

**TERRY COLE
1931–1999**


Terry Cole (PhD '58), senior faculty associate in chemistry and chemical engineering at Caltech and for nearly two decades chief technologist at JPL, died on August 20 at age 68. Born March 28, 1931, in Albion, New York, Cole earned a BS in chemistry from the University of Minnesota in 1954 before coming to Caltech for his doctorate. He stayed as a postdoc before taking a job at Ford Motor Company, where he held a variety of research and management positions from 1959 to 1980. He came to Caltech as a Sherman Fairchild Distinguished Scholar for nine months in 1976, returning for good as a research associate in chemistry in 1980. He was also appointed JPL's chief technologist that year, and retired from that post in 1998.

With one foot at Caltech and one at JPL, Cole was a vital conduit between the two institutions. Says JPL Chief Scientist Moustafa Chahine, "He had a deep, insider's knowledge of germinating ideas on campus and at JPL, and he knew how to put them together. This has left a void we are still trying to fill. He knew so much about so many things. He was always up to date, even after he re-

tired. And he appreciated that science, which is Caltech's strength, and technology, which is JPL's strength, work hand-in-hand." Says Carolyn Merkel, director of Caltech's SURF (Summer Undergraduate Research Fellowship) program, in which Cole was deeply involved, "Terry had a knack for identifying people's interests and needs, and then putting together people who had problems or opportunities in common. And, often, something good would happen." Fred Shair, who founded the SURF program, offered this thumbnail portrait. "Terry was truly a Renaissance person. His love for music spanned the great jazz of Jelly Roll Morton to the classics. He could have made a living as a photographer—he was an artist. But unlike most artists, he was a virtuoso of the scientific fundamentals that explain how the beautiful patterns of nature emerge."

Cole's energy and enthusiasm were legendary. "He never walked into the SURF office—he always bounded in," Merkel recalls. With this verve came a gift for salesmanship. "He had this great ability to paint a verbal picture, to make you see his vision," says Merkel. Recalls

Lew Allen, director of JPL from 1982 to 1991, "He would pop into my office and tell me about all these developments down on campus that he thought would be useful for space. He was very engaging and amusing, and he could get me excited about the things he saw coming along. He made it fun.

"For example," Allen continued, "NASA offered to construct us a building for microelectronic fabrication. I was dubious, but Terry convinced me that JPL had the capabilities to get into that field, if we made use of the expertise of people down on campus. And he was right." But getting the Center for Space Microelectronics Technology (CSMT) built was only the beginning—NASA was willing to fund its construction, but not its operation. Cole and Carl Kukkonen, whom Cole had recruited from Ford, had to go out and line up sponsors to use the facility in order to keep its doors open. Since its founding in 1987, it has provided key technologies used on Pathfinder and the rest of the new generation of smaller, faster, cheaper spacecraft, and in 1992, CSMT earned Cole NASA's Exceptional Service Award. Says Allen, "His advocacy greatly

contributed to the strong technological position that JPL is in now."

Cole was also instrumental in getting JPL its first supercomputer. "JPL had never had a supercomputer," Allen explains, "because the project managers liked having their own smaller computers. Terry saw the benefits to be had from a larger machine the Lab and campus could use, but it was a challenge to fund, as it was too big to come from any individual budget." So Cole and Kukkonen talked it up, and arranged the backing—in essence, becoming time-share salesmen. Supercomputer use in image processing and mission design is now commonplace, says Chahine. "He took us from being a small-computer facility to supercomputers being an integral part of JPL. He changed the mindset." Today, the JPL Supercomputer Project and Caltech's Center for Advanced Computational Research share some of the fastest, most advanced machines in the world.

But Cole's greatest legacy may be the SURF program. Founded in 1979, SURF places students in the labs of participating faculty members for a summer of hands-on work; what made

the program unique was that the students wrote their own research proposals and, at summer's end, presented papers on their work. (These papers often go on to appear in scientific journals, providing many undergrads with their first professional publications.) Cole greatly expanded SURF's scope in 1983, when he opened the door for students to work at JPL. Says Merkel, "With his usual enthusiasm, Terry became SURF's advocate. We were a fledgling program, and few people were aware of what we were trying to do. Terry fired the imaginations of faculty and JPL staff who hadn't yet participated. He talked convincingly to administrators whose support we needed. He excelled at explaining technology to laymen, and he was great with donors. He was an outstanding emcee, enlivening any SURF event with stories and easy humor, and he was as comfortable talking about art and literature as he was about science and technology. He was a master of aphorism, succinctly stating SURF's philosophy: 'no intellectual bottle-washing.' He would remind donors and mentors alike that 'money is the sin-

cerest form of commitment.'" In 1989, he became chair of the SURF Administrative Committee—a position he held for the rest of his life. Under his leadership, 1,525 students have SURFed, roughly a quarter of them at JPL. More than half of Caltech's undergrads now SURF for at least one summer, and the program has spawned many imitators elsewhere.

"Terry had a passion for helping young people build a better world," says Shair. This showed not only in the SURF program but at JPL, where he founded the Telescopes in Education program, in which a 24-inch telescope at the Mount Wilson Observatory is available over the Internet for use by K–12 students around the world.

Says Chahine, "Terry's first goal at JPL was developing our intellectual capabilities. He had the connections in industry—at Ford and elsewhere—and in the universities to get people to come to JPL who otherwise wouldn't have. He brought in lots of talented people, especially as postdocs." Many of these young scientists stayed to become lifelong friends.

"He was an advisor, mentor, and problem-solver to

everybody who sought his help, from postdoc to senior scientist," says Chahine. Merkel agrees. "If you ever needed an idea, you could call Terry. It didn't matter what kind of an idea—a mentor for a student with a particular interest, a fund-raising event, or a keynote speaker for a conference."

Cole battled prostate cancer the way he did everything else, says Chahine—he threw himself into it. "He studied it and understood it. Several colleagues who also had it relied on him for help, information, and support; sometimes several people at the same time. His knowledge and advice were invaluable. He helped others through, even as he was struggling to keep afloat himself. They say, first you help yourself, then you help others. Terry didn't do that."

A memorial service was held at Caltech's Athenaeum on October 22. Memorial contributions can be made to the SURF program, care of Carolyn Merkel, Caltech mail code 139-74, Pasadena, CA 91125; or to the Prostate Cancer Research Fund at USC-Norris Hospital, 1441 Eastlake Ave., Room 8302, Los Angeles, CA 90033. □

HONORS AND AWARDS

Jacqueline Barton, the Hanisch Memorial Professor and professor of chemistry, has been elected a member of the American Philosophical Society "for her achievements in science." She has also received the 1999 G. M. Kosolapoff Award for Scientific Distinction from Auburn University.

Roger Blandford, the Tolman Professor of Theoretical Astrophysics, has received the Royal Astronomical Society's Eddington Medal for Theoretical Astronomy.

Professor of Literature, Emeritus, *Kent Clark's* "influence on the lives of many generations of Caltech undergraduates" has been recognized through the establishment of the J. Kent Clark SURF Endowment, which will support one student in the humanities each summer, in perpetuity.

Mark Davis, the Schlinger Professor of Chemical Engineering, has won the American Institute of Chemical Engineers' 1999 Professional Progress Award.

Peter Dervan, the Bren Professor of Chemistry, has been selected by the Oregon, Portland and Puget Sound Sections of the American Chemical Society to receive the 1999 Linus Pauling Medal, which "recognizes

Cole was an accomplished nature photographer.

