

Random Walk

NSF Sites Named

Caltech will be the site of one of 11 Science and Technology Centers supported by the National Science Foundation and will be a partner in another. The Center for the Development of an Integrated Protein and Nucleic Acid Biotechnology and the Center for Research on Parallel Computation (based at Rice University) represent 2 of 323 proposals submitted nationwide.

The NSF will provide first-year funding of more than \$3 million for the Center for the Development of an Integrated Protein and Nucleic Acid Biotechnology, which will be a cooperative effort by scientists at Caltech and JPL, led by Leroy Hood, the Bowles Professor of Biology and chairman of the Division of Biology. Further funding of the centers for the first five years will depend on available funds and the center's progress, and a review will determine funding for an additional five years after that.

Scientists at this center intend to improve on and integrate the most advanced techniques in genetic engineering, protein chemistry, and data analysis in order to develop new technology to speed research in protein and gene regulation. Their efforts should ultimately open up new possibilities for understanding, diagnosing, and treating diseases at a molecular level.

First-year funding of more than \$4 million will support a joint proposal of Caltech and Rice University for the Center for Research on Parallel Computation, based in Houston. This center

will focus on the development of the next generation of supercomputers, which will depend on parallel processing—breaking up computations into smaller problems that can be solved more quickly by computer subsystems working simultaneously rather than in sequence. The principal Caltech participants will be Geoffrey Fox, professor of theoretical physics and associate provost for computing; Herbert Keller, professor of applied mathematics (who will represent Caltech in the center's administration); and Charles Seitz, professor of computer science.

Time-Share Telescope

The cost of looking at the cosmos has risen astronomically, causing researchers to pool their resources. As of January 1990, Cornell University astronomers will be allotted 25 percent of the observing time on Palomar Observatory's 200-inch Hale Telescope. In return, Cornell will cover one-fourth of the operating costs of the telescope and provide new, ultra-sensitive detectors for it. Cornell's total contribution is expected to be about \$500,000 annually.

The first instruments Cornell will contribute are infrared detectors. Cornell astronomers have led the way in developing high-sensitivity technology for such devices. Infrared, or thermal, radiation, is an important astronomical resource because many interesting objects that aren't hot enough to emit visible light, or whose light is obscured by intervening dust, shine brightly in the infrared.

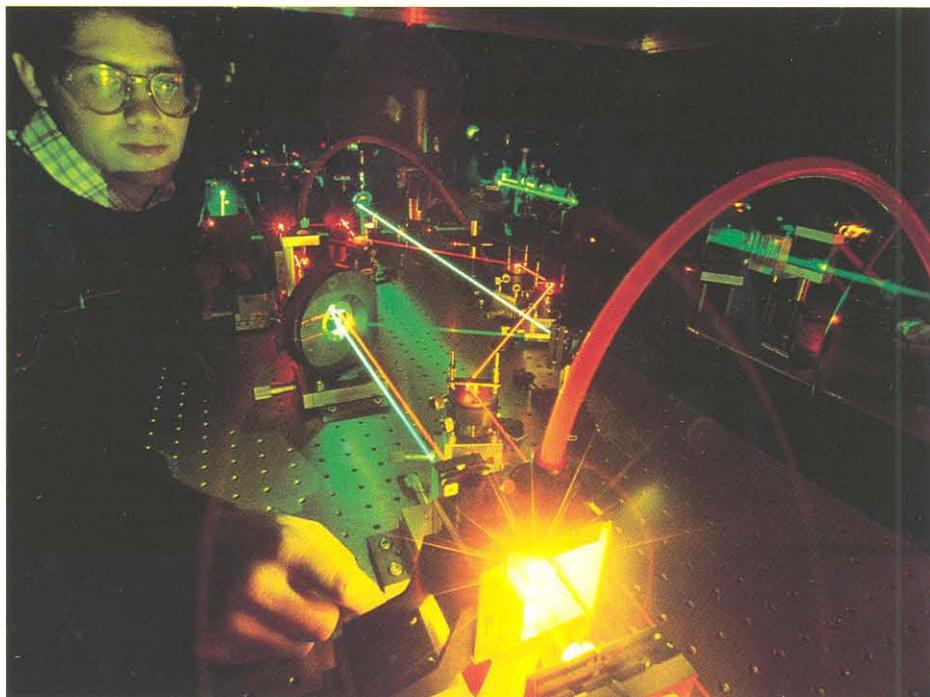
New Appointments

Edward Stone, Jr., professor of physics, has been named vice president for astronomical facilities. In this capacity Stone will be responsible for Caltech's involvement in the design, construction, and start-up phases (as well as the policy-making and negotiating aspects) of the W. M. Keck Observatory, which, when completed in Hawaii in 1992, will house the world's largest optical telescope. Stone is already chairman of the board of directors of the California Association for Research in Astronomy, which was formed in 1985 to oversee the 10-meter-telescope joint project with the University of California.

Stone has worked principally in cosmic ray research and was the project scientist for JPL's Voyager missions to Jupiter, Saturn, Uranus, (and coming next August, Neptune). He joined the Caltech faculty in 1964 and has been chairman of the Division of Physics, Mathematics and Astronomy since 1983.

Succeeding Stone as division chairman is Gerry Neugebauer, the Howard Hughes Professor and professor of physics, as well as director of Palomar Observatory. Neugebauer, who has been a member of the Caltech faculty since 1962, is known for his pioneering work in infrared astronomy. He has played a leading role in infrared studies of the planets—developing instrumentation for the Mariner, Pioneer, and Viking missions at JPL—and was the principal U.S. scientist for the Infrared Astronomical Satellite (IRAS).

On the evening of April 28, 1988, 100 photographers fanned out across the State of California. Starting at midnight, and for the next 24 hours, they shot nearly 115,000 photographs. The fruits of their labor, *A Day in the Life of California*, contains only a few hundred pictures. This shot of Graduate Student Marcos Dantus in Professor of Chemical Physics Ahmed Zewail's laser lab appears on page 96.



Honors and Awards

Harry A. Atwater, assistant professor of applied physics, has been elected to the Cornell University-based Böhmsche Physical Society "for his studies of ion-beam-enhanced grain growth in thin-film systems."

Assistant Professor of Computer Science Alan H. Barr has won the 1988 Computer Graphics Achievement Award from the Association of Computing Machinery's Special Interest Group on Computer Graphics (SIGGRAPH) for developing the technique of "dynamic constraints," a shortcut method which imparts realistic motion to computer animations.

Assistant Professor of Cosmochemistry Geoffrey A. Blake is one of 20 outstanding young faculty nationwide to be awarded the first David and Lucile Packard Fellowships in Science and Engineering, which includes an unrestricted research grant of \$100,000 annually for the next five years.

Harry B. Gray, Beckman Professor of Chemistry and director of the Beckman Institute, has been elected an Honorary Member of the *Societa Chimica*

Italiana (the Italian Chemical Society), "in recognition of the many fundamental contributions he has given to modern inorganic and bio-inorganic chemistry."

J. Harold Wayland, professor of engineering science, emeritus, has received the 1988 Malphigi Award, the European Society for Microcirculation's highest honor. The award honored his research in blood flow and his development of quantitative measurements of fundamental life processes on the microscopic level.

Rhodes Scholar

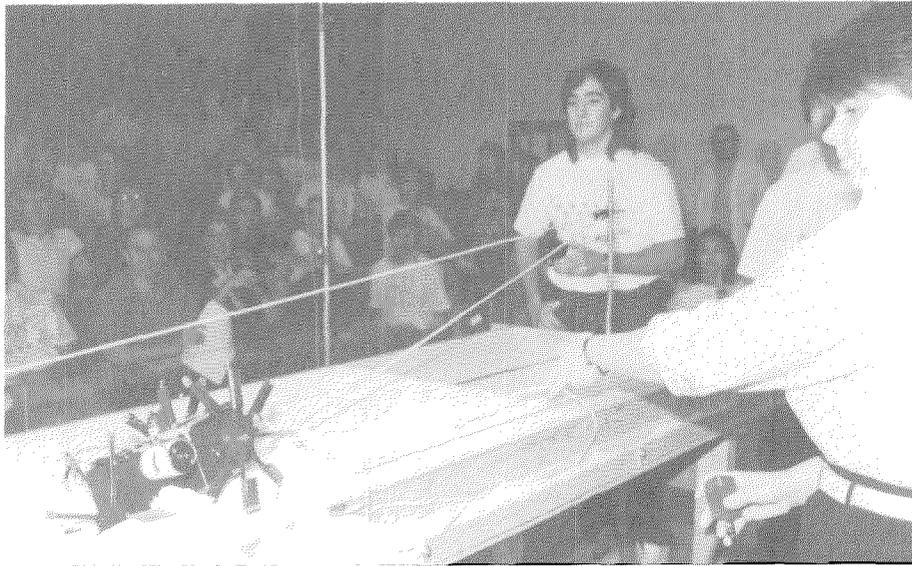
Gregory P. Dubois, a doctoral candidate in high-energy physics, has been named a Rhodes Scholar. The Rhodes Trust will give Dubois a two-year post-doctoral fellowship at Oxford University in Oxford, England. Dubois is one of 32 American college students to be selected as Rhodes Scholars this year. Dubois will head for Oxford this fall, where he will study the interaction of science, technology, and public policy.

Sternberg Dies

Eli Sternberg, professor of mechanics, emeritus, died October 8 in Pasadena. He was 70 years old. Sternberg was known for his theoretical work in structural elasticity, which found numerous applications in both mechanical and civil engineering.

Born in Vienna, Sternberg left there in 1938. He earned his BCE from the University of North Carolina in 1941 and his MS (1942) and PhD (1945) from the Illinois Institute of Technology. After teaching at I.I.T. and Brown, he joined the Caltech faculty as professor of applied mechanics in 1964. He became professor of mechanics in 1970 and emeritus just this past year.

Sternberg was a fellow of the American Academy of Arts and Sciences and a member of the National Academy of Engineering; he was awarded honorary doctorates from the University of North Carolina and the Israel Institute of Technology, and in 1985 won the Timoshenko Medal of the American Society of Mechanical Engineers, considered the nation's most prestigious award in applied mechanics.



Assistant Professor of Mechanical Engineering Erik Antonsson's ME 72 final played to a packed house once again. The challenge was the same as last year's— pitting devices students built from identical "bags of junk" in a tug-of-war over a bed of plastic "sand"—but this year's motors were 20 times more powerful. In the final round, Philip Lee's paddle-wheel crawler flailed doggedly down the track, but lost to Steve Errea (left), whose tank-treaded juggernaut went undefeated. Leslie McCaffrey (right), who placed second last year, officiated.

Carlson Stamp

Separated by more than 600 years, Thomas Blanket of Bristol and Chester Carlson of Caltech have this in common: They both introduced popular, durable, even revolutionary products. However, Blanket, being a simple fellow, called his commodity after himself, while Carlson—an educated man, a scientist, and a graduate of Caltech (BS '30)— named his invention after the Greek word for dry writing: xerography. The result? Today, Blanket is a household word, not to mention a household item. As for the inventor of Xeroxing, who died in 1968, the ink has long since run dry on his memory.

But now Carlson's name—and face— may finally get some recognition. On October 21, the U.S. Post Office issued a stamp commemorating the man who 50 years earlier to the day had used a silk handkerchief, a sulfur-coated aluminum plate, and ideas borrowed from a library book in ways that would ultimately alter the lives of millions of office workers. (The commercial Xerox copier made its debut in 1960.)

The purple-gray stamp—the postage needed to mail a postcard to

Canada— is largely the result of an 11-year campaign by Frank Horton, congressional representative from Rochester, New York, where Carlson lived as a citizen-philanthropist, after his invention made him rich but never famous.

Carlson's generosity was also extended to his alma mater. In the 1960s he made an anonymous gift to Caltech that, with funding from the National Science Foundation, made possible the building of Noyes Laboratory of Chemical Physics, completed in 1967— a year before his death. In accordance with Carlson's wishes, his role remained a secret until 1977, when, at the request of his widow, Doris Carlson, the identity of the donor was announced and a plaque to that effect placed in the foyer of Noyes.

Carlson also served for a brief period before his death on the Caltech Board of Trustees.

According to the Caltech Archives, Carlson is the first alumnus ever to grace a postage stamp— an honor incidentally that was never accorded Thomas Blanket. (Caltech's first president, Robert A. Millikan, was honored with a 37-cent stamp in 1982.) It may not have quite the force of "Can you Carlson me a dozen copies?" but at least it stamps as worthy of notice the man who, in the words of *American*

Heritage magazine, "satisfied the reproductive urges of office workers everywhere."

Heidi Aspaturian

Reprinted from *On Campus*.

Math Show Award

Project *MATHEMATICS!*'s pilot videotape, "The Theorem of Pythagoras," won the gold medal in the Mathematics and Computer Science category at the 1988 International Film & TV Festival of New York. The tape is the first in a series that is designed to use computer animation to teach basic mathematics. Additional episodes will be produced as funding becomes available. The project, which involves 32 states as well as professional mathematics organizations, is based at Caltech and headed by Professor of Mathematics Tom M. Apostol and JPL's James F. Blinn, one of the world's leading computer animators. The two were also part of the collaboration that produced *The Mechanical Universe*, the award-winning physics telecourse developed at Caltech.