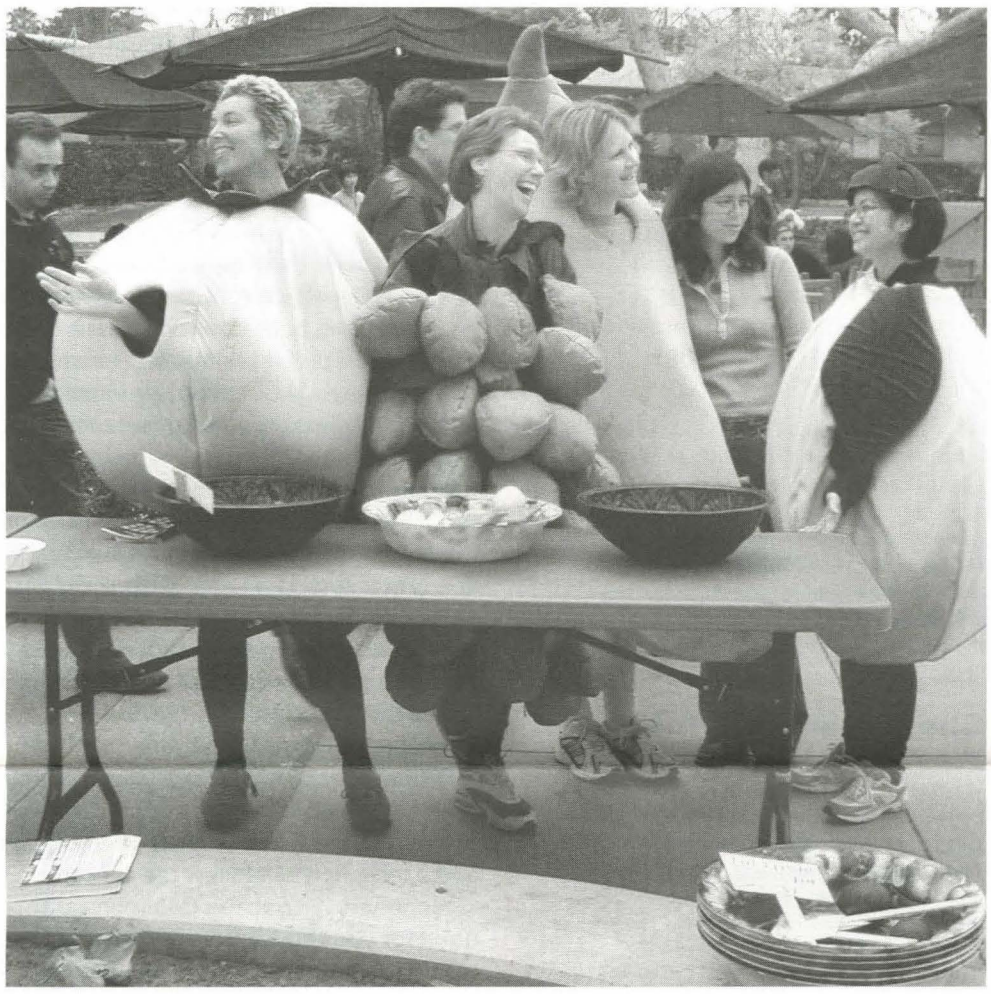
Caltech336

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

The campus community biweekly

March 4, 2004, vol. 4, no. 5

Fruity foursome



From left, Mandy Gamble, head tennis coach; Jane Curtis, health educator; Julie Levesque, athletics administrator; and Athena Castro, director of the Caltech Y, help promote the importance of eating five fruits and vegetables daily at Strive for 5, the kickoff for Body Image Awareness Week. The week of events was sponsored by Athletics, the Counseling Center, the Health Center, the Women's Center, and the Caltech Y.

(CIT)² brims with potential

Javier Marquez

With Caltech's acquisition last year of the former St. Luke Medical Center, a landmark property in northeast Pasadena, the original structure and an assortment of later buildings present the Institute with an invaluable opportunity for growth.

"For 1933, it was probably one of the outstanding hospitals in the valley," says Rick Canny, a project manager with Caltech's Architectural and Engineering Services. Canny's task was to head the inspection of the site, renamed the Center for Innovative Technologies, or (CIT)², weigh its potential value to Caltech, and manage the property after its purchase.

Construction was completed in 1933 on the 75-bed hospital that was built to serve the 60,000 residents of the San Gabriel Valley, many of whom had come for the mild and salubrious climate. At that time, the air was considered perfect for tending chronic ailments. It was founded and directed by the Sisters of St. Joseph of Orange, an order of Catholic nuns held in high esteem for their work in health care and education.

Situated on a 13-acre parcel of land at the border separating Pasadena and Altadena, the hospital's well-tended grounds once included a nursery, vineyards, and a small wooded area. Located only four miles from Caltech, the existing structures, parking facilities, and undeveloped land hold much potential for the

see (CIT)², page 6

Telescopes detect far-flung galaxy

The farthest known object in the universe may have been discovered by a team of astrophysicists using the Keck and Hubble telescopes. The object, a galaxy behind the Abell 2218 cluster, may be so far from Earth that its light would have left when the universe was just 750 million years old.

The discovery demonstrates again that the technique known as gravitational lensing is a powerful tool for better understanding the origin of the universe. Via further applications of this remarkable technique, astrophysicists may be able to better understand the mystery of how the so-called Dark Ages came to an end.

According to Caltech astronomer Jean-Paul Kneib, who is the lead author reporting the discovery in a forthcoming article in the *Astrophysical Journal*, the galaxy is most likely the first detected close to a redshift of 7.0, meaning that it is rushing away from Earth at an extremely high speed due to the expansion of the universe. The distance is so great that the galaxy's ultraviolet light has been

see Galaxy, page 5

A timepiece that's out of this world

Members of JPL's Mars Exploration Rover mission are sporting a new power watch, but it's no ordinary timepiece like a Rolex, a Breitling, or a Patek Philippe. This wristwatch follows Martian time.

On Mars, one solar day is roughly 39 minutes longer than it is on Earth. That means the Mars watch, true to the planet's longer day, runs 39 minutes slower than conventional Earth-based timekeepers.

The special watch was needed to keep track of the Martian sunrise because the Mars rovers *Spirit* and *Opportunity* run on solar power. In order to make use of every minute of Martian daylight, they need to follow the Martian sun.

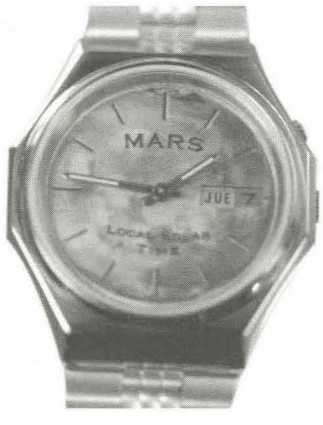
JPL employees turned to Executive Jewelers, in Montrose, to see if a watchmaker could design a timepiece that could help them keep track of time on another planet.

Garo Anserlian, a master watchmaker and president of the company, says at first he thought the request was a joke. "A watch that loses 39 minutes a day?" Anserlian remembers wondering. But the JPL employees were serious, so he got to work and had a sample within a month.

"I used existing watches, ones that are mechanical and self-winding, and modified them so that they lose 39 minutes and 25 seconds every day," he says. He uses Seikos, Citizens, and Orients for their reliability and relatively low cost.

The watches, which are not very practical here on Earth, have nevertheless piqued the interest of watch collectors and Mars buffs, he says. "They are buying them as collector's pieces," he says. "We number them, provide a certificate, and engrave the number on the back of

see Mars, page 2



Scientists find planetoid

Planetary scientists at Caltech and Yale University recently discovered a new planetoid in the outer fringes of the solar system. The planetoid, currently known only as 2004 DW, could be even larger than Quaoar—the current record holder in the area known as the Kuiper Belt—and is some 4.4 billion miles from Earth.

According to the discoverers, Caltech associate professor of planetary astronomy Mike Brown and his colleagues Chad Trujillo (now at the Gemini North observatory in Hawaii) and David Rabinowitz of Yale University, the planetoid was found as part of the same search program that discovered Quaoar in late 2002.

The astronomers use the 48-inch Samuel Oschin Telescope at Palomar Observatory and the recently installed QUEST CCD camera built by a consortium including Yale and the University of Indiana, to systematically study different regions of the sky each night.

see Planetoid, page 6

Explore Mars from your desktop

Anyone with an Internet connection can now see the Red Planet through the rovers' eyes at the new MarsQuest Online interactive website, which extends the power of JPL's Mars Exploration Rover Mission site to offer a more in-depth exploration experience. MarsQuest Online includes a full set of images from *Spirit* and *Opportunity*, along with daily updates. Viewers can see the most recent panoramic images, rocks, and soil investigated by the rovers; follow the twin robotic geologists as they navigate the planet's surface; and perform 3-D virtual flyovers of prominent land features. Visit www.marsquestonline.org/mer.

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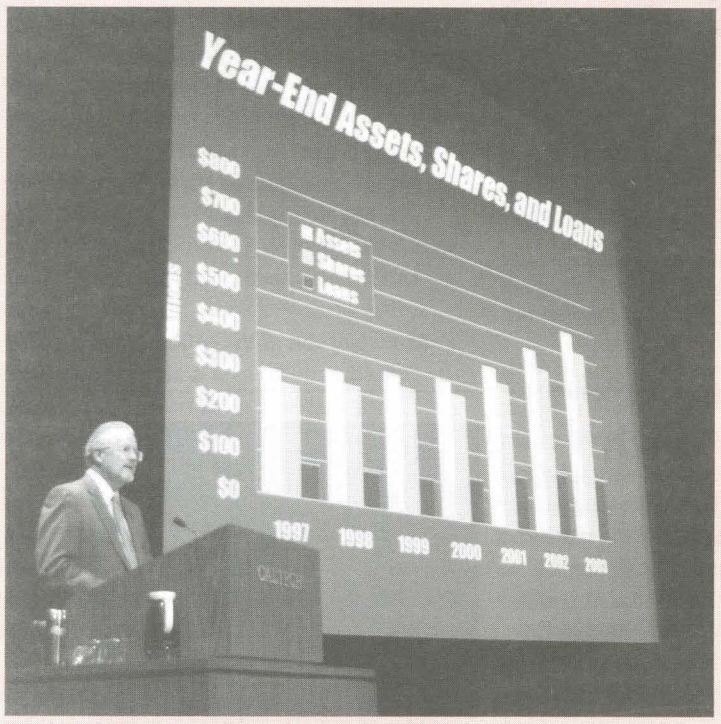
NewsBriefs



Richard Harris, president and treasurer of the Caltech Employees Federal Credit Union, reports some good numbers to members at the organization's recent annual meeting.

Personals

Welcome to Caltech

December

Cassandra Meagher returned to campus, effective December 22, as associate director of foundation relations, in Caltech's Development Office; she previously had been writer-editor for the campuswide Administrative Process Engineering Project, and executive assistant to JPL's Educational Affairs Office, coordinating the Lab's outreach programs in K–12 schools and in colleges and universities. She comes to Caltech from her position as assistant director of foundation and corporate relations at Pitzer College.

February

Postdoctoral scholars **Cahit Aydiner**, in materials science, and **Marlene (Louise) Biller**, in biology; **Jonathan Branch**, custodian, Facilities Management; **Lynne Caver**, accounting operations manager, Financial Services; postdoctoral scholars **Jinsub Choi**, in electrical engineering, and **Jason Connolly**, in biology; **Kirk Crouch**, head dishwasher, Dining Services; **Ulrike Ervig**, visitor in economics; **Cassie Ferguson**, senior writer, Center for Advanced Computing Research; **Kevin Kan**, fabrication facility engineer, chemistry and chemical engineering; postdoctoral scholars **Grazyna Orzechowska**, in JPL's instrument development and spectroscopy research element, and **Eric Rivard**, in chemistry; **Angel Salazar**, custodian, Facilities Management; **Linda Taddeo**, research administrative support, control and dynamical systems; **Jeroen van Dongen**, postdoctoral scholar in history; **Lynda Wright**, staff support, Facilities Management; **Vicky Yamamoto**, research assistant, molecular biology.

Christina Yen has joined the staff of the Caltech Associates as assistant director, effective February 17. She will staff the travel and membership committees, coordinate programs in West Los Angeles, Santa Barbara, and New York, and assist with the campaign projects committee. Before coming to Caltech she served as executive assistant to the dean of Fuller Seminary's School of Psychology, and prior to that as program coordinator for Duke University's Center for Multicultural Affairs. She received her BA in international studies, with a minor in chemistry, from the University of North Carolina, Chapel Hill.

New positions

Stephen Mayo, associate professor of biology and chemistry, has been appointed professor of biology and chemistry, effective December 10. He received his BS from Pennsylvania State University in 1983 and his PhD from Caltech in 1987, then joined Caltech's faculty in 1991. He became an assistant investigator with the Howard Hughes Medical Institute in 1994, and has been associate investigator since 2000.

Mitchio Okumura, associate professor of chemical physics, has been appointed professor of chemical physics, effective October 17. After receiving his BS and MS from Yale, both in 1979, he earned his CPGS at the University of Cambridge in 1980 and his PhD from UC Berkeley in 1986. He joined Caltech's faculty in 1988.

Wilhelm Schlag, associate professor of mathematics, has been appointed professor of mathematics, effective January 1. He joined Caltech's faculty in 2001, having received his Dipl.Ing. from the Technical University of Vienna in 1992 and his PhD from Caltech in 1996.

Honors and awards

Andrew Blain, assistant professor of astronomy; **Nathan Dunfield**, associate professor of mathematics; **Sunil Golwala**, assistant professor of physics; **Vadim Kaloshin**, associate professor of mathematics; **Re'em Sari**, associate professor of astrophysics and planetary science; and **Tapio Schneider**, assistant professor of environmental science and engineering have all received 2004 Sloan Research Fellowships.

Intended to enhance the careers of the very best young faculty members nationally in the fields of chemistry, computational and evolutionary molecular biology, computer science, economics, mathematics, neuroscience, and physics, the highly competitive two-year, $40,000 awards are available for any activity directly related to a Fellow's research, including equipment, technical assistance, professional travel, or trainee support.

Twenty-six Sloan Fellows have gone on to win Nobel Prizes.

Mark Konishi, Bing Professor of Behavioral Biology, has been selected to receive the first Edward M. Scolnick Prize in Neuroscience, the highest award of the McGovern Institute at MIT. Named in honor of the former president of Merck Research Laboratories, the award was created in 2003 to recognize an outstanding discovery or significant advance in the field of neuroscience. Konishi "is being recognized for his fundamental discoveries concerning mechanisms in the brain for sound location," according to Institute Director Phillip Sharp. A member of the Caltech faculty since 1975, Konishi received his BS and MS from Hokkaido University and his PhD from UC Berkeley.

Caltech senior wins Churchill Scholarship

Po-Shen Loh, a senior in mathematics, will undertake graduate studies in math next year at Churchill College, University of Cambridge, as one of 11 Churchill Scholars who have been chosen from a pool of students nominated by major colleges and universities nationwide. He is the 13th Caltech student to have won a Churchill Scholarship since the program was founded in 1963 to enable outstanding American students to do graduate work in engineering, mathematics, and the physical and natural sciences at Churchill College. In addition, three former Churchill Scholars are currently in residence at Caltech: Chevron Professor of Chemical Engineering **John Brady**, Professor of Chemical Physics **Mitchio Okumura**, and Member of the Professional Staff **Alan Cummings**.

CIT honored for postdoc satisfaction

Caltech has placed number 12 among the top-15 U.S. institutions ranked in the Best Places to Work for Postdocs survey, conducted by *The Scientist*. Thousands of postdoctoral readers of the magazine replied to the survey, citing multidisciplinary research, economic stability, and an affable working environment as the major factors for job satisfaction. Writes publisher Alexander Grimwade in his letter of congratulation: "We feel that the voluntary participation of postdoctoral fellows candidly talking about their programs lends a credibility to our results that all the highly ranked institutions should be proud of." The results of the survey appear in the February 16 issue of *The Scientist*, together with stories about what makes the top institutions so appreciated by their postdocs.

Chess team two for two in Westerns

Caltech's chess team has for the second time taken the Western regionals of the U.S. Amateur Team Chess Championship, considered the most prestigious among amateur contests. Dubbing themselves Patrick Hummel and a Hat Trick of Pummelers, the winning team comprised students **Patrick Hummel** '06 (captain), **Graham Free** '04, **Zhihao (Howard) Liu** '06, and **Eugene Yanayt** '06. The Caltech team won all six of their matches for a rare perfect score, defeating a number of top-ranked teams, and will go on to represent the Western division in the national championship on March 14. Having won that competition last year in their first year of existence, the team will now attempt to be the first ever to win the nationals two years in a row.

Media minute

Steven Quartz, associate professor of philosophy and director of Caltech's Social Cognitive Neuroscience Laboratory, was profiled in a February 6 *Sacramento Bee* article, "Marketers See Riches in Brain Data," on neuromarketing, defined as "the emerging field of studying the brain to help advertisers tap into people's unarticulated needs, drives and desires." The article describes Quartz's work in developing a brain-scanning service that will help movie studios determine which trailers have the most potential to attract audiences. He and his team scan volunteers' brains as they watch film trailers and then evaluate which of the clips activate brain activity in certain areas, such as memory encoding (suggesting the clip will be remembered) and anticipation. Axline Professor of Business Economics **Colin Camerer**, who specializes in behavioral economics, is also quoted in the article. Commenting on neuromarketing, he says it "is kind of like interviewing the brain. Instead of just asking people what they want, you go right to the brain process." He also notes that despite such efforts, consumers remain notoriously unpredictable—from a marketer's point of view, "like some kind of random, finicky cat."

100 years of Coleman concerts

Celebrating 100 years of live performance in Pasadena, the Coleman Chamber Music Association continues its 2003–04 season with the music of internationally renowned artists. These musicians carry on Alice Coleman's desire to promote musical growth in her hometown.

On March 14, the Juilliard Quartet returns to the series for its 18th engagement, the highest number of performances in this series after those by the London String Quartet and Alice Coleman herself. The quartet will play selections from Mozart, Carter, and Dvorák.

The Eroica Piano Trio blends the sounds of the violin and the cello in a joyous chemistry that has been described as "exactly what a chamber ensemble should be." The trio will perform selections from Beethoven, Shostakovich, and Dvorák, on April 4.

Rounding out the Coleman centennial will be Edgar Meyer on the double bass and Amy Dorfman on the piano. Meyer, a 2002 MacArthur Fellow, is a composer as well as a Grammy Award–winning double bassist. The duo will play music by Vivaldi, Schubert, Bloch, Chopin, and Kreisler. As a special treat, audiences will hear a new composition by Meyer that will be announced the night of the April 18 show.

Up to 16 finalists will compete together in the Coleman Chamber Ensemble Competition, which is scheduled for Saturday, April 24, from 9 a.m. to 5 p.m. It is open to the public and free of charge. The competition offers audiences and performers alike an experience of chamber music with unparalleled intensity and intimacy as ensembles vie for prizes. The prizes this year total $19,000 and include the $6,000 Coleman Centennial Prize.

The winners of the competition will perform on Sunday, April 25, in Ramo Auditorium at 3:30 p.m. Presentation of the awards and a reception will follow the concert.

Begun in 1947 as the Coleman Auditions for young nonprofessional performers, the competition originally included junior, intermediate, and senior categories. Currently, up to 16 finalists (selected by preliminary judging on the basis of submitted recordings) compete together for substantial prizes. Entrants still must be nonprofessional, and the average age of each ensemble must be less than 26. Recent winning ensembles have ranged in average age from 17 to 25.

All performances take place on Sundays at 3:30 p.m. in Beckman Auditorium. Further information, as well as tickets to these concerts, may be obtained by calling Caltech Public Events at (626) 395-4652 or by visiting www.events.caltech.edu.

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Mars, *from page 1*

the watch." He says he is making only 1,000 of the novelty wristwatches.

Anserlian has since expanded his line to 20 models, including a ladies' watch. Buyers can choose different base metals; options include a date and calendar display. The watch with an image of Mars on its face reads "Mars Local Solar Time."

Prices start at about $200, and the costliest is the $500 presidential model, which Anserlian says he is sending to Governor Schwarzenegger and to President George W. Bush.

Anserlian is also making watches that keep Earth time but with a Mars face; these go for about $70. "Some people are even sending me old pocketwatches to convert them," he says. Pictures of the watches, and an order form, are available at www.executivejewelers.com.

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the academic week at Caltech is a printed version of selected events from the online master calendar, **http://today.caltech.edu/calendar/**. To publish events online, register as an event planner on the Caltech Today calendar. If unable to submit electronically, please call (626) 395-3630. For further information or a schedule of deadlines, call **(626) 395-3630**, fax (626) 449-2159, write *336 Calendar*, 1-71, California Institute of Technology, Pasadena, CA 91125, or e-mail **debbieb@caltech.edu**.

March 8–21, 2004

M T W T F S S

Monday, March 8

High Energy Physics Seminar
469 Lauritsen, 4 p.m.—"Split Fermions: Flavor Hierarchy and Leptogenesis," Gilad Perez, Lawrence Berkeley National Laboratory. Information: www.theory.caltech.edu/people/helen/seminar1.html.

Shirley A. Kliegel Lectureship in Geological and Planetary Sciences
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"Strength of the Continental Lithosphere," James Jackson, professor of active tectonics, University of Cambridge.

Applied and Computational Mathematics Colloquium
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4:15 p.m.—"On Network Models and Variational Principles," Professor Alexei Novikov, department of mathematics, Penn State University. Refreshments, 3:45 p.m. Information: www.acm.caltech.edu/colloq.shtml.

Tuesday, March 9

Institute for Quantum Information Seminar
74 Jorgensen, 3 p.m.—Topic to be announced. Professor Hoi-Kwong Lo, University of Toronto.

Mechanical Engineering Seminar
206 Thomas, 3 p.m.—"Acoustic Absorption by a Perforated Liner with Mean Bias Flow," Jeff D. Eldredge, assistant professor of mechanical and aerospace engineering, UCLA. Refreshments, 210 Thomas, 2:45 p.m.

Carnegie Observatories Colloquium Series
William T. Golden Auditorium, 813 Santa Barbara Street, 3:30 to 5 p.m.—"Weak Lensing, Dark Matter, and Dark Energy," Gary Bernstein, University of Pennsylvania. Refreshments.

Chemical Physics Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"The Role of Hydration in Protein Structure, Folding, and Function," Professor Teresa L. Head-Gordon, department of bioengineering, UC Berkeley.

Wednesday, March 10

Mathematical Physics Seminar
351 Sloan, noon—"Injectivity Problem for Toeplitz Operators," Nikolai Makarov, professor of mathematics, Caltech. Information: www.math.caltech.edu/events/mathphys.html.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Recent Studies on the Total Synthesis of Natural Products: Strategies, Tactics, and New Methodology," Professor William R. Roush, department of chemistry, University of Michigan, Ann Arbor.

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.— "Recent Results from the DEEP Survey," Sandra Faber, professor of astronomy and astrophysics, UC Santa Cruz / Lick Observatory. Information: www.astro.caltech.edu/~gma/colloquia.html.

Everhart Lecture Series
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4 p.m.—"Stalking the Exciton Condensate: Exotic Behavior of Electrons under Extreme Conditions," Melinda Kellogg, graduate student in physics. Refreshments, 3:45 p.m. Information: www.its.caltech.edu/~els.

Information Science and Technology Seminar
080 Moore, 4 p.m.—"Ubiquitous Pattern Matching and Its Applications," Professor Wojciech Szpankowski, department of computer sciences, Purdue University. Information: http://netlab.caltech.edu/seminar.

Materials Research Lecture
106 Spalding Lab, Hartley Memorial Seminar Room, 4 p.m.—"Nanowire Synthesis and Properties," Professor Peidong Yang, department of chemistry, UC Berkeley. Refreshments, 113 Spalding Lab, 3:45 p.m. Information: www.matsci.caltech.edu/seminars.html.

Thursday, March 11

Inorganic-Electrochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 2 p.m.—"Nitrosyl Hemes: Electronic, Structural, and Mechanistic Aspects of Their Roles in NO Sensing and Transport," Kenton R. Rodgers, associate professor, department of chemistry, North Dakota State University.

Web of Science for Science and Engineering
Sherman Fairchild Library, multimedia conference room, 2 to 3:30 p.m.—Learn tips and tricks for searching a premier bibliographic database for relevant journal articles. Information: library.caltech.edu/learning/default.htm.

Biophysics Lecture
153 Noyes, Sturdivant Lecture Hall, 4 p.m.—Topic to be announced. Professor Barry Honig, department of biochemistry and molecular biophysics, Columbia University.

Friday, March 12

High Energy Theory Seminar
469 Lauritsen, 11 a.m.—"Membranes and Consistent Quantization of Nambu Mechanics," Cosmas Zachos, Argonne National Laboratory. Information: www.theory.caltech.edu/people/seminar/schedule.html.

High Energy Theory Seminar
469 Lauritsen, 1 p.m.—Topic to be announced. John McGreevy, department of physics, Princeton. Information: www.theory.caltech.edu/people/seminar/schedule.html.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Towards Aqueous Olefin Metathesis Catalysis Containing N-Heterocyclic Carbene Ligands," Jason Jordan, graduate student in chemistry, Caltech.

Kellogg Seminar
Lauritsen Library, 4 p.m.—Topic to be announced. Nicole Bell, Fermi National Accelerator Lab.

Monday, March 15

Inorganic-Electrochemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Supported Ionic Liquid Catalysis: A New Concept for Homogeneous Catalysis," Dr. Christian P. Mehnert, ExxonMobil Chemical Company, Baytown Technology and Engineering Complex West.

Wednesday, March 17

Astronomy Colloquium
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—"The Cold Dark Matter Power Paradox: Small Scale Structure and Early Reionization," Rachel Somerville, astronomer, Space Telescope Science Institute. Information: www.astro.caltech.edu/~gma/colloquia.html.

Organic Chemistry Seminar
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—"Catalysts for Enantioselective Cycloaddition Reactions," Professor Viresh H. Rawal, department of chemistry, University of Chicago.

Thursday, March 18

Von Karman Lecture Series
JPL, von Karman Auditorium, 7 p.m.—"Return to Sender: *The Stardust Sample* Return Mission," Tom Duxbury, Stardust Project Manager, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

USGS Public Lecture Series
Baxter Lecture Hall, 8 p.m.—"Earthquake Conversations," Dr. Ross Stein, U.S. Geological Survey scientist. Information: http://pasadena.wr.usgs.gov/lectures or 583-6801.

Friday, March 19

High Energy Theory Seminar
469 Lauritsen, 11 a.m.—"N=1 Field Theories and Fluxes in IIB String Theory," Richard Corrado, physics department, University of Illinois, Urbana-Champaign. Information: www.theory.caltech.edu/people/seminar/schedule.html.

Inorganic-Organometallics Seminar
151 Crellin, 4 p.m.—"Structural and Mechanistic Investigations of a Chromium-Phosphine System for Catalytic Trimerization of Ethylene," Theodor Agapie, graduate student in chemistry, Caltech.

Von Karman Lecture Series
Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—"Return to Sender: The Stardust Sample Return Mission," Tom Duxbury, Stardust Project Manager, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture.

CampusEvents

Monday, March 8

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

Men's Tennis
vs. Wabash College, 3:30 p.m.

Tuesday, March 9

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: 793-4099 or camila_bruns@hotmail.com.

Caltech Shorinji Kempo Club
Brown Gymnasium, 7 p.m.—Learn effective self-defense and martial arts. Sessions are free. No experience required. Wear comfortable clothing.

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

Amnesty International Letter Writing
Athenaeum Rathskeller, 7:30 p.m.—Caltech/Pasadena AI Group 22 will host an informal meeting to write letters on human-rights abuses around the world. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov. Visit our website at www.its.caltech.edu/~aigp22.

Wednesday, March 10

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

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

Salsa Dance Class
Winnett lounge, 7 p.m.—Learn the fundamentals of Cuban-style salsa and rueda from a professional instructor. The beginners' session begins at 7 p.m. The intermediate/advanced lesson starts at 8:30. The first class took place January 28. Fee: $28 for 5 classes; $7 per class.

Thursday, March 11

Retirement Distribution Flexibilities
Winnett clubroom #1, 11 a.m.—The Human Resources Benefits Office invites you to attend a workshop presented by TIAA-CREF. This workshop will provide participants who may be close to retirement with a demonstration of TIAA-CREF's retirement income flexibilities, helping to clarify the most suitable income options for their needs. All Caltech personnel are welcome.

Reel Women Film Series: *Fly Girls*
Caltech Women's Center, noon—This film tells the story of the Women Airforce Service Pilots (WASP), who during World War II test-piloted aircraft, ferried planes, and logged 60 million miles in the air. Lunch and drinks provided.

Caltech Shorinji Kempo Club
Brown Gymnasium, 7 p.m.—Learn effective self-defense and martial arts. Sessions are free. No experience required. Wear comfortable clothing.

NPR's *Wait Wait . . . Don't Tell Me!* Live Taping
Beckman Auditorium, 7:30 p.m.— Join Peter Sagal, NPR veteran Carl Kasell, and a special celebrity guest as KPCC-FM 89.3 presents a live performance of National Public Radio's popular news and trivia quiz show, *Wait Wait . . . Don't Tell Me!* The performance will be taped for broadcast the following Saturday. 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.

Friday, March 12

Men's Tennis
vs. Colorado College, 2 p.m.

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

Caltech Chess Club
Page House dining room, 8 p.m.—Be you master or novice, you will enjoy the chess club's weekly meetings. Information: www.its.caltech.edu/~citchess.

Caltech Dance Show
Ramo Auditorium, 8 p.m.—Every facet of the Caltech community will be represented in the first campuswide dance show, with pieces that range from hula to salsa, from belly dance to jazz. The suggested donation is $2. The program will continue on March 13 at 8 p.m.

Caltech Chinese Chess Club
Page House dining room, 9 p.m.—The Chinese Chess Club meets on Friday nights for casual play in the Page House Dining Hall. Information: www.its.caltech.edu/~xiangqi.

Saturday, March 13

Track and Field
Caltech Collegiate Multi-Team Meet, 10 a.m.

Hawaiian Club Hula Lessons
Winnett lounge, 1 p.m.—Learn hula dancing from the Hawaiian Club. The 10 weekly lessons, which began January 10, will be held on Saturdays until March 13. Fee: $5 per class; graduate students and ASCIT members, $3 per class. Pareos are the recommended attire; purchase one at the class for $5. Registration: maruchan@its.caltech.edu. Information: www.ugcs.caltech.edu/~lilinoe/hula.html.

The Gizmo Guys
Beckman Auditorium, 2 p.m.—Comedy jugglers Allan Jacobs and Barrett Felker complement their unique and dazzling presentation with infectious humor and zany antics. 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.

Caltech Dance Show
See Friday, March 12, for details.

Sunday, March 14

Skeptics Society Lecture
Baxter Lecture Hall, 2 p.m.—"The Science of Good and Evil: Why People Cheat, Gossip, Share, Care, and Follow the Golden Rule," Michael Shermer, director, Skeptics Society. Donation is $8 for nonmembers and non-Caltech students. Free to the Caltech/JPL community. Tickets and information: 794-3119 or skepticmag@aol.com. Visit the Skeptics Society at www.skeptic.com. Book signing to follow the lecture.

Caltech Shorinji Kempo Club
Braun Athletic Center, aerobics room, 3:30 p.m.—Learn effective self-defense and martial arts. Sessions are free. No experience required. Wear comfortable clothing.

Coleman Chamber Concert
Beckman Auditorium, 3:30 p.m.—The Juilliard String Quartet will perform works by Mozart, Carter, and Dvorák. 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.

Monday, March 15

Baby Furniture and Household Equipment
See Monday, March 8, for details.

Tuesday, March 16

NSF Workshop on Grant Writing
Beckman Institute auditorium, 9 a.m. to noon—Join the Caltech Postdoc Association for a half-day workshop covering the basics of NSF grant writing and submission. Presenters include faculty members, David Mayo from the Office of Sponsored Research, and Ephraim Glinert from the NSF. For information and to register for an individual meeting with Ephraim: www.its.caltech.edu/~cpa.

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: 793-4099 or camila_bruns@hotmail.com.

TheatreworksUSA: *Romeo and Juliet*
Beckman Auditorium, 10:30 a.m.—TheatreworksUSA is America's largest and most prolific professional not-for-profit theater for young and family audiences. In this critically acclaimed 90-minute, 11-actor production of the classic text with a pulsing rock incidental score, Theatreworks takes Shakespeare's language to the streets of a futuristic crumbling urban wasteland called Verona. Tickets: TheatreworksUSA, (800) 497-5007.

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

Wednesday, March 17

Baby Furniture and Household Equipment
See Wednesday, March 10, for details.

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

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

Salsa Dance Class
Winnett lounge, 7 p.m.—Learn the fundamentals of Cuban-style salsa and rueda from a professional instructor. The beginners' session begins at 7 p.m. The intermediate/advanced lesson starts at 8:30. The first class took place January 28. Fee: $28 for 5 classes; $7 per class.

Thursday, March 18

Women's Wellness Series: Humor Your Stress
Caltech Women's Center, noon—Comedian and therapist Loretta LaRoche uses her irreverent and unconventional style to show how to find humor in everyday situations and to rediscover the joys of simple pleasures in order to help conquer the stress of life. Reservations: wcenter@studaff.caltech.edu.

Friday, March 19

Fire-Extinguisher Training
Wilson Avenue North Parking Structure, roof, 11 a.m.—This class will teach basic fire safety and include hands-on training on how to use a fire extinguisher. Class size is limited; please call 395-6727 or e-mail safety.training@caltech.edu to reserve a place.

Men's Tennis
vs. University of Wisconsin-Oshkosh, 2 p.m.

Track and Field
Oxy Distance Carnival, at Occidental College, 5 p.m.

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

Saturday, March 20

Track and Field
La Verne Invitational, at the University of La Verne, 10 a.m.

Caltech/MIT Enterprise Forum
Baxter Lecture Hall, 8:30 a.m. to 12:30 p.m.—"The Global Entrepreneur." This program, co-sponsored by the Caltech/MIT Enterprise Forum and the Indian Institutes of Technology alumni organization, will feature a panel of highly successful entrepreneurs of global ventures. They will cover the key issues and will recount their experiences in setting up global enterprises. Registration and continental breakfast, 7:45 a.m.; program, 8:30 a.m. Information: www.entforum.caltech.edu.

Sunday, March 21

Men's Tennis
at La Sierra University, 10 a.m.

Amnesty International Book Discussion Group
Vroman's Bookstore, 695 E. Colorado Boulevard, second floor, 6:30 p.m.—This month's book is *Reading Lolita in Tehran: A Memoir in Books*, by Azar Nafisi. All are welcome. Sponsored by Caltech/Pasadena AI Group 22. Visit Group 22 at www.its.caltech.edu/~aigp22.

***Galaxy**, from page 1*

stretched to the point of being observed at infrared wavelengths.

The team first detected the new galaxy in a long exposure of the Abell 2218 cluster taken with the Hubble Space Telescope's Advanced Camera for Surveys. Analysis of a sequence of Hubble images indicates a redshift of at least 6.6, but additional work with the Keck Observatory's 10-meter telescopes suggests that the astronomers have found an object with a redshift that is close to 7.0.

Redshift is a measure of the factor by which the wavelength of light is stretched by the expansion of the universe. The greater the shift, the more distant the object and the earlier it is being seen in cosmic history.

"As we were searching for distant galaxies magnified by Abell 2218, we detected a pair of strikingly similar images whose arrangement and color indicated a very distant object," said Kneib. "The existence of two images of the same object indicated that the phenomenon of gravitational lensing was at work."

The key to the new discovery is the effect the Abell 2218 cluster's gigantic mass has on light passing by it. According to Einstein's theory of relativity, light is bent and can be focused in a predictable way due to the warpage of space-time near massive objects. In this case the phenomenon actually magnifies and produces multiple images of the same source. The new source in Abell 2218 is magnified by a factor of 25.

The role of gravitational lensing as a useful phenomenon in cosmology was first pointed out by the Caltech astronomer Fritz Zwicky in 1937, who even suggested it could be used to discover distant galaxies that would otherwise be too faint to be seen.

"The galaxy we have discovered is extremely faint, and verifying its distance has been an extraordinarily challenging adventure," Kneib added. "Without the magnification of 25 afforded by the foreground cluster, this early object could simply not have been identified or studied in any detail with presently available telescopes."

Using the unique combination of the high resolution of Hubble and the magnification of the cosmic lens, the researchers estimate that the galaxy is small—perhaps measuring only 2,000 light-years across—but forming stars at an extremely high rate.

An intriguing property of the new galaxy is the apparent lack of the typically bright hydrogen emission seen in many distant objects. Also, its intense ultraviolet signal is much stronger than that seen in later star-forming galaxies, suggesting that the galaxy may be composed primarily of massive stars.

"The unusual properties of this distant source are very tantalizing because, if verified by further study, they could represent those expected for young stellar systems that ended the Dark Ages," said Richard Ellis, Steele Family Professor of Astronomy and a coauthor of the article.

British astronomer Sir Martin Rees coined the term Dark Ages to signify the period in cosmic history when hydrogen atoms first formed but stars had not yet had the opportunity to condense and ignite. Nobody is quite clear how long this phase lasted, and the detailed study of the cosmic sources that brought this period to an end is a major goal of modern cosmology.

The team plans to continue the search for additional extremely distant galaxies by looking through other cosmic lenses in the sky.

"Estimating the abundance and characteristic properties of sources at early times is particularly important in understanding how the Dark Ages came to an end," said Mike Santos, a former Caltech graduate student involved in the discovery, and now a postdoctoral researcher at the Institute of Astronomy in Cambridge, England. "We are eager to learn more by finding further examples, although it will no doubt be challenging."

The Caltech team reporting on the discovery consists of Kneib, Ellis, Santos, and Johan Richard. Kneib and Richard are also affiliated with the Observatoire Midi-Pyrenees of Toulouse, France. The research was funded in part by NASA.

The W. M. Keck Observatory is managed by the California Association for Research in Astronomy, a scientific partnership between Caltech, the University of California, and NASA. For more information, visit the observatory online at www.keckobservatory.org.

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Mountain Film Fest is back

The Caltech Alpine Club and the Outland Mountain Shop will once again present the Banff Mountain Film Festival World Tour, bringing to campus the best in mountain film. This year's event will take place Wednesday, March 24, at 7:30 p.m. in Ramo Auditorium.

Films in the 2004 tour will take viewers from their own backyards to the ends of the earth—Nepal, Siberia, China, Italy, Pakistan, and Croatia, among other places—in a wide variety of mountain stories, from sports to culture to environment. Highlights include *Front Range Freaks: Biscuit*, about a small dog that loves to climb big rocks, and *A Man Called Nomad*, which examines the dilemma of nomadic herders caught between their traditional lifestyle and a changing world. *Wehyakin* follows an international crew of paddlers through spectacular white water in Iceland, Norway, and Mexico, and *The Other Final* narrates a game between the lowest-ranked teams in international soccer, Bhutan and Montserrat, played against a mountainous Bhutanese backdrop on the same day as the World Cup Final.

Produced by the Banff Centre for Mountain Culture, the tour comprises award-winning films from the Banff Mountain Film Festival, held in Banff, Alberta, Canada. Each November, the world's best films on mountain themes draw international crowds of thousands to Banff. The world tour expands that audience, taking the best of the fest to Africa, Asia, Europe, and the Americas.

Tickets are $10 in advance, $12 at the door, and $5 for students. Contact Caltech Public Events at 1 (888) 2CALTECH, (626) 395-4652, or events@caltech.edu, or the Outland Mountain Shop at (626) 568-8828. For more information, visit www.banffmountainfestivals.ca.

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Seeing the Ath in a new light

Recent guests at Caltech's Athenaeum have had new light shed on their enjoyment of the faculty club's elegant interior.

Lighting fixtures in the Hall of Associates have been replaced with ones that, in addition to being brighter, more closely resemble the original lights installed when the club was built. The main dining room fixtures also have been revamped, with a new look and increased lighting capacity, says Romy Wyllie, the interior designer for the Athenaeum and a cofounder of the Caltech Architectural Tour Service.

According to Wyllie, the upgrade began several years ago when the Athenaeum's Design Review Committee noted that the lighting in the Hall of Associates was "not adequate for meetings, dining, even reading a menu." Additionally, ornate candelabra lights with shades—which Wyllie deems "too busy" and "not appropriate" for the room's decor—had replaced the original lighting fixtures sometime in the late 1960s.

While doing research for her book *Caltech's Architectural Heritage: From Spanish Tile to Modern Stone*, Wyllie came across a photo of the hall with the original light fixtures, and thought it would be ideal to be able to recapture the room's intended style and feel. She worked with Frank Gerardo, a consultant at Horton Lees Brogden Lighting Design, who conceived new hanging fixtures that resemble the simple, pendantlike originals.

"The new fixtures are a little larger than the original ones and more in scale with the volume of the room," Wyllie says. They also can accommodate compact fluorescent bulbs, providing more light at a lower cost. The T. A. Greene Company, which had designed the lighting for Caltech's chemistry library, manufactured the lamps, and also added small tube lights hidden behind valances to illuminate the historic shields along the ceiling's perimeter.

Additionally, the main dining room candelabras were cleaned and rewired and their shades were removed, enabling the fixtures to handle higher-wattage bulbs and to emit more light overall. With new programmable dimmer systems in both the dining room and the Hall of Associates, the brightness can be adjusted as needed.

"This was really a team effort," says Wyllie. In addition to Gerardo and T. A. Greene, she worked with Facilities Management's Greg Norden, who supervised the project; Jorge Alvarado of the Athenaeum; and Mike Anchondo and members of Caltech's electrical shop, who performed the installation and electrical work.

Wyllie is pleased with the results. "We were able to use the latest in lighting technology to make the rooms more functional, yet adaptable for romantic dining or a wedding party. At the same time, we're retaining the architectural integrity of the space, and in fact bringing back some of the historical intent."

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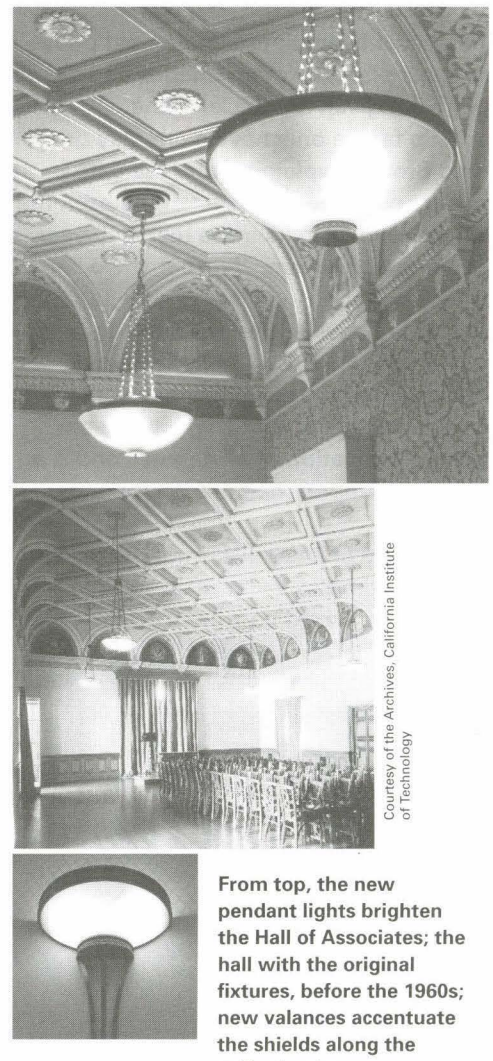

Courtesy of the Archives, California Institute of Technology

From top, the new pendant lights brighten the Hall of Associates; the hall with the original fixtures, before the 1960s; new valances accentuate the shields along the ceiling's edge.

Oral histories and memoirs go digital

Deborah Williams-Hedges

"In 1919, during the summer, when I was eighteen years old, I had been in southern Oregon as a paving engineer, a paving plant inspector, working for a contractor. . . . And at the end of the summer, I did not have money enough to return for my junior year at Oregon Agricultural College. So I didn't return. I'd been sending my money to my mother, who was a widow and was having a hard time. . . ."

This excerpt, from the personal memoirs of world-renowned Nobel Laureate and Caltech chemist Linus Pauling, is one of many intriguing tales and personal accounts contained in the Institute's Oral Histories Online Project (http://oralhistories.library.caltech.edu/).

The original Caltech Archives Oral History Project began in 1978 for the purpose of recording the personal memoirs of distinguished scientists, professors, and administrators of the Institute. To date, approximately 200 interviews have been completed, and most are open to readers in transcript form.

In the fall of 2002, the Oral Histories Online Project began bringing selected interviews to the public in digital text form. Approximately 30 in-depth interviews from the fields of biology, chemistry, geology, physics, astronomy, environmental science, and social science are currently online, and additional interviews continue to be added.

The Caltech Institute Archives, which houses photographs, documents, and artifacts pertaining to the history of Caltech and the scientific community, recently received a $10,000 grant to support the Oral Histories Online Project from the Gladys Krieble Delmas Foundation. With the funding, the Archives will publish additional interviews online, making them accessible to a wider audience.

Founded in 1976, the Gladys Krieble Delmas Foundation awards grants to support the humanities, the study of Venetian history, and research libraries.

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Planetoid, *from page 1*

Unlike Quaoar, the new planetoid hasn't yet been pinpointed on old photographic plates or other images and hasn't yet been given an official name.

"So far we only have a one-day orbit," said Brown, explaining that the data covers only a tiny fraction of the orbit the object follows in its more than 300-year trip around the sun. "From that we know only how far away it is and how its orbit is tilted relative to the planets."

The tilt that Brown has measured is an astonishingly large 20 degrees, larger even than that of Pluto, which has an orbital inclination of 17 degrees and is an anomaly among the otherwise planar planets.

The size of 2004 DW is not yet certain; Brown estimates a size of about 1,400 kilometers, based on a comparison of the planetoid's luminosity with that of Quaoar. Because the distance of the object can already be calculated, its luminosity should be a good indicator of its size relative to Quaoar, provided the two objects have the same albedo, or reflectivity.

Quaoar is known to have an albedo of about 10 percent, which is slightly higher than the reflectivity of our own moon. Thus, if the new object is similar, the 1,400-kilometer estimate should hold. If its albedo is lower, then the object could actually be somewhat larger; if higher, smaller.

According to Brown, scientists know little about the albedos of objects this large and this far away, so the true size is quite uncertain. Researchers could best make size measurements with the Hubble Space Telescope or the newer Spitzer Space Telescope.

The continued discovery of massive planetoids on the outer fringe of the solar system is further evidence that objects even farther away and larger are lurking out there. "It's now only a matter of time before something is going to be discovered out there that will change our entire view of the outer solar system," Brown says.

The team is working hard to uncover new information about the planetoid, which they will release as it becomes available, Brown adds. Other telescopes will also be used to better characterize the planetoid's features.

Further information is available at www.gps.caltech.edu/~chad/2004dw.

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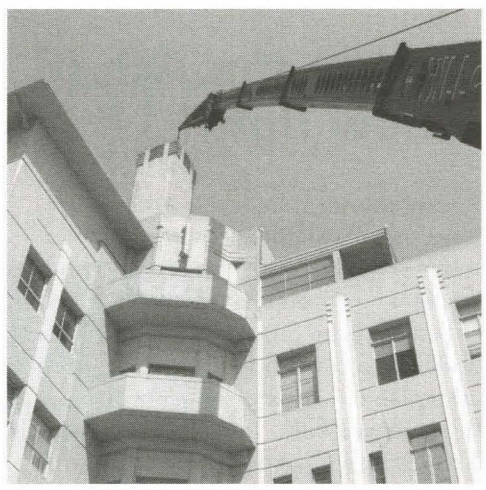

Workers used a crane last September to remove the cross atop the dome of (CIT)². The cross was donated to a local religious organization.

(CIT)², from page 1

Institute, whose own campus is running out of space for expansion. (CIT)² is also fortuitously located one block from the city's extensive data fiber loop, which is of immense importance to information-trading institutions like Caltech.

Now that (CIT)² belongs to Caltech, the question is how best to use it. Canny says that the directors of the Thirty-Meter Telescope are very interested in utilizing space there, and researchers from Caltech and an NSF-funded university consortium have either visited the site or expressed interest. Caltech is also considering the possibility of leasing out some space to industry.

Architecturally, Canny says, the main building blends art deco streaming lines with the moderne style. Intricate grillwork gates still hang above the entryway, while a bas-relief adorns the main door's lintel facing Washington Boulevard. A dome caps the center tower of the long and narrow edifice. A 12-foot cross stood atop the dome until its recent removal and donation to a local religious order.

In 1947, a convent was completed on the (CIT)² property. A graceful building with a copper roof that has patinated with age, the convent's top two floors were once lined with tiny and modest cells. But the ground floor, which held the nun's common areas, had a sun porch that opened out to an enclosed grassy courtyard, shaded by ancient pines.

The convent is connected to the hospital's chapel, a small and peaceful refuge that holds a choir loft, 20 rows of pews, and a sacristy. Light filters in through painted glass, and the plaster ceiling resembles carved wood.

"The main hospital, convent, and chapel were given landmark designation by the city in 2003," Canny says. "The nuns moved out about 1980 to a couple of houses on [nearby] Woodlyn Road. They are currently used by Step-by-Step, a child-care agency."

Over the years, the sisters responded to the growing community's needs by adding an annex, an emergency-care facility, a radiology building, an acute-care wing, and an obstetric-surgery facility. According to Canny, the interior walls of some of these structures can be removed to create large open spaces. A central plant building with boilers, chillers, and cogeneration equipment provides the facility with electricity as well as cooling and heating.

Eventually, financial realities caught up with St. Luke. Competition came from Huntington Hospital to the west and from Arcadia to the east, home of the ultra-modern 138-bed Methodist Hospital built in 1957.

Today, the former St. Luke Medical Center still bears the marks of human use and habitation, evident in the worn carpeting, the disused desks, the abandoned hospital beds, and the aroma of food that still emanates from the basement kitchen. While Caltech's planners mull over their options, many of these halls have found a second life as "dressing," or set props.

Since Caltech took over its stewardship, the hospital has become a venue for production companies to film television series and commercials. The television shows *ER, The West Wing, Monk,* and *Without a Trace* have been shot there, as was a hospital scene in the feature film *Something's Gotta Give*. Commercials for Burger King, Diet Pepsi, and a bank have also been shot there, Canny says, all of which provide useful revenue to Caltech.

In 1987, (CIT)² opened a new medical office building on the property and leased office space to doctors. This valuable resource to the community is another source of revenue for Caltech, Canny says, and the offices will remain.

Ultimately, whoever utilizes space at the former (CIT)² will have to come to terms with a vestige of the hospital's past inhabitants: the reputed St. Luke ghost. Some people believe that not all of the nuns moved out in 1980.

Members of the facility's skeleton crew of security guards, mechanics, and gardeners have reported strange sightings and occurrences, including chapel lights that go out by themselves. "Sometimes I think the guys are here alone too long," Canny says. "Me, I think I've heard footsteps, but it could have just been my imagination."

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Clockwise from left, current and former graduate students Sean Spillane, Dave Michalak, Robert Strittmatter, Julie Liu, Sarah Heilshorn, and Cecily Ryan perform a pole dance, one of the featured pieces in the upcoming show.

Dance show a first on campus

Caltech's first-ever all-campus dance show will premiere at Ramo Auditorium on Friday, March 12, and Saturday, March 13. Featuring a dozen performances that represent the wide variety of cultures on campus, the program will begin at 8 p.m. and is open to the public. A donation of $2 is suggested.

"We've got a very diverse program, ranging from belly dancing to hula to salsa to jazz," says Julie Liu, a graduate student in chemical engineering who is coordinating the show with undergrad Robin Deis '04 and graduate student in chemistry Catharine Larsen.

"A lot of different groups on campus have been working hard on pieces to contribute, and I think the show will be very exciting and fun to watch. We hope that this will become an annual event at Caltech."

Liu, Deis, and Larsen are members of the Caltech Dance Troupe, a fairly recent arrival on campus whose goal is to broaden interest in dance classes and performances. The group offers a variety of classes, nearly all of which are open to the Caltech community, and many of which are free or cost a minimal amount.

According to Liu, several troupe members have participated in past shows sponsored by the USC dance program, and were inspired to hold one of their own. "Because there are a lot of different dance groups on campus, we thought it would be great to put together a show consisting of members of the Caltech community," she says. "We hope that the show will raise the visibility of dance on campus and that others will share our enthusiasm for dance."

The event is sponsored by the Caltech Dance Troupe, Moore-Hufstedler Fund, Graduate Student Council, and Campus Life and Graduate Housing offices. For more information, e-mail troupe@caltech.edu.

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