sensor and Biomedical Applications,” Professor Michael J. Sailor, department of chemistry and biochemistry, UC San Diego.

William Bennett Munro Memorial Seminar
25 Baxter, 4 p.m.—“Recovering Renaissance Readers,” Kevin Sharpe, Mellon Visiting Professor of History, Caltech. Refreshments.

Applied and Computational Mathematics Colloquium
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4:15 p.m.—“Geometric Multiscale Transforms: Algorithms and Applications to Image Processing,” Emmanuel Candes, assistant professor of applied and computational mathematics, Caltech. Refreshments, 3:45 p.m.

Tuesday, May 21

Symposium to Honor William B. Bridges
Beckman Institute auditorium, 9 a.m. to 5:45 p.m.—William B. Bridges, Braun Professor of Engineering, winner of the ASCIT Lifetime Achievement Award, and the inventor of the argon ion laser, will be honored. Attendance is free, but advance registration is recommended. Registration: Linda McManus, 836-2065 or lindamc@its.caltech.edu. Information: www.ee2.caltech.edu/People/Faculty/bbridges/.

Caltech Library System Presents: Patents
Sherman Fairchild Library, multimedia conference room, noon to 1:30 p.m.—A quick review of the patenting process, searching for patents and patent equivalents, legal status issues, and current awareness techniques. Registration: <http://library.caltech.edu/learning/form.htm>.

IR/submm/mm Sack Lunch
469 Lauritsen, 12:15 p.m.—“Supernova Remnants and Molecular Clouds,” Jeonghee Rho, Infrared Processing and Analysis Center (IPAC) and SIRTf Science Center, Caltech. Information: www.submm.caltech.edu/~motte/sacklunch.html.

Chemical Physics Seminar
153 Noyes, Sturdivant Lecture Hall, 2 p.m.—“A Theoretical Approach to Electronic Non-Adiabatic Coupling Terms in Poly-Atomic Molecules: Recent Developments and Numerical Studies,” Professor Michael Baer, Soreq Nuclear Research Center, Yavne, Israel.

Thesis Seminar
147 Noyes, Sturdivant Lecture Hall, 2 p.m.—“DNA Binding Polyamides in Biological Systems,” Jason Belitsky, graduate student in chemistry, Caltech.

Ulric B. and Evelyn L. Bray Seminar
25 Baxter, 4 p.m.—“The Walrasian Tatonnement to Economize on Cognitive Transaction Costs: An Experiment,” Sebastien Pouget, assistant professor of finance, Georgia State University. Refreshments.

Carnegie Observatories Colloquium Series
William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—“A Very Deep HST Study of the Globular Cluster M4,” R. Michael Rich, associate research physicist, department of physics and astronomy, UCLA. Refreshments, 3:30 p.m.

Chemical Physics/Biophysics Seminar
153 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Single Molecule Enzymatic and Conformational Dynamics,” Sunney Xie, professor of chemistry, Harvard University.

Caltech/MIT Enterprise Forum
Registration and dinner, Chandler Dining Hall, 5:30 p.m.; lecture, Baxter Lecture Hall, 7 to 9 p.m.—“Patriot Ventures: Breaking into the Homeland Security Market.” Fee: \$35 general admission, \$10 non-Caltech students; Caltech faculty and staff free. Information: www.entforum.caltech.edu. Registration: 395-3916 or ircshare@caltech.edu.

Wednesday, May 22

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“AGN, Host Galaxies, and Black Holes,” Meg Urry, professor of physics, department of astronomy, and director of the Center for Astronomy and Astrophysics, Yale. Information: <http://astro.caltech.edu/~jlc/colloquia.html>.

Environmental Science and Engineering Seminar
142 Keck, 4 p.m.—“Observations of the Great Whirl,” Dr. Lisa Beal, Physical Oceanography Research Division, Scripps Institution of Oceanography and UC San Diego. Refreshments, Keck lobby, 3:40 p.m. Information: www.es.caltech.edu/seminars.html.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 to 5:30 p.m.—“Identification of Novel Ligands for Asymmetric Synthesis,” Marisa Kozlowski, assistant professor of organic and bioorganic chemistry, University of Pennsylvania.

Earnest C. Watson Lecture Series
Beckman Auditorium, 8 p.m.—“Einstein at Caltech: Publishing the Collected Papers of Albert Einstein,” Diana Kormos-Buchwald, associate professor of history and general editor and director of the Einstein Papers Project, Caltech. Information: www.events.caltech.edu/0102/wl.020522.shtml.

Thursday, May 23

Thesis Seminar
106 Spalding Lab, Hartley Memorial Seminar Room, 1 p.m.—“Protein Engineering Using Unnatural Amino Acids: Incorporation of Leucine Analogs into Recombinant Proteins *in vivo*,” Yi Tang, graduate student in chemical engineering, Caltech.

Biochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Genome Regulatory Networks in Living Cells: New Directions for Disease Therapies,” Richard A. Young, member, Whitehead Institute, and professor of biology, MIT. Refreshments.

Civil Engineering Seminar
206 Thomas, 4 p.m.—“A Technical Framework for Probability-Based Seismic Assessments,” Fatemeh Jalayer, graduate student, department of civil and environmental engineering, Stanford University. Refreshments, 210 Thomas, 3:45 p.m.

Geoclub Seminar
151 Arms, Buwalda Room, 4 p.m.—Topic to be announced. Robin Whatley, UC Santa Barbara. Refreshments, 3:45 p.m. Information: www.gps.caltech.edu/seminars/geoclub/.

Physics Research Conference
201 E. Bridge, 4 p.m.—“How the Muon’s Spin Challenges the Standard Model,” David Hertzog, professor of physics, University of Illinois at Urbana-Champaign. Refreshments, 108 E. Bridge, 3:45 p.m. Information: www.pma.caltech.edu/~physcoll/PhysColl.html.

Friday, May 24

Fluid Mechanics Seminar
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—“Direct Numerical Simulations of Turbulent Viscoelastic Channel Flow: Toward a Better Understanding of Drag Reduction,” Professor Antony N. Beris, department of chemical engineering, University of Delaware. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.

Institute for Quantum Information Seminar
74 Jorgensen, 3 p.m.—“Gaussian Maps: Characterization and Applications,” Ignacio Cirac, Max Planck Institute for Quantum Optics, Germany.

Caltech/JPL Association for Gravitational-Wave Research Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Waveforms and Templates,” Alessandra Buonanno, Tolman Fellow, theoretical astrophysics, Caltech.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—“Kinetic Resolution of Chiral Olefins Using Asymmetric Zirconocene Catalysts,” Endy Min, graduate student in chemistry, Caltech.

May 27–June 2, 2002

Monday, May 27

Memorial Day holiday

Tuesday, May 28

Thesis Seminar
Beckman Institute auditorium, 11 a.m.—
"Mapping Heme Protein Folding Land-
scapes," Jennifer Lee, graduate student
in chemistry, Caltech.

Thesis Seminar
151 Crellin, 1 p.m.—"Electron-Transfer
Reorganization Energies of Isolated Mol-
ecules," Xenia Amashukeli, graduate
student in chemistry, Caltech.

Astronomy Tea Talk
106 Robinson, 4 p.m.—"The Cult of
Microlensing," Scott Gaudi, Hubble
Fellow, Institute for Advanced Study.
Information: www.astro.caltech.edu/~kartik/tea_talks/.

Carnegie Observatories Colloquium Series
William T. Golden Auditorium,
813 Santa Barbara Street, 4 p.m.—
"Collapsars: Gamma-Ray Bursts from
Massive Stars," Andrew MacFadyen,
DuBridge Postdoctoral Scholar, Caltech.
Refreshments, 3:30 p.m.

Wednesday, May 29

Mathematical Physics Seminar
351 Sloan, noon—"Infrared Renormal-
ization and Infraparticle States in QED,"
Thomas Chen, Courant Institute, NYU.
Information: [www.math.caltech.edu/](http://www.math.caltech.edu/events/mathphys.html)
[events/mathphys.html](http://www.math.caltech.edu/events/mathphys.html).

Thesis Seminar
Beckman Institute auditorium, 2 p.m.—
"Electron Tunneling through Phenylene
Bridges," Randy Villahermosa, graduate
student in chemistry, Caltech.

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall,
4 p.m.—"The Universe at Redshift 3,"
Charles Steidel, professor of astronomy,
Caltech. Information: <http://astro.caltech.edu/~jlc/colloquia.html>.

Environmental Science and Engineering Seminar
142 Keck, 4 p.m.—"Bioremediation
of Chlorinated Solvent Sites: From Lab
Studies to Field Applications," Professor
Frank Loeffler, School of Civil and Envi-
ronmental Engineering, Georgia Institute
of Technology. Refreshments, Keck lobby,
3:40 p.m. Information: www.eso.caltech.edu/seminars.html.

Thursday, May 30

Civil Engineering Seminar
206 Thomas, 4 p.m.—"Structural Investi-
gation of the September 11, 2001, World
Trade Center Collapses," Ron Hamburger,
senior vice president and chief structural
engineer, EQE Structural Engineers Divi-
sion, ABSG Consulting Inc. Refreshments,
210 Thomas, 3:45 p.m.

William Bennett Munro Memorial Seminar
25 Baxter, 4 p.m.—"The German Middle
Ages and German Medieval Historians,"
Dr. Caspar Ehlers, Max Planck Institute,
Germany. Refreshments.

Physics Research Conference
201 E. Bridge, 4 p.m.—"Scholarly Infor-
mation Architecture," Paul Ginsparg,
professor of physics and computer
science, Cornell University. Refresh-
ments, 108 E. Bridge, 3:45 p.m. Informa-
tion: [www.pma.caltech.edu/~physcoll/](http://www.pma.caltech.edu/~physcoll/PhysColl.html)
[PhysColl.html](http://www.pma.caltech.edu/~physcoll/PhysColl.html).

Friday, May 31

Fluid Mechanics Seminar
101 Guggenheim Lab, Lees-Kubota
Lecture Hall, 3 p.m.—"Mixed Velocity-
Passive Scalars Statistics in High-
Reynolds-Number Turbulence," Laurent
Mydlarski, assistant professor, depart-
ment of mechanical engineering, McGill
University. Information: [www.galcit.](http://www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html)
[caltech.edu/Seminars/Fluids/CurrentFluids/](http://www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html)
[index.html](http://www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html).

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"The Synthesis and
Reactivity of Palladium Compounds
Supported by Quinolinyl Amido Ligands,"
Steve Brown, graduate student in chem-
istry, Caltech.

Caltech/JPL Day at
Dodger Stadium

Time is running short, but you can still
get Dodger Day tickets!

Saturday, June 1
Dodgers vs.
Arizona Diamondbacks

Caltech/JPL Carnival starts at
11 a.m.

Join in the fun: activities for kids,
including wall climbing, slides, clowns,
and face painting.

Game starts at 1:10 p.m.

- Tickets available at:
- Caltech Ticket Office
 - Tech Express
 - Human Resources

CampusEvents

Monday, May 20

Baby Furniture and Household Equipment Pool
234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Ballroom Dance Club
Winnett lounge, 7:30 p.m.—Fox-trot for beginners, professionally taught. This is the third of a five-week series running on Mondays. If you missed the first classes but have previous dance experience, come anyway. Fee: \$6 per lesson for Caltech students; \$8 for others. No partner is required. Refreshments and a half-hour practice period will follow each class.

Ballroom Dance Mini Party
Winnett lounge, 9 p.m.—Open dancing; make requests or bring your own music. Refreshments provided, no partner needed. The first half-hour coincides with the fox-trot practice session.

Beginners’ Hip-Hop Dance Class
Braun Gym, multipurpose room, 10 p.m.—Hip-hop classes, professionally taught, sponsored by the Caltech Dance Troupe. Fees: trial class, \$5; students, \$20 per term; nonstudents, \$30 per term. Attendees must have a valid gym ID or student ID. To register, e-mail troupe@caltech.edu.

Tuesday, May 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: (323) 550-8075 or jmph-p@pacbell.net.

Caltech Tai Chi Club
Winnett lounge, 7:15 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Caltech Folk-Dancing Club
Dabney Lounge, 7:30 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted.

Intermediate Jazz Dance Class
Braun Gym, multipurpose room, 10 p.m.—Sponsored by the Caltech Dance Troupe, this intermediate lyrical-jazz dance class is open to members of the Caltech community with Athletic Center membership. Some prior dance experience is required. The cost per term is \$20 for Caltech students and \$30 for nonstudents.

Wednesday, May 22

Baby Furniture and Household Equipment Pool
234 S. Catalina, 10 a.m. to 1 p.m.—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—Conversation and coffee for parents and caregivers, and playtime for children. Information: 744-9919 or cdd@its.caltech.edu.

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. Information and reservations: 395-6727.

Ballroom Dance Club
Winnett lounge, 7:30 p.m.—Argentine tango for beginners, amateur-taught. This is the third of a five-week series running on Wednesdays; if you missed the first classes but have previous dance experience, come anyway. Fee: \$1 per lesson; free for freshmen or those taking it for PE credit. No partner is required. Refreshments and a half-hour practice period will follow each class.

Thursday, May 23

Caltech Architectural Tour
Athenaeum, 11 a.m. to 12:45 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. Open to the public.

Amnesty International Monthly Meeting
Caltech Y lounge, 7:30 p.m.—Amnesty International 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.

Friday, May 24

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Saturday, May 25

Intermediate Ballet Class
Braun Gym, multipurpose room, 1 p.m.—The Caltech Dance Troupe offers free intermediate ballet classes to members of the Caltech community with Athletic Center membership and/or student ID.

Monday, May 27

Memorial Day holiday

Baby Furniture and Household Equipment Pool
234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Ballroom Dance Club
Winnett lounge, 7:30 p.m.—Fox-trot for beginners, professionally taught. This is the fourth of a five-week series running on Mondays. Fee: \$6 per lesson for Caltech students; \$8 for others. No partner is required. Refreshments and a half-hour practice period will follow each class.

Ballroom Dance Mini Party
Winnett lounge, 9 p.m.—Open dancing; make requests or bring your own music. Refreshments provided, no partner needed. The first half-hour coincides with the fox-trot practice session.

Beginners’ Hip-Hop Dance Class
Braun Gym, multipurpose room, 10 p.m.—Hip-hop classes, professionally taught, sponsored by the Caltech Dance Troupe. Fees: trial class, \$5; students, \$20 per term; nonstudents, \$30 per term. Attendees must have a valid gym ID or student ID. To register, e-mail troupe@caltech.edu.

Tuesday, May 28

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: (323) 550-8075 or jmph-p@pacbell.net.

Caltech Tai Chi Club
Winnett lounge, 7:15 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Caltech Folk-Dancing Club
Dabney Lounge, 7:30 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted.

Intermediate Jazz Dance Class
Braun Gym, multipurpose room, 10 p.m.—Sponsored by the Caltech Dance Troupe, this intermediate lyrical-jazz dance class is open to members of the Caltech community with Athletic Center membership. Some prior dance experience is required. The cost per term is \$20 for Caltech students and \$30 for nonstudents.

Wednesday, May 29

Baby Furniture and Household Equipment Pool
234 S. Catalina, 10 a.m. to 1 p.m.—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—Conversation and coffee for parents and caregivers, and playtime for children. Information: 744-9919 or cdd@its.caltech.edu.

Laser Safety Orientation
118 Keith Spalding Building, 11 a.m.—All laser operators and individuals working in areas where there may be exposure to laser radiation from Class 3b or Class 4 lasers are required to attend this training. Class size is limited; please call 395-6727 to reserve a space.

Watch Your Back
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. To reserve a place, please contact the Safety Office, 395-6727.

Ballroom Dance Club
Winnett lounge, 7:30 p.m.—Argentine tango for beginners, amateur-taught. This is the fourth of a five-week series running on Wednesdays. Fee: \$1 per lesson; free for freshmen or those taking it for PE credit. No partner is required. Refreshments and a half-hour practice period will follow each class.

Friday, May 31

FOCAL Book Sale
Dabney Lounge, 8 a.m. to 5 p.m.—The annual two-day book sale, sponsored by the Friends of Caltech Libraries (FOCAL), offers great prices on books on a wide range of subjects.

Caltech Tai Chi Club
Winnett lounge, 7 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Saturday, June 1

FOCAL Book Sale
Dabney Lounge, 9 a.m. to 2 p.m.—The annual two-day book sale, sponsored by the Friends of Caltech Libraries (FOCAL), offers great prices on books on a wide range of subjects.

Intermediate Ballet Class
Braun Gym, multipurpose room, 1 p.m.—The Caltech Dance Troupe offers free intermediate ballet classes to members of the Caltech community with Athletic Center membership and/or student ID.

Sunday, June 2

Skeptics Society Lecture
Baxter Lecture Hall, 2 p.m.—“The Dawn of Human Culture,” Richard Klein, professor of anthropology and human biology, Stanford. Donation is \$8 for nonmembers, \$5 for members and non-Caltech students. Free to the Caltech/JPL community. Tickets and information: 794-3119 or skepticmag@aol.com. Book signing to follow the lecture.

TACIT presents two plays

In the span of five weeks, Theater Arts at Caltech will produce two plays for its spring season. Although the calendar is exhausting, this schedule is not so unusual in the theater world, but the casting is another story: one play calls for an all-male cast; the other for all women. And one is being staged on a Caltech loading dock.

Lakeboat is an early David Mamet play populated by coarse dockworkers who spend their days loading and unloading freighters that troll the Great Lakes. It premiered last weekend and will be presented again this weekend. Its appropriately gritty setting is the loading dock at Central Receiving.

The second play is a work that TACIT commissioned from the actress and playwright Iona Morris. *Inspiration* has eight speaking parts, for women of various ethnicities. Its main theme concerns women’s relationships to their hats, and follows the April visit by the author and the photographer of the book *Crowns*. This play, commissioned to draw on the diversity that exists at Caltech, will hold its world premiere on Friday, May 31.

“Some of the actresses have contributed stories from their own experience or things they know about that will add to the general theme. It is a work in progress,” TACIT’s Gavin Claypool said. “The plays are both workshops, so it’s not the final finished product here.”

Also unusual for a TACIT production was the advisory Claypool attached to *Lakeboat*’s announcement, which warned the audience of off-color language. “They must expect to hear very strong, foul language,” he said. “This is a play about blue-collar men in an all-male situation, talking like men do.”

Lakeboat’s cast includes Joe Andrieu, Fred Farina, Ryan Olf, Nick Rupprecht, and Will Wajert, while *Inspiration*’s cast list has not been finalized. The audience is invited to discuss the play with the cast after every performance. The Central Receiving loading dock is located on Holliston Avenue, just north of Human Resources. Tickets cost \$3 and seating is limited.

Einstein on paper

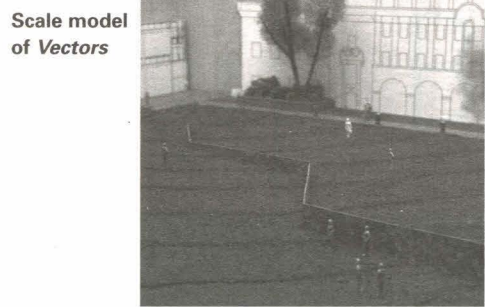
The May 22 Watson Lecture, the last of the academic year, will focus on one of the world’s most celebrated scientists. “Einstein at Caltech: Publishing the Collected Papers of Albert Einstein” is the title of the talk by Diana Kormos-Buchwald, Caltech associate professor of history and general editor and director of the Einstein Papers Project, which has recently arrived on campus.

Albert Einstein, who was a visiting researcher at Caltech in the early 1930s, is probably the best-known and most-scrutinized personality in the history of science. Still, this ongoing scholarly project, which publishes his collected correspondence, manuscripts, and political writings, has revealed numerous novel findings on his scientific thought, career, and personal life. Kormos-Buchwald will present the work of the Einstein Papers Project, a major collaborative research effort into Einstein’s impressive scientific and personal legacy.

The free public lecture will begin at 8 p.m. in Beckman Auditorium. No tickets are required; a minimum of 700 seats will be available on a first-come, first-served basis, beginning at 7:30. For more information, contact Public Events at 1 (888) 2-CALTECH, (626) 395-4652, or events@caltech.edu, or visit online at www.events.caltech.edu. Individuals with a disability can call 395-4688 (voice) or 395-3700 (TDD).

Location correction

An article in the last issue of *Caltech 336* incorrectly gave Ramo Auditorium as the location for the May 17 and 18 Glee Clubs opera-chorus concerts. The concerts will take place in Dabney Lounge at 8 p.m. We apologize for any inconvenience caused.



Scale model
of *Vectors*

Sculpture, from page 1

Beckman, says Physical Plant director Bill Irwin. "It was always Caltech land, and was originally reserved in the master plan as a future academic building site, with the current Physical Plant site to be open space. However, due to the desire to keep the BI lawn open space, and to concern over future Physical Plant site requirements, Caltech asked the city of Pasadena to exchange the open space, and in August 1999, the city approved an amended master plan with the BI lawn as open space." The area has at various times been covered by trees and buildings; a parking lot; and, during the BI construction, a dirt mound.

A discussion on public art, Serra, and the proposed sculpture is scheduled for Tuesday, May 21, at noon in Beckman Auditorium, moderated by Rosenstone and featuring Caltech conceptual artist and art committee consultant David Kremers. In addition, a model of *Vectors* will be on display at the Beckman Institute from May 16 to 30, and at the bookstore until June 21. An informational Web site is also available at <http://pr.caltech.edu/events/serra/>. Questions can be submitted to vectors@caltech.edu through May 31.

Richard Serra comments on *Vectors*

The title *Vectors* literally describes essential formal aspects of the sculpture. It signifies the work's directionality and velocity in a straight line as it steps from one extremity to the next.

I have structured the slope to fall diagonally from the highest elevation (the corner between the Broad Center and the Beckman Institute) fairly regularly to the lowest elevation (the southwest corner at Wilson Avenue). The land slopes 10 feet over 350 feet. Taking the four corners as elevation benchmarks, I have further sloped the site more subtly along its perimeters. Without changing the topology, I have thus transformed the site into a gently rolling field.

The field is structured at 2'3" contour intervals and each element is placed wherever the quickest fall in elevation occurs. I determined that the land would fall 2'3" over a distance of 60'. Accordingly, the four 60' long plates rise in progression from 0 to 2'3", from 2'3" to 4'6", from 4'6" to 6'9", and from 6'9" to 9'; they adjoin where the direction of the fall of the land changes. What is singular about this work is the logic built into the progression of the stepped elevation.

I chose the 2'3" drop in elevation because the resulting location of the four plates offered

Jenkins, from page 1

Caltech. Bill championed the improvement in our financial reporting and accounting capabilities, as well as many other administrative improvements. The talents that Bill brought to these efforts will be sorely missed. Personally, and on behalf of the entire Caltech community, I want to express to Bill appreciation for the many contributions he made to Caltech and to extend to him best wishes for the future."

In a letter to Baltimore, Jenkins wrote, "It is with profound regret that I submit my resignation as Caltech's Executive Vice President for Administration. The actions of the individual who occupies the position I hold must be, and must appear to be, at all times beyond reproach. Unfortunately, after careful reflection, I recognize that I have made an error of judgment that violated that principle by having Caltech employees support some activities involving my residence. As you know, since our arrival in Pasadena, we have entertained a good deal on behalf of Caltech at our home, and my failure to observe a bright line between staff support for the many business-related events at our home and personal support is the reason that I find myself in the current untenable situation.

"Accordingly, I see no honorable alternative other than to submit my resignation as Executive Vice President. In doing so, I want to assure you that in my time at Caltech I have come to respect it as an institution without peer. The individuals who make up the Caltech community are a special and gifted group. We will always value our friendships at the Institute."

the most comprehensive reading of the site. The top edges of the plates establish a continuously shifting horizon. Whether one is walking around the perimeter or across the site, the shifting horizon lines give measure not only to the landscape elevation but also to the architectural urban context, functioning as visual barometers.

As one drives along or walks the site, the sculptural configuration foreshortens and extends, compresses and expands the entire field and its urban surroundings, continuously re-drawing the viewer's relationship to the landscape and the architecture. Approaching the field either from the Beckman Institute or Broad Center, the entire sculpture is below grade of both buildings with clear view across the entire landscape; approaching the sculpture from Wilson Avenue, the top edge of each plate offers a perspective line into the architecture.

In trying to conceive this work, the choice was one of sculptural object versus sculpturally structured field. I opted for the latter because I believe that given the complexity of this particular context in its singular mix of landscape and urban elements, shaping the viewer's response to the entire context was the most demanding challenge.

Baltimore said that Al Horvath, vice president for business and finance, will assume Jenkins's duties on an interim basis while the administration assesses the best way to move forward. "Obviously, this is a difficult time of transition but I would encourage you to work with Al in his broadened role and to support him as he takes on these new responsibilities," Baltimore said.

Children, from page 1

the kids to science," said chaperone Vicki Pratt, who works in Human Resources. Cody, her fifth-grader from Mountain View Elementary in Santa Clarita, said he liked the rock-melting machine. "He seems to like science," Pratt said encouragingly. "Math, he works on real hard."

"We need to open up our kids to see beyond what they see every day," said Cynthia Torres, who works in Aeronautics. "I think sometimes we limit our kids, but we need to open them up to possibilities, like graduate school."

On their lab visits, Torres and her daughter Jasmin, a seventh-grader at Olive Vista Junior High, got to see what a flea must look like to another flea up close. "It was nasty," Jasmin said.

Following the lab tours, children and parents gathered for lunch in Beckman Institute courtyard, enjoying pizza on steps, chairs, and along the Gene Pool. Jasmin Hernandez joined her father, Physical Plant staff member Efrain Hernandez, and her brother, Jesse, 10.

Jasmin was an old hand at Take Our Children day, this being her second, but it was Jesse's first. He shyly described his morning of lab tours: "We were talking about earthquakes. After that, we went to a robotics lab. One of the robots had remote control and that was fun." The experience got him thinking, he said, about what he might want to do in the future.

After lunch, Wayne Snyder, assistant director of the Caltech Precollege Science Initiative (CAPSI) surveyed the crowd of kids: "How many of you like science?" Hands waved. "How many of you like physics?" Blank looks. "How many of you know what physics is?" A voice piped, "Physical education?"

Snyder described physics as "the study of matter and energy" and gave examples of physics in everyday life, adding, "Physics is a heck of a lot more fun than math." The project they were about to do would prove it.

Gathering around tables near a sign proclaiming "Make a Frictionless Puck. Physics is Phun!", the 75 or so kids, with help from CAPSI staff and chaperones, set to work gluing small rubber plugs with holes in them to Plexiglas squares,



Staff member Gloria Gutierrez (left), with daughters Diana (second from left) and Joanna (far right), and staff member Martina Villa and daughter Carina, enjoy lunch by the Gene Pool.

which also had holes. The buzz of work and chatter filled the air.

Once the plugs were set, balloons were inflated, and their necks were fitted over the plugs. Then the devices skimmed along the tabletops like air-hockey pucks, powered by air escaping through the holes. A cry of "Oh yeah!" went up.

From there, the girls and boys made their way to Beckman Auditorium, the day's final destination, where Director of Public Events Denise Nelson Nash greeted them and introduced dancer Lilly Cai. The ensuing session was a kind of performance and interactive social studies lesson rolled into one, as Cai demonstrated various Chinese dances and explained their cultural context and meaning; taught the students a Chinese greeting; and had several come up on stage and practice bowing to each other. At one point, she pulled out a long, tasseled sword. "Ooh!" said several boys, as she twirled across the stage with it as skillfully as a martial arts expert.

When it was all over, seventh-graders Jessica Molina and Mary Recendez (daughters of Lucy Molina, Sponsored Research, and Yvonne Recendez, Purchasing) looked tired but happy. Both said they enjoyed the dancing most. Jessica said, "I also liked the glowing mouse"—a mouse that glows green under fluorescent light due to an implanted jellyfish gene, in President David Baltimore's biology lab. Mary said that making the puck was "pretty cool," and she also received unexpected inspiration for a future career.

"I was looking at the dancer's clothes," she said, referring to Cai's dazzling costumes, "and I'm thinking I want to design clothes."