

Caltech 336

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

The campus community biweekly

March 8, 2001, vol. 1, no. 5



Building a better mouse

Robert Tindol

Some inventors hope to build a better mousetrap, but Caltech professor of biology Henry Lester's grand goal is to build a better mouse.

Not that the everyday laboratory mouse is inappropriate for a vast variety of biological and biomedical research. But for Parkinson's disease research, it has become clear that a strain of mutant mice with "slight" alterations would be a benefit in future medical studies. And not only would the mutant mice be useful for Parkinson's, but also for studies of anxiety and nicotine addiction.

Though Lester and his colleagues Johannes Schwarz and Cesar Labarca have not yet produced the mouse they envision, they have already achieved encouraging results by altering the molecules that form the receptors for nicotine in the mouse's brain. If they can just make these receptors overly sensitive in the right amount, they reason, the mice will develop Parkinson's disease after a few months of life.

Two earlier strains of mice were not ideal, but nonetheless convinced the Lester team members they were on the right track. One strain of mice suffered from nerve-cell degeneration too quickly, developing ion channels that opened literally before birth. Their overly sensitive receptors essentially short-circuited some nerve cells. These mice usually did not survive birth, and never lived long enough to reproduce.

Another strain developed modest nerve-cell degeneration in about a year, which is a long time in a mouse's life as well as a long time for a research project to wait for its test subjects. Lester wants the "Goldilocks mouse," with neurons that die "not before birth—that's too fast. Not at a year—that's too slow and incomplete. With a mouse strain that degenerates in three months, we could generate and test hypotheses several times per year."

Though they haven't achieved the Goldilocks mouse yet, the strain of mice developing modest degeneration after a

see Mouse, page 2

Brad Sturtevant remembered

A memorial gathering in remembrance and celebration of Brad Sturtevant, the Hans W. Liepmann Professor of Aeronautics, was held following a reception and buffet in Dabney Lounge on February 24. Sturtevant died October 20 of pancreatic cancer at the age of 66.

Sturtevant came to Caltech as a grad student in 1955, earned his PhD in 1960, and stayed on as a faculty member in GALCIT for the rest of his career. He became full professor in 1971 and was named the Liepmann Professor in 1995. His research focused on shock waves and nonsteady gas dynamics. At the memorial, several of his colleagues affectionately recalled his perfectionism and his insistence on getting everything right the first time. He also exemplified what Hans Liepmann, the Theodore von Kármán Professor of Aeronautics, Emeritus, described as a GALCIT "trademark": pursuing such imaginative applications as investigating volcanic blasts and using shock waves to break up kidney stones.

Many of Sturtevant's former students attended the memorial, and several were among the 18 speakers who had known Sturtevant as colleague, mentor, or athlete. He loved the outdoors and was a tireless hiker and ocean swimmer, as attested by many slides shown and anecdotes recounted. Because his workouts at the Braun gym and pool were legendary, a new Jacuzzi in his memory and bearing his name will assure his continued presence on the pool deck.

"I disagree with him on one thing, after the fact," said Liepmann. "He should have lived forever. Maybe you shouldn't do everything to remain healthy."

Digital archiving enhances Caltech research

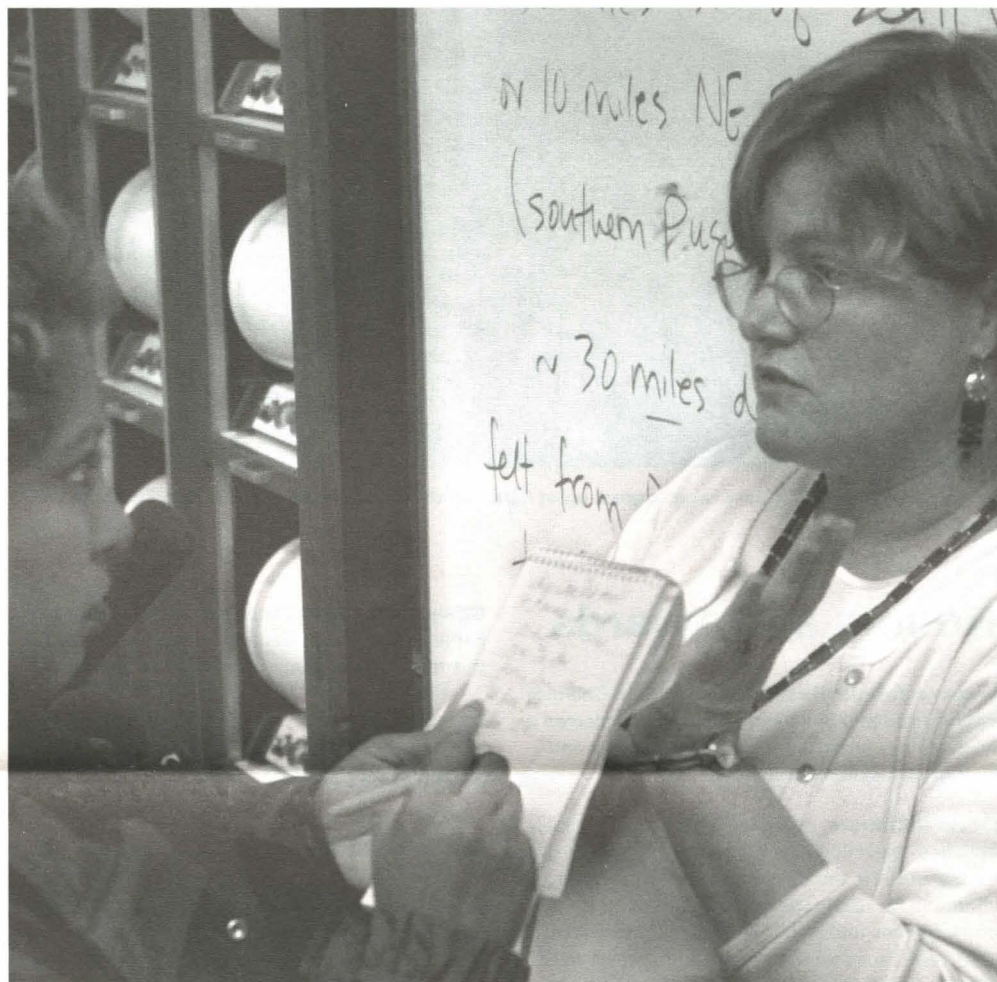
Kimberly Douglas

The Caltech Sherman Fairchild Library of Engineering and Applied Science is actively contributing to the revolution in scientific publishing that got underway in the late '90s with widespread use of the Internet. While engineering departments nationwide have a long history of documenting the research of their faculties, it is only in the last decade that such technical reports have been available online; and only in the last several years that a concerted, worldwide effort has been made to standardize how such reports are put online so that they can be easily found and accessed.

For decades—even as far back as the '50s—computer science departments

see Archiving, page 6

Seismically speaking



USGS seismologist Lucy Jones addresses a Caltech press conference following the 6.8 magnitude earthquake that rocked Seattle on February 27.

Feynman play QED opens in LA

The late Richard Feynman has been variously described as a bongo player, a safecracker, a hipster, and an intellectual. These are not the usual words that come to mind when describing a Caltech professor of physics. But by most accounts Feynman was a brilliant scientist and quirky educator, falling somewhere between Albert Einstein and Mr. Chips.

One of his defining characteristics, and what made him so memorable to the many people who knew him, was his insatiable curiosity. An intellectual magpie, Feynman was drawn to interesting bits of information that he would carefully gather and add to his glittering collection of

knowledge. The more abstruse the nugget, it seemed, the better.

This inclination may have led to his interest in Tannu-Tuva, a republic sandwiched between Siberia and Mongolia. As recounted in Feynman and Ralph Leighton's book *Tuva or Bust!*, upon learning the name of the Tuvian capital, an intrigued Feynman remarked, "A place that's spelled K-Y-Z-Y-L has just got to be interesting." And so the adventure began.

Falling in love with Tuva was vintage Feynman. Also vintage were the lengths to which he went in order to satisfy his curiosity. His fascination with the rugged mountain nation led to a 10-year effort to learn everything about it. He determined to visit tiny Tuva, located on the other side of the world and a place that practically no one had ever heard of. For Feynman, the fact that it existed at all was reason enough to devote his attention to it.

Feynman arrived at Caltech as a visiting professor in 1950 and joined the permanent faculty the following year. Along with his singular intellect, he brought an unconventional approach to teaching physics. He jazzed up the sedate lectures, preferring that his students learn by understanding rather than by rote. He also closed the cool distance between students and professors by mingling with the incoming freshman classes and participating in theatrical pro-

see Play, page 6



Richard Feynman

NewsBriefs



Coming in with the February rains, a great egret lights up the Ramo Auditorium lily pond with its presence.

Honors and awards

Frances Arnold, Dickinson Professor of Chemical Engineering and Biochemistry, has been elected a fellow of the American Institute for Medical and Biological Engineering.

David Baltimore, president of Caltech, has been awarded the 2000 Warren Alpert Foundation Prize for his work “in the development of Abl kinase inhibitors for use in the treatment of chronic myelogenous leukemia.” The prize is awarded each year “to a scientist (or group of scientists) who has made a significant discovery leading to the prevention, cure, or treatment of a disease or disorder that afflicts humankind.” Baltimore will share the \$150,000 prize with four other scientists.

The Alice C. Tyler Perpetual Trust has awarded a Caltech research group a grant of \$100,000, which will fund the group’s project, “Environmental Quality Near Large Urban Areas.” The project, which will examine the effects of a growing population and the impact of human interaction on land and aquatic ecosystems in the San Gabriel Valley and San Gabriel River watershed, will be jointly supervised by **Janet Hering**, associate professor of environmental engineering science; **Michael Hoffman**, Irvine Professor of Environmental Science and executive officer for environmental engineering science; **James Randerson**, assistant professor of global environmental science; and **Paul Wennberg**, associate professor of atmospheric chemistry and environmental engineering science. While Hering is responsible for overall project coordination, she is not the sole recipient of the grant, as reported in the last 336.

Alice Huang, senior councilor for external relations and faculty associate in biology, has been selected to receive the 2001 Alice C. Evans Award, which is sponsored by the ASM (American Society for Microbiology) Committee on the Status of Women in Microbiology. She is being honored for “contributions toward the full participation and advancement of women within the science and profession of microbiology and in ASM.” A member of ASM since the late 1960’s, she was elected president in 1988. She is a fellow of the American Academy of Microbiology

Shrinivas Kulkarni has been named the John E. and Catherine T. MacArthur Professor of Astronomy and Planetary Science, effective March 1. This title replaces that of professor of astronomy and planetary science.

John Seinfeld, Nohl Professor and professor of chemical engineering will receive an honorary doctorate this year from the University of Patras, Greece.

Brian Wernicke has been named the Chandler Family Professor of Geology. Effective March 1, this title replaces that of professor of geology.

Personals

New positions

Michael Beglinger has been named by the Atheneum as its new executive chef, effective March 5. Chef Michael began his career nearly 20 years ago in Switzerland, where he was employed at several well-known hotels. He then worked in a variety of famous venues in New York City before becoming executive chef at the L.A. Music Center. His arrival at Caltech culminates a search that included a review of 35 candidates and a culinary competition between the final three.

Pamela Koyzis joined Caltech on February 20 as information technology audit manager. With over 20 years of information technology experience, she will help establish an effective, risk-based, customer-focused information-technology internal-audit function at the Institute. She holds a bachelor’s degree in mathematics from Southern Methodist University and an MBA from UCLA’s Anderson Graduate School of Management, and during the past 10 years has held positions with ARCO and PricewaterhouseCoopers.

Wendy Lahmidi became manager of compliance services at Caltech on January 29; she will assist both the campus and JPL in ensuring continued compliance with laws, regulations, and contract/grant provisions. She holds a bachelor’s degree in accounting from Southwest Missouri State University and has 14 years’ experience in accounting and auditing, including 10 years with the Defense Contract Audit Agency and two years with the Campus Audit Relations Office.

Rick Moyer joined Caltech on February 12 as associate director for audit. With 29 years of accounting and auditing experience, he will help establish an effective, risk-based, customer-focused internal-audit function at the Institute. He holds a bachelor’s degree in business administration/accounting from San Diego State University and is a Certified Internal Auditor and active in the Institute of Internal Auditors, in which he most recently was chairman of its international committee for academic relations.

Bruce Murray, professor of planetary science and geology, became emeritus on February 1, after more than 40 years at Caltech. He came to Caltech as a research fellow in 1960, after receiving his bachelor’s, master’s, and doctoral degrees from MIT. He was appointed full professor in 1968.

Rahul Pandharipande, associate professor of mathematics, has been appointed professor of mathematics, effective March 1. He received his AB from Princeton in 1990 and his PhD from Harvard in 1994, and he joined Caltech’s faculty in 1998.

Won Kyu Rhim joined Caltech on February 1 as a senior research associate in materials science.

Media minute

Researchers support stem cell funding

Taking a decisive step in support of research on human embryo cells, 80 U.S. Nobel laureates have signed a letter to President George W. Bush urging him to allow the initial flow of federal grants, according to the February 22 issue of *The Washington Post*. Among them was **Edward Lewis**, the Caltech biologist who conducted seminal work on embryo development.

Scientists believe that stem cell research may provide cures for conditions such as diabetes and paralysis. The cells are harvested from frozen embryos that fertility clinics were planning to discard.

The letter was sent less than a month before a National Institutes of Health deadline to apply for the agency’s planned first round of stem cell research grants. Although opponents call the research immoral, the Nobel laureates maintained in their letter that given the cells’ great therapeutic promise, it would be immoral not to study them.

Merck begins human AIDS trials

Pharmaceutical conglomerate Merck & Co. has initiated tests of a potential AIDS vaccine on human volunteers, reported *The Wall Street Journal* on February 22. The company presented its data to the AIDS Vaccine Advisory Committee of the National Institutes of Health

“After the presentation, members of the committee were excited,” said Caltech president **David Baltimore**, who chairs the committee.

In Merck’s pre-clinical trials, the vaccine showed promise when it prevented laboratory monkeys from falling victim to a virulent strain of HIV. The company has not gone public with its research, but scientists familiar with the research were pleased by the vaccine’s potential.

Pauling centennial celebrated

The Division of Chemistry and Chemical Engineering presented “Frontiers in Science,” a symposium marking what would have been Linus Pauling’s 100th birthday, on Friday, March 2.

Speaking to a full house in Beckman Auditorium, **Ahmed Zewail**, Pauling Professor of Chemical Physics and professor of physics, lauded Pauling, PhD ’25, as one of the greatest and most influential scientists of the 20th century. He noted that Pauling had also considered going to UC Berkeley or Harvard, but Arthur Amos Noyes was “influential in making Berkeley unattractive” to the future Nobel Prize winner. Pauling went on to do his groundbreaking research on chemical bonds and molecular medicine during 40-plus years as a Caltech grad student and faculty member. He died in 1994. “Caltech and Pauling are covalently bonded,” Zewail said of the long and symbiotic relationship between the two.

Other speakers included **David Tirrell**, chair of the division of chemistry and chemical engineering; Pauling’s fellow Nobel laureates Elias Corey of Harvard and Charles Townes of UC Berkeley; Richard Lerner from the Scripps Research Institute; Jack Dunitz of the Swiss Federal Institute of Technology; Thomas Steitz from Yale; and Alexander Rich of MIT.

Baltimore to speak at ACM1

The Association for Computing Machinery (ACM) announced recently that it will host a three-day conference featuring talks by influential thought leaders. **David Baltimore**, president of Caltech, has been invited to give a talk.

“ACM1: Beyond Cyberspace” will feature speakers who will discuss the future role of computing in energy, engineering, telecommunications, scientific research, robotics, software, marine biology, and other areas. The conference will take place March 12–14 at the McEnery Convention Center in San Jose.

Mouse, from page 1

year is particularly interesting. Tests showed that they were quite anxious, but tended to be calmed down by minuscule doses of nicotine. For reasons not entirely understood, humans who smoke are less likely to develop Parkinson’s disease later in life, pointing to the likelihood that a mouse with hypersensitive nicotine receptors will be a good model for studying the disease.

In fact, the Lester team originally set out to build the strain of mice in order to study nicotine addiction and certain psychiatric diseases that might involve acetylcholine, a natural brain neurotransmitter that is mimicked by nicotine. The work in the past has been funded by the California Tobacco-Related Disease Research Program, the National Institute of Mental Health, and the National Institute of Neurological Disorders and Stroke (NINDS).

Once they had some altered mice, Schwarz (a neurologist who works with many Parkinson’s patients) realized that the dopamine-containing nerve cells were dying fastest. The death of these cells is also a cause of Parkinson’s disease. Because present mouse models for Parkinson’s research are unsatisfactory, the researchers applied for, and soon received, funding from the National Parkinson Foundation, Inc. (NPF).

Not only did the researchers receive the NPF funding, but they also were named recipients of the Richard E. Heikkila Research Scholar Award, which is presented for new directions in Parkinson’s research. “The Heikkila award is gratifying recognition for our new attempts to develop research at the intersection of clinical neuroscience and molecular neuroscience here at Caltech,” says Lester.

Dr. Yuan Liu, program director at NINDS, says the Lester team’s research is important not only because it is the first genetic manipulation of an ion channel that might lead to a mammalian model for Parkinson’s disease, but also because the research is a pioneering effort in an emerging field called “channelopathy.”

“Channelopathy addresses defects in ion channel function that causes diseases,” Liu says. “Dr. Lester is one of the pioneers working in this field. We’re excited about this development, because Parkinson’s is a disease that affects such a large number of people—500,000 in the United States. The research on Parkinson’s is one of the research highlights that the NINDS is addressing.”

The first results of the Lester team’s research are reported in the February 27 issue of the journal *Proceedings of the National Academy of Sciences* (PNAS). In addition to Labarca, a member of the professional staff in Caltech’s department of biology, and Schwarz, a visiting associate, the collaborators include groups led by professors James Boulter of UCLA and Jeanne Wehner of the University of Colorado.

Banks memorial set

A memorial service for Jeffrey Banks, PhD ’86, Caltech professor of political science, will be held on Saturday, April 7, at 3 p.m. in Dabney Lounge. All members of the Caltech community are invited to attend. Banks died December 21 from complications of a bone marrow transplant.

Banks joined the Caltech faculty in 1998, and had served as executive officer for the social sciences since 1999. He received numerous awards and recognition for his work, and contributed much to the Social Science Division through his interdisciplinary interests and insights, his administrative skills, and his teaching excellence.

He is survived by his wife, Shannon; sons Bryan, 15, and Daniel, 13; mother, Sandra Jacobs; father, James Banks; and brothers, Michael and Timothy.

March 12–18, 2001

M T W T F S S

Events in roman type are open to the public
Events in *italic type* are open to the Caltech community only

Monday, March 12

Control and Dynamical Systems Seminar
102 Steele, 11 a.m.—Topic to be announced. Stefano Soatto, assistant professor, department of computer science, UCLA.

Theoretical Astrophysics and Relativity Seminar
114 E. Bridge, 2 p.m.—“A Numerical Study of Magnetohydrodynamic Energy Transport in a Simple System of a Large-Scale Magnetic Field and a Kerr Black Hole,” Shinji Koide, Toyama University. Information: www.tapir.caltech.edu/tapir_seminars.html.

General Biology Seminar
119 Kerckhoff, 4 p.m.—“Eucaryotic Gene Transcription at Atomic Resolution,” Roger Kornberg, professor of structural biology, Stanford University School of Medicine.

Applied and Computational Mathematics Seminar
306 Firestone, 4:15 p.m.—“The 3D Spectral/hp Element Method and Its Application to Vascular Flow Modeling,” Spencer J. Sherwin, professor of aeronautics, Imperial College of Science and Technology, London. Refreshments, 204 Firestone, 3:45 p.m.

Astronomy Tea Talk
106 Robinson, 4:15 p.m.—“Public Surveys with the UKIRT Wide-Field Camera,” Omar Almaini, research fellow, department of physics and astronomy, University of Edinburgh.

Tuesday, March 13

Caltech Library System Presents
Sherman Fairchild Library, multimedia conference room, noon to 1:30 p.m.—“A Quick Review of Information Resources for HSS Staff.” Review the content and use of subscription databases for the humanities and social sciences. Registration: <http://library.caltech.edu/learning/form.htm>.

Carnegie Observatories Colloquium Series
William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—“Faint Red Galaxies and the Las Campanas IR Survey,” Dr. Patrick McCarthy, Carnegie Observatories. Information: 577-1122.

Chemical Physics Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Density Functional Theory: Where Does It Come From, Why Does It Work?,” Kieron Burke, assistant professor, department of chemistry, Rutgers University.

Wednesday, March 14

Biolunch Meeting
24 Beckman Labs, noon—“Design and Synthesis of an Apoptosis-Sensitive Contrast Agent,” Carlo Quinonez, graduate student in biology, Caltech.

Mathematical Physics Seminar
351 Sloan, noon—“Random Schrödinger Operators in Strong Magnetic Fields,” Georgi Raikov, Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia. Information: www.math.caltech.edu/events/mathphys.html.

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Demography of PSRs/NS,” David Chernoff, professor of astronomy, Cornell University.

Earnest C. Watson Lecture Series
Beckman Auditorium, 8 p.m.—“Chlorofluorocarbons, Climate Change, and the Future of Stratospheric Ozone,” Paul Wennberg, associate professor of atmospheric chemistry and environmental engineering science, Caltech. Information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Thursday, March 15

Special Biochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 2 p.m.—“Getting to Grips with the Structure of Photosystem Two,” James Barber, professor of biochemistry, Imperial College, London.

Chemical Engineering Seminar
106 Spalding Lab, Hartley Memorial Seminar Room, 4 p.m.—“Metabolic Engineering at the Level of Genomic Regulation: Finding the Master Switch?,” Professor James Liao, chemical engineering, UCLA. Refreshments, 113 Spalding Lab, 3:30 p.m. Information: www.cheme.caltech.edu/seminars/seminars.html.

Olin Seminar
25 Baxter, 4 p.m.—Topic to be announced. Jennifer Arlen, visiting professor of law, Caltech. Refreshments.

Physics Research Conference
201 E. Bridge, 4 p.m.—Topic to be announced. Dr. Craig Hogan, department of physics, University of Washington. Refreshments, 110 East Bridge 3:45 p.m.

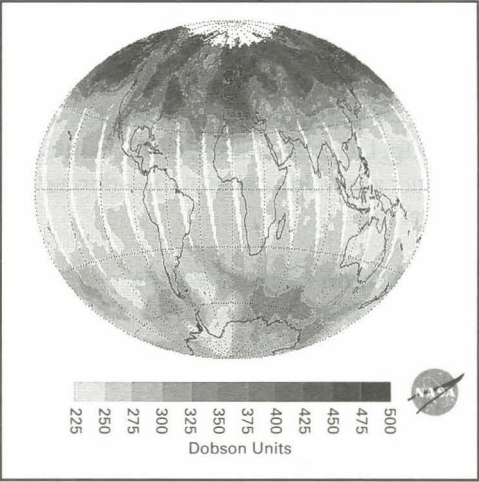
USGS Public Lecture Series
Baxter Lecture Hall, 8 p.m.—“Did You Feel It?,” David Wald, geophysicist, Western Earthquake Hazards Team, U.S. Geological Survey, Pasadena. Information: <http://pasadena.wr.usgs.gov/lectures/>.

Friday, March 16

Biomedical Engineering 0.1 Seminar Series
Baxter Lecture Hall, 4 p.m.—“New Methods in Magnetic Resonance Imaging,” Emlyn Hughes, professor of physics, Caltech, and Steve Conolly, research associate, department of electrical engineering, Stanford. Information: www.cco.caltech.edu/~koonin/0_1seminars.html.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—“The Influence of Mismatches on Long-Range Guanine Oxidation in Oligonucleotides,” Pratip Bhattacharya, graduate student in chemistry, Caltech.

Kellogg Seminar
Lauritsen Library, 4 p.m.—“Baryon Structure and the Chiral Symmetry of QCD,” Dr. Leonid Glozman, University of Graz, Austria.



Satellite imagery from NASA's Total Ozone Mapping Spectrometer on March 1, 2001, reveals ozone loss, the subject of the Watson Lecture on Wednesday, March 14.

<http://jwocky.gsfc.nasa.gov/>

March 19–25, 2001

M T W T F S S

Events in roman type are open to the public
Events in italic type are open to the Caltech community only

Monday, March 19

Special Kellogg Seminar
Lauritsen Library, 2 p.m.—“Do We See the Chiral Restoration ‘Phase Transition’ in Baryon Spectrum?”, Dr. Leonid Glozman, University of Graz, Austria.

Tuesday, March 20

Computation and Neural Systems Seminar
119 Kerckhoff, 2 p.m.—Topic to be announced. Athanassios Siapas, postdoctoral associate, Center for Learning and Memory, MIT. Refreshments.

Carnegie Observatories Colloquium
William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—“Gas-Rich Galaxies in the Thermal Infrared,” Dr. Richard Tuffs, Max Planck Institute for Nuclear Physics, Heidelberg, Germany. Information: 577-1122.

Wednesday, March 21

Charles and Thomas Lauritsen Memorial Lecture
Beckman Auditorium, 8 p.m.—“To Test or Not to Test: The Comprehensive Test Ban Treaty,” Sidney Drell, professor of theoretical physics, emeritus, Stanford Linear Accelerator Center, and senior fellow, Hoover Institution, Stanford. Admission is free. Information: www.events.caltech.edu/0001/se.010321.shtml. (See article at right.)

Thursday, March 22

Special Physics Research Conference
201 E. Bridge, 3 to 4:15 p.m.—“Maintaining a Nuclear Deterrent under a Comprehensive Test Ban Treaty: The Scientific Challenge,” Sidney Drell, professor of theoretical physics, emeritus, Stanford Linear Accelerator Center, and senior fellow, Hoover Institution, Stanford.

Von Karman Lecture Series
von Karman Auditorium, JPL, 7 p.m.—“Galileo Millennium Mission: The Latest Results,” Dr. Duane Bindschadler, science planning and operations manager, Galileo Project, JPL. Information: (818) 354-0112 or www.jpl.nasa.gov/lecture/.

Friday, March 23

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—“Energetics and Dynamics of Electron Transfer at Modified Semiconductor/Liquid Junctions,” Nicholas Prokopuk, postdoctoral scholar in chemistry, Caltech.

LIGO Science Seminar
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—Topic to be announced. John Zweizig, LIGO laboratory, Caltech. Information: www.ligo.caltech.edu/~donna/future.html.

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado, the Forum (south of Colorado on Bonnie), 7 p.m.—“Galileo Millennium Mission: The Latest Results,” Dr. Duane Bindschadler, science planning and operations manager, Galileo Project, JPL. Information: (818) 354-0112 or www.jpl.nasa.gov/lecture/.

The ban is the question

The Charles and Thomas Lauritsen Memorial Lecture presents “To Test or Not to Test: The Comprehensive Test Ban Treaty,” by Sidney Drell, professor of theoretical physics, emeritus, at the Stanford Linear Accelerator Center. He will discuss the Comprehensive Test Ban Treaty, which has been responsible for slowing the proliferation of nuclear weapons worldwide.

Nearly a decade ago, the United States led the international effort to ban the development of nuclear weapons and their testing. Eventually, nearly all of the nations with nuclear capabilities agreed to negotiate a CTBT. In 1996, the United States was the first of 160 nations to sign the treaty. However, the Senate refused to ratify it in 1999.

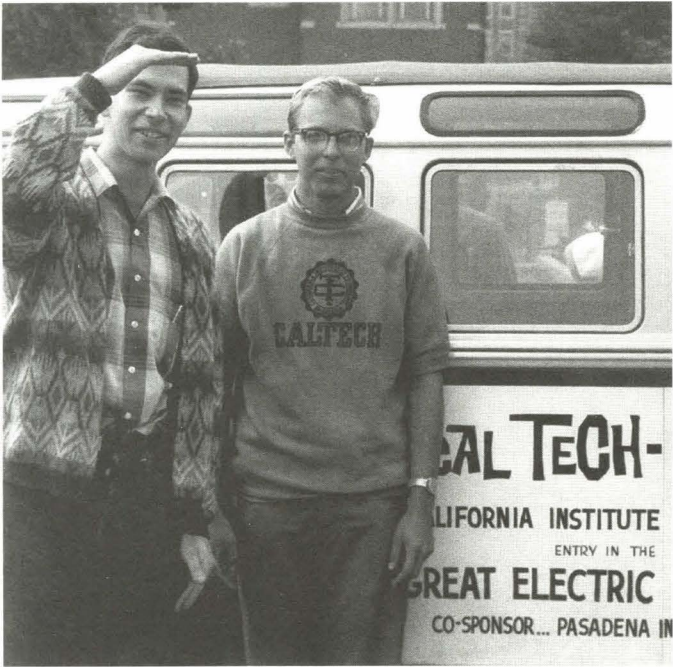
Now that the U.S.–U.S.S.R. cold war is over, other cold wars are cropping up. The escalating conflict between India and Pakistan, nations with nuclear warheads of their own, indicates that the bogeyman of a nuclear holocaust never really went away.

Drell will discuss the impact of the Comprehensive Test Ban Treaty on the United States and the world. How has the treaty affected the ability of the United States to maintain confidence in the reliability of the nation’s enduring nuclear deterrent? Will our nuclear stockpile meet our future national security requirements under such a ban on testing?

Born in New Jersey, Drell earned his BA from Princeton University and his MA and PhD from the University of Illinois. He has been on the Stanford faculty since 1956 and is a senior fellow at the Hoover Institution at Stanford.

This Lauritsen Memorial Lecture will be held on Wednesday, March 21, from 8 to 10 p.m., at Beckman Auditorium. This event is free and open to the public. For further information, contact the Caltech ticket office at 395-4652 or at events@caltech.edu.

An (electric) jolt from the past



Codrivers Wally Rippel (left) and Ron Gremban pose with the battery-powered 1958 VW bus they drove from Pasadena to Cambridge to beat MIT in the Great Electric Car Race of 1968.

CampusEvents

Monday, March 12

Badminton
Brown Gymnasium, 9:30 a.m. to noon—Bring your own racket. Information: 355-6158.

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.

Wednesday, March 14

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.

Friday, March 16

Badminton
Brown Gymnasium, 9:30 a.m. to noon—Bring your own racket. Information: 355-6158.

Armchair Adventure Series
Beckman Auditorium, 8 p.m.—*Slovenia and Croatia: From the Alps to the Sea*, narrated by Frank Klicar, shown in digitally enhanced e-Cinema. Tickets and information: 395-4652, 1(888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Folk Music Society Presents Katy Moffatt
Dabney Lounge, 8 p.m.—Moffatt sings an eclectic blend of folk and country music. Admission is \$12 for adults and \$4 for children and Caltech students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Saturday, March 17

Caltech/MIT Enterprise Forum
Baxter Lecture Hall; registration and continental breakfast, 7:45 a.m.; presentation, 8:30 a.m. to 12:30 p.m.—“Emerging Opportunities in Biotechnology and Medicine: Can Your Start-up Be a Winner?” No cost to Caltech students and faculty, \$40 for others, \$10 for students with ID. Preregistration and prepayment are required. Information: 395-3916, entfor@caltech.edu, or www.caltech.edu/entforum. Registration: www.its.caltech.edu/~entfor/online.htm.

Caltech Y Volunteer Project: Union Station
8 a.m. to 10 p.m.—Caltech Y volunteers will help prepare and serve meals for homeless men, women, and children at the Union Station shelter in Pasadena. Information: 395-3180, kabbott@caltech.edu, or www.y.caltech.edu/volunteer/.

Men’s and Women’s Track and Field
at Occidental College, 3 p.m.

Monday, March 19

Badminton
Brown Gymnasium, 9:30 a.m. to noon—Bring your own racket. Information: 355-6158.

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.

Wednesday, March 21

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.

Thursday, March 22

Campus Architectural Tour
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: 395-6327 or suze@caltech.edu.

Friday, March 23

Badminton
Brown Gymnasium, 9:30 a.m. to noon—Bring your own racket. Information: 355-6158.

Sunday, March 25

Caltech Y Alternative Spring Break
Through March 29—This year, Caltech students and staff perform volunteer service in Tecolote, Mexico. Information: 395-6493, rtillery@caltech.edu, or www.y.caltech.edu/calendar/.



Katy Moffatt will bring her down-home music to Dabney Lounge on Friday, March 16, courtesy of the Caltech Folk Music Society.



The Sahara’s Secret Garden will be one of the highlights of the Banff Mountain Film Festival World Tour, on March 28 in Baxter Lecture Hall.

Banff film fest comes to campus

If Caltech can’t go to the mountain, then the mountain will just have to come to Caltech. So the Caltech Alpine Club members must have thought in deciding to bring the Banff Mountain Film Festival World Tour to campus. This selection of the best picks from the annual festival in Banff, Canada, will be shown on Wednesday, March 28, at 7:30 p.m. in Baxter Lecture Hall.

Celebrating its 25th anniversary this past year, the Banff Mountain Film Festival draws thousands to the town of Banff, in the Canadian Rockies, each November to view more than 130 mountain-themed films from some two dozen countries. In 1988, the festival organizers began an outreach to share some of the festival’s best films with the rest of the world. The “best-of” world tour currently extends to more than 100 cities in Canada, the United States, Australia, Chile, Iceland, New Zealand, Scotland, and South Africa.

This year’s world tour includes such titles as *The Sahara’s Secret Garden*, a film exploring the remote but beautiful Ennedi Massif in Chad, central Africa; *Quartzite Falls: A Wilderness Tale*, which traces the destruction of a rapid in Arizona’s Salt River Canyon; *Resident Bruise*, “a skiing and snowboarding wipeout extravaganza”; and *Wheel Women*, about female mountain bikers in British Columbia.

The campus film festival, cosponsored by REI, will also feature a raffle (included in the ticket price) and vendor displays, including REI, Outland, the Sierra Club, Free Our Forests, and the American Alpine Club. Tickets for the event are \$8 in advance, \$10 at the door, and \$6 for Caltech students. They can be purchased through Caltech Public Events at 1 (888) 2CALTECH or through REI, 214 North Santa Anita Ave., Arcadia, (626) 447-1062. For more information, visit Caltech’s film festival Web site at www.events.caltech.edu/0001/se.010328.shtml.

•

Archiving, from page 1

around the world have published technical reports documenting their research. Through a Defense Advanced Research Projects Agency (DARPA) grant in 1994, this effort was moved to a digital library environment called NCSTRL, the Networked Computer Science Technical Reference Library (www.ncstrl.org). Carnegie Mellon University, Cornell University, and MIT, among others, were early participants in this digital repository of technical reports. Over the years the list of participating organizations has expanded to more than 200, and the project has curtailed the need to print runs of the reports. As long as each site keeps its collection current and its repository server up, everyone on the network has immediate access to the worldwide collection.

This model is now finding its way into almost every discipline, providing a means to communicate directly with colleagues, known and unknown. Several groups within the Engineering and Applied Science division at Caltech have a technical report series: the GALTIC (Graduate Aeronautical Laboratories) Reports in Aeronautics, the Environmental Quality Laboratory Technical Reports, and the Keck Laboratory Reports in Environmental Engineering, to name a few, in addition to the Institute's Computer Science Technical Reports. Other series relate to specific research projects: Caltech's Accelerated Strategic Computing Initiative (ASCI) Technical Reports is a recent series, while the Center for Advanced Computing Research Technical Reports were initiated as long ago as 1991.

The Caltech Library System digital repository. The Caltech Library System is working with Division of Engineering and Applied Science faculty to promote networked access to the division's research for the national and international scientific communities. The library's goal is to provide a digital collection service that will assist in the dissemination of faculty research across the Web network and in perpetuity.

In collaboration with a group wishing to create a digital archive, the library establishes a policy document describing the scope of the collection and how the contents are to be certified. An author or other responsible party formally gives permission, allowing Caltech, via the library, to place the reports in the digital repository. The library converts any print-only reports to portable document format (PDF) files, adds the metadata (descriptive and identifying elements of the document) for searching, and then submits each report electronically to the local

digital repository (<http://library.caltech.edu/digital/>) for archiving.

The library has already extended the Computer Science Technical Report collection online back through 1987 and plans to continue the conversion process until the series is completely digitized. New technical reports are added to the repository as soon as the appropriate Caltech faculty member approves them and they are submitted to the library. The ASCI Technical Reports repository was launched just a few months ago and reports are added as authors make them available. Also in the works is an archive of all Caltech theses (see <http://gwaihir.caltech.edu:8880/ETD-db/> for a demonstration).

Caltech's repository and worldwide scholarly communication. One might well ask what is required of archiving in an environment as mutable and volatile as that of the digital network. The library's commitment entails adhering to current and evolving national standards for protocols, file formats, and markup. To that end, the Caltech Library System has joined the Coalition of Networked Information (www.cni.org) and is an active participant in the Open Archives Initiative (OAi, at www.openarchives.org/).

The Coalition of Networked Information was founded in 1990 and is an organization supported by institutional members representing higher education, publishing, networks and telecommunications, information technology, and libraries and library organizations. The objective is to advance the potential for networked information technology to increase scholarly communication and enrich intellectual productivity.

OAi, more specifically, aims to support archives of many different types, with an emphasis on allowing the harvesting of metadata describing diverse "records" of content stored in managed repositories. In the near future, it is quite possible that others will develop discovery services ultimately pointing to the repository maintained by the Caltech Library System. By being integrated within this larger context, the collections that the Caltech Library System maintains will be joined logically with others for discovery purposes. The aim is for these digital collections to eventually be available on distributed servers worldwide and permanently accessible to the scientific community.

Kimberly Douglas is director of Caltech's Sherman Fairchild Library of Engineering and Applied Science.

Play, from page 1

ductions in Ramo Auditorium. Soon enough, in yearly polls, his students voted him their favorite professor.

Among his many achievements at Caltech, Feynman revolutionized quantum electrodynamics, or QED. He is credited with correcting faults in the science's basic theory, reinterpreting quantum mechanics and quantum electrodynamics from his unique perspective. It was this work that earned him the Nobel Prize in 1965.

It's no surprise that a play would be written about this extraordinary individual and the rich material that was his research and his life. The Center Theatre Group is presenting *QED*, a new play that will run at L.A.'s Mark Taper Forum for six weeks. Previews begin this month.

The two-person play stars Alan Alda as Feynman, and Allison Smith as a fictional student. Alda is a natural for the lead. Not only does he have an enthusiasm for science—he's hosted the PBS show *Scientific American Frontiers* for more than seven years—he also projects an intelligent and unforced curiosity about the world, one that mirrors Feynman's own. It was Alda who proposed the idea of a play about Feynman to Gordon Davidson, the director of *QED*, and Peter Parnell was eventually brought on board to write it.

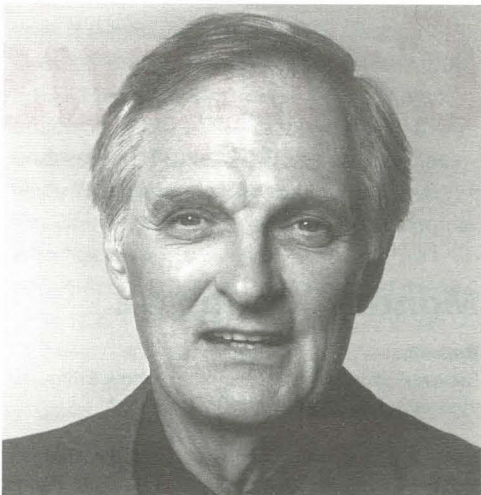
A coproducer on the television series *The West Wing*, Parnell wrote a two-act play that aspires to portray Feynman reflecting on his life at Caltech. Besides winning several prestigious writing awards and grants in his career, Parnell's credits include a stage adaptation of John Irving's *The Cider House Rules* that was produced at the Taper in 1998.

Parnell was charged with the dual tasks of creating a believable Feynman, complete with his idiosyncrasies, while capturing the ineffable essence of Feynman's genius. The question is, How successfully does his writing portray his subject's intelligence, charisma, and singular creativity? His initial source material comprised the various anecdotes and comical stories in the books written about the professor.

"It's inspired by the Feynman books, including the two well-known ones with Leighton as well as *Tuva or Bust*, but it also uses other Feynman writings," Parnell said. "There's a lot of documentation, but it was more about sifting through this material." The two books are the boldly titled *Surely You're Joking, Mr. Feynman!* and *What Do You Care What Other People Think?*

In the four years since Alda proposed the idea of writing the play, Parnell went through various drafts while experimenting on different approaches to telling the story. He also consulted Leighton, Feynman's Caltech friends and students, and one of Feynman's daughters.

Feynman never got to see his *Tuva*; he died in 1988 of a rare abdominal cancer.



Alan Alda

QED goes into previews on March 10, and opening night is March 22. Caltech students and employees may receive a discount of 25 percent off all available tickets for performances from March 11 to April 1 by calling the Taper's ticket office at (213) 628-2772 and mentioning the code MCP1ET. Discount tickets must be ordered by March 9. The play runs through May 13. Further information and show times are available at www.taperahmanson.com.

Tech Express to deliver mail, services

Beginning this week, students will be able to receive packages of all sizes, as well as their U.S. mail, in one place. That place is the Tech Express, which will be located on the Olive Walk along with the student mailboxes.

The satellite office of Graphic Arts Facilities will solve many problems that students have faced with the distribution of their mail. Regular pieces of mail, such as letters and magazines, were placed in their boxes. But packages that didn't fit in the boxes required extra effort: if it was sent by FedEx, Priority Mail, or Express Mail, it had to be picked up at Mail Services. In the event that it was sent by UPS, it was held for pickup at Central Receiving.

This satellite office will continue to maintain the student mailboxes while adding various services, available to faculty and staff as well. These services include a networked color copier, a black and white copier, and photo film processing.

During the school year, the Tech Express will be open weekdays from 9 a.m. to 8 p.m. The extended evening hours mean that errands can be run after the workday is done.

The campus community is invited to enjoy refreshments at the daylong grand opening that takes place on Monday, March 12.