

# Random Walk



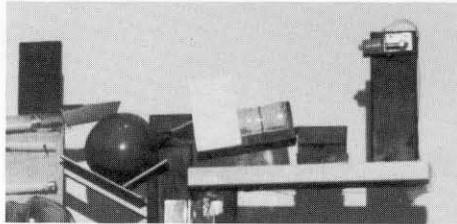
## *Not Exactly a Better Mousetrap*

The Nobel prizes for physics and chemistry were announced on October 12. Caltech didn't win any, but that same day a team of five undergrads beat teams from UC Irvine, UCLA, and USC in the Coopers & Lybrand Collegiate Technology Challenge, netting a \$10,000 scholarship. The challenge, held as part of a conference for high-tech business leaders, was to design and construct a Rube Goldberg contraption to inflate a 16" globe. The judging was based on whether the device worked; the design's complexity and its creative use of unrelated parts; and overall presentation. Top: (from left) Albert Thies, managing partner of C & L's L.A. office, with Chris Hurwitz (senior, AE), Randy Pollock (senior, APh), team captain Eric Hassenzahl (senior, ME), Mike Ricci (junior, EAS), and Drazen Fabris (senior, EE). Behind them are faculty advisors Joel Burdick, assistant professor of mechanical engineering, and Chris Brennen, professor of mechanical engineering and dean of students. Middle: The contraption was built in the garage of an off-campus house. Bottom: The device stands poised for action, its liquid-nitrogen reservoir adding to the drama.

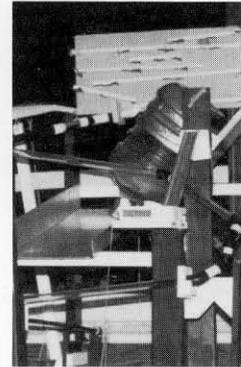




**How does it work? Funny you should ask. A little liquid nitrogen cools the thermostat to below 50°F. . .**



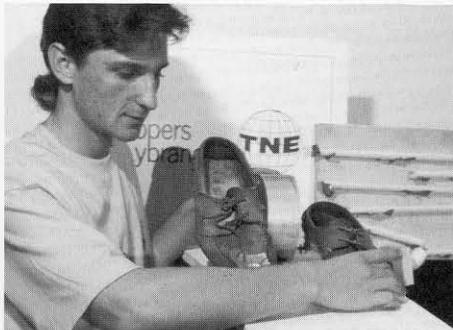
**. . . closing a circuit that makes a pinball plunger knock over a soda bottle. Vinegar in the bottle mixes with baking soda in the balloon taped to the bottle neck. The inflated balloon tips a steel ball bearing out of the manila envelope. . .**



**. . . and down into the troughs, through the pipes, and into a funnel. . .**



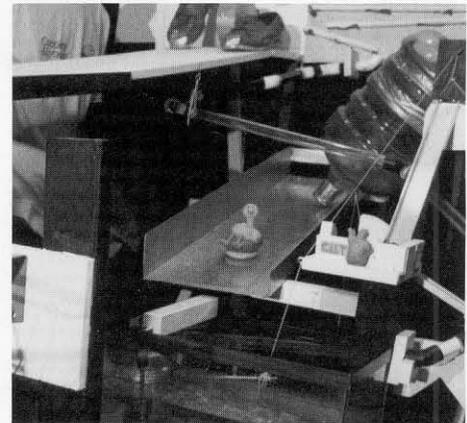
**. . . springing the rat trap. . .**



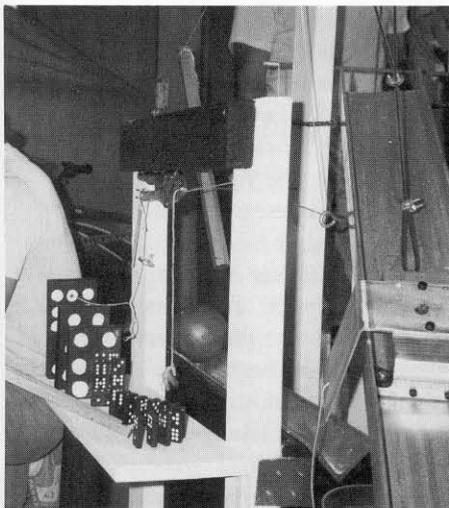
**. . . knocking the walking shoes down the ramp. . .**



**. . . to kick the soccer ball into the gutter, through the basketball net, and into the wastebasket, tripping a lever rolling the disc-brake rotors across the floor, winding up string to pull over the. . .**



**. . . 5-gallon water bottle, filling the aquarium until the toilet-tank float pulls a string to lift a hinge sending a toy off-road vehicle plunging down the hill into a golf ball, which rolls down a ramp to tip over the first of. . .**



**. . . a line of increasingly larger dominoes, the last of which opens the jaws of the vice-grips, releasing the string which lowers the boom on the shotput, sending it along the channel. . .**

**. . . into a bucket of sand with a beaver aboard, which slides down an incline, pulling the rope which raises the copper tube full of liquified air out of the styro-foam chest filled with liquid nitrogen. . .**



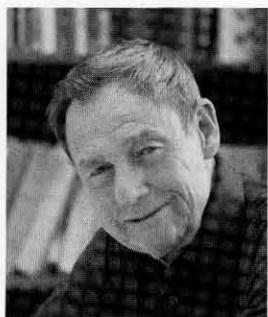
**. . . and the liquid air evaporates, inflating the globe.**

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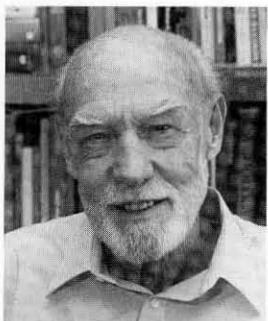
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**Rudolph  
Marcus**



**Robert  
Sharp**



**Roger  
Sperry**



**Arnold  
Beckman**

## National Medal of Science

Three members of the Caltech faculty are recipients of the National Medal of Science. This was the largest number presented to any one institution out of the 19 medals given this year. It's also the most awarded to Caltech in any one year.

Rudolph A. Marcus, the Arthur Amos Noyes Professor of Chemistry, won the award "for his fundamental, far-reaching, and eminently useful developments of theories of unimolecular reactions and of electron transfers in chemistry and biochemistry."

Robert P. Sharp, the Robert P. Sharp Professor of Geology, Emeritus, was honored "for his research that has illuminated the nature and origin of the forms and formation processes of planetary surfaces and for teaching two generations of scientists and laymen to appreciate them; for his recruitment and leadership of a successful multidisciplinary department of earth and planetary scientists who have gained world recognition."

Roger W. Sperry, Nobel laureate and Board of Trustees Professor of Psychobiology, Emeritus, received the medal "for his work on neurospecificity which showed how the intricate brain networks for behavior are effected through a system of chemical coding of individual cells, which has made fundamental contributions to the understanding of human nature."

Also a recipient of the National

Medal of Science was Arnold O. Beckman, a member of Caltech's board of trustees and a generous benefactor of the Institute, "for his leadership in the development of analytical instrumentation, and for his deep and abiding concern for the vitality of the nation's scientific enterprise." Beckman also received the National Medal of Technology last year.

## Honors and Awards

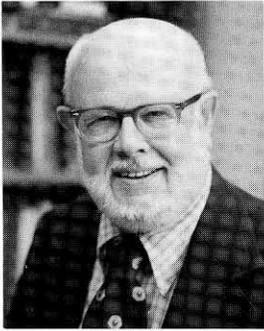
The \$70,000 International Prize "Antonio Feltrinelli" for Medicine has been awarded to Giuseppe Attardi, the Grace C. Steele Professor of Molecular Biology, by the Accademia Nazionale dei Lincei.

Pamela Bjorkman, assistant professor of biology, is one of 20 outstanding young researchers nationwide to be named a 1989 Pew Scholar in the Biomedical Sciences by the Pew Charitable Trusts. She will receive \$200,000 to support her research over the next four years.

Nobel Laureate William Fowler, Institute Professor of Physics, Emeritus, was inducted into the *Legion d'Honneur*, France's highest honor. He received the insignia of the rank of *Officier* from French President Francois Mitterrand in Paris October 19.

Edward Lewis, the Thomas Hunt Morgan Professor of Biology, Emeritus, has been elected a Foreign Member of the Royal Society of London.

Vito Vanoni, professor of hydraulics,



**Willy  
Fowler**

emeritus, is the first recipient of the American Society of Engineers Hans Albert Einstein Award, named for the son of Albert Einstein.

Two young faculty members are among the 20 recipients nationwide of David and Lucile Packard Fellowships in Science and Engineering. Frances Arnold, assistant professor of chemical engineering, and Andrew Myers, assistant professor of chemistry, will each receive \$100,000 per year for five years.

Four members of the faculty received awards for excellence in teaching from the Associated Students of the California Institute of Technology: Yaser Abu-Mostafa, associate professor of electrical engineering and computer science; Clinton Dodd, swimming coach; Morgan Kousser, professor of history and social science; and Robert McEliece, professor of electrical engineering.

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## *IRC Hosts Speakers*

Caltech's Industrial Relations Center is sponsoring a Distinguished Speaker Series to celebrate its 50th anniversary and to lead into Caltech's 100th. Under the theme "Technological Leadership: A New Global Game Plan," the series will include John Young, CEO of Hewlett Packard; David Kearns, CEO of Xerox; Harvard economist Martin Feldstein, who was Reagan's chief economic adviser; and Lester Thurow, dean of MIT's Sloan School of Management.

# Random Walk

continued

**Celina Mikolajczak (foreground) and Eleanor Helin work in the dome office of the 18-inch Schmidt telescope at Palomar Observatory, where Mikolajczak discovered a supernova on photographic films last summer.**



## *Supernova Sighted*

A SURF (Summer Undergraduate Research Fellowship) project this summer yielded the discovery of a supernova for Celina Mikolajczak. Working with Eleanor Helin, a planetary scientist at the Jet Propulsion Laboratory, the 19-year-old junior discovered the supernova on photographic films taken on the 18-inch Schmidt telescope at Palomar Observatory on the night of June 29-30. The supernova has been named SN 1989N and is located in NGC 3646, a large spiral galaxy 137 million light years away.

Although she enjoys astronomy, her discovery and the media attention it evoked has not persuaded her to become an astronomer. Mikolajczak's main interest is aeronautics, and her major is engineering. "I believe astronomy is closely related to the goals of aeronautics. They both involve space, either studying it or getting there," she said.

## *Professorships Announced*

James Bailey has been named the Chevron Professor of Chemical Engineering. Bailey, who came to Caltech in 1980 as professor of chemical engineering, works in biochemical reaction engineering and is a pioneer in the new field of metabolic engineering. The professorship was established in 1980 by a gift from the Chevron Corporation.

Succeeding the late John Benton, who held the first Dreyfuss chair, Alan Donagan will be the Doris and Henry Dreyfuss Professor of Philosophy. Donagan, whose research focuses on 17th-century philosophy and on the theory of ethics, has been at Caltech as professor of philosophy since 1984. The endowed professorship is named after the late industrial designer and his wife, who were deeply involved with the Caltech community.

John Schwarz, one of the founders of superstring theory, considered the best candidate for the long-sought unified field theory, has been named the Harold Brown Professor of Theoretical Physics. The Institute-wide chair (any division) was recently established in honor of Caltech's former president through the support of several members of Caltech's board of trustees and through corporate gifts. Schwarz joined the Caltech faculty in 1972; two years ago he received a MacArthur Foundation award.

# Random Walk

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**On the evening of September 21, as Hurricane Hugo threatened the coast of the Carolinas, Hans Hornung, the Clarence L. Johnson Professor of Aeronautics and director of GALCIT, obligingly subjected his body to 115-mph winds for Ted Koppel's "Nightline." Simulation of the force of the hurricane, live, in Caltech's 10-foot wind tunnel kept Hornung's mouth shut, so Professor of Aeronautics Brad Sturtevant also made his TV debut as narrator. This photo was taken by grad student Ichiro Sugioka before the wind was turned on.**



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## Centennial Float

To help celebrate its centennial Caltech will enter a float in the 1991 Rose Parade, whose general theme is humor. The committee in charge of the float is soliciting humorous ideas. A rough sketch of the concept and theme title (a word or phrase) may be submitted to Hall Daily, Caltech 1-71, Pasadena, CA 91125. The deadline is December 1.

The last Caltech Rose Parade entry was in 1950—a flower-bedecked model of Palomar Observatory. It was built by nine students in two months. But things have changed in 40 years, and beginning a year ahead is none too soon.

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## New Division Heads

John Abelson, professor of biology since 1982, has been named chairman of the Division of Biology. Abelson, who earned his PhD in biophysics from Johns Hopkins University in 1965, has done significant research on the mechanisms of gene expression in yeast.

The new chairman of the Division of Geological and Planetary Sciences is David Stevenson. A professor of planetary science who is known for his work on the formation, evolution, and internal structure of the solar system and the planets, he joined the Caltech faculty in 1980. His PhD in theoretical physics is from Cornell (1976).

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## Watson Lectures

Coming up in the Earnest C. Watson Lecture Series are: November 8 — Daniel Kevles, "Patenting Life: Animals, Ethics, and Politics"; November 29 — Moustafa Chahine, "Global Warming: Fact or Fiction?"; January 10 — Barclay Kamb, "Is the Antarctic Ice Sheet Disintegrating?"; January 24 — Kip Thorne, "Wormholes Through Hyperspace and Travel Through Time."