

# Caltech 336

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

The campus community biweekly  
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## Ken Burns to deliver Michelin Lecture

Ken Burns, the visionary behind prize-winning documentaries about distinctly American subjects, is scheduled to speak about his art and craft at the James Michelin Distinguished Visitor's Lecture in January.

Burns is the driving force behind the critically lauded *Baseball*, *The Civil War*, and most recently, *Jazz*, all of which aired nationally on the Public Broadcasting System. The title of his Michelin lecture, "American Trilogy," refers to these three epic films that document Americans at play and at war.

While his work has been credited with fueling a renewed interest in the history of the United States, it has also generated an enthusiasm for topics that have been considered too stuffy for television audiences. By employing the diaries of contemporary individuals, reenactments, and dramatic narration, the filmmakers infuse their subjects' stories with texture and nuance.

In a previously published interview, Burns said that he strives to capture his subjects as wholly as he can.

"I'm less interested in the dry dates and facts than in the way emotional connections hold the past and its meaning together and tell a story that we can all share and remember," he said.

Burns and his team make smart films  
*see Ken Burns, page 5*

## Misadventure on the high sea

All the three Caltech marine chemists wanted as they set out on a small powerboat was to collect water samples—but before long, they found themselves in over their heads.

Jess Adkins, assistant professor of geochemistry and global environmental science; new staff member Diego Fernandez, an assistant professor of physical chemistry on leave from the University of Buenos Aires; and Jeff Mendez, a graduate student in environmental science and engineering, were on a routine outing from Caltech's Kerckhoff Marine Biological Laboratory in Corona del Mar on November 27 when strong gusts and five-foot waves capsized their craft.

*see Misadventure, page 6*

## Astronomers detect extrasolar planet atmosphere

Astronomers using NASA's Hubble Space Telescope have made the first direct detection of the atmosphere of a planet orbiting a star outside our solar system and have obtained the first information about its chemical composition. Their unique observations demonstrate that it is possible with Hubble and other telescopes to measure the chemical makeup of extrasolar planet atmospheres and to potentially search for chemical markers of life beyond Earth.

The planet orbits a yellow, sunlike star called HD 209458, a seventh-magnitude star (visible through an amateur telescope), which lies 150 light-years away in the autumn constellation Pegasus. When the planet passed in front of HD 209458, astronomers could for the first time explore the composition of the planet's atmosphere by seeing the star's light filtered through it.

Lead investigator and Caltech postdoctoral researcher David Charbonneau,  
*see Astronomers, page 5*

## A bridge from Caltech to industry

If you're like many people at Caltech, you may have wondered what goes on in the picturesque old house at 383 South Hill Avenue. Its shuttered windows and iron railings belie its high-powered function as a world-class learning hub for business executives from throughout the United States and abroad.

Like the 6,000-square-foot house it occupies, Caltech's Industrial Relations Center is larger than it appears at first glance. Little known by much of the campus community, the center has a substantial reputation in the outside world. According to director Nick Nichols, it's one of the largest executive education programs in higher education.  
*see IRC, page 6*



The IRC staff, from top left: Julie Anderson, Nick Nichols, Judy Donohue. Middle: Anne Marie Simoneau, Delores Lee, Anne Campbell, Sandy Harlan. Front: Christina Valdivia, Debbie Q. White, Jennifer Kantorowski, Patty Van Raalte.



John Van Deusen, with students Jonathan Torrey, left, and Ryan White, adorns the traditional ME 72 Christmas tree with leftovers from their robotic creations.

## Helping students build a better robot

Machinist John Van Deusen looks on approvingly as two undergraduates see how well their new robot climbs a curved wall. The device performs admirably—not necessarily a foregone conclusion in the Caltech machine shop, where dysfunctional robots have been known to be created. Van Deusen, ever the diplomat, passes by without comment.

"In ME 72 we bite our tongues a lot," he says later.

The robot, a set of caterpillar treads linked by an aluminum bar, is radio-controlled and powered by small electric motors. Its purpose is to race up a wall and retrieve as many hockey pucks as possible—and, ideally, to win the coveted first-place award in the famed Mechanical Engineering 72 contest.

Van Deusen's purpose, on the other hand, is to advise the students on how best to achieve their goals, and to show them how to safely use the high-powered shop equipment. He's the guy whom students consult as they build their robots for the ME 72 competition each December, a contest that attracts most of the Caltech campus, as well as local and national media.

As the machine-shop manager, Van Deusen provides instruction on the fixing and making that will be a part of every student's life to some degree. After all, mechanical engineering is the process of creating things to solve problems. So, even at a highly analytical school like

Caltech, fledgling mechanical engineers find they're most likely to stay at the cutting edge if they are familiar with . . . well, the actual cutting edge. And that's where Van Deusen's expertise is especially valuable, says Erik Antonsson, Caltech professor of mechanical engineering.

"Being a mechanical engineer without knowing your way around a machine shop would be like being an MD without ever having been inside a clinic," says Antonsson, the ME 72 contest originator and guru.

*see Van Deusen, page 5*

## Update on campus power situation

Bill Irwin

Caltech was recently honored at a breakfast hosted by Pasadena Water and Power, Mayor Bill Bogaard, and City Manager Cynthia Kurtz for participating in the summer 2001 voluntary load-curtailement program. Along with other large PWP customers, the Institute was recognized for its support to the city in preventing rolling blackouts and its efforts in the significant coordination required to reduce electrical consumption on very short notice.

Through this program, the city gives Caltech and other participants about 30  
*see Power update, page 5*

# NewsBriefs



**John Hume**, the 2001 DuBridge Distinguished Lecturer, spoke on campus in November about the efforts in Northern Ireland that earned him the 1998 Nobel Peace Prize. The talk was sponsored by Fidelity Investments, Aer Lingus, the *Los Angeles Times*, and the Ritz Carlton Huntington Hotel.

## Personals

### New positions

**Safia Abidi**, a project assistant in the humanities, joined Caltech on October 3.

Starting at Caltech on October 8 was **Cody Becker**, a research assistant in geology.

Joining the Institute on October 22 were **Mark Figueroa**, an associate director of educational programs for Student Affairs; **Kathy Golden**, a senior administrative secretary for the Space Infrared Telescope Facility (SIRTF); and **Shant Uhanian**, a project assistant in the humanities.

An assistant lab technician in biology, **Sherrie Hopkins** joined Caltech on October 24.

Lab helper **Ingrid Soto** started work in biology on October 26.

Joining Caltech on October 29 were **Engracia Alvarez**, a custodian in Auxiliary and Business Services; **Angel Araiza**, a custodian in Physical Plant; **Fiona Berry**, an administrative assistant for Officers of the Faculty; **Bill Burrows**, director of the Bookstore; **Kevin Caporicci**, a senior staff member for audit/compliance in Audit Services; **Salvador Escobar**, a service mechanic in Physical Plant; **Maria Gonzalez**, a custodian in Physical Plant; **Patrice Harris**, a consultant for user applications with the Administrative Technology Center; **Karolyn Knoll**, an administrative aide in geology; **Jana Pearlman**, an assistant animal lab technician in biology; **Alba Pleitez**, a custodian in Physical Plant; **Roger Smith**, a principal electronics engineer at Palomar Observatory; and **Edward Ungruue**, executive chef at the Athenaeum.

**Leopoldo Appe**, an alternative investments accountant, and **Devine Baquiran**, a junior accountant, both started with Financial Services on October 30.

Software engineer **Kaben Nanlohy** started with engineering, and research assistant **Kayla Smith** joined biology, both on November 1. Also on November 1, **Chris Yates**, director of gift and estate planning, added the title of associate director of development; a member of the development staff since 1998, he will continue to direct gift and estate planning along with his new assignment.

Joining the Institute on November 5 were **Kathryn Clark**, an administrative assistant in the Treasurer's Office; **Irma Cruz**, a department assistant in Security; **Rosa Maria Diaz**, a dishwasher with Dining Services; **Catherine Lin**, a senior research assistant I, and **Andrei Petcherski**, an associate biologist, both in biology; **Edward Shapiro**, a senior staff member for audit/compliance in Audit Services; **Conrad Steenberg**, an associate applications developer in high-energy physics; **Kannika Supanyo**, a research aide in biology; **Eleanor Valenzuela**, a lab specialist in Physics, Mathematics and Astronomy; and **Yihong Wang**, who will be providing

help-desk support for the Infrared Process and Analysis Center.

**Diego Fernandez**, a research assistant in geology, started work on November 8.

Starting at Caltech on November 9 was **Cristina Pak**, an executive assistant in the office of the executive vice president for administration.

Joining the Institute on November 12 were **Marjory Gooding**, director of immigration services in Human Resources; **Loren Kajitani**, deputy chief of security operations; and **Heun Jin Lee**, an assistant scientist in applied physics.

A writer III in the Humanities and Social Sciences, **Kim Matsunaga** joined Caltech on November 13.

**Wayne Nealis** started work as an administrative assistant in Development on November 15.

Starting at Caltech on November 16 was **Carolina Young**, as an assistant animal lab technician in biology.

On November 19 **Barbara Cruz** joined the Safety Office as a program manager in hygiene/safety, and **Maria Farkas** started with biology as a research assistant I.

Joining Caltech effective January 1 will be **Anand Asthagiri**, assistant professor of chemical engineering, and **Oskar Painter**, assistant professor of applied physics. A graduate of Cornell University (BS 1995) who received his PhD from MIT in 2000, Asthagiri plans to establish a research program in cellular engineering. Painter received his BS from the University of British Columbia in 1994 and did his graduate study at Caltech on photonic crystal structures and devices, receiving his PhD in 2001.

### Deaths

James McCaldin, professor of applied physics and electrical engineering, emeritus, died November 23. He was 79.

A graduate of the University of Texas and Caltech, McCaldin spent the early decades of his career in industry. He worked in telemetry at Arabian American Oil Company, in physical metallurgy at General Motors, as head of semiconductor materials at Hughes Aircraft, and as semiconductor leader at the North American Aviation Science Center. He joined Caltech in 1968 as an associate professor of applied science, retiring in 1983.

McCaldin was a widely recognized expert in electronic materials and their device applications. He did early work on the planar construction for silicon devices and on the ion implantation doping of silicon, work that has been of great practical importance. In a 1973 issue of *Engineering and Science*, he and his coauthor, James Mayer, discussed the ways in which crystal growth was revolutionizing the electronics industry, noting that the structures giving rise to metal-semiconductor contacts were smaller than anticipated and

predicting the possibility of reducing them to "atomic dimensions."

McCaldin was editor of the journal *Progress in Solid State Chemistry* from 1969 to 1976, and held several patents. He was a member of the American Physical Society, a former chair of the Southern California section of the American Institute of Mining, Metallurgical, and Petroleum Engineers, and a former secretary of the Southern California and Nevada section of the Electrochemical Society.

He is survived by a brother, Roy McCaldin, of Tucson.

## Honors and awards

**Sandra Eli**, Caltech's treasurer and chief investment officer, has been appointed to the Getty Villa Council, which will shape the programs for the Getty Villa, in Malibu, which has been closed for renovation.

**Dan Kevles**, Koepfli Professor of the Humanities, Emeritus, has been awarded the George Sarton Medal by the History of Science Society at its annual meeting in Denver, on November 10. The medal is the society's highest award and honors George Sarton, the founder of *Isis*, the leading journal of the history of science. "The award recognizes distinction in scholarship, impact through writing and leadership in the profession. It has been awarded annually since 1955 to an outstanding historian of science selected from the international scholarly community."

**Anneila Sargent**, professor of astronomy and director of the Owens Valley Radio Observatory and the Interferometry Science Center, has been selected to give the Selove Lecture at the University of Pennsylvania during the spring 2002 semester. A colloquium comprising two talks—one suitable for the entire department at a level grad students can appreciate, the second for specialists in the speaker's field—the Selove Lecture was established by Fay Ajzenberg-Selove to honor her husband, Walter. It is usually given by a "hands-on" experimenter.

## Fairchild Library unplugs

The Caltech Library System is pleased to announce wireless networking capabilities in the Sherman Fairchild Library, made possible through the generosity of the Lee Center for Advanced Networking (<http://leecenter.caltech.edu>). Each floor of the library is outfitted with two wireless access points that deliver seamless connectivity to the Caltech network and the Internet for mobile computing. All wireless devices must be registered with ITS at [wireless@caltech.edu](mailto:wireless@caltech.edu).

The library also has 10 new wireless Dell Latitude C800 notebook computers, which can be checked out at the circulation desk for use in the library. Configured with all Caltech Library System-supported applications and databases, the notebooks include two batteries providing up to four hours of use, an internal DVD/CD-RW drive, and 15-inch screens. Users can also borrow an internal floppy drive and, for extended use, power cables.

Caltech faculty, students, and staff are invited to visit and experiment with wireless mobile computing. Library hours during the school year are 8 a.m. to 1 a.m. Monday to Friday and 9 a.m. to 1 a.m. Saturday, Sunday, and holidays (closed on Thanksgiving, Christmas, and New Year's Day). Caltech IDs are required after 5 p.m. on weekdays and all day on weekends and holidays.

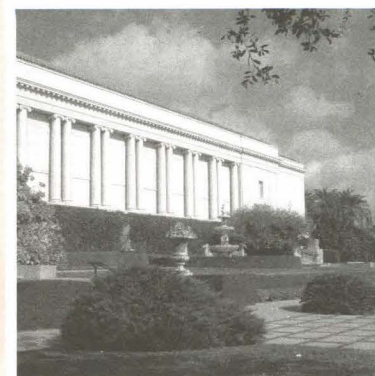
## No deadline for United Way

Misplace your contribution form? Or simply miss the deadline? No worries, says Diana Alvarez. Although Caltech's 2001 United Way campaign officially ended November 2, contributions are continuing to find their way in.

"Each year, I usually receive checks through November and December as people remember to get their tax-deductible donations in before the year ends," Alvarez said. She also added that she never turns away a donation, even if it's well into the new year.

The United Way of Greater Los Angeles serves as an umbrella for more than 250 local charities that can be designated as donation recipients, including the Caltech Y, the Caltech Children's Center, and the JPL Child Educational Center. Donations to the child-care centers will provide tuition assistance for Caltech/JPL community members, while gifts to the Y help support numerous cultural, leadership, and other programs for students.

Checks can be made out to United Way and sent to Alvarez in Human Resources at mail code 153-84, or contact her for more information at ext. 6001 or [diana.alvarez@caltech.edu](mailto:diana.alvarez@caltech.edu).



## Grants renew Huntington Library ties

Always close in both spirit and space, Caltech and the Huntington Library share a history that reaches back to their earliest days. Now that the Andrew W. Mellon Foundation has awarded the institutions a joint grant, the ties between them can only grow stronger.

The Huntington Library and Caltech's Division of the Humanities and Social Sciences will share the grant, totaling \$440,000, to support the ongoing work taking place between the two institutions.

"We are very excited about this new grant, and we are deeply appreciative of the Mellon Foundation's enthusiastic support of these collaborative ventures," said Bill Deverell, associate professor of history, who submitted the grant proposal.

In the coming five years, the grant will fund four new postdoctoral fellows, who will continue the ongoing research between humanities faculty and students and the Huntington's curators of rare books, manuscripts, and art.

In the last three years, the Caltech Huntington Committee for the Humanities (CHCH) has sponsored activities such as faculty and graduate research projects, seminars, and symposia, all of which have led to a gradually deepening relationship between the Huntington Library's curators and Caltech students.

The grant follows a gift of \$180,000, also from Mellon. The funds will be used to create a proliferation of joint work and an enduring relationship between two academic powerhouses: Caltech as the leader in physics, biology, and chemistry, and the Huntington Library in history and literature.

"It is in many ways the fulfillment of a vision initially put forth by people like George Ellery Hale, who, in his critical role at the founding of both Caltech and the Huntington, realized that a partnership between these two institutions could create a center of research like no other in the United States," Deverell said.

It was early in the last century that Hale convinced philanthropist Henry E. Huntington to "think big" regarding the latter's extensive book and art collection. The result was the Huntington.

Its vast resources include Anglo-American art, literature, rare books, and manuscripts, the stuff that students and researchers of history, artwork, and English-language writing dream about.

The CHCH has proposed three areas of study to be funded by the Mellon grant. These are the American West, British studies, and British and American visual culture and art. Each theme would be the focus of a yearlong series of programs and events, such as symposia, graduate courses, working papers, colloquia, and undergraduate seminars that touch on related sub-themes.

Rather than solely fund a postdoctoral fellow's lonely research in the Huntington's archives, Deverell said the grant would spur a rich profusion of activities that will bring those studies to life.

# December 10, 2001–January 13, 2002

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, December 10

### Thesis Seminar

151 Crellin, 2 p.m.—“Sequence Specific Alkylation of DNA by Polyamide-Chlorambucil Conjugates,” Nicholas Wurtz, graduate student in chemistry, Caltech.

### Inorganic-Electrochemistry Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Controlling Inorganic Structure: Cyanide-Bridged Materials as Sieves, Sensors, and Magnets,” Jeffrey R. Long, assistant professor, department of chemistry, UC Berkeley.

### Sloan-Swartz Seminar

24 Beckman Labs, 4 p.m.—“The Science and Engineering of an Artificial Retina: A Microelectronic Implant for the Blind,” Mark Humayun, MD, professor of ophthalmology and associate director of research, Retina Institute, Doheny Eye Institute, Keck School of Medicine, USC. Refreshments, lobby, 3:45 p.m.

### Applied and Computational Mathematics Colloquium

101 Guggenheim Laboratory, Lees-Kubota Lecture Hall, 4:15 p.m.—“Choice of Optimum Wavelets Using the Wigner Function Representation of Multiresolution Decomposition,” Bedros Afeyan, Polymath Research Inc. Refreshments, 3:45 p.m.

## Tuesday, December 11

### IR/Sub-mm/mm Sack Lunch

469 Lauritsen, 12:15 p.m.—“Overview of the Extragalactic Sub-mm Sources: Detection/Identification Success and Reliability,” Scott Chapman, senior postdoctoral scholar in astronomy, Caltech. Information: [www.submm.caltech.edu/~motte/sacklunch.html](http://www.submm.caltech.edu/~motte/sacklunch.html).

### Ulric B. and Evelyn L. Bray Seminar

25 Baxter, 4 p.m.—“Computational Neuromodulation and Conditioning,” Dr. Peter Dayan, Gatsby Computational Neuroscience Unit, University College London. Refreshments.

### Carnegie Observatories Colloquium Series

William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—“The History of Star Formation in Dusty Galaxies,” Andrew W. Blain, assistant professor of astronomy, Caltech. Refreshments, 3:30 p.m. Information: Bronagh Glaser, 304-0241 or [bronagh@ociw.edu](mailto:bronagh@ociw.edu).

## Wednesday, December 12

### Neurobiology Seminar

24 Beckman Labs, 4 p.m.—Topic to be announced. Professor Leah Krubitzer, department of psychology and the Center for Neuroscience, UC Davis.

### Organic Chemistry Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Recent Advances in Nitrogen Heterocyclic Synthesis of Marine Alkaloids,” Professor David A. Horne, department of chemistry, Oregon State University.

## Thursday, December 13

### First Annual Review Meeting, Center for the Science and Engineering of Materials (CSEM)

Check-in and continental breakfast, Winnett Lounge, 7:30 a.m.; presentations, 101 Guggenheim Laboratory, Lees-Kubota Lecture Hall, 8:30 a.m. to 6 p.m.—Keynote address: “Physics-Based Simulations of the Dynamic Response of Materials Under Extreme Conditions,” Christian Mailhot, Lawrence Livermore National Laboratory. Web registration required by December 7. Information and registration: [www.csem.caltech.edu](http://www.csem.caltech.edu).

### Von Kármán Lecture Series

Von Kármán Auditorium, JPL, 7 p.m.—“The Ends of the Earth: Examining the Arctic and Antarctic Ice Covers,” Benjamin Holt, research scientist, polar oceanography group, JPL. Admission is free. Information: [www.jpl.nasa.gov/events/lectures.html](http://www.jpl.nasa.gov/events/lectures.html).

## Friday, December 14

### Caltech/JPL Association for Gravitational-Wave Research Seminar Series

155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Interferometers for LISA and Its Precursor,” Robert Spero, interferometry and large optical systems, JPL.

### Computer Science 0.1 Seminar

Ramo Auditorium, 4 p.m.—“Large-Scale Simulation of Physical Systems,” Dan Meiron, professor of applied and computational mathematics and computer science, and associate provost for information and information technology, Caltech. Information: [www.cco.caltech.edu/~koonin/cs.html](http://www.cco.caltech.edu/~koonin/cs.html).

### Inorganic-Organometallics Seminar

147 Noyes, Sturdivant Lecture Hall, 3:30 p.m.—Topic to be announced. Oren Scherman, graduate student in chemistry, Caltech.

### Kellogg Seminar

Lauritsen Library, 4 p.m.—“Looking for WIMPs: The Cryogenic Dark Matter Search Experiment (CDMS),” Laura Baudis, Stanford University.

### Von Kármán Lecture Series

Pasadena City College, 1570 E. Colorado, the Forum (south of Colorado on Bonnie), 7 p.m.—“The Ends of the Earth: Examining the Arctic and Antarctic Ice Covers,” Benjamin Holt, research scientist, Polar Oceanography Group, JPL. Admission is free. Information: [www.jpl.nasa.gov/events/lectures.html](http://www.jpl.nasa.gov/events/lectures.html).

## Wednesday, December 19

### Molecular Mechanisms of Disease Seminar

24 Beckman Labs, 2 p.m.—Topic to be announced. Stan Nelson, department of human genetics, UCLA.

## Monday, December 24

Institute holiday

## Tuesday, December 25

Christmas holiday

## Monday, December 31

Institute holiday

## Tuesday, January 1

New Years holiday

## Friday, January 4

### Inorganic-Organometallics Seminar

151 Crellin, 4 p.m.—“Chelating, Mono-anionic Ligands on Late Transition Metals: A Scouting Report,” Ted Betley, graduate student in chemistry, Caltech.

## Saturday, January 5

### James Michelin Distinguished Visitor's Lecture

Beckman Auditorium, 8 p.m.—“American Trilogy,” an evening with Ken Burns. Ken Burns has been making award-winning documentary films for more than 20 years. Among his films are the landmark PBS series *The Civil War*, *Lewis and Clark*, *Baseball*, and *Jazz*. Admission is free. Information: 395-4652, 1 (888) 2CALTECH, or [events@caltech.edu](mailto:events@caltech.edu). Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at [www.events.caltech.edu](http://www.events.caltech.edu).

## Monday, January 7

### Humanities and Social Sciences Brown Bag Seminar

218 Baxter, noon—“Humboldt and Arago as Friends and Intellectual Partners,” Dr. Petra Werner, member, Alexander von Humboldt Research Group, Berlin-Brandenburg Academy of Sciences.

### Geology and Planetary Sciences Seminar

155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Tectonic Evolution of the Altai: A Turkic-type Orogen in Asia,” Celâl Sengör, Moore Distinguished Scholar, Caltech. Information: [www.gps.caltech.edu/seminars/seminars\\_events.html](http://www.gps.caltech.edu/seminars/seminars_events.html).

### James Michelin Seminar Series

Beckman Institute auditorium, 4 p.m.—Stephanie Day Iverson will speak on fashion designer Bonnie Cashin.

## Wednesday, January 9

### Astronomy Colloquium

155 Arms, Robert Sharp Lecture Hall, 4 p.m.—Topic to be announced. Michael Strauss, astrophysical sciences, Princeton University. Information: <http://astro.caltech.edu/~jlc/colloquia.html>.

### Organic Chemistry Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Protein Molecular Recognition: Coiled Coils, DNA, and Artificial Micelles,” Martha G. Oakley, assistant professor, biochemistry and bioorganic chemistry, Indiana University, Bloomington.

### Earnest C. Watson Lecture Series

Beckman Auditorium, 8 p.m.—“Cosmic Background Imager: Reading the Universe's Early History,” Anthony C. S. Readhead, Barbara and Stanley R. Rawn, Jr., Professor of Astronomy, Caltech. Information and tickets: 395-4652, (888) 2CALTECH, or [events@caltech.edu](mailto:events@caltech.edu). Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at [www.events.caltech.edu](http://www.events.caltech.edu).

## Thursday, January 10

### Civil Engineering Seminar

206 Thomas, 4 p.m.—“Function Estimation and Singularity Detection: Signal Separation Using Wavelets and Its Application,” Jianye Chiang, graduate student in civil and environmental engineering, UC Berkeley. Refreshments, 210 Thomas, 3:45 p.m.

### Physics Research Conference

201 E. Bridge, 4 p.m.—“Multiscale Science, from Quantum to Bio,” Hideo Mabuchi, associate professor of physics, Caltech. Refreshments, 108 East Bridge, 3:45 p.m. Information: [www.pma.caltech.edu/~physcoll/PhysColl.html](http://www.pma.caltech.edu/~physcoll/PhysColl.html).

## Friday, January 11

### Inorganic-Organometallics Seminar

151 Crellin, 4 p.m.—Topic to be announced. Susan Schofer, graduate student in chemistry, Caltech.

# CampusEvents

## Monday, December 10

**Haven House Annual Holiday Gift Collection**  
Monday through Friday, 8 a.m. to 5 p.m., until December 18—Holiday gifts are being collected for battered women and their children who are living in Haven House, a local shelter. Needed: new clothes and nonviolent toys for the children, new clothing and cosmetics for the mothers. Drop boxes for gifts: 216 Beckman Behavioral Biology, 184 Alles, 228 Baxter, 650 S. Wilson Avenue (Central Plant), Physical Plant lobby (building 83), 168 Crellin, 101 Keith Spalding (Purchasing). Send checks (made out to Haven House) or cash to S. Koceski, MC 216-76 or 395-6806.

**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.

**The Copenhagen Interpretation: Exploring Science on Stage**

Beckman Auditorium, 8 p.m.—A panel discussion of the scientific, historical, and theatrical perspectives surrounding the events of the acclaimed play *Copenhagen*. Admission is free. No tickets or reservations are required. At least 500 seats will be available. Doors will open at 7:30 p.m. 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.

## Tuesday, December 11

**Digital Media Center Presents "Hands-On Photoshop for Researchers Workshop"**

New Media Classroom, 363 S. Hill Avenue, 10 a.m. to noon—In this two-day class, held in the building behind the Einstein Papers house, learn techniques for working with imagery for Web, PowerPoint, publication, posters, etc. Topics include resolution, selection, layers, image enhancement, and file formats. The second class is December 13. Registration and information: 395-3420 or dmc@caltech.edu. For further information, see our event Web page at <http://twing.caltech.edu/workshops>.

**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 jmp-h-p@pacbell.net.

**Caltech Folk-Dancing Club**

Dabney Lounge, 7:30 to midnight—Drop-ins are welcome. Donations accepted.

**Caltech Tai Chi Club**

Winnett lounge, 7:30 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

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## Friday, December 14

**Caltech Tai Chi Club**

Winnett lounge, 7:30 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

**Armchair Adventure Series**

Beckman Auditorium, 8 p.m.—*The Great Trans-American Train Ride*, narrated by Doug Jones. 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, December 15

**Children's Holiday Party**

Winnett lounge, 10 a.m. to 1 p.m.—Holiday crafts and caroling, storyteller Jim Cogan, and a visit from Santa. Open to the Caltech community. Bring an appetizer or dessert or a dish from your own national tradition. Sponsored by the Women's Club. Information: Donna Burdick, 798-0028.

**Post Office Holiday Shipping and Customer Appreciation Day**

Keith Spalding Building, 10 a.m. to 2 p.m.—The campus post office is extending its hours and services to assist you with your holiday shipping. It will offer a variety of stamps, supplies, and shipping options, and the post office "elves" will be happy to help you box and seal your packages. Prizes, refreshments, shorter lines, and plenty of parking in the lot.

**Caltech Y Community Service—Union Station**

6 to 9 p.m.—Volunteers will help prepare and serve meals for homeless men, women, and children at the Union Station shelter in Pasadena. Information: 395-6163, gregf@caltech.edu, or www.y.caltech.edu.

**Ballroom Dance Party**

Winnett lounge, 8 p.m. to midnight—Polka lesson from 8 to 8:30 p.m., then ballroom, swing, and Latin dancing. Refreshments. Admission is free.

**Folk Music Society Presents Kevin Burke**  
Winnett lounge, 8 p.m.—Burke is a legendary Celtic fiddler who plays "naked" (unaccompanied) fiddle. Admission is \$15 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, and the Folk Music Society at www.cco.caltech.edu/~folkmusi/.

## Monday, December 17

**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.

## Tuesday, December 18

**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). Field trip. Information: (323) 550-8075 or jmp-h-p@pacbell.net.

**Caltech Folk-Dancing Club**

Dabney Lounge, 7:30 p.m. to midnight—Drop-ins are welcome. Donations accepted.

**Caltech Tai Chi Club**

Winnett lounge, 7:30 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

## Wednesday, December 19

**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, December 21

**Caltech Tai Chi Club**

Winnett lounge, 7:30 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

## Monday, December 24

**Institute holiday**

## Tuesday, December 25

**Christmas holiday**

**Caltech Folk-Dancing Club**

Dabney Lounge, 7:30 to midnight—Drop-ins are welcome. Donations accepted.

## Friday, December 28

**Caltech Tai Chi Club**

Winnett lounge, 7:30 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

## Monday, December 31

**Institute holiday**

## Tuesday, January 1

**New Years holiday**

**Caltech Folk-Dancing Club**

Dabney Lounge, 7:30 to midnight—Drop-ins are welcome. Donations accepted.

## Wednesday, January 2

**Women's Basketball**

at MIT, 7 p.m.

## Friday, January 4

**Women's Basketball**

Worcester Poly Tech Tournament, at Worcester, 6 p.m.

## Saturday, January 5

**Women's Basketball**

Worcester Poly Tech Tournament, at Worcester, 6 p.m.

## Tuesday, January 8

**Caltech Folk-Dancing Club**

Dabney Lounge, 7:30 to midnight—Drop-ins are welcome. Donations accepted.

**Women's Basketball**

vs. University of Redlands, 7:30 p.m.

## Wednesday, January 9

**Men's Basketball**

at Pomona-Pitzer College, 7:30 p.m.

## Friday, January 11

**Women's Basketball**

at Pomona-Pitzer College, 7:30 p.m.

**Folk Music Society Presents Chris Proctor**

Dabney Lounge, 8 p.m.—Proctor is a master of the acoustic guitar. 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, and the Folk Music Society at www.cco.caltech.edu/~folkmusi/.

## Saturday, January 12

**Swimming and Diving**

at University of Redlands, 11 a.m.

**Men's Basketball**

vs. Claremont-Mudd-Scripps, 7:30 p.m.

## Lectures explore universe, robotics

The Watson Lecture Series will kick off winter quarter on Wednesday, January 9, with "Cosmic Background Imager: Reading the Universe's Early History," a talk by Anthony Readhead, Caltech's Rawn Professor of Astronomy. Over the past two years, Caltech astronomers have installed the Cosmic Background Imager, a radio interferometric array, in the Chilean Andes. The instrument is used to observe the cosmic microwave background, a faint, still-visible glow of microwave radiation that scientists believe is a result of the intense heat of the creation of the universe some 12 to 15 billion years ago. These observations are being used to place new limits on fundamental cosmological parameters that determine the geometry, size, age, and major constituents of the universe, and that support cosmological theories based on inflation—a period of very rapid expansion in the early universe. Readhead will discuss the imager's operation and its latest scientific results.

On January 23, Joel Burdick, Caltech professor of mechanical engineering, will discuss "Robotics: Moving Beyond the Factory Floor." Robotics as a research and commercial activity has existed for 40 years and, while the pace of progress has not matched expectations, robotic technology has become pervasive in some industries. Research traditionally has focused on developing technology for industrial automation. Now, however, it has become apparent that robotic technology will have a greater impact outside of manufacturing and industry. The goal of deploying robots in a wide variety of human-oriented and unstructured settings poses many interesting research challenges, and Burdick will describe Caltech efforts aimed at developing autonomous machines for nonindustrial applications.

The Watson Lecture Series is named for the late Caltech physicist Earnest C. Watson, who founded the series in 1922. He presented one of his most popular lectures, "Liquid Air," in October 1964 in the then-new Beckman Auditorium, a gift of Arnold O. and Mabel Beckman.

The free public lectures begin at 8 p.m. in Beckman Auditorium, near Michigan Avenue south of Del Mar Boulevard. A minimum of 700 seats will be available on a first-come, first-served basis beginning at 7:30 p.m. each lecture evening. Free parking is available in the parking structures on Wilson and Holliston Avenues. For more information, call toll-free 1 (888) 222-5832.

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## Baltimore wins Eddy



President Baltimore was recently awarded the L. A. County Economic Development Corporation's Eddy Award "for both his and [Caltech's] contributions in bringing the fields of education, research and professional employment together."

### Van Deusen, from page 1

"It really helps the students to do some actual machining, and John is really good at helping them build some amazing skills."

The point of the celebrated annual contest, according to Antonsson, is to nurture future engineers' ability to design the best possible machine to accomplish an arbitrary task, such as gathering Ping-Pong balls or moving disks across a barrier. If the students have come up with a viable design—and if they've learned their machining skills well from Van Deusen—they may rack up sufficient points to win.

The task differs each year, and the only parameters that seem to repeat annually are the bag of "junk" (assorted metal pieces, cogs and axles, small motors, wires, etc.) given to each two-person team, and the injunction to go to Van Deusen's shop and get busy. Thus, on the manufacturing end, Van Deusen is essentially one of the ME 72 instructors. He reluctantly admits he often has a good idea who will likely win the contest—he can usually spot a good design as well as a bad one.

His personal experience with novel designs is grounded in the aerospace industry. The most unique thing he ever built, Van Deusen says, was the umbilical for the Space Shuttle—the last link to break away when a shuttle launches. The four-by-five-foot piece of aluminum took half a year to construct. "We all held our breaths the first time a shuttle went off," he says. "We had been saying that if we saw a bunch of wires dragging along behind the shuttle, we wouldn't go back to work the next day."

When Southern California's aerospace economy went soft in the early 1990s, Van Deusen came to Caltech's machine shop, where he's been ever since. He's also now finishing a bachelor's degree in vocational education at Cal State Long Beach. Though he originally wanted to be a pharmacist, Van Deusen says he thoroughly enjoys working in machine shops and has no regrets about his career choice.

As for his Caltech job, Van Deusen says he especially appreciates the steep learning curve of undergraduates. Virtually all of them are quick studies in the shop as well as in class, and learning the theory and fabrication skills is nothing for them, he says. "But they're not precision machinists, and to manufacture things, you have to learn how to do things properly, or else axles won't match up, or edges won't meet."

Antonsson says Van Deusen's knack with the students is a key to the success of the annual ME 72 endeavor. "He's very thoughtful, and really tuned to the students."

"Every year about this time he puts up a Christmas tree and encourages students to decorate it with all kinds of chips and things that come off their machines while machining," Antonsson says. "That goes to show how he really makes the whole shop environment a welcoming home."

### Power update, from page 1

minutes to an hour of notice when a state-wide power alert takes place. The customers then implement prearranged energy-reduction plans, allowing Pasadena to lower its electrical load by a total of 7.5 megawatts. (A megawatt—1,000,000 watts—is enough electricity to power 1,000 homes.)

PWP emphasized, however, that California is not "out of the woods" regarding potential blackouts this winter. There is concern that a below-average snow pack in the Northwest will affect hydroelectric power availability. Also, the winter months are traditionally used for power plant maintenance (Caltech, for example, takes its cogeneration plant off-line each February for this purpose). Due to these concerns, PWP has extended the load-curtailement program through February 2002.

The Institute continues to make progress on its commitment to reduce electricity consumption. According to Reza Ohadi, associate director of Physical Plant for campus operations, over the summer all incandescent exit signs were replaced with LED (light emitting diode) versions, which use just one-tenth as much power. The department also replaced an existing 650-ton chiller and 600-ton cooling tower, which chill water for use in campus air-conditioning systems, with larger, high-efficiency models. The new systems more than double the capacity of the old ones and respectively save about \$230 per ton and \$40 per ton each month in electricity costs. Physical Plant also updated a large chilled-water pump with an added variable-speed drive that runs the pump at a lower speed when demand is lower, resulting in electricity savings of about \$2,600 monthly.

Further energy-conserving improvements are in process or on the drawing boards for the future, including additional electrical cogeneration capacity. Physical Plant is investigating thermal energy storage and alternative energy sources such as microturbines and solar power, as well as continuing to replace inefficient lighting and to install variable-speed drives and occupancy sensors, which turn off lighting if no movement is detected.

Energy conservation is something Caltech community members can all take part in by turning out nonessential lights, keeping thermostats set at 68 degrees in the winter months, and turning off equipment and lights when rooms and buildings are not occupied. Your efforts to save energy are important and appreciated.

Bill Irwin is director of Caltech's Physical Plant.

### Ken Burns, from page 1

that are marked by a faithful attention to period detail, meticulous scholarship, and engrossing storytelling. The dozens of awards these documentaries have won, including Grammys, Peabodys, and Emmys, attest to that dedication. Made with so much care and skill, the documentaries transport the viewer through time and space and into the subject's world.

In addition to films concerning the conflict between the North and South, the rise of America's national pastime, and the country's original art form, Burns has pointed his camera lens at great American figures.

He has shaken the dust off rare documents and illumined the archives to produce candid biographies like *Thomas Jefferson*, *Lewis and Clark: The Journey of the Corps of Discovery*, and *Frank Lloyd Wright*. Lest it be said that Burns has ignored the distaff side of the American pantheon, he also produced *Not For Ourselves Alone: The Story of Elizabeth Cady Stanton & Susan B. Anthony*.

Much more than high school history lessons, these documentaries vividly recount the struggles and aspirations of common and extraordinary people alike; in many instances, it was their response to adversity and challenge that thrust

### Astronomers, from page 1

Timothy Brown of the National Center for Atmospheric Research, and colleagues used Hubble's spectrometer (the Space Telescope Imaging Spectrograph or STIS) to detect the presence of sodium in the planet's atmosphere.

"This opens up an exciting new phase of extrasolar planet exploration, where we can begin to compare and contrast the atmospheres of planets around other stars," says Charbonneau. The findings will be published in the *Astrophysical Journal*.

The Hubble observation was not tuned to look for gases expected in a life-sustaining atmosphere. Nonetheless, this unique observing technique opens a new phase in the exploration of extrasolar planets, say astronomers. Such observations could potentially provide the first direct evidence for life beyond Earth by measuring unusual amounts of atmospheric gases caused by the presence of living organisms. The planet orbiting HD 209458 was discovered in 1999 through its slight gravitational tug on the star. Subsequently, astronomers discovered the planet passes in front of the star, causing the star to dim very slightly during the transit. It is the only example of a transit among all the extrasolar planets discovered to date.

The planet is an ideal target for repeat observations because it transits the star every three and a half days, at just 4 million miles away. This precarious closeness to the star heats the planet's atmosphere to a torrid 2,000 degrees Fahrenheit.

Previous observations by Hubble and other telescopes had confirmed that the planet is a gas giant like Jupiter and Saturn. The planet's swift orbit allowed for four transit observations in search of direct evidence of an atmosphere. During each transit a fraction of the star's light passed through the planet's atmosphere on its way to Earth. When analyzed by spectrograph, the light's color showed the telltale "fingerprint" of sodium.

The team next plans to look at HD 209458 with Hubble in other colors of the star's spectrum to see which are filtered by the planet's atmosphere. They hope eventually to detect methane, water vapor, potassium, and other chemicals in the atmosphere.

The Hubble Space Telescope is a cooperative project between NASA and the European Space Agency. The National Center for Atmospheric Research's primary sponsor is the National Science Foundation.

More information and electronic images are available at <http://hubble.stsci.edu/go/news>.

them into positions of prominence and influence on the country's future.

Like all good portraits, the documentaries present their subjects in a direct manner: while praise is showered on their triumphs and virtues, light is shone on their frailties and darker sides. Consequently, the giants of American history are humanized, becoming more accessible to the average viewer.

Burns's latest documentary, on the writer and humorist Mark Twain, will air in January on PBS. He will deliver his lecture on Saturday, January 5, 2002, beginning at 8 p.m., in Beckman Auditorium.

January also brings an installment of the James Michelin Seminar Series. The guest will be Stephanie Day Iverson, a Bard Graduate Center PhD candidate, who will speak about her book-in-progress on the late Bonnie Cashin. An innovative fashion and costume designer whose career began in the 1940s, Cashin founded the Michelin speaker series at Caltech. This event will take place on Monday, January 7, 2002, in the Beckman Institute auditorium, from 4 to 5 p.m. The Michelin Distinguished Visitor's Lecture and the Michelin Seminar are free and open to the public.

## Caltech Nobelists in the news

Caltech president David Baltimore; Millikan Professor of Theoretical Physics, Emeritus, Murray Gell-Mann; and alum Douglas Osheroff '67 are among the 21 laureates featured in *The Nobel: Visions of Our Century*, to air on KCET-TV on Thursday, December 13, at 8 p.m. Created to honor the Nobel's 100th anniversary, the program examines the prize's legacy and the dilemma of increasing social responsibility that accompanies human progress. The program includes interviews with 11 living Nobelists, plus archival footage of 10 others. More information can be found at [www.pbs.org/kqed/nobel/](http://www.pbs.org/kqed/nobel/).

Caltech's 28 past and present laureates have also figured prominently in a special Nobel Prize anniversary issue of *Los Angeles Times Magazine*, published on December 2. Among those spotlighted in articles, profiles, and photos are David Baltimore, Ed Lewis, Rudy Marcus, and Ahmed Zewail, plus there is a special feature, "The Cult of Richard Feynman," with quotes and anecdotes from a number of Caltech faculty and staff. The articles can be viewed online at [www.latimes.com/features/printedition/magazine/](http://www.latimes.com/features/printedition/magazine/).

## Needed: gifts for kids

As in the past three years, the Human Resources staff is doing its part to deliver holiday cheer through the Angel Tree project. Sponsored by the Foothill Unity Center in Monrovia, the program asks Caltech community members to donate new toys and sports equipment that will be distributed to children in Monrovia, Duarte, and Arcadia. The children, who may not otherwise receive Christmas presents, range in age from 4 months to young adulthood. Donations may be brought to Human Resources, 399 South Holliston Avenue, by Friday, December 7.

## Post office increases holiday mail hours

Avoid endless lines and surly service at your neighborhood post office this holiday season! The busy elves at Caltech's post office, located on the ground floor of the Keith Spalding Building, are playing host at their Customer Appreciation Day on December 15 from 10 a.m. to 2 p.m. That's on a Saturday, the perfect day to dispatch the requisite fruitcake and holiday packages to far-flung family and friends. The shorter lines will mean a shorter wait for holiday stamps and shipping supplies, but stay for the prize giveaways and the refreshments. Parking promises to be plentiful.

## 2002 holidays

- **New Year's Day**—Tuesday, Jan. 1
- **Martin Luther King Day**—Monday, Jan. 21
- **President's Day**—Monday, Feb. 18
- **Memorial Day**—Monday, May 27
- **Independence Day**—Thursday, July 4
- **Labor Day**—Monday, Sept. 2
- **Thanksgiving**—Thursday and Friday, Nov. 28 and 29
- **Christmas**—Tuesday and Wednesday, Dec. 24 and 25
- **Floating holiday**—Tuesday, Dec. 31
- **One personal holiday** to be selected by employee

This month, the campus will be closed for Christmas on Monday and Tuesday, December 24 and 25, and for a floating holiday on Monday, December 31.

## Hitler and the bomb

Why did Nazi Germany fail to build an atom bomb? Physicists, historians, and an actor will try to answer that question in "The *Copenhagen* Interpretation: Exploring Science on Stage," on December 10, 8 p.m., in Beckman Auditorium.

The idea for the free-flowing roundtable discussion was sparked by the staging of Michael Frayn's play *Copenhagen*, running at the Wilshire Theater in Los Angeles now through January 6. The play is inspired by an event that has intrigued and baffled historians for more than 50 years—a 1941 meeting between two brilliant physicists, longtime friends whose work together had opened the way to the atom, but who were on opposite sides during World War II. Werner Heisenberg made a covert trip to Copenhagen, at great risk, to see his Danish counterpart Niels Bohr and his wife, Margrethe, but the meeting ended in disaster. *Copenhagen* explores the events of this secret meeting, and attempts to answer the questions: Why did Heisenberg go to Denmark? What did the two men say to each other? What happened at this pivotal meeting that was a defining moment of the modern nuclear age?

Discussion panelists will include Robert Christy, a leading researcher on the Manhattan Project and an Institute Professor of Theoretical Physics, Emeritus, at Caltech; Marge Leighton, a close friend of the Bohr family; Jay Labinger, an expert on the cultural and literary aspects of science and the administrator of Caltech's Beckman Institute; Diana Barkan Buchwald, general editor and director of the Einstein Papers Project at Caltech and an associate professor of history; and *Copenhagen* actor Hank Stratton, who plays Werner Heisenberg. Caltech provost and professor of theoretical physics Steve Koonin will moderate.

The roundtable discussion will explore the meeting between Heisenberg and Bohr, focusing on personal reminiscences as well as modern interpretations of the events preceding the construction of nuclear weapons by the Allies. Participants will consider broader scientific, historical, philosophical, and artistic dimensions of this encounter and its dramatization in the play. The three-person play also features Len Cariou as Niels Bohr and Mariette Hartley as Margrethe Bohr.

The event is free and open to the public; no tickets are required. For information, call 1 (888) 222-5832. Beckman Auditorium is at 332 South Michigan Avenue, south of Del Mar Boulevard.

### Misadventure, from page 1

"We had finished our first sample and turned around to go back, when a swell came at us and we realized we were in deeper than we thought," Adkins recounted. "We strapped everything down and put on life jackets, and then we took a wave that put us shin deep in water." He put out a radio SOS, noting their location with the boat's global positioning system (GPS), just minutes before another wave overturned the boat and plunged them into the frigid water.

Fortunately, the Mayday call was picked up right away. With the GPS information, an Orange County Sheriff's Department harbor patrol boat found the trio in about half an hour and took them to the harbor patrol base in Newport Beach. They suffered mild hypothermia but no other injuries. (The 24-foot boat, owned by Caltech's Division of Biology, was salvaged upside down, Adkins said. "There was no damage to the body, but the electronics and engine will probably have to be replaced.")

In retrospect, his perspective on the event has evolved, Adkins said. "As it was happening, I focused on what we had to do to stay afloat and stay warm. I always had the sense it would turn out fine. I didn't get scared until we actually got rescued." It wasn't that he hadn't realized the danger, but survival instincts kept him calm. "I knew it was a pretty bad situation, but we just had to do what we could. Whaling and thrashing about wouldn't have gotten us rescued any sooner."

Adkins also highly praised the officials who rescued them. "The harbor patrol and sheriff's department were fantastic. They deserve all the credit, getting out there so quickly."

The researchers' goal, which is also the basis for Mendez's doctoral thesis, was to collect samples weekly in order to study concentrations of metal in the water over time. "Once you know the variations over a few months, seasons, or years, the data let you do an 'event response' in cases such as an oil spill or storm-drain runoff," Adkins explained. "In particular, we're interested in Santa Ana winds and the dust they deposit on the ocean surface."

The trip was one of several the group had taken to determine the project's feasibility, he said, so the researchers will likely stay grounded for the next few weeks and rethink the logistics, possibly hooking up with oceanographers at USC and UCLA who have boats. In any case, he said, future excursions will definitely involve "a bigger boat."

Meanwhile, Adkins feels just about back to normal. He was in the classroom as scheduled for a guest lecture two days later. "It maybe wasn't my best lecture ever. I apologized that it was so disjointed—I hadn't had enough time to work on it."

### IRC, from page 1

tion. In 1993, it was rated third in executive education worldwide by the *Wall Street Journal*. And with just 12 staff—program coordinators, marketers, and administrators—the center presents more than 175 courses and forums, both on campus and at company sites, that reach thousands of executives and managers each year.

Says Nichols of the center, "It doesn't look corporate, and when people are trying to find it, they often pass right by. But I think that makes a great statement about Caltech. It's an exceptional educational environment where leading-edge topics are pursued."

The IRC has tried to remain on that cutting edge since it opened in 1939, when the hot industrial issue of the day was labor-management relations. Over the years, the center has evolved to reflect changing industry concerns, and when Nichols arrived in 1983, he began to reorient its curriculum toward technology-based industries. As that sector continues to expand at a dizzying rate, it promises to remain the center's core emphasis for the foreseeable future.

Presenting programs for time-crunched executives can be a challenge, Nichols says. "We're lucky to get people who can come for even two days. That's our client profile, and we have to design the curriculum accordingly." The IRC staff also spends a good deal of time keeping abreast of the latest management issues and updating course content as needed.

Using working instructors—executives, just like the participants themselves—the classes incorporate lots of discussion and case histories from various industries, which allow each learner's experience to serve as a benchmark for others. Current courses include such topics as developing global partnerships, strategic product development and marketing, measuring business performance, and customer relations.

Darrell Jan, a program manager at JPL, has taken several IRC courses, the most recent in managing strategic alliances. He recalls, "The first course I took was an oral communication course, about 14 years ago. It was quite good." Jan also found a more recent class, Managing Technological Innovation, to be particularly helpful in his work. "It gave a framework for understanding how tech fits in at a company overall, like at JPL. There are people from different backgrounds, but you quickly discover that you have a lot of the same problems."

Experiences like Jan's is what the IRC is hoping to achieve. "What executives need is to be able to solve problems," says Nichols, and the classes are designed to give participants the necessary know-how and skills. More than 100 Caltech graduate and undergraduate students also attend IRC courses each year, getting a glimpse of what might lie ahead in their careers.

Nichols' own background and range of experience seem ideally suited for the IRC.

With a degree in economics from Yale and graduate study at UCLA, he spent many years in management at JPL, helped the government of India establish the Indian Institute of Technology, and served as a consultant before coming to Caltech.

In addition to directing the center's overall activities, Nichols founded the Enterprise Forum, a popular monthly series on technology-based entrepreneurship that's co-sponsored by the MIT Alumni Association and local corporations. Anne Campbell, the IRC's deputy director, is in charge of the center's marketing activities and directs the Quality Productivity Leadership Forum, featuring successful corporate leaders who share their strategies for business improvement.

Nichols notes that, as part of an innovative and productive research institution, the IRC is well positioned to serve as a bridge between Caltech and industry. "Sometimes we at Caltech would like to go about our own business, but the fact is, people expect us to represent the broader interest," he says. "And the IRC fits into that. We're a small school with a huge reputation. We make a larger imprint in the tech management world than a small school normally would—especially one without a business school."

Clearly proud to be a part of the Institute, Nichols also feels the pressure of measuring up to a bar that's continually rising. "Caltech is always transforming itself, and it keeps getting better. We have that reputation, those standards to fall back on, and it keeps us mindful that we have to be the best."

## "The future of biology in the 21st century"



UCLA's David Eisenberg discussed protein interactions at the Second International Conference on Systems Biology, at Caltech in November. Local organizers for the ICSB, the "premiere conference in systems biology," included Caltech professors John Doyle and Mel Simon, visiting associate Herbert Sauro, staff member Michael Hucka, and postdoctoral scholar Tau-Mu Yi.

# Caltech 336

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