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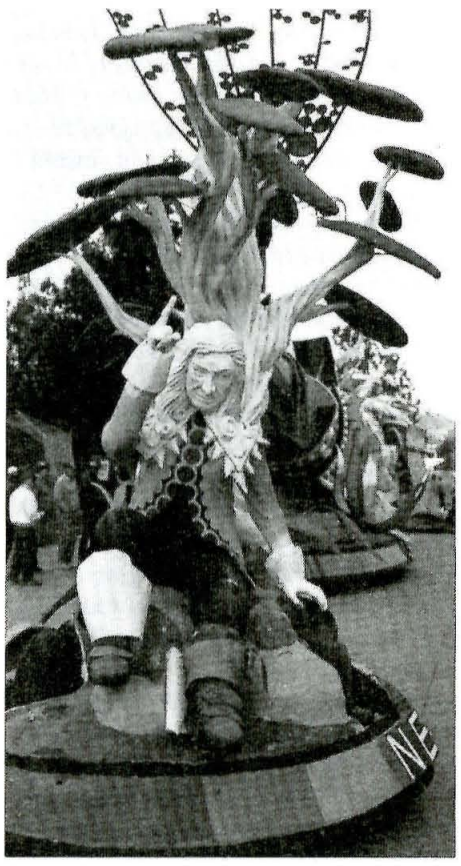
Some observers insist the beavers look like chipmunks, and others are convinced that Newton was modeled on the late Richard Feynman. And the float, say its designers, looks like nothing that's ever appeared in a Rose Parade.

Waiting for the apple to drop



It's official, according to the 1991 Parade Program of the 102nd Annual Tournament of Roses. The souvenir brochure carries an artist's colorful rendering of a winged machine piloted by beavers, the title "For Every Action . . . A Reaction," and this description: "Caltech kicks off its centennial celebration by taking a fun-filled three-century journey back into time. Nine beavers guide Caltech's Time Traveler to the year 1687 and find Isaac Newton resting under a tree, awaiting his famous encounter with a falling apple. One stowaway beaver starts a Rube Goldberg chain reaction, setting the stage for a scientifically irrefutable conclusion."

Caltech's float will be the third to appear in the parade. This is a good omen, according to seasoned parade watchers, who say Tournament officials traditionally like to put the most unusual, arresting floats at the head of the pack. Leading the parade this year will be a 70-foot-high talking wizard commissioned by General Motors, whose entry last year—a robot transformer—stopped the parade cold.

Of the nine beavers accompanying Caltech's float, two will be animated chicken-wire sculptures, lavishly bedecked with flowers. The others are Alumni Association president Micheal Boughton; Palomar engineer Michael Carr, one of the people who first proposed the idea of a Caltech Rose Parade entry to the Institute's centennial committee; JPL graphic artist Herman Herrera, whose sketch of Isaac Newton and the falling apple was chosen as a basic theme of the float; undergraduates Mark Humphreys and Amy Hansen, both members of the Mechanical Engineering float class taught last year by Professor Joel Burdick; ASCIT vice chairman and Board of Control chairman Mike Nassir; and graduate student Laurie Watson.

All seven will be wearing beaver costumes fashioned by a designer who once worked for Madonna. The unisex fake-fur outfits are reportedly designed to fit all shapes and sizes. Current plans call for four beavers to serve as outwalkers, and for Carr, Herrera, and Hansen to ride on the float.

Meanwhile, a much larger Caltech contingent is getting ready to help the Institute's float builders, Charisma Floats, flower-up their winged vehicle at the end of the month. About 100 volunteers have signed up, and as the week between Christmas and New Year's Day fills up with visitors, relatives, and children-home-from-school, the ranks of the decorators will most certainly grow. Flowering-up will begin the day after Christmas and continue through mid-afternoon, New Year's Eve. The completed float will carry more than 200,000 blossoms, primarily roses, orchids, marigolds, and chrysanthemums.

How the crowds, commentators, and judges (who will view all the floats on December 31) will react to this novel blend of whimsy, science, roses, and beavers is anyone's guess. Tune in on New Year's Day.

FRIENDS

Fred L. Hartley

Long-time Trustee Fred L. Hartley died Friday, October 19, in his home in Palos Verdes Estates, California. He was 73. Hartley joined Caltech's Board of Trustees in 1967. A Senior Trustee since 1989, Hartley was a member of several Trustee committees, including the executive committee, the nominating committee, the JPL committee, and the visiting committee in chemistry and chemical engineering. He was also a life member of The Associates, having joined in 1968, and was a member of the President's Circle.

Hartley was serving as chairman emeritus of Unocal Corporation, a company he joined in 1939 as an engineer trainee. He became its president in 1964 and built the company into a worldwide energy concern with interests in gas development, oil exploration, geothermal power, and oil shale production.

A shrewd businessman, Hartley will long be remembered in the business community as the man who defeated the attempts of financier T. Boone Pickens, Jr., to take over Unocal. This defeat was a turning point in the merger mania of the 1980s.

Recent honors and awards for Hartley include the Engineer of the Year award in 1986 from the Institute for the Advancement of Engineering and the American of the Year award from the Thomas Jefferson Research Center in 1983. Hartley was a member of the National Academy of Engineering and the National Petroleum Council.

Surviving are Hartley's wife, Peggy, and their children, Jack and Marnie. A memorial fund has been set up at Caltech by Mrs. Hartley. Contributions can be made to the Fred L. Hartley Memorial Fund, c/o California Institute of Technology, 105-40, Pasadena, California 91125.

Recently, the Hartleys made a $1 million leadership gift in anticipation of Caltech's second-century fund-raising campaign, which officially begins in March 1991. Their gift establishes the Mr. and Mrs. Fred L. Hartley Laboratories of Catalysis and Materials and will be used to refurbish and equip research facilities in Spalding Laboratory.

Five chemical engineering professors will use the renovated space to pursue studies in the areas of advanced materials analysis and processing as well as catalysis. The Hartley Laboratories are expected to provide Caltech with some of the finest chemical engineering facilities of their kind in the country.

Anderson to head Institute Relations

Thomas Anderson, vice president for development and alumni affairs at Case Western Reserve University since 1981, has been named Caltech's new vice president for Institute Relations, succeeding Ted Hurwitz, who is leaving campus at the end of this year to become head of the Price Charities in La Jolla.

At Case Western Reserve University, Anderson has been responsible for fund-raising and institutional relations with alumni, corporations, foundations, and associations, and he has directed the university's major development campaign. Since 1985, Anderson, who

received his law degree from the University of Dayton in 1979, has also been adjunct professor of political science, teaching courses on American civil liberties. He joined Case Western Reserve as dean of student affairs in 1977, after holding several administrative positions in student development at the University of Dayton and Albion College.

Anderson, 47, received his BA in economics in 1965 from Iowa Wesleyan College and an MA in counselor education in 1970 from Michigan State University, before earning his Dayton JD. He and his wife, Rosalie, have five children.

An open letter to the Caltech community

By Ted Hurwitz

It has been a privilege and an honor for me to be Vice President for Institute Relations these past five years. I want to convey my appreciation to all of you who have provided me with support, advice, and well-wishes. An open "thank you" letter may seem impersonal but I wanted to write to all who have impacted my life during my tenure at Caltech.

In some small way, I want to express my gratitude to the entire Caltech family for all you do for Caltech and for your support of my efforts. To those of you who have expressed sadness in my leaving, I hope that you can understand my motivations to accept a career change at this stage in my life. I always thought that this would be my last job and that I would retire from the Institute.

Caltech is a very special place, far different than any other university, and the main reason is its people. The alumni are the most loyal, dedicated, and supportive group of any alumni in the country. They help the Institute in ways that go beyond the important task of fund-raising. The Associates are a unique support group with a tremendous tradition of caring, involvement, and financial support. Their interest in our faculty and programs has enabled us to reach out to a world well beyond our small numbers of alumni.

The Board of Trustees take their stewardship responsibility seriously and bring to the Institute great wisdom and counsel. Their generosity is unsurpassed and they set an example for all to follow. The Caltech students and faculty are the showcase for those of us working in public relations and development. Although enormously busy, they have always been willing to help. Over three hundred visits by corporate, foundation, and individual donors, as well as continual requests for interviews by the electronic and print media, can impact their "tranquil" academic life style.

Lastly, I would like to recognize the Caltech staff; the support structure for everyone else to do their jobs. In my estimation, the staff are the unsung heroes of the Institute. I would like to convey special thanks to those who work in Institute Relations. They are a truly dedicated group of people who care deeply about every proposal, news release, dedication, and other events. They are an extremely capable staff and I am confident that both the upcoming campaign and yearlong centennial activities will be enormously successful.

The Institute needs all of you if it is to maintain its preeminence. I have every reason to believe that Caltech, under the leadership of Tom Everhart—one of the most decent human beings I have ever met—will continue to thrive and provide a great service to the entire world.

Thank you all, and I look forward to your visits in La Jolla!

Schlingers fund professorship

A pledge of $1.5 million has been made to Caltech by alumnus Warren Schlinger and his wife, Katharine, to endow a professorship whose holder will specialize in energy research. The Schlingers have established the chair in anticipation of the Institute's campaign, to be launched in 1991. The Warren and Katharine Schlinger Professorship in Chemistry and Chemical Engineering will be awarded to a faculty member conducting research on new sources of energy, more efficient utilization of existing energy resources, and environmentally safe energy sources.

Dr. Schlinger, a resident of Pasadena, received three degrees from Caltech—a BS in 1944 in applied chemistry, and an MS in 1946 and a PhD in 1949, both in chemical engineering. His career spanned more than 30 years at Texaco, Inc., where he worked as a chemical engineer, as manager of the Montebello Research Laboratory, as associate director of gasification, and served as a long-term liaison between Texaco and Caltech's Industrial Associates program. He retired in 1987.

Katharine Schlinger met her husband while working as a secretary to Linus Pauling, who was then the chairman of the Division of Chemistry and Chemical Engineering. They were married in 1947 and have three children—Michael, Norman, and Sarah. She is on the board of the Coleman Chamber Music Association.

The Schlingers, who joined The Associates in 1973, are life members of the President's Circle. Warren is a life member of the Alumni Association and has served on its board of directors.

ARCO supports air pollution research

A gift of $500,000 has been made by ARCO to Caltech's new Center for Air Quality Analysis. The center, located in the Environmental Quality Laboratory, will support research on developing scientifically reliable environmental models and conducting field research to test the accuracy of those models. The investigations will include characteristics of emission sources, the chemistry of air pollutants, the air quality resulting from various emission-control strategies, and the economic and technological feasibility of emissions controls.

The Center for Air Quality Analysis, founded earlier this year, has also received funding from the Texaco Philanthropic Foundation, the Ford Motor Company, and the Unocal Foundation, all long-time supporters of Caltech.

The center will be staffed by faculty, professional staff, and graduate students under the leadership of chemical engineer John H. Seinfeld, Louis E. Nohl Professor and chairman of Caltech's Division of Engineering and Applied Science, and Glen R. Cass, professor of environmental engineering and mechanical engineering.

ARCO, Atlantic Richfield Company, is a worldwide, integrated hydrocarbons-based company. Its operations include all aspects of the oil and gas business, from the exploration and production of

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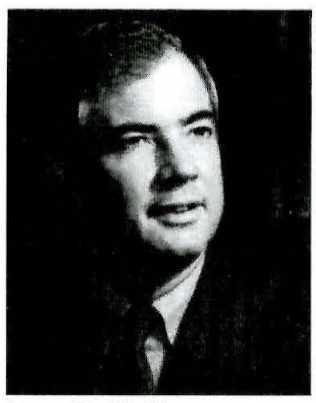
Jewel Plummer Cobb

Yuan T. Lee



Peter W. Mullin

Caltech elects three new trustees

A former university president, a Nobel laureate, and a corporate entrepreneur have been elected to Caltech's Board of Trustees. The new trustees are Jewel Plummer Cobb, president emeritus of the California State University at Fullerton; Yuan T. Lee, professor of chemistry at UC Berkeley and corecipient of the 1986 Nobel Prize in Chemistry; and Peter W. Mullin, president and CEO of the Management Compensation Group, a Los Angeles-based corporate insurance and executive benefits firm.

Jewel Plummer Cobb, 66, who holds a PhD in biology and cell physiology, joins Caltech's Board of Trustees after nine years as the president of the California State University at Fullerton. A native of Chicago, she received her AB from Talladega College in 1944, and her MS and PhD from New York University in 1947 and 1950 respectively. After two years as a Fellow at the National Cancer Institute, and two years as an instructor of anatomy at the University of Illinois, she spent five years on the Department of Surgery faculty of the NYU Postgraduate Medical School. In 1960 she joined Sarah Lawrence College as professor of biology, and in 1969, she was appointed Dean of the College and professor of zoology at Connecticut College. In 1976, she went to Rutgers University's Douglass College as dean and professor of biology, a position she left in 1981 to become president of Cal State Fullerton.

The granddaughter of a pharmacist who was born into slavery, and the daughter of a physician, Cobb has been actively involved in areas related to biomedicine and to educational opportunities for women and minorities. A member of the National Science Foundation Board from 1974 to 1980, she is a Fellow of the New York Academy of Sciences and a member of numerous professional organizations, including the Institute of Medicine of the National Academy of Sciences, the Sigma Xi Honorary Society, the American Association of University Women, the advisory council of the African-American Institute, and the South Coast Air Quality Management District Advisory Council. She holds honorary degrees from eighteen universities or colleges, including Pennsylvania Medical College, City College of the University of New York, Tuskegee University, and Rutgers University, and is the author of several publications dealing with women in science.

A native of Taiwan, Yuan T. Lee, 53, shared the 1986 Nobel Prize in Chemistry, for laser and molecular beam research that has illuminated the fundamental dynamics and mechanisms of chemical reactions. He later said that playing baseball as a child kept him interested in collisional processes, and likened the collision of molecular beams to the hitting of a baseball with various aiming errors. Lee received his BS in 1959 from National Taiwan University, his MS from National Tsing Hua University in 1961, and came to the United States a year later as a graduate student at UC Berkeley, where he received his PhD in 1965. Lee became a naturalized U.S. citizen in 1974, after carrying out his postdoctoral research at Harvard in 1968. That same year, Lee went to the University of Chicago, where he rose to the rank of professor of chemistry in six years, and in 1974 returned to Berkeley as a member of the chemistry faculty. Lee has also served as a principal investigator at Lawrence Berkeley National Laboratory.

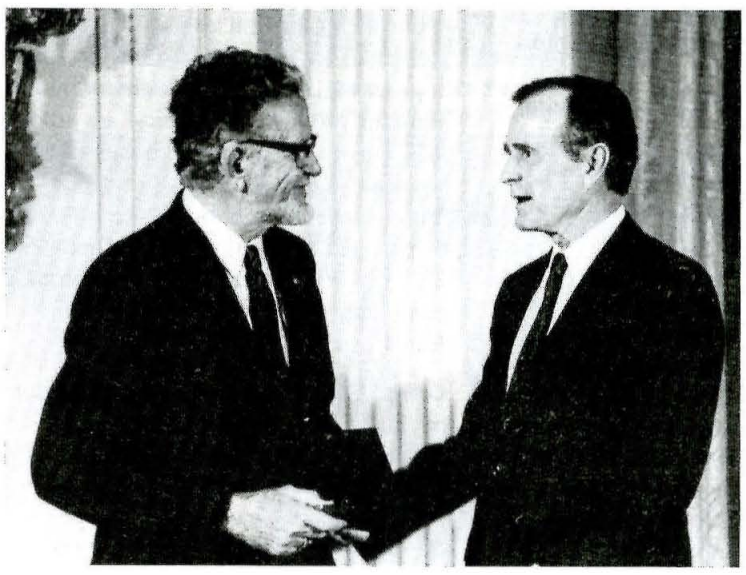
Lee's research has principally been in the areas of chemical kinetics, reaction dynamics and molecular interaction, and laser chemistry. His honors include the 1986 National Medal of Science; the 1986 Peter Debye Award for Physical Chemistry; the 1983 Harrison Howe Award, presented by the Rochester section of the Atomic Energy Commission; and the Department of Energy's 1981 Ernest O. Lawrence Award. He was elected a member of the National Academy of Sciences, as well as a member of the American Academy of Science, Academia Sinica, and Göttingen Academy of Sciences. He holds honorary degrees from the University of Waterloo, Canada; the Chinese Academy of Sciences; the Chinese University of Hong Kong; and Arizona State University.

Peter W. Mullin, 49, has been president of the Management Compensation Group, an executive compensation, benefit planning, and corporate insurance consulting firm, since 1970. The company has subsidiaries in New York, San Francisco, Minneapolis, and Chicago.

A member of the Board of Trustees of Occidental College, Mullin also serves on the board of the Hospital of the Good Samaritan, as well as on the board of trustees of both the Marlborough School and the John Thomas Dye School. He is a member of the Board of Governors of the Los Angeles Music Center and chairman of the Music Center Foundation, and serves on the boards of the Los Angeles Chamber of Commerce and the Huntington Library Society of Fellows. Mullin is also a member of the board of directors of Cooperation Ireland and of the office of the president of the Los Angeles Archdiocesan Educational Foundation. He has been a longtime leader and board member of the United Way of Los Angeles.

Ed Lewis, Jack Roberts awarded National Medal of Science

The National Medal of Science was presented to biologist Ed Lewis and chemist Jack Roberts by President Bush at a White House ceremony on November 13. The medals, given to 20 men and women this year, are awarded to honor the impact that an individual's career has had on the present state of scientific knowledge; for outstanding achievements that change the direction of scientific thought; and for distinguished service in the advancement of science.



Professors Ed Lewis, top, and Jack Roberts receive the National Medal of Science from President Bush in a November 13 ceremony at the White House.

In all, 264 medal recipients have been selected by a National Science Foundation committee since the first National Medal of Science was given to Caltech's Theodore von Kármán in 1962 for his pioneering work in aeronautics. Caltech alumni John McCarthy (BS '48), professor of computer sciences at Stanford and Edwin McMillan (BS '28, MS '29), professor of physics emeritus at the Lawrence Berkeley Laboratory, who also received medals this year, bring to 33 the number of medals awarded to Caltech faculty and alumni.

In the same White House ceremony, Caltech trustee Gordon Moore (PhD '54), chairman of Intel Corporation, received the National Medal of Technology. Moore, one of eleven winners this year, becomes the third Caltech alumnus or trustee to win a medal since the award's inception two years ago.

Lewis, the Thomas Hunt Morgan Professor of Biology, Emeritus, has been investigating the genetics of fruit flies for more than 50 years, almost all of them at Caltech. He was honored "for his demonstration and exploration of the genetic control of the development of body segments by homeotic genes." Homeotic genes, Lewis found, act as a master control center for the way an embryonic fruit fly develops into an adult. He predicted, more than 30 years ago, that homeotic genes had evolved from a few very ancient genes, and would be present in other animals as well. Subsequent research confirmed this prediction and a new arena of research was born.

A member of the faculty since 1952, Roberts, Institute Professor of Chemistry, Emeritus, was cited "for his pioneering studies in nuclear magnetic resonance spectroscopy and reaction mechanisms in organic chemistry." Roberts's work in nuclear magnetic resonance, used to analyze the structure of chemical compounds and their reactions, is credited as being the beginning of modern physical organic chemistry.

HONORS

Yaser Abu-Mostafa, associate professor of electrical engineering and computer science, has been awarded a Richard P. Feynman-Hughes Fellowship that will provide him with research support of $30,000 annually for up to three years. Abu-Mostafa is the second Caltech faculty member (the first was Kerry Vahala) to be awarded the new fellowship, which was established this year by Caltech and sponsored by Hughes Aircraft to honor the memory of Richard Feynman. The fellowships will be awarded annually to young faculty in Caltech's Division of Engineering and Applied Science.

AirTalk: The Caltech Edition, the monthly science-and-research interview simulcast produced by Caltech's public relations office in cooperation with radio station KPCC of Pasadena City College and KPAS, the City of Pasadena's cable channel, has received the 1990 Diamond Award for best call-in show, presented by the Southern California Cable Association for excellence in community broadcasting, as well as a nomination for best community talk show in the same competition. *AirTalk* was also honored as a second-place finisher in the Best Interview Talk Show category at the 5th annual National Association of Telecommunication Officers and Advisors Government Programming Competition.

John Allman, Hixon Professor of Psychobiology and professor of biology, has received the Golden Brain Award from the Minerva Foundation for pioneering research into how the brain processes and interprets visual information.

Regina Dugan, graduate student in mechanical engineering, is one of 40 outstanding doctoral students worldwide to be awarded a $6,000 Zonta Amelia Earhart Fellowship and one of three to be named an Amelia Earhart Leota F. Pekrul Fellow by Zonta International, an international service organization dedicated to improving the status of women. The Fellowship is awarded annually to women graduate students in fields related to aerospace science and engineering.

Six Caltech faculty and two graduate students have been honored for outstanding teaching in 1990 by ASCIT (The Associated Students of Caltech): *Joel Burdick*, assistant professor of mechanical engineering; *Peter Fay*, professor of history; *John Feiler*, graduate student in physics; *Valentina Lindholm*, lecturer in Russian; *Robert McEliece*, professor of electrical engineering; *Jane Raymond*, member of the professional staff in chemistry; *Bob Ripperdan*, PhD in geology, 1990; and *Kerry Vahala*, associate professor of applied physics.

Jacqueline Barton, professor of chemistry, has received the 1990 Medal of Distinction by her alma mater, Barnard College, awarded annually to "distinguished individuals who have made

major contributions to their professions and have exemplified the qualities of mind, character, and human service that Barnard has traditionally set as its students' educational goals."

William Dunphy, assistant professor of biology, *David Goodwin*, assistant professor of mechanical engineering, *Julia Kornfield*, assistant professor of chemical engineering, and *Jonas Zmuidzinas*, assistant professor of physics, are among 200 outstanding young scholars nationwide to be named 1990 Presidential Young Investigators by the National Science Foundation. Each will receive up to $100,000 each year through a combination of federal and matching funds.

George Housner, Carl F Braun Professor of Engineering, Emeritus, has been elected to honorary membership in the American Society of Civil Engineers.

Shrinivas Kulkarni, associate professor of astronomy, is one of 20 outstanding young scientists nationwide to be awarded a 1990 Packard Fellowship in Science and Engineering by the David and Lucile Packard Foundation. Kulkarni will receive $100,000 annually to support his research for the next five years.

Edward Lewis, Thomas Hunt Morgan Professor of Biology, Emeritus, has been named corecipient of Brandeis University's 1990 Rosentiel Award, presented annually to "outstanding life scientists for discoveries of particular originality and importance to basic medical research." Lewis was honored for research that has "provided mankind with its first glimpses into the process through which organisms, including humans, assemble and correctly position body parts in the growing embryo."

Nathan Lewis, associate professor of chemistry, has been selected the 1991 recipient of the American Chemical Society Award in Pure Chemistry and will receive the prize—$3,000 and a certificate—next April at the ACS National Meeting in Atlanta. In a separate honor, Lewis has received the 1990 Fresenius Award of Phi Lambda Upsilon, presented by the National Chemistry Honor Society to outstanding chemists early in their professional careers.

Hans Liepmann, Theodore von Kármán Professor of Aeronautics, Emeritus, has received this year's Lord Foundation Award for Systems and Functional Analysis, presented annually by the Lord Corporation, in recognition of "pioneering research efforts in a variety of basic science and engineering subjects . . . and for his extraordinary ability as a stimulating educator and developer of trained scientists and engineers."

Bruce Murray, professor of planetary science and director of JPL from 1976 to 1982, has been awarded the prestigious American Institute of Physics (AIP) Science-Writing Award in Physics and Astronomy for his book *Journey into Space: The First Thirty Years of Space Exploration*. The award—a certificate and $3,000 prize—is presented each year for distinguished physics- or astronomy-writing in a book intended for the general public. Murray has also been selected for the Eugene M. Emme Astronautical Literature Award, presented annually by the American Astronautical Society.

Barry Simon, IBM Professor of Mathematics and Theoretical Physics, has been elected a corresponding member of the Austrian Academy of Sciences.

Roger Sperry, Nobel laureate and Board of Trustees Professor of Psychobiology, Emeritus, has been honored by his alma mater, Oberlin College, which dedicated a new neuroscience research center—the Sperry Wing of the Kettering Hall of Science—to him in a ceremony last May. Sperry received his BA (in English literature) from Oberlin in 1935, and an Oberlin MA in psychology in 1937.

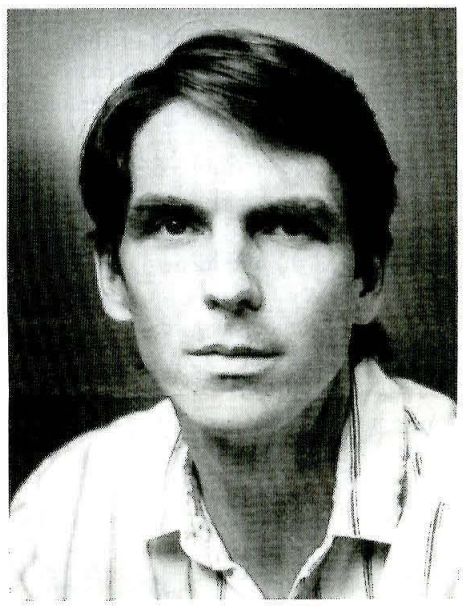
Edward Stone, professor of physics and director-designate of JPL, has received the Association for Unmanned Vehicle Systems Operations Award for 1990 in recognition of his role as project scientist for the Voyager mission. Stone has also been given *Discover* magazine's 1990 Discover Award for Technological Innovation in Aviation/Aerospace for "prolonging the life of Voyager 2," whose longevity, the magazine noted, surprised "even its creators."

John Sutherland, professor of literature, has been elected a Fellow of the Royal Society of Literature of the United Kingdom, an honor "conferred upon writers, who in the opinion of the Society's Council, have published books of a high literary standard." Sutherland's recently published book, *Mrs Humphrey Ward*—a biography of a once hugely successful but now largely forgotten Victorian novelist—has been critically acclaimed on both sides of the Atlantic.

Peter Wyllie, professor of geology, was elected a Foreign Fellow of the Indian National Academy of Science at the Academy's annual meeting in October.

Ahmed Zewail, Linus Pauling Professor of Chemical Physics, has been selected by the Egyptian American Organization as the recipient of their 1990 Outstanding Achievement Award.

Kai Zinn, assistant professor of biology, has been selected a 1990 Pew Scholar in the Biomedical Sciences by the Pew



Charitable Trusts of Philadelphia. He will receive $200,000 over the next four years to support his research in developmental neurobiology.

Acosta named Hayman Professor

Allan Acosta, a Caltech alumnus and professor of mechanical engineering on campus since 1966, has been named the Richard L. and Dorothy M. Hayman Professor of Mechanical Engineering. Acosta succeeds the chair's first holder, Frank Marble, who is now the Hayman Professor of Mechanical Engineering and Professor of Jet Propulsion, Emeritus.

Acosta earned all his degrees at Caltech (BS '45, MS '49, PhD '52), then served as section chief of the Hydrodynamics Laboratory for two years before joining the faculty as an assistant professor in 1954. His work centers on hydrodynamics, flow in hydraulic machines, heat transfer, and cavitation—the sudden formation and collapse of low-pressure bubbles in liquids due to mechanical forces, such as those resulting from a spinning propeller.

The Hayman professorship is named for long-time Caltech benefactor Richard L. Hayman and his late wife, Dorothy. The Haymans also endowed Caltech's Dotty and Dick Hayman Professorship in Engineering (currently held by Ronald Scott).

Associates hear energy secretary

At The Caltech Associates' annual black-tie dinner on October 5 in the Athenaeum, 380 guests heard Admiral James D. Watkins speak on "Commercialization of Technology: Key to Competitiveness." Watkins has been Secretary of Energy since 1989, and previously served as Chief of Naval Operations from 1982 until his retirement from the Navy in 1986. In his talk Watkins stressed the need for new partnerships and alliances between government, universities, and industry.

Doris Everhart, Sheila Watkins, Adm. James Watkins, Joanna (Mrs. Downie) Muir, and Caltech President Tom Everhart.

President Emeritus Lee DuBridge.

Chemistry professors Jacqueline Barton and Peter Dervan with Betty and Ken Rhodes.

Adm. Watkins with Paul Jennings (MS '60, PhD '63), vice president and provost, and Missy Jennings.

John McMillan (BS '31) and his daughter, Linda Bozung.

Sharon Black, David (BS '58, PhD '63) and Barbara Ann Groce, Amytis Barrett, and Gene Vincenti.

Millard Jacobs (BS '40) and Doris Everhart.

Phyllis and Bob Henigson (BS '48, MS '49).

Kinetic fountain sculpture in Millikan Pond commissioned for centennial

A 24-foot-long, 3-foot-high stainless-steel kinetic sculpture built by artist George Baker, will be placed in Millikan Pond in January in honor of Caltech's centennial. The sculpture was commissioned by Caltech, and funds were provided by a group of individual trustees, alumni, Associates, faculty, and other friends of the Institute.

The Baker kinetic sculpture consists of six moving parts, each mounted on a ball bearing. Two base sections are large curved plates that rock slightly when set in motion by either wind or water pumped into a hidden chamber underneath. Mounted on each base plate are two elongated forms with vertical axes. The rocking motion of the lower plates causes the axes to tilt back and forth, in turn causing the upper forms to spin slowly. They are designed to move as much as 360 degrees.

"There are no motors within the sculpture," says artist Baker, professor of sculpture at Occidental College for the past 26 years, whose works are exhibited privately and publicly worldwide. Baker explains that "the movement is achieved from the way in which the forms are balanced."

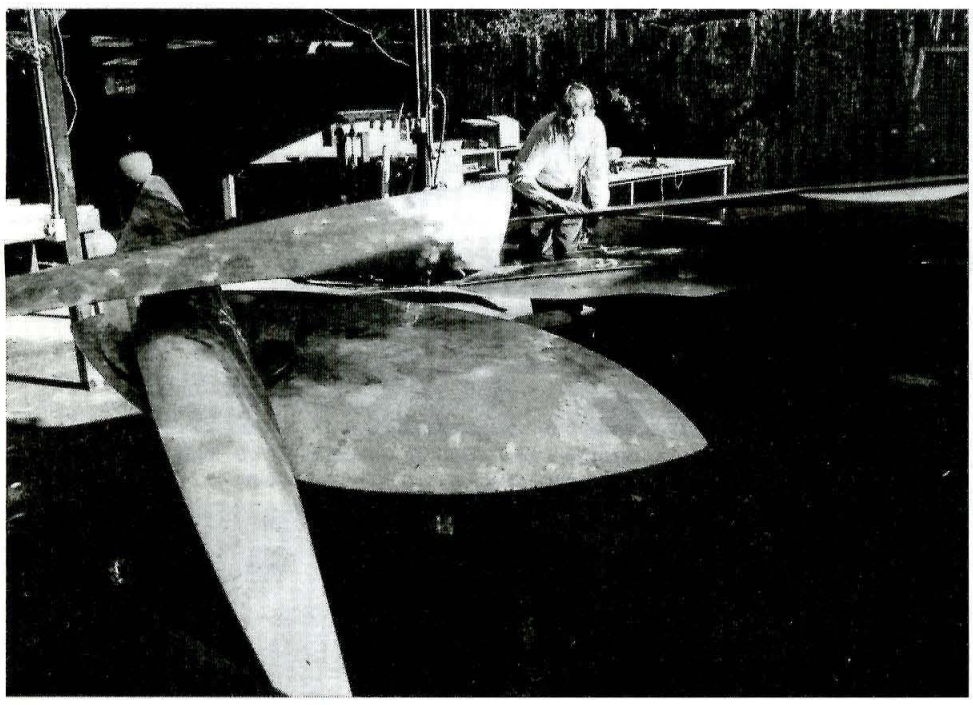
Another aspect of the sculpture will be the constantly changing colors of the steel forms, which reflect the changing light and sky colors.

Baker and his associates used the computer to make an exact model of the sculpture in three-dimensional space. The patterns for the sheet-metal shapes are drawn on the screen directly, then measured, rescaled, and given three dimensions. Full-size patterns for the shapes were printed out in sections on a laser printer and then taped together.

"We are looking forward to seeing the sculpture installed in January," says Edith (Mrs. John) Roberts, who chaired Caltech's centennial subcommittee on music and art, and who headed the drive to raise funds for the sculpture.

According to the artist, there will not be any significant change in the water supply system of Millikan Pond when the sculpture is installed. It will operate with the current recirculation system.

Says Baker of his work, "My sculpture forms are subconsciously abstracted from the environment. Their movement is gentle, and attention is focused on the interaction of line, form, and surface, as the shapes move. Their interaction is meant to produce a secluded, peaceful environment, and to elicit a contemplative mood."



Centennial programs

Nobel Laureate Hans Bethe, professor of physics, emeritus, at Cornell University, will lead off the Watson Lecture Series for the centennial year on January 16, 1991. He will talk on "The Need for Nuclear Power," discussing why global warming, pollution, and other problems compel us to reduce reliance on fossil energy, and addressing the objections to nuclear energy.

Two music programs will also be held this winter to celebrate Caltech's centennial. On January 25, the Student Chamber Music Ensembles will present "Some Musical Events of 1891: A View of the Cultural Climate in the Year of Caltech's Founding," which will include works composed in 1891 by Brahms and Dvorak, a work by Mozart (1891 marked the centennial of his death) and possibly a composition by Prokofiev, who was born in 1891.

On February 2, the Caltech Jazz Band will perform "A Historical Look at Jazz," which will trace the development of jazz over the last 100 years.

Caltech gets new supercomputer

A supercomputer of unprecedented power and speed that will enable scientists and engineers to tackle a new range of immensely complex computational problems will be installed at Caltech this spring by the Concurrent Supercomputing Consortium, a consortium of supercomputer researchers from 14 academic and research institutions, including Caltech and JPL. Paul Messina, director of Caltech's Concurrent Supercomputing Facilities, will head the consortium, whose members, in the words of Caltech's President Everhart, expect to use the new supercomputer to investigate scientific problems "that otherwise could not even be attempted."

"I am delighted that the most powerful computer in the world will be housed at Caltech, where faculty have been using concurrent computers for science and engineering applications since the early 1980s," said Everhart. "I know that a number of research groups at Caltech and at other consortium members are simply itching to get their fingers on this machine," Everhart added.

The new computer—the Touchstone Delta System—is the result of a research collaboration between Caltech and the Supercomputer Systems Division of Intel Corporation, an international manufacturer of microcomputer components, modules, and systems. Work on the computer, an advancement of Intel's iPSC/860 supercomputer, has been supported by DARPA, the Defense Advanced Research Projects Agency.

An integral component of the Delta System's unprecedented ability to handle massive computational problems comes from a custom-mesh routing chip developed by a Caltech research group headed by Professor of Computer Science Charles Seitz.

Consortium members will use the Delta System to perform large-scale computations in areas ranging from molecular biology to astrophysics. These include the modeling and simulation of global climate change (which will help develop a better understanding of the impact of environmental problems such as acid rain, increasing CO_2 concentrations, deforestation, and the hole in the ozone layer); creating images from the scientific data returned by the Magellan and Galileo spacecraft; pattern recognition of DNA sequences within the human genome; and modeling of molecular processes in natural and contaminated systems to better understand the behavior of contaminants in the environment.

Besides Caltech, JPL, and Intel's Supercomputer Systems Division, Consortium partners include: Argonne National Laboratory; National Science Foundation (NSF) Center for Research in Parallel Computation, based at Rice University; DARPA; NASA; Pacific Northwest Laboratory; and NSF programs in computational science and engineering. Additional members include: Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Oak Ridge National Laboratory, Sandia National Laboratories, and Purdue University.

The Consortium will be managed by a policy board made up of representatives from each consortium member. Caltech Associate Professor of Physics Tom Prince will be the board's first chairman.

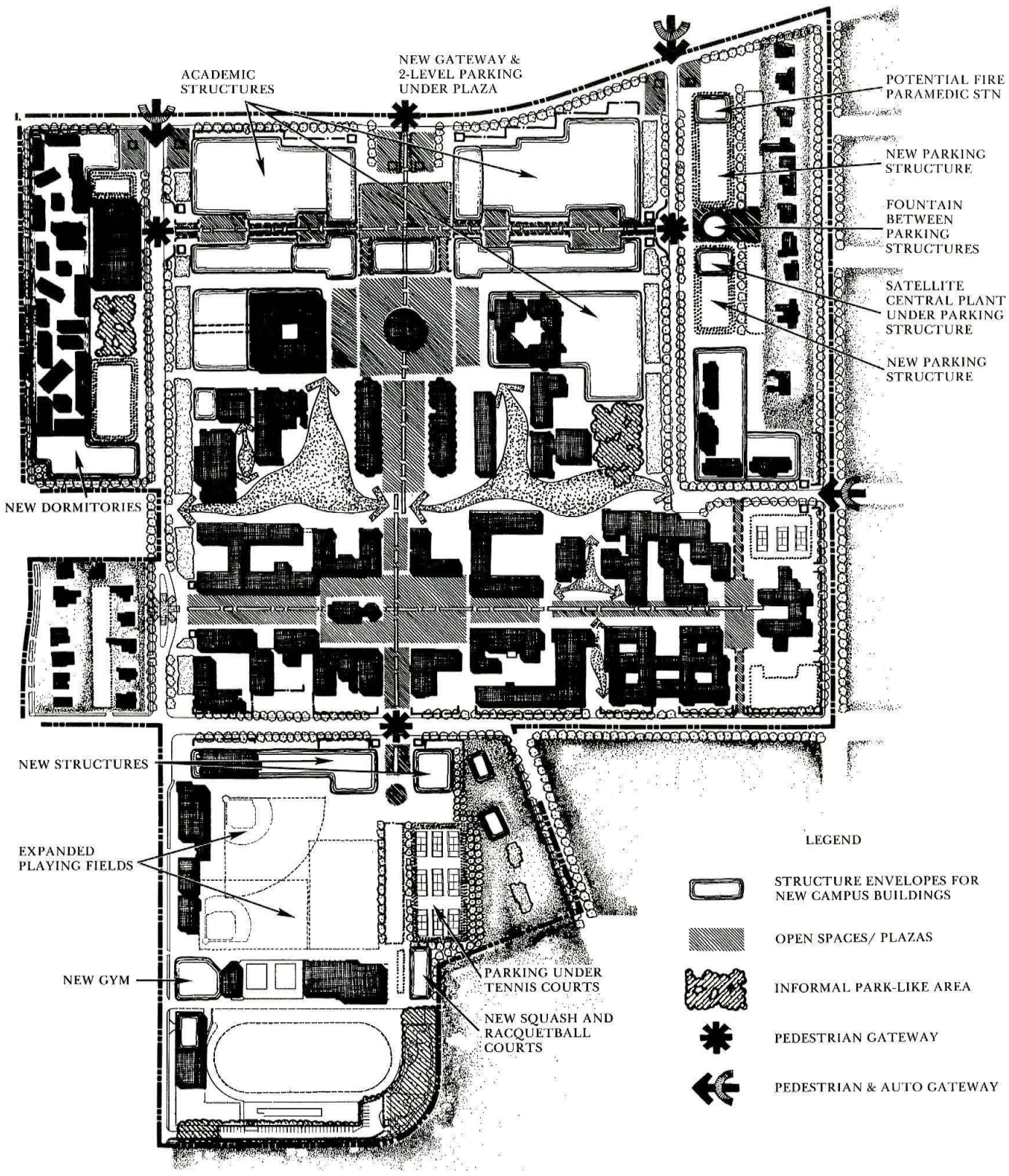
EUREKA announces keynote speakers

The Caltech staff in charge of the Fifth Annual National Conference on Undergraduate Research, which will be held on campus Thursday, Friday, and Saturday, March 21-23 next year, is looking for 200 volunteers to help take care of the some 1,500 guests expected to attend.

The three-day conference, called EUREKA (Excellence in Undergraduate Research: Experience, Knowledge, and Achievement) to symbolize the feeling of triumph in achievement, will include 90 sessions at which undergraduates from more than 200 colleges and universities throughout the country will read papers and discuss their shared scholarship. Receptions and other social events are also planned.

Keynote speakers will be science-fiction author Ray Bradbury; Caltech's Bowles Professor of Biology Lee Hood; and Evelyn Fox Keller, director of women's studies and professor of rhetoric at UC Berkeley. Robert Cowen, natural science editor of *The Christian Science Monitor*, will moderate a panel discussion of global warming.

Caltech's host committee, chaired by SURF's Carolyn Merkel, and assisted by Linda McManus, is calling for help. Faculty, postdocs, alumni, students, and staff are needed to fill session-chairman posts, to help with registration, in the information centers, to post signs, and to assist the catering department. Volunteers are welcome, if only for a two- or three-hour segment of time. For further information call (818) 356-8471.



2020 vision: the Caltech Master Plan

By Phyllis Brewster

An elegant new gateway into campus from Del Mar Boulevard; a compound of academic buildings connected by courtyards and arcades, stretching along Del Mar; six new parking structures—two of them underground; nine new tennis courts (to replace the current eight); a new gym adjacent to the women's locker room; and a second power plant—underground—with a decorative fountain over it above ground. These are some of the possible hallmarks of the campus of the future, according to the recently signed-sealed-and-published Master Plan of Caltech.

Four years ago, when a group of administrators and consultants first met to draw up a vision of Caltech's campus 25 years hence, they had three constituencies to satisfy—the Institute, the City of Pasadena, and the neighbors—residents whose homes are on the perimeter of campus.

The Institute's long-term concerns were to provide for the growth of the academic divisions; to keep an attractive interface between the campus and its residential neighborhoods; to minimize the uncertainty felt by the City of Pasadena and campus neighbors in regard to Caltech's future development; to avoid the time-consuming building-by-building permission procedures; and to insure a harmony of appearance and continuity of style in the landscape and architecture of the campus.

The City of Pasadena wanted a Caltech Master Plan because it was concerned about the effects of an expanding campus on traffic patterns in adjacent streets, on the city's utilities services, and on the immediate neighborhood generally.

Caltech's neighbors were dedicated to protecting the appearance of their community of homes, and guarding against the encroachment of on-street parking.

In the initial planning stages, the Caltech Board of Trustees came up with some internal guidelines that were basic, says Greg Van Der Werff, Caltech's director of property management and manager of the Master Plan. They wanted to keep the campus population close to its present level; to establish a three-story building limit; and to preserve and continue the 'presence' of the old campus. The trustees particularly wanted to maintain the spirit of the early campus.

Chief among Van Der Werff's associates in addressing these objectives were Vice President for Business and Finance and Treasurer David Morrisroe, who was ultimately responsible for the undertaking, Director of Physical Plant Bob Fort, master planner Clif Allen of Meyer & Allen, landscape architect Tom Lockett of Land Images, and Hall Daily of Caltech's public relations office.

Together and separately the planners devoted some 36 months to research, consultation, meetings, presentations, and compromises, until, in July of 1989, the new Master Plan was approved by all parties. The details of the plan, including a report of the objectives, constraints, potentials, implementations, and phasing guidelines associated with it, may be seen in a 105-page book, complete with graphs and four-color maps, in Van Der Werff's office and in Millikan Library.

"The plan is flexible, open to change within certain parameters," says Van Der Werff, who was instrumental in shepherding the plan through the series of meetings with master planners and architects, city commissions, faculty, trustees, staff, students, and neighborhood groups, as well as the Cultural Heritage Commission, and environmental planners. "What the plan doesn't do is constrain Caltech with the specifics of exact location, size, or style. What it does do is establish boundaries and guidelines," he explains.

The boundaries of the future campus will be roughly what they are today, marked on the west by Catalina Avenue, on the east by Hill Avenue, on the north by Del Mar Boulevard, and on the south by Tournament Park. The Institute currently owns all of the property within those boundaries, except for five parcels of land containing private homes.

The basis for the layout of the Master Plan is three border-to-border malls—one on a north–south axis, and two on east–west axes—forming a large H configuration. Special emphasis has been given to open space and

Continued on page 11

Help us find these lost alumni

Caltech has no record of the addresses of these alumni. If you know the current locations of any of them, please relay the information to the Alumni Association office, Caltech 1-97, Pasadena, CA 91125, or call (818) 356-6592.

1922

Blake Beatty BS
Arthur J. Garfield BS

1923

Robert J. Hammond BS
Lewis M. Mott-Smith BS

1924

Mitchell C. Lukens BS
Willard H. Tracy BS

1925

Wilfred G. Thompson BS
Conrad J. Waller BS

1926

Hung Y. Chang BS
Riley L. Gilbert EX
Fray Hardwick BS
John R. Howell BS

1927

Frank F. Peterson BS

1928

Francis C. Martin MS

1929

John D. Elder PhD
Reymond J. Kircher BS
Kam H. Lau BS
Julius Nelson BS
True W. Robinson BS
Willem Uyterhoeven PhD

1930

Donald K. Allison BS
William Kelley BS
Frank N. Moyers BS
Jack D. Pritchett BS
Katsunoshin Suzuki BS

1931

Jack H. Amann BS
Tseng-Loh Ho MS
James B. Taylor EX
William T. West BS
T. R. White BS
Carl K. Yoshioka BS

1932

F. B. Phleger, Jr. MS
Richard A. Searle BS

1933

Thomas C. Burk EX
David L. Clark BS
Ralph R. Hultgren PhD
Luis E. Kemnitzer MS
William A. Larsen MS
Wyatt H. Lewis BS
Edwin B. Michal MS
Winston H. Rice BS
Maple D. Shappell PhD
Warren H. Smith BS

1934

Duncan L. Hooper MS
Francis G. Tracy, Jr. BS

1935

Edward A. Bertram MS
Fun-Chang Huang MS
Russel L. Maycock EX
Dagoberto Rivas BS

1936

W. Bruce Beckley BS
Calvin M. Bolster MS
Charles A. Morse BS
Larry L. Young MS

1937

Thomas R. Burnight BS
Ju-Yung Cheng MS
Anthony Easton MS
James A. Hurst EX
Paul F. Jones MS
Thomas N. Shaw BS
Ellis W. Shuler MS
Meyer J. Test BS
Clark H. Wiget BS

1938

Kamal Djanab PhD
Duane W. Farnham MS
Hyman D. Goodman MS
Arthur G. Gross BS
Arnulfo G. Gutierrez MS
Frank C. Lowe BS
William Rhett BS
Chi-Cheng Tsao BS
Hsih-Heng Wang MS
James W. Watson BS

1939

Richard H. Bishop BS
Andrew Frejer BS
Winthrop G. Jones MS
Spencer W. Oakley BS
David H. Scott BS
Lester G. Zukerman BS

1940

George A. Brettell, Jr. MS
Arthur M. Compton BS
Rear Adm. William E. Gentner MS
Arville C. Gibson MS
William J. Green MS
George A. Hatton MS
Orson B. Lolmaugh BS
Adolph Lovoff MS
Luigi Menis BS
Norman L. Peterson MS
Robert A. Phillips BS
Shih C. Tao MS
Sabin A. Ustel MS
Tsung-Su Wang MS
James M. Watkins, Jr. BS

1941

Norman Z. Alcock MS
Chieh-Chien Chang MS
Morris R. Clark BS
Samuel J. Easley MS
John M. Feeley BS
Glyn Frank-Jones BS
Donald L. Harvey BS
Lloyd A. Lewis MS
Blaine R. Nelson BS
George I. Reimers BS
Frederick G. Robinson BS
C. B. Stadum BS
Clyde T. Standridge MS
Robert L. Weaver MS
Colman Zola MS

1942

Mehmet F. Bebe ENG
Orhan M. Emre ENG
Frank I. Given BS
Chong-Hu Go MS
Victor H. Marinez MS
Charles B. Metz PhD
Enver M. Muradoglu ENG
Russell Rhyne BS
Albert G. Wilson MS

1943

Kenneth E. Anspach BS
James M. Brown EX
Wayne H. Brown BS
Ted L. Crosthwait MS
Benjamin A. Daleon MS
Warren V. Eaton Jr. MS
Edward G. King MS
Robert H. Koch MS
Robert W. Kong MS
William L. Leeds MS
Roland E. Lundquist MS
Klaus Mampell PhD
Robert W. Mitchell EX
Norman Newsome Jr. MS
Lawrence K. O'bert EX
Richard E. Pentoney EX
Fred D. Roberts MS
Dan R. Scholz MS
Leslie A. Shannon MS
Thomas B. Smitherman MS
William Snyder BS
Peter A. Tileston EX
Ernesto Vicente MS
Courtland L. Washburn MS

1944

William O. Ballard, Jr. BS
Francisco Barriga MS
William E. Bell MS
Donald G. Benjamin MS
Mehmet N. Berkant MS
Ertugrul Birlik BS
Joseph E. Burch MS
William G. Burke MS
Ahmed Cebeci MS
Carlos A. De Medeiros MS
Weldon R. Donsbach BS
E. J. Goehring EX
Leon Green, Jr. BS
Charles P. Harrison MS
Paul J. Labanauskas MS
John W. Marshall BS
Carl O. Mattinson BS
Kenneth L. McBreen MS
Merrill E. Onstad MS
Ethem Ozkaragoz MS
Jim M. Ridlehuber MS
David F. Rutland BS
Mayo G. Shults MS
Roberto L. Stein MS
R. S. Tanyildiz BS
Garland S. Taylor BS
William M. Trimble BS
D. R. Wight MS

1945

Victor A. Ari MS
Roy G. Killian BS
Emanual J. Miller BS
Jonathan F. Rice BS
Robert G. Trout BS
Necat Turkbas MS
Bruce R. Vernier BS
Louis B. Zambon MS

1946

Charles W. Allison Jr. BS
Clyde C. Andrews MS
Khosrow Behroon MS
Ke-Yuan Chen MS
Robert H. Conradt BS
Daniel Cortes-Guzman MS
Jerome P. Dyson BS
Hassan F. Fatch MS
Robert W. Foote BS
George S. Gill BS
Luther A. Hall MS
Benjamin S. Hayne, III BS
H. T. Huang BS
Frederick J. Lewis MS
Norman J. MacDonald BS
Stanley R. Nixon BS
Carl K. Salbach MS
Elmer R. Shepard BS
Harvey F. Smith MS
Claudio F. Stegmann MS
Basil G. Stergis MS
Yu-Sin Tung MS
Thomas F. Weldon MS

1947

Rolland S. Asher BS
Adolfo J. Atencio MS
Fredric B. Clarke ENG
Hugh H. Collins ENG
Brain D. Dagnall MS
Subodh C. Das MS
Leo Fiorello MS
Eric Gillam MS
Walter Harrington MS
Merwyn E. Hodges BS
Ea-Qua Huang MS
Paul T. Hutchison MS
Felix A. Kalinski MS
James S. Lesko MS
Rodin Lesovsky BS
Vicente H. Lim, Jr. MS
John Manoukian MS
Michael K. Molloy MS
Basil E. Moorehead BS
Raymond L. Olson BS
John L. Orr MS
Loys M. Satterfield ENG
Robert W. Shackford ENG
Alexander Smith PhD
Francis D. Sullivan BS
Russell Thompson, Jr. ENG
George Vanden Heuvel MS
Arthur F. Vieweg BS
Clifford M. Wimberly MS
Edward B. Winters, Jr. BS

1948

Fred A. Adler MS
Ying-Ching Au BS
James A. Bunce MS
Tao-Hung Chu MS
Albert R. Clark MS
Burgess F. Collins BS
James R. Dale, Jr. MS
Charles D. Edwards MS
Perry H. Eubank MS
Patrick N. Glover BS
Omer I. Inonu ENG
Robert J. MacNeill MS
Herman A. Mason BS
Walter P. Murphy Jr. ENG
Winton G. Roe Jr. BS
John S. Swain BS
Robert K. Swank MS
William H. Voelker MS
Philip Rosten MS
Charles A. Savant BS
Howard R. Schmidt MS
Robert S. Welte BS
Norris D. Whitehill BS
John D. Wilkes PhD

1951

Ricardo M. Arosemena MS
Kenneth R. Berg BS
Richard B. Campbell MS
Edward B. Crichton BS

1950

John R. Doe BS

1951

Howard C. Goodell MS
Carl-Nils Hildabrand BS
Jacob P. Lafdjian MS
Gerald M. Monroe PhD
Wilfred C. Mosier MS
Joseph E. Padgett Jr. MS
Raymond A. Sjodin BS
Richard K. Smyth BS
Allan J. Summers MS
Arthur E. Wennstrom BS

1952

Paul E. Arbo ENG
Elias G. Arcoulis MS
Oswin N. Brown MS
Smith V. Bucy MS
Frank Capra Jr. EX
Wesley Caspers MS
Frank C. Lang Jr. BS
Bernard J. O'Neill, Jr. MS
Basil R. Parnes BS
William C. Robison MS
Yung-Chung Shen MS
Robert E. Stanaway BS
Donald E. Sutton BS
Richard W. Weeks BS
Howard E. Wilson MS

1953

Stuart G. Lennox MS
George H. Moore BS
Wilbur F. Offtermatt ENG
Sherman H. Ripley PhD
Norman M. Schroeder BS
Thomas R. Slodowski BS
Fred P. Storrer MS
David S. Twining BS

1954

Otto Cardinale BS
John T. Coughlin, II MS
Christian P. Dambrine MS
Wesley R. Guebert MS
James E. Guinane MS
Irvin G. Henry MS
Richard C. Heyser MS
Richard R. Hodges BS
Herberto Jimenez MS
Eugene A. Kaiser BS
Berdine H. Rogers MS
Francis F. Scott BS
Bruce J. Watkins BS
Paul F. Weyers MS
Herbert H. Winters MS

1955

Alain Brethes MS
John D. Britton PhD
Roger J. Dewiest MS
Lewis F. Ellmore BS
Jean Garcin MS
Hashim H. Hamzawi MS
William E. Huber MS
Shankar Lai PhD
James Meacham BS
William T. Moore MS
Frank B. Wallace, Jr. BS

1956

Arthur H. Blair MS
Wilmot G. Brownlee MS
James L. Cowan BS
Robert W. Edwards MS
Jacques Feige MS
James R. Foster ENG
E. Mark Gold BS
Maurice Granier MS
David W. Hill MS
James L. Kelly MS
Duncan E. MacDuffie BS
Rolland G. Moody BS
William N. Spence BS
Prabandam Srinavasan ENG
Tran N. Truong BS
Robert M. Young EX

1957

Anthony A. Dupont MS
John F. Edsforth MS
Douglas B. Holdridge MS
Donald T. Meyer BS
Robert T. Moore BS
James M. Short BS
Franklin C. Silvey ENG
Joseph E. Stuteville BS
Andre A. Treyer MS
John C. Uhthoff MS
Chi-Hsiang Wong PhD

1958

David A. Ackley BS
Majid Arbab MS
Alain Boulanger MS
David G. Byles BS
Paul L. Donoho PhD
George Gerson MS
Lawrence I. Kittiver MS
Jean P. Lacrouts MS
Rene E. Maurice MS
Hugh D. Palmiter EX
Gerald M. Pjerrou BS
Jacques M. Rieunier MS
Gunnar E. Stenberg MS

1959

Kenneth H. Adams BS
Victor Baekelandt MS
Louis N. Bathish MS
Chai B. Byun BS
Clark E. Carroll BS
Ronald A. Christiensen MS
Andre J. Fossard MS
Michel P. Guillemet MS
Jay H. Harris MS
Ronald B. Leonard BS
Didier Morane MS
Kenneth A. Muraoka BS
Stanley Roth BS
Walter V. Weber, Jr. MS

1960

Neville A. Black BS
Paul R. Calaway BS
Joseph M. Cauley BS
Jacques J. de Barbeyrac MS
Alain N. Genko MS
Gary C. Goodman BS
Ernest A. Isaacs BS
Pierre E. Joffres MS
Thomas R. Koehler PhD
Jimmy C. Larsen MS
Melvin K. Neville BS
Richard A. Newcomer BS
Walter E. Pelton BS
William A. Sinoff BS
Stephen V. Stephens BS
Paul R. Widess BS

1961

Charles A. Allen MS
Roland Kitten MS
Etienne Macke MS
Ann R. Massar PhD
Lawrence W. McCombs BS
Nick S. Mousouris BS
Demetrius Philippou MS
Jean-Pierre Quent MS
Dwain J. Reed BS
Rolf Richter BS
Lewis L. Smith MS
Jeanne M. Weiler PhD

1962

Nazeer Ahmed MS
Clement C. Auder MS
James T. Chang PhD
Michel M. Cousin MS
Thomas E. Creighton BS
Michel D'Arbaumont MS
Jean C. Dubois MS
Larry D. Fitzgerald MS
Donald C. Garwood PhD
Scott E. Gilles MS
John M. Grover BS
Peter W. Hammond BS
Marlyn T. Jakub MS
Miguel E. Levy BS
Alexander N. Lyon BS
John F. Murphy MS
Jean M. Noel MS
Barry N. Pines BS

1963

Michael F. Behrens BS
Pierre J. Facon MS
Leo Horowitz MS
Stephen H. Mastin BS
Raymond F. Poggi MS
Lee W. Samuelson EX
David S. Siegel BS
Will G. Spiegelman BS
Randle W. Ware BS
John Y. Wu BS

1964

Bruce J. Aborn MS
Eudoxia Aliferis MS
Tzeu-Ching Chang MS
Der-Shyr Chen MS
William S. Cheng BS
Duygu Demirlioglu BS
Jean-Marie F. Grange MS
Takehiko Ikeda MS
Karl H. Kanus MS
Chung-Mo Kwok BS
George E. Mager BS
Jacques A. Parisot MS
Andreas Puhl MS
George E. Radke Jr. BS
Michel E. Sivirine MS
Thomas R. Berger PhD
James R. Boyd MS
Martin D. Cooper BS
John B. Davies MS
Terrall De Jonckheere MS
Larry E. Dillehay BS
Douglas M. Eardley BS
Payton D. Fuller MS
William C. Galley PhD
Robert E. Goldwasser MS
Eitan Gonen MS
Michel J. Henry MS
Louis Kircos MS
Chien-Shih Lu PhD
Panos Z. Marmarelis MS
Duane P. McClure BS
Jean M. Moysan MS
Robert C. Neveln BS
Karuppagounder Palaniswamy MS
John C. Perrin MS
Michael Plouf EX
Michael A. Scavennec MS
Nagendra Singh MS
Vivian L. Steadman MS
Duke A. Sun BS
Paul F. Williams II BS
Elton T. Young II PhD

1968

Mohan P. Ananda MS
Alain A. Artaud MS
Gerald M. Cotreau MS
William M. Denny MS
William J. Driskell MS
Jacques P. Fleuret MS
Ender M. Kaya MS
John M. Lehman BS
Leroy C. Lin PhD
David M. MacKenzie BS
Dale L. Miller MS
Brian M. Schaefer MS
George K. Tucker BS

1969

James B. Andrew BS
Jean-Henry Barth MS
Joseph W. Blum PhD
J. Neal Brantner MS
James P. Cerne MS
George K. Chan MS
Shuan-Ping Chao MS
Ted W. Dillingham BS
Theresa Dodds PhD
Michel H. Flandrin MS
Luis N. Ikwueke MS
Barry R. Keller BS
Thomas O. Mahon, Jr. BS
Yavuz Rona MS
George J. Siltanen MS
Murray D. Smigel BS
Jean-Marie Quitin MS
Arnold W. Richards BS
Richard J. Schwall BS
Jack K. Tam BS
Paul T. Wegener BS
William M. Weigel BS
William W. Yue MS

1972

Carl R. Anderson BS
David S. Anderson EX
Richard B. Baxter MS
Richard J. Blint PhD
Eric R. Boissaye MS
Emmy T. Chan MS
Robert L. Derham MS
Samuel R. Gardiner MS
Frank Kendall III MS
Sai-Kit A. Law BS
Andrew H. Lo BS
Robert N. Miller MS
Robert J. Panek BS
G. Seth Shostak PhD
Dan A. Sinema BS
Lawrence K. Tu MS
Keikichi Yagii PhD

1973

Frederick H. Auld, Jr. MS
Bruce W. Bennett BS
Raymond E. Carhart PhD
Deborah D. Chung BS
Bruce S. Eisenhart BS
Daniel P. Haake BS
Michael A. Piliavin PhD
Brooks N. Schmidt MS
Richard A. Shaw BS
Clifford E. Smith MS
Clement L. Tai, Jr. MS
Kee-Hau Tsang BS
Wayne K. Warzecha MS
Rodney K. Womer MS
Hung L. Wong MS
Bruce Woodford EX

1974

Neil S. Berkey BS
John J. Cipar MS
Robert M. Coleman BS
Dennis B. Creamer BS
Jay D. Doty BS
Robert B. Fisher III BS
John E. Gelotsky PhD
Joseph F. Karnicky PhD
Harold J. Katz MS
Betty P. Kwan BS
Daniel F. Lam MS
David Y. Leung MS
George B. Levin PhD
Thanh Luu BS
Alain A. Martin MS
Albert T. Ng BS
Constantine Spyropoulos MS
Richard L. Sweet, III MS
William E. Wright MS

1970

Luiz T. Auler MS
Robert C. Balcer MS
David Boss MS
Sydney P. Craig III PhD
Kevin G. Donohoe MS
Richard F. Doyle BS
Helio Fagundes MS
Abdol R. Faiz MS
Atef I. Girguis MS
Edwin J. Hamilton, Jr. PhD
Allen G. Hirsh BS
William C. Hocker BS
James D. Hutchinson MS
Nicole H. Imbert MS
Arun N. Kulkarni MS
Juan E. Leon MS
Pierce A. Lynne MS
Isaac A. Majerovicz BS
Miss Jovka Michova MS
Vivek C. Monteiro MS
Richard W. Noren MS
Robert E. Powell MS
Peter Stavroulakis MS
Juan L. Steimle MS
George Z. Voyiadjis MS
Sheldon H. Zemell MS

1971

Luis Y. Aranguren BS
Theodor S. Colbert MS
J. Lee Compton MS
Brian T. Cox BS
Ronald A. Friedland EX
John D. Gallivan PhD

1976

Ralph B. Graham BS
Thomas C. Gunderson MS
Gregory E. Kandel BS
Wally P. Lau MS
Alan S. Lederman BS
Chi C. Lo MS
Lt. CKirk A. Mathews BS
Terrence M. Morris MS
David C. Muchmore PhD
Ahmet Ozkul BS
David Pollard MS
D. Wilmer Rivers Jr. BS
Sedigheh Salim MS
Charles Schmidt, Jr. PhD
Satish C. Sharda PhD
Arlan D. Steinolfson MS
Donald J. Sullivan MS
W. S. Thompson BS
Frederick D. Williams BS
Thomas W. Yee BS

1975

Thomas C. Brown, Jr. PhD
Erik J. Brune BS
James C. Conwell MS
Christopher L. Cooper BS
Peter J. Drivas PhD
Alexander C. Egwuatu BS
Klaus H. Engelhardt BS
Manuel R. Florez MS
Ralph R. Hayward, III BS
Sylvan A. Jacques Jr. MS
Ravi Jain MS
Jonathan D. Katz MS
Diane J. Kent MS
Robert W. Lim BS
Brian T. Luke BS
William C. Moss BS
Michael L. Norman BS
John P. Pelegano MS
Michael D. Rourke MS
Barry Schneidman MS
Jeffrey B. Smith PhD
Robert E. Sullivan, III BS
Eric N. Vella BS
Bruce D. Westermo MS
Eric D. Williams BS

1976

Ahmet V. Arslan MS
Samir E. Barudi MS
Wesley M. Brown PhD
Charles R. Byler BS
Martin F. Cohen MS
Michael C. Coln BS
Michael L. Cooper MS
James W. Deutsch PhD
Lewis K. Hashimoto BS
Robert H. Higley BS

Andrew J. Jankevics	BS	Ahmad F. Khorrami	MS	Paul N. Spathis	BS	Gregorio Beitman	MS
Barbara F. Keenan	MS	Robert R. Krchnavek	MS	Maritza I. Stapanian	PhD	Johan L. Bijnens	MS
Thomas J. Lawler	BS	Aleksander Kupiszewski	BS	Michael R. Walsh	BS	Paul S. Bloch	MS
Keith D. Neerman	BS	Albert Y. Lam	BS	Laura H. Wesson	BS	Anne-Marie Brest	MS
Chiu-Yuen J. Ng	BS	Thomas K. Lee	PhD	George W. Williams	BS	Carol J. Bryan	BS
Daniel D. O'Dowd	BS	Brian T. Lew	BS	1982		Hong-Man Chan	MS
Douglas G. Petrie	BS	Mark G. McHarg	BS	Stewart W. Baillie	MS	Mark S. Chitjian	BS
Stephen Robsky	EX	Patty P. Pang	BS	Marc J. Berman	BS	Haris Christodoulou	MS
Stephen R. Roe	BS	Michael B. Porter	BS	Robert E. Blair	PhD	Yam K. Chu	MS
Mark G. Rowan	BS	John M. Pursch	BS	Jonathan F. Buss	BS	Jose E. Disini	BS
Alan B. Saul	BS	Mark Ragins	BS	Loudon L. Campbell	BS	Michael M. Doty	BS
Hubert H. Shen	BS	Tim X. Rentsch	BS	Steven A. Cohen	PhD	Reese Faucette	MS
Alan J. Shusterman	BS	Michael Rubinstein	BS	Pascal O. Correc	MS	Brian J. Fitzsimmons	PhD
Don J. Slankard	BS	Augusto Sagnotti	MS	Kathryn L. Doughty	BS	David A. Goldberg	PhD
Karl D. Stephan	BS	Mavis Shure	PhD	David R. Dowling	BS	Stuart Gondrici	BS
Steven M. Sweeney	BS	Eric J. Siskind	PhD	Ilnur Erbas	MS	Herman J. Gordon	PhD
Steven K. Wake	BS	Dean G. Sturtevant	MS	Graeme F. Fowler	PhD	Koichi Gotoh	MS
Gerald A. Wedekind	BS	Jebril A. Swedan	MS	Joseph A. Garcia, Jr.	BS	Peter J. Grieve	BS
1977		James L. Taylor	PhD	Gothard C. Grey	MS	Roch Guerin	MS
Mustafa A. Abushagur	MS	Steven G. Trabert	BS	Rajan Gupta	PhD	Orkum Hasekioglu	MS
Adi R. Adiwoso	MS	David R. Van Alstine	PhD	Karl W. Heuer	BS	Jeffrey M. Hicks	BS
Kwok-Shing Au-Yeung	MS	James C. Walseth	BS	Nak-Hui Hwang	BS	Chih-Chieh Hu	MS
Jeffrey R. Barnes	MS	Joseph K. Wat	MS	Catherine A. Kirschvink	BS	Karim F. Karagulla	BS
Andrew Bewsher	MS	Tak-Yiu Wong	MS	Randal D. Koster	BS	Francoise J. Lemouel	MS
Mark S. Bickford	BS	1980		Gerasimos Lyberatos	MS	Moses Mares	BS
Duane K. Boman	BS	Jean-Luc R. Aschard	MS	Douglas Y. MacKenzie	BS	Craig N. Minor	BS
John L. Chambers	PhD	Pamela R. Auburn	MS	Linda B. McAllister	BS	Bruno C. Nadd	MS
Bruce G. Herring	BS	Thomas C. Banwell	MS	John P. McNally	BS	Phu T. Nugyen	BS
Bart Jackson	BS	N. Walden Barcus	MS	Milan Mijic	MS	Shouleh Nikzad	MS
Kevin E. Jones	BS	Meir Bartur	MS	David P. Millar	PhD	Nonkululeko Nyembezi	MS
James J. Kelly	BS	Robert J. Bensoussan	MS	David A. Myers	MS	Jeffrey P. Rhinesmith	MS
Thomas D. Little	BS	Barry J. Bentley	MS	Byron L. O'Steen	PhD	Helio T. Rodrigues	MS
Kai-Yan M. Ma	BS	Donna H. Berry	MS	Hisup Park	BS	Nadira B. Sabanovic	MS
Madeline Paciorek	MS	Roland L. Bouchard	MS	Michael L. Pearson	BS	Michael P. Schatz	PhD
Rodolfo R. Rosales	PhD	Alan H. Boyar	BS	Pamela J. Phillips	BS	Steven G. Schlipf	BS
Vega D. Sankur	PhD	Johanan L. Codona	BS	Forest C. Quinn	BS	Barry A. Swartz	PhD
Frank Stackhouse	MS	David M. Cole	PhD	Mohit Randeria	MS	Nadeem Tufail	BS
Michael A. Surkes	MS	Brain R. Davis	PhD	Russell O. Redman	PhD	Harold M. Weiser	BS
Paul M. Whitmore	BS	Alain Delsupexhe	MS	Philip A. Sackinger	BS	Kriengkrai Wianrakkit	BS
Glenn D. Wood	BS	Peter A. Edwards	BS	Edward Schepps	MS	1985	
Gong P. Yeh	MS	Reda E. El Damak	MS	Kenneth R. Sieck	BS	Manuel Acevedo-Ruiz	BS
Ronald Zimmerman	MS	James R. Ellison	MS	Maurisa Sommerfield	BS	Sean M. Callahan	MS
1978		M. G. Finn	BS	Michael E. Stibila	MS	Ariel Caticha	PhD
Nain H. Al-Adhadh	PhD	Thomas H. Fly	BS	Saleh A. Tanveer	MS	Keming Chen	MS
Farhad Barzegar	MS	Jeffrey L. Fordon	MS	Paul D. Thomas	BS	Gary T. Chow	BS
William I. Behen	BS	Patrick W. Goalwin	MS	Anuchit Tiranuchit	BS	Mark Crawshaw	PhD
William E. Bratton II	BS	Charles E. Goodhart, Jr.	BS	Liem T. Tran	BS	Sheldon I. Green	MS
Daniel G. Canin	BS	Peter M. Goodwin	BS	Santosh S. Venkatesh	MS	Betty J. M. Hannoun	MS
Reazuddin Chaudhuri	MS	John A. Goree	BS	Russell E. Walker	MS	Wendy L. Hansen	MS
Wilbert Chew	BS	Mohammed F. Helwa	MS	Xian-Li Yeh	BS	Ting-Lin Kao	BS
David A. Chin	MS	Kwok K. Ho	MS	1983		Ivo Klemes	PhD
Robert M. Claudson	BS	Jeffrey B. Johnson	MS	Tadhg P. Begley	PhD	Kikis M. Kyriacou	MS
Mark B. Dolson	MS	David M. Joseph	BS	Alejandro A. Borbolla	MS	Blake H. Lewis	BS
Christopher L. Frenzen	MS	Norman T. Lee	BS	David P. Brady	MS	Tan D. Ngo	BS
Samy M. Hanna	MS	Boscoe H. Leung	MS	Clark D. Brooks	BS	K. M. Papadimitriou	MS
Syed J. Husain	EX	Herman S. Li	MS	William M. Bruno	MS	Stephen D. Prowse	MS
Benham Hushmand	MS	Mark A. Ludwig	MS	Walter A. Coole	BS	Jeannine-Marie St. Jacques	BS
Edward N. Keller	BS	Christian Mailhiot	MS	Yongbum P. Cuevas	MS	Cynthia C. Walker	MS
Bing H. Ko	BS	Max Marshall	PhD	James M. Cummings	BS	Michael J. Walsh	EX
Kristen M. Larson	BS	Kevin S. McLoughlin	BS	Barry D. Davidson	MS	Michele C. Walters	BS
Jesus Leyva Ramos	MS	Hsiao-Ping H. Moore	PhD	Marc M. De Villepin	MS	Thomas C. Zietlow	PhD
Moses L. Ma	BS	Paul V. Neilson	MS	Andrew M. Duncan	BS	1986	
Amelia M. Maxted	MS	Karolen Paularena	MS	Lisa L. Flitz	BS	Peter D. Ashcroft	BS
Luis Medina-Vaillard	PhD	March J. Peran	MS	James E. Flowers	MS	Douglas D. Axe	MS
Arthur I. Metz	MS	Michael K. Reach	BS	Chi H. Fong	BS	Douglas J. Bennett	MS
Lawrence I. Mortin	BS	Charles S. Reynolds	BS	Hamid Johari	BS	Lynda C. Brinson	MS
James H. Mullany	BS	Janet A. Rice	BS	Baruch D. Kupperman	PhD	Wei Chen	MS
Tor E. Ostbo	MS	Wayne H. Richardson	MS	Wayne W. Lam	MS	Piranart Chokwatana	MS
Siranush Papazian	MS	Colleen R. Ruby	BS	Anthony Magaldi	ENG	David H. Chow	MS
Charunya Phichitkul	MS	Robert Schulz	MS	Maclen B. Marvit	BS	Harry Soot-Shang Chu	MS
Stephen P. Pope	BS	Napapon S. Scott	PhD	Frank A. Meyer	BS	Sung H. Chun	MS
Jim D. Povlis	MS	Patricia F. Scott	MS	Roman Movshovich	BS	Karen L. Condie	BS
Jack Powell	MS	David C. Shafer	BS	David J. Muraki	BS	Urna Devi Dasika	MS
Daniel J. Rader	BS	Charles S. Slater	MS	Matthew P. Newlin	MS	Denise L. Draper	BS
Kenji Shintani	MS	Joseph S. Stephens	MS	Thelma Nunez-McNally	BS	Diana Foss	BS
Thomas P. Sterk	MS	Eric J. Swanson	MS	Wendy A. Olson	MS	Brian L. Foster	BS
Wayne J. Thompson	PhD	James K. Wang	BS	Richard L. Paquette	BS	Marc E. Herant	BS
George Triantafyllou	MS	Robert W. Weaver	BS	Jonathan E. Parker	BS	Chi Fai Ho	PhD
Nikolaos P. Vasilakos	MS	Michael R. Woolley	BS	Vipul Periwal	BS	Tyler L. Housel	MS
David S. Wong	BS	1981		Alexios Polychronakos	MS	Justin T. C. Ip	MS
Ella H. Wong	BS	Rajapillai V. Ahilan	MS	Ilene M. Reinitz	BS	Toru Katsumoto	MS
King-Wah W. Yeung	BS	Philippe G. Boita	MS	David C. Sams	MS	Julie A. Kern	MS
Jeffrey C. Yuen	MS	Bret S. Burns	BS	Balachandran Sathiapalan	PhD	Paul T. Kinney	MS
Barton Zwiebach	MS	Thomas D. Burton	MS	Paul D. Siders	PhD	James J. Lee	PhD
1979		Carla J. Casewit	PhD	Risto L. Sjogren	BS	Michael J. McDowell	BS
Mark C. Anderson	MS	Constantine Chazapis	MS	Aditya Srinivasan	BS	Milagros Montalvo	BS
Genevieve M. Blick	MS	Vanevic C. Daniel	MS	Kenneth J. Stern	MS	James J. More	MS
Douglas A. Breisky	BS	Kathryn L. DeWitt	MS	Steven Y. Tam	MS	Thomas J. Nadeau	MS
Richard J. Carlson	BS	Horace R. Drew III	PhD	Gregory P. Tollisen	MS	Tak-Kwong Ng	MS
Ping Y. Chiu	BS	Singaravelu Elangovan	MS	Curtis A. Trimble	BS	Kevin C. Power	MS
Bo H. Cho	BS	Steven L. Gay	MS	Walter S. Tsuha	MS	Irene L. Replogle	BS
Kenneth S. Coles	BS	Natalie S. Gluck	BS	Thiti Vejpas Korawit	BS	Michael A. Rider	MS
Steven W. Cordray	MS	Brian Herndier	PhD	Wacharasindhu	MS	Steve S. Roy	BS
Fred J. Crimi	BS	Daniel J. Jacob	MS	Timothy L. Williams	BS	Ricardo Sanchez Pena	MS
Mark B. Cronshaw	MS	Richard P. Keller	MS	Brian D. Wilson	MS	Michael J. Scott	MS
Brian G. Easton	MS	Robert P. Kreh	PhD	Sung J. Yoo	BS	Steve S. Shin	BS
Steven T. Eckmann	BS	Hin-Wing Kui	BS	1984		John R. Stille	PhD
Brent L. Ellerbroek	PhD	Luen-Hin Kwok	MS	Stephen C. Anco	MS	Steven D. Thomas	BS
Kenneth P. Fecteau	MS	Louis Lamarche	MS	Clinton L. Ballard	BS	Dale R. Warren	PhD
Carl R. Gilray	BS	Christopher Lamendola	MS	Mary A. Barsony	MS	Yiu-Fai I. Wong	BS
Frederick S. Grennan	BS	Tuan A. Le	MS			Chang D. Yoo	BS
Alvin J. Hill, Jr.	PhD	Derek S. Lillie	BS				
Sai-Yuen B. Ho	MS	Aneesh V. Manohar	BS				
Artie Hodges	BS	James P. McDermott	BS				
Stephen C. Jackson	BS	Afshin Nassiri	MS				
David L. Keller	MS	Bonny L. Schumaker	MS				

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Alumni fund chooses chairmen

Each year more than 800 alumni volunteer for the Annual Fund. The goal of the Annual Fund is the development of a broad base of alumni donors who will make annual contributions to the Institute. As a result of the interest and involvement of these Institute advocates, Caltech enjoys an impressive donor participation rate as well as greater financial support each year.

The Annual Fund's alumni structure is divided into four distinct campaigns, each with a separate volunteer organization.

The Chairman of the entire campaign for the third year is George Stanley Holditch (BS'48). The key volunteer for the Special Gifts I Campaign, which solicits gifts of $5,000–$25,000 is Joseph Ben Earl (BS'44).

The Special Gifts II campaign which solicits gifts of between $1,000 and $4,999 is headed again this year by Gordon McClure (BS'47). The volunteers working with Gordon are: Albert P. Albrecht (BS'42), Paul H. Allen, Jr. (BS'42), Dwight H. Bennett (BS'40), Frank C. Bumb, Jr. (BS'51, MS '52), Robert G. Chapman, Jr. (MS'62), James H. Crabtree (BS'65), James A. Davies (BS'35, MS'36), Roger C. Davisson (BS'65, MS '66), Erik P. DeBenedictis (BS'78, PHD'83), Elliott A. Green (BS'42), Lewis L. Grimm (BS'44), Robert T. Herzog (BS'56, MS'63, ENG'64), Danny F. Huebner (MS'57, ENG'58), Earl D. Jacobs (BS'53, MS'54, PHD'61), Theodore G. Johnson (BS'57), Stuart A. Krieger (BS'40), Neville S. Long (BS'44, MS'48), John F. McClain, Jr. (BS'42), Wayne T. McMurray (BS'45), Boude C. Moore (BS'48, MS'49), Harry J. Moore, Jr. (BS'48), Fred W. Morris (BS'44), Richard L. Ridgway (BS'37), Alfred Schaff, Jr. (BS'41), Richard W. Seed (BS'44), Paul W. Tuinenga (BS'77, MS'78), Fred A. Wheeler (BS'29), James W. Workman (BS'57, MS'58).

The Reunion Campaign is directed at all alumni who are celebrating their 10th, 25th, 30th, 35th, 40th, 45th, and 50th reunion. Kirk Dawson (BS'61,MS'62) is the volunteer coordinator for this campaign. Frederick W. Thiele (BS'41) serves as the Class of 1941 Chair, his committee members are: Robert G. Bowlus, (BS'41), George H. Bramhall (BS'41), William F. Chapin (BS'41), Donald E. Dawson (BS'41), Quentin Elliott (BS'41, MS'42), Paul H. Faust (BS'41), Sidney K. Gally (BS'41), George B. Harr (BS'41), Gilbert A. Jones (BS '41), Emerson H. La Bombard (BS'41), Bruce E. Lawrence (BS'41), Joseph W. Lewis (BS'41), D. F. James McIntosh (BS'41), Robert F. Myers (BS'41), Alfred Schaff, Jr. (BS'41), Joseph Weiss (BS'41).

Marion E. Gillihan (MS'46) is the Class of 1946 Chair; his committee members are: Kenneth O. Cartwright (MS'46), James C. Evans (BS'46), Yoshiyuki J. Fujimura (MS'46), Calvin E. Kempton (BS'46), Richard A. Montgomery (MS'46, PHD'48), James F. Parker (MS'46, ENG'46), Harry L. Wolbers (BS'46).

The 1951 Class Chair is Robert E. Covey (BS'51, MS'52); his committee members are: Leo L. Baggerly (BS'51, MS'52, PHD'56), Joseph R. Bookee (BS'51), Dean C. Daily, II (BS'51), William E. Eilau (BS'51), David G. Elliott (BS'51 MS'52), James A. Enslow (BS'51), Raymond H. Greutert (BS'51, BS'53), Earl C. Hefner (BS'51 MS'52), Albert S. Jackson (BS'51, MS'52), Hiroshi Kamei (BS'51, MS'52), Thomas W. Layton (BS'51, PHD'57), Dan B. Lemay (BS'51), Peter Price (BS'51), William M. Whitney (BS'51).

Ralphe O. Kehle (BS'56, MS'57) serves as the 1956 Class Chair. H. Kent Frewing (BS'61) is the 1961 Class Chair; his committee members are: Henry I. Abrash (PHD'61), Constantine S. Ananiades (MS'61, MS'78), Richard E. Balsam (MS'61), Ward M. Calaway (BS'61, MS'62), Joel K. Donnelly (BS'61), Ronald F. Draper (MS'61), Douglas K. Fenwick (BS'61), John R. Hribar (BS'61, MS'62), Jerome V. Kasper (BS'61), David W. Kendle (BS'61, MS'62), John J. Kennedy (BS'61, MS'62), Hayden B. Macurda (BS'61, BS'63), Miles W. McLennan (BS'61), David B. Morse (MS'61), Neil R. Richardson (BS'61, MS'62), Michael R. Ruecker (BS'61, MS'62), Oliver Seely Jr., (BS'61), Charles J. Siegel (BS'61), Samuel R. Suitt, III (BS'61).

The Class of 1966 Chair is Alan W. Harris (BS'66). Christopher J. Finch (BS'81) serves as the 1981 Class Chair.

The Young Alumni Campaign, now in its third year, is led by Gary R. Tanigawa (BS'83). This campaign solicits all alumni who earned a bachelor's degree within the last nine years. The Blacker House Chair is Ari Fuad (BS'82); his Class Chairs are: John A. Butman (BS'85), Arthur J. Fortini (BS'83), Richard C. Walker (BS'82). The Ruddock House Chair is Mark R. Vagins (BS'87); his Class Chairs are: Jay P. Ebersohl (BS'89), Jamaludin Mohd. Yusof (BS'88), Kathleen C. Hayashibara (BS'87), Karla A. Peterson (BS'86), Michele C. Walters (BS'85), Glyn H. Anderson (BS'84), Ri-Chee Chou (BS'83), George D. Caravias (BS'82). Lloyd's House Chair is Vivek R. Dave (BS'89); his Class Chair is Babak Ayazifar (BS'89). Page House is led by Sean F. Moriarty (BS'85); his Class Chair is: Laura L. Sakamoto (BS'87). The Ricketts House Chair is Eric Sinn (BS'83); his Class Chairs are: Jonathan J. Hamkins (BS'90), Joseph W. Kurtz (BS'89), Nicole P. Vogt (BS'88), Leslie R. Grate (BS'85), Daniela Bonafede-Chhabra (BS'84), Bimal Wadhwa (BS'82). The Fleming House Chair is John D. Sahr (BS'84), his Class Chairs are: Russell L. Nater (BS'85, MS'86), Cheryl J. Robertson (BS'83), Jesse F. Slater (BS'82).

Finally, all remaining alumni are contacted through the Regional Campaign. This campaign is geographically based with 13 national regions consisting of approximately 10 areas each. In addition, there is one international region. Ben Burke (BS'61, MS'62) is serving as the Chair of this campaign for the third year.

The Regional Chair for Region 1—Pasadena and Vicinity—is David B. Ritchie (BS'80). His Area Chairs are: Stephen E. Blewett (BS'40, MS'42), Andrew B. Campbell (BS'46), Eugene L. Scott (BS'45), Loucas N. Christodoulides (MS'84), Robert M. Lehman (BS'31), James J. Kosmicki (MS'71, ENG'73), James A. Hendrickson (BS'53, MS'54, PHD'57), Daniel H. Deutsch (BS'48, PHD'51), Albert C. Whittlesey (BS'62), William C. Woods (BS'49).

Region 2—South Coast Counties—is chaired by Michael S. Stefanko (BS'70). His Area Chairs are: Calvin E. Kempton (BS'46), Malcolm C. Morrison (BS'64, PHD'69), Sanford S. Sweet (BS'51), Terry R. Simpson (BS'65), A. E. Thompson (BS'34), Jerry F. L. Aldrich (MS'47), David B. McCarroll (BS'66), Steven J. Goldner (BS'64, MS'65), Donald Stewart Jr., (BS'47), Michael J. Kaiserman (MS'70), Frank A. Fleck (BS'42).

Western Los Angeles, Region 3, is led by Reinaldo V. Gutierrez (BS'54). His Area Chairs are: Augusto L. Soux (BS'52, MS'53), Miles A. Nesman (BS'55), J. Robert Shull (MS'49), Mitchell H. Seidman (BS'58, MS'59), Robert L. Ditchey (ENG'73), Kevin J. Savage (BS'69), Leo J. Milan (BS'36), John N. Gross (BS'83).

The Regional Chair for Region 4—Central Coast Counties—is Lothrop Mittenthal (BS'48). His Area Chairs are: John S. Davis (BS'45), Steven M. Menkus (BS'71), G. Richard Morgan (BS'49), Gordon E. Glattenberg (BS'58), Steven L. Heisler (BS'70, MS'71, PHD'76), Patrick J. Fazio, Jr. (BS'53), Tad E. Reynales (BS'72), Donald W. Moore (BS'50), Daniel Markoff (BS'50).

Region 5—San Francisco—is Chaired by Robert Talbot (BS'57). Talbot's Area Chairs are: Robert L. Shacklett (PHD'56), Jack D. Stephenson (MS'43), Richard H. Lockett (BS'44), Luther B. Perry (BS'68), Robert W. De Grasse (BS'51), See C. Young (BS'75), Alan M. Breakstone (BS'72), Arthur F. McGarr (BS'62, MS'63), Robert W. Taylor (BS'45), William R. King Jr., (BS'47), Peter O. Clark (MS'61, PHD'64).

The Regional Chair for Region 6—East Bay and Northern California—is David Sams (MS'80, PhD'86). His Area Chairs are: Robert M. Sherwin (BS'43, MS'50, ENG'52), Dennis E. Pocekay (BS'70), Rollie J. Myers (BS'47, MS'48), Michael P. Chandler (BS'78), Raymond K. H. Chow (BS'76), David C. Oakley (BS'50, MS'52, PHD'55), Tracy V. Petersen (BS'86), Clinton L. West (BS'57).

Region 7—Southwestern Sun Belt—is led by Clay Smith (BS'38, MS'40, PHD '43). Smith's Area Chairs are: Delano A. Brouillette (BS 55, MS 56), Linden R. Burzell (BS'45), Edgar F. Kiefer (PHD'61), William J. Sharman (BS'75), Thomas C. Stockebrand (BS'53), W. Scott Baldridge (MS'70, PHD'79).

Region 8—The Northwest—is Chaired by John J. Deniston (BS'47). His Area Chairs are: Melvin N. Levet (BS'39, MS'40), Robert R. Bennett (BS'45, MS'47, PHD'49), Frank A. Woodward (ENG'52), Rex B. Peters (BS'56, MS'63, ENG'69), William C. House (BS'40), Robert E. Breidenthal, Jr. (MS'74, PHD'79), Ronald W. Gatterdam (BS'61), John L. Honsaker (BS'55), Ernest G. Janzen (BS'61), Richard W. Forester (MS'71, PHD'75), Norris E. Woerner (MS'47), Carol L. Watkins (BS'75), David A. Lind (MS'43, PHD'48), Timothy C. Groat (BS'79), Frank H. Shelton (BS'49, MS'50, PHD'53).

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SPORTS

Kingston, the L.A. Kings' mascot, signed on just in time for the season opener on October 4. According to the press kit, Kingston, late of the Himalayan Hockey League, has "the cunning of a tiger, the stealth of a jaguar, the quickness of a cheetah, the courage of a lion, and the good looks of a snow leopard." Inside is longtime hockey fan Dwight Berg (BS '90), who beat out a dozen other hopefuls in open auditions for the job. By day, Berg works as an associate engineer at David Tausig & Associates, a public-finance firm.

Nearly 20 years after Caltech began admitting female undergraduates, women's athletic programs are beginning to hit their stride. Besides the cross-country and volleyball seasons highlighted below, the swimming program, whose season is just beginning, is getting a record turnout. "We're doing everything we can to make women feel welcome and important in Caltech athletics," says Director of Athletics and Physical Education Dan Bridges. "At a school like this, with intense academic pressure, it's very easy to just not come out for sports, and women being in the minority makes it all the harder. It's a credit to our coaches that participation is on the rise. We've just hired Karen Nilsen, our first female coach, hoping to help create an environment where women feel free to participate, and it's worked out beyond all expectations."

The facilities are catching up with the times, too. New aluminum bleachers have replaced the old wooden ones at Fox Stanton Stadium, and the lighting is being upgraded. (Don't expect to see the Battling Beavers on Monday Night Football, however—the new lighting is strictly for evening practices and nocturnal joggers.) And the telephone-pole-mounted treehouse has given way to a *real* pressbox with four walls, a roof, windows, and everything. These improvements, financed by the Lon V. Smith Foundation, were dedicated at the Sixth Annual Toy Bowl.

Football

For the sixth consecutive year, the Battling Beavers bulldozed the Pasadena Police in the Toy Bowl, which benefits the Toys for Tots program. The Beavers posted a 6–2 record this season, and Coach Wendell Jack realized one of his goals for the program when, for the first time in years, the team was able to field two entirely separate offensive and defensive units. Caltech played a stronger schedule this year, including two college squads. The Beavs lost to Cal Poly Pomona, but beat the University of San Diego junior varsity in a cliffhanger, coming from behind with less than two minutes to go. "I'd like to put more schools on the schedule next year," says Jack. "We're thinking of Claremont–Mudd's or Pomona–Pitzer's junior varsities. It brings out a better level of football in us, because we rise to our opponents' level, and I think the school as a whole gets more involved—more people come out to watch the game. It gives the program a higher credibility level when you don't always have to keep explaining who your opponent is." Adds Bridges, "There's community appeal to institution-vs.-institution contests, and more alumni interest, because it's more like what they remember they used to do. I think we'd rather go 5–5 against other schools than 9–0 against club teams."

Soccer

The soccer team had a less than stellar year, with an overall final record of 2–10–2, 0–10–1 against Southern California Intercollegiate Athletic Conference (SCIAC) opponents. "We played much better than our record," says coach Phil Howells, "but we were undone by injuries, including a broken leg, a broken foot, and numerous torn ligaments. This is probably due to our late start—we didn't have much time for conditioning. Next year we'll be able to begin training sooner." It's a young, up-and-coming team. One freshman, José Garcia, made all-league; the team's excellent goalie (Matt Baker) is also a freshman; and MVP Rich Baltzersen is a sophomore.

Water Polo

Water polo finished with a 2–22 record. Although the squad got high marks for ball handling, moving the ball into scoring position with ease, it was handicapped by a proclivity for blowing the shot. "It was a very good season, despite our record," says Coach Clinton Dodd. "Everyone played up to his ability, and still had fun. We lost a heartbreaker to PCC, a dominant force in water polo in southern California. We were ahead in the fourth period with just minutes to go, but we couldn't hold on. This is a very tough league—Claremont–Mudd has won national NCAA titles, for example. Southern Californians start playing water polo before they're 12 years old, but a lot of our team is from the frozen north. It's a completely foreign sport to them, yet here they are, competing against Olympic hopefuls. We're always the underdogs, but sometimes we surprise people. Our players learn fast, but you can't teach experience."

Men's Cross-Country

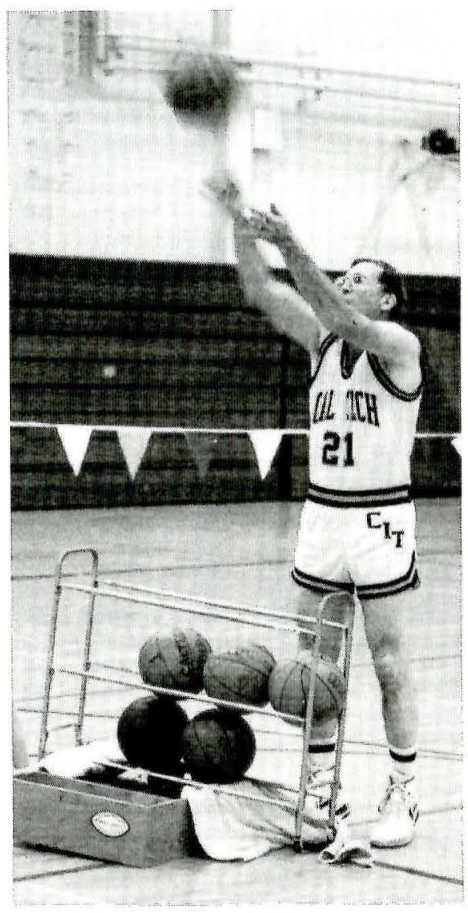
The men's cross-country team went 6–5 overall, 1–5 against SCIAC. The big story this year was junior Aaron Matzner, who won the team's outstanding runner award. At the first meet of the season, Matzner set the record for the fastest time by a Caltech student on our home course at Lower Arroyo Park—28:28. He later won a conference dual meet outright, something that "hasn't happened around Caltech for a while," according to Coach Jim O'Brien. Matzner's season ended prematurely, however, after he strained a quadriceps playing Ultimate Frisbee. Meanwhile, junior Dan Flees took Second Team All-Conference Honors at the SCIAC Championship Meet. The men also won the Caltech Invitational Meet, beating Life Bible College, LaVerne, and Pepperdine, before going on to finish seventh out of ten at the NCAA Western Regionals.

Women's Cross-Country

The women's cross-country team also went 6–5 overall, but fared slightly better in SCIAC competition (2–4) than the men. "This is their first winning season in Caltech history. That's a banner year," says O'Brien. Not only did the Orange Crush post a winning record, but the team boasted more depth this year than ever before. "We went to the [NCAA Western] Regionals missing four of our seven first-team runners—three from academic conflicts and one from injury—yet we were still able to field a complete seven-member team," says O'Brien. "This never used to be the case. And it's not uncommon for other schools in our league to be a runner or two short at a meet. We've had really good turnout for cross-country and track from both sexes." The team came in second at the Caltech Invitational, losing to Pepperdine but beating LaVerne and Mount St. Mary's, and placed fifth of seven at the SCIAC Championship, where sophomore Amy Hansen made Second Team All-Conference honors. With only one senior lost to graduation, O'Brien is optimistic for a good year next year.

Women's Volleyball

Women's volleyball has heretofore been a club team, like the football team, with graduate students, faculty, staff, and JPL players as well as undergraduates. The club team continues strong this year, posting a final record of 9–7–1, but this year saw the formation of an all-undergraduate women's team under coach Karen Nilsen. This team played a season of intramural games in the Graduate Student Council (GSC) league, going 4–2. Both teams took their first-ever road trip, to San Francisco, where the club team took first place in the Cal Maritime Invitational Tournament, beating Cal Maritime, Holy Names, and Mount St. Mary's. The undergrads played their first intercollegiate match, beating Cal Maritime in two games. With a nearly all-frosh team—two sophomores and a lone junior—everyone should be back next year. "It's been a great 'just-for-fun' year, where we learned to play as a team," says Nilsen. "Next year we hope to go intercollegiate, probably with a six- to eight-game season." Adds Bridges, "It used to be that freshman women would try out for the club team, not get much playing time, get disappointed, and quit. But with an all-undergraduate team, the frosh get more playing time, and it encourages them to stick with it. The more skilled undergrads currently play on both teams, but we're hoping to be able to field entirely separate undergrad and club teams in the near future."



Fred L. Newman (BS '60) sank 20,371 out of 22,049 foul shots (92.39%) in 24 hours September 29–30, 1990, smashing the previous record of 16,093 out of 23,194 (69.38%), held by Robert Browning of Dallas, Texas. Newman set another record in the process, making 209 of 210 shots in a 10-minute period with a single ball and rebounder, eclipsing the 169 of 175 score by Ted St. Martin of Jacksonville, Florida. Newman already holds three other free-throw records in the 1989 Guinness Book of World Records.

Research Directors Conference

The Office for Industrial Associates is sponsoring its annual Research Directors Conference January 29–30, 1991, under the theme "Caltech: The Next 100 Years." A number of faculty members will discuss their research, and the first day's keynote address will be delivered by Paul MacCready (MS '48, PhD '52), president of AeroVironment, Inc., and creator of the muscle-powered *Gossamer Condor*, the solar-powered *Sunraycer*, and other imaginative alternative vehicles. Kip Thorne, the William R. Kenan, Jr., Professor and professor of theoretical physics, who has recently suggested the possibility of time travel through "wormholes," will speak on the second day. The registration fee of $450 is waived for Industrial Associates companies, the Caltech–JPL community, Caltech alumni, and faculty and staff of other universities. For more information call (818) 356-6599.

Fund chairmen

Continued from page 9

The South, Region 9, is led by Henry A. Corriher Jr. (MS'50). Corriher's Area Chairs are: Leon W. Zelby (MS'57), Kristian E. Meisling (MS'78, PHD'84), Richard C. Montgomery (BS'59), R. Michael Lloyd (PHD'60), Albert Schweizer (PHD'74), Donald R. Street (MS'66, ENG'66), Alvin L. Fehrman (MS'55, ENG'55), Elizabeth M. Yelverton (BS'76), Samuel A. Bradley (MS'69), William V. Wright (BS'51, PHD'55).

The Regional Chair for Region 10—The Midwest—is Edwin B. Seidman (BS'55). His Area Chairs are: David B. Atkinson (BS'75), Gregg F. Wright (BS'69), John S. Mathis (PHD'56), Arthur E. Gooding (BS'77), Kenneth S. Suslick (BS'74), Edward H. Simon (PHD'60), Erdogan Gulari (PHD'73), Donald R. Petersen (PHD'55), Joe P. Elmers (MS'73), Rodger Brandt (BS'42), Lawrence Hunt (BS'69).

Region 11—Washington, D.C., and Virginia—is chaired by Raymond Cromley (BS'33). Cromley's Area Chairs are: Knox S. Long, Jr. (PHD'76), Robert S. Williams (BS'62), Stewart R. Davey (BS'67), William D. Harkins (ENG'54), Frank Ridolphi (BS'62, MS'63), James M. McDonald (BS'67), Robert Von Gerichten (ENG'54), Brian Storrie (PHD'73), Barry K. Moritz (BS'63), William M. Hardam (PHD'65).

The Regional Chair for Region 12—The Mid-Atlantic—is E. Ted Grinthal (PHD'69). His Area Chairs are: Harold R. Almond Jr. (BS'56, PHD'61), John L. Hokanson (MS'58), Francis E. Fairman III (MS'48), John Walden (MS'59), Alfred B. Brown, Jr. (MS'47, PHD'50), Dhiraj K. Sharma (MS'72, PHD'75), Albert L. Wells, Jr. (BS'78, MS'78), Lim H. Cheung (BS'75), Frank R. Johnson (BS'69), John R. Golden (BS'62), Donald B. Potter (PHD'54).

Region 13—New England—is led by Robert N. Hall (BS'42, PhD'48). His Area Chairs are: William F. Tivol (BS'62), Bernard M. Malofsky (BS'59), James A. Conte (MS'70), Fan-Chia Tao (BS'81), Jeffrey C. Hecht (BS'69), Jo Laird (PHD'77), Donald L. Strange (PHD'72).

The International Region has two Area Chairs, Justin L. Bloom (BS'48) for Japan, and Thomas Vrebalovich (BS'48, MS'49, PhD'54) for Spain.

Master plan

Continued from page 7

landscaped areas, including courtyards, gardens, patios, and outdoor arcades linking the buildings.

In support of the open-space concept, all surface parking lots except the Athenaeum's will gradually be replaced by either above-ground or underground parking structures. Three street sections within the campus boundaries will be incorporated into the campus grounds—one block each of Michigan and Chester Avenues (south from Del Mar); and one block of Lura Street east from Wilson Avenue.

Five gateways into campus have been designated, one for pedestrians, and four for vehicles and pedestrians, with immediate parking inside. The new main gate on Del Mar will open onto a landscaped forecourt, followed by a hardscaped plaza of walkways, steps, and plantings, with two levels of visitor parking underneath.

Although the Institute has committed itself to minimum population growth, it does anticipate a gradual need for expanded physical facilities. Today's research increasingly calls for laboratory equipment that occupies more floor space and the help of more graduate students. The Master Plan calls for most of the new laboratories (as they become needed and financed) to be located in the northern part of the campus, south from Del Mar to Beckman Auditorium. Another, smaller, area is designated to replace the parking lot currently fronting on California Boulevard. The Master Plan calls for these buildings to be connected in scale, style, and ambiance with the old campus.

The Institute has made a commitment to maintain, and upgrade where necessary, the houses it owns that are located across the streets from privately owned homes—specifically those on Hill, Arden, and Catalina. The smaller houses in the center of campus will be offered to qualified house movers.

What changes will be made first? "That depends on funding and programmatic requirements—always hard to predict," say Van Der Werff. "But the addition of the underground, satellite central plant, and possibly an additional parking structure, might be next."

"Remember, we're looking at 25 and more years," Van Der Werff cautions. "It's not going to happen all at once."

Just as the Master Plan didn't happen all at once.

"It was a complicated process—gaining consensus from so many constituencies," the director says. "But the finished product is worth waiting for."

ALUMNI ASSOCIATION FINANCIAL STATEMENTS

ALUMNI ASSOCIATION
CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena, California

BALANCE SHEET
June 30, 1990

ASSETS	
Cash on Hand and in Bank	$ 69,521
Investments:	
C.I.T. Consolidated Portfolio	1,249,916
Money Market Funds	158,361
Receivables	14,195
Inventory	18,132
Deferred Program Expense	9,422
Postage Deposit and Other Assets	928
Computer and Other Equipment	16,659
TOTAL ASSETS	$1,537,134

LIABILITIES, RESERVES AND SURPLUS	
Accounts Payable	$ 73,275
Deferred Income:	
Investment Income from C.I.T. Consolidated Portfolio	54,000
Program Income	150
Life Membership Reserve	1,262,024
Reserve for Directory	15,000
Reserve for Publications	8,231
Reserve for Membership	12,000
Reserve for Electronic Database	4,000
Investment in Equipment	16,659
Surplus	91,795
TOTAL LIABILITIES, RESERVES AND SURPLUS	$1,537,134

STATEMENT OF INCOME, EXPENSES AND SURPLUS
For the Year Ended June 30, 1990

INCOME	
Dues of Annual Members	$ 86,780
Investment Income:	
C.I.T. Consolidated Portfolio	77,002
Money Market Funds	12,011
Sale of Legends	12,988
Other	1,744
TOTAL INCOME	$ 190,525

EXPENSES	
Publications	$ 21,622
Net Expenses of Seminar Day	9,087
Net Expenses of Alumni Programs	1,503
Net Expenses of Class Reunions	9,070
Net Expenses of Chapter Programs	9,170
Student/Faculty/Alumni Relations	18,965
Undergraduate Admissions Support	3,212
Administration	69,502
Membership	18,182
Directory	15,000
Electronic Database	2,000
TOTAL EXPENSES	$ 177,313
INCOME IN EXCESS OF EXPENSES	$ 13,212
Surplus, June 30, 1989	78,583
Surplus, June 30, 1990	$ 91,795

INDEPENDENT AUDITOR'S REPORT

Board of Directors
Alumni Association
California Institute of Technology

I have audited the accompanying balance sheet of the Alumni Association, California Institute of Technology as of June 30,1990 and the related statement of income, expenses and surplus for the year then ended. These financial statements are the responsibility of the Association's Board of Directors. My responsibility is to express an opinion on these statements based on my audit.

I conducted my audit in accordance with generally accepted auditing standards. Those standards require that I plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. I believe that my audit provides a reasonable basis for my opinion.

In my opinion, the financial statements referred to above present fairly in all material respects, the financial position of the Alumni Association as of June 30, 1990 and the results of its operations for the year then ended in conformity with generally accepted accounting principles.

Calvin A. Ames
Certified Public Accountant

October 25, 1990

Correction

In a story in the August issue of *Caltech News*, Hugh F. Colvin (BS '36), winner of one of this year's Distinguished Alumni Awards, was misidentified as the founder of Unitek Corporation. Unitek was actually conceived and started by Edward L. Mayo, now deceased, who was its first president. Colvin was one of the original stockholders, and became president in 1964.

ARCO gift

Continued from page 2

crude oil, natural gas, and natural gas liquids to the refining and marketing of petroleum products. ARCO also mines and markets coal and has interests in two companies that produce and market petrochemical products. A long-time sponsor of Caltech environmental studies, ARCO has provided grants to support research and education at Caltech's Environmental Quality Laboratory since 1981.

ALUMNI

Chapter news

Mettler addresses D.C. chapter

Chairman of Caltech's Board of Trustees Ruben F. Mettler spoke to more than 30 alumni and their guests at the Washington, D.C., chapter meeting October 10. The alumni represented classes from 1935 to 1979.

Mettler gave the chapter members a preview of important upcoming events, including the Institute's centennial celebration—to be kicked off by a float in the 1991 Tournament of Roses Parade—and The Campaign for Caltech, to begin officially in March 1991. Caltech's last campaign was in 1972, said Mettler, and this one is long overdue. He described the aims and needs study conducted by President Everhart and the faculty, on which the goals of the campaign are based.

The group also heard the board chairman describe some of the successes of the past year, including the expected first light of the Keck Telescope, the finale of JPL's Voyager planetary journey and the launch of Ulysses to study the sun's poles. Mettler spoke of Edward Stone's appointment as director of JPL and retiring director Lew Allen's role in the investigation of what went wrong with the Hubble Space Telescope. Mettler also discussed some of Caltech's sports successes, including student Ari Kaplan's SURF project on relief pitching statistics and his subsequent job with the Baltimore Orioles. And he described the demographics of the "new kids in town," the class of 1994.

Enthusiastic alumni asked many questions, and were impressed with Mettler's detailed answers, reported chapter president John Andelin.

Tri-State chapter going strong

The Tri-State Chapter, which serves 660 alumni in New York, New Jersey, and Connecticut, has been going strong since its formation last spring. Several events have been held in New York City, the most central location, and chapter president Andrew Weigel (BS '73) says plans are in the works for more events in New Jersey, and Westchester County and Long Island, New York. "Having meetings in various locations makes it more convenient for alumni to participate," says Weigel. "We get about 40 people per event, but the group is always different."

The chapter recently had its first event in New Jersey, a lecture by Andy Odlyzko, BS '71, MS '71, head of the math department at AT&T Bell Labs, on "Factoring Integers for Fun and Publicity."

Because the chapter is so far from campus Weigel tries to arrange meetings with local technical companies. The chapter has cosponsored events on Voyager and the Hubble Space Telescope. "We are trying to arrange a seminar with the IBM Research Lab concerning biological research," says Weigel.

In addition, the chapter tries to provide a sense of a Caltech community. "As undergraduates we felt a strong sense of community through Caltech's philosophy of excellence. Caltech is always at the forefront of research and it's exciting to still be a part of that atmosphere and philosophy," says Weigel. The chapter invites the parents of current Caltech students to its functions to give them a feel for Caltech.

Weigel, president of Eclipse Software, a company that designs securities trading systems, invites alumni to call him at work (212) 480-3360, or home (212) 727-1136. He says, "We are always looking for input and involvement from alumni."

Alumni Seminar Day Reunion Weekend Calendar

May 16, 1991: Class of '41 – 50th Reunion Dinner, the Athenaeum

May 17, 1991: Half Century Reception and Luncheon, the Athenaeum

May 17, 1991: Class of '51 – 40th Reunion Dinner, the Athenaeum

May 17, 1991: Alumni/Student BBQ (seating by House), Dabney Gardens

May 17, 1991: Student House receptions for alumni

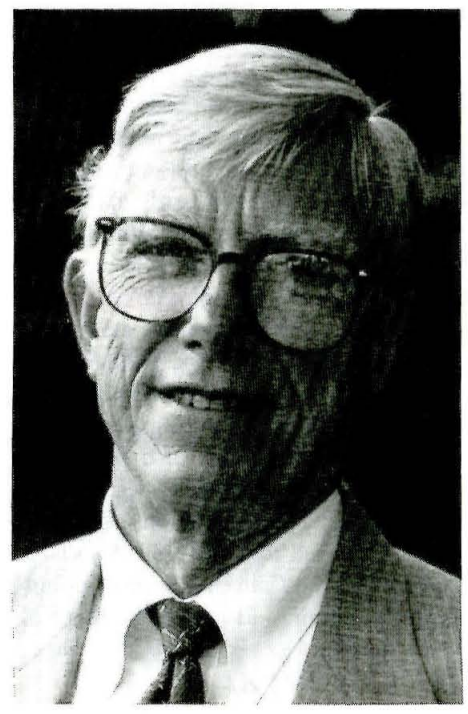
May 18, 1991: 54th Annual Alumni Seminar Day, on campus. General Session speaker, Frank Press, president, National Academy of Science

May 18, 1991: All-Classes Reunion Dinner, The Ritz-Carlton Huntington Hotel

If you would like more information on these events, please contact us by mail or phone: Caltech Alumni Association, mail code 1-97, Pasadena, California 91125, 818/356-6592

From the alumni president

By E. Micheal Boughton



In an effort to enhance the cohesiveness of our chapter network, the Alumni Association cosponsored with the Annual Fund a Leadership Conference this past September. The Association invited all of our chapter presidents back to Caltech for a one-day workshop that focused on increasing the officers' knowledge of the Institute and the Association, and provided an opportunity for the leaders to become better acquainted and share ideas.

Presidents from 8 of the 12 active chapters attended: Walter A. Specht (BS '57, MS '61, PhD '65), Boston; W. Carl Gottschall (BS '60), Colorado; David Kauffman (BS '62, MS '63), New Mexico; Hans D. Linhardt (ENG '60), Orange County; Leighton D. Hanon (BS '55, MS '58), San Diego; Alan M. Breakstone (BS '72), San Francisco; Ernest G. Janzen (BS '61), Seattle; and Andrew Weigel (BS '73), Tri-State. All felt the conference was an overwhelming success, and hoped that it would become a regular event in the future.

Morning sessions featuring faculty and administration presentations were shared with Annual Fund participants, and the afternoon focused on chapter issues. Following presentations by three guest speakers—SURF student Joseph Bach; Cal Ames, deputy director of finances and deputy controller for Caltech; and Ed Lambert, board member and co-chair of the Undergraduate Admissions Support Committee—the presidents met with Judy Amis, Association executive director, and Arlana Bostrom, assistant director, for a hands-on session discussing chapter organization and event planning.

Participation in chapter events is one way to continue ties with the Association, the Institute, and other Caltech alumni. There are currently 12 active chapters in Boston, Chicago, Denver, New Mexico, Orange County, Phoenix, Portland, San Diego, San Francisco, Seattle, Washington, D.C., and the Tri-State area which covers New York, New Jersey, and Connecticut. Recent chapter programs have included outstanding faculty lectures, visits to the Stanford Linear Accelerator and the San Onofre Nuclear Generating Station, and a holiday boat parade in Newport Beach. Many excellent events are scheduled during the coming year, and I invite you to become involved with the chapter nearest you.

If you would like more information concerning chapter events, or if you are interested in forming a chapter in your area, please contact us by mail or phone: Caltech Alumni Association, mail code 1-97, Pasadena, California, 91125, 818/356-8363.

Lost Alumni *Continued from page 9*

1987		Hei S. Wong	MS	Bradley B. Woods	MS	Floyd L. Klavetter	PhD
Asif Ahmed	MS	**1988**		Dongping Yin	MS	Mo Li	MS
Bryan R. Botsch	MS	Julian L. Anthony	MS	Ren-Feng Yuan	PhD	David S. Loren	MS
Yie-Hwa Chang	PhD	Brenda F. Baker	PhD	**1989**		Paresh S. Murthy	BS
David S. Fashena	MS	Ashok Bansal	BS	Khurram K. Afridi	BS	Joon Won Park	PhD
Andrew D. Gaynor	MS	Wilson Brumiller, Jr.	MS	Kurt A. Andrews	MS	Peter M. Richardson	BS
Peyton S. Gibner	MS	Malcolm N. Butler	PhD	Mihai D. Azimioara	BS	Takeshi Sasaki	MS
D. Michael Goedecke	EX	Thomas Buttgenbach	MS	Talal T. Balaa	MS	Amish J. Shah	BS
Arie W. Grossman	MS	Chun Chang	MS	Jerome D. Banks	BS	Jacqueline V. Shanks	PhD
Kurt W. Haas	MS	Michael R. Douglas	PhD	H. Douglass Bloomer	BS	Seung Koo Shin	PhD
David A. Imel	MS	Richard L. Dubs	PhD	Matthew A. Breaden	BS	Steven G. Sogo	MS
Lap Yan Lee	MS	Nadeem Ghani	BS	Thomas K. Brown	MS	Spiridon V. Spirou	BS
Graeme Lowe	PhD	Chang S. Hahn	PhD	Carlo Carraro	MS	H. Holden Thorp	PhD
John J. Ngai	PhD	Eric M. Hanczyc	MS	Kay-Yut Chen	BS	Mark S. Trimmer	PhD
Ching-Long Ni	PhD	Ann T. Heil	MS	Christos S. Christoforou	MS	Nancy S. Vogelaar	PhD
Thomas P. Nolan	BS	Barton D. Huxtable	PhD	David V. Dearden	PhD	Thomas E. Wahl	BS
Ivan M. Onyszchuk	MS	Patrick A. Legros	MS	Ricardo H. Diaz, Jr.	MS	Denise L. Worthen	MS
Rocco A. Paciello	PhD	Michael R. Lewis	MS	Mark A. Fischman	BS	Sin-Nim Samuel Yip	MS
Michael Wray Spencer	MS	Michael Loewenberg	PhD	Mary Ann M. Fuhry	MS	Yanong Zhu	PhD
Theron W. Stanford	BS	Lindsay K. McKinley	MS	David A. Gerken	MS	Fei Zhuang	ENG
Ichiro Takeuchi	BS	Mark Olmos	BS	Tracy M. Handel	PhD	Miriam H. Zietlow	PhD
Jean C. Tang	BS	Minh Q. Tran	BS	Brian T. Hayes	BS		
Jean Thouin	MS	Yucon Tsien	MS	Katherine J. Kanes	PhD		

ALUMNI ASSOCIATION TRAVEL/STUDY PROGRAMS

The Alumni Association is currently planning several programs and would appreciate your input. Please check the programs that you are interested in and return this form to: Caltech Alumni Association, 1-97, Pasadena, CA 91125.

PLANNED PROGRAMS

_____ Owens Valley/Yosemite, September 27-30, 1991

_____ Hawaii, October 19-25, 1991

_____ Ecuador/Galapagos Islands, April 1992

_____ Iceland, July/August 1992

PROPOSED PROGRAMS

_____ Joshua Tree camp out, April 1991

_____ American River white water rafting, June/July 1991

_____ Shakespeare Festival, Ashland, Oregon, Summer 1992

Other suggestions you would like us to consider:

_____

Please send me information on the programs checked above as soon as it is available.

Name _____ Class year _____

Address _____

_____

Phone (home)_____ (business)_____

_____ I am a member of the Alumni Association.

_____ I would like to become a member of the Alumni Association.

_____ Enclosed is my check for $35.00 for annual dues.

Alumni Activities

December 5, 1990, *Boston Chapter Event:* Glen R. Cass, professor of environmental engineering and mechanical engineering

December 6, 1990, *Portland Chapter Event:* Clarence R. Allen, professor of geology and geophysics, emeritus

December 7, 1990, *Seattle Chapter Event:* Clarence R. Allen

December 7, 1990, *New Mexico Chapter Event:* Tom M. Apostol, professor of mathematics

December 10, 1990, *Alumni Association Holiday Open House*, 4:00–6:30 p.m., the Alumni House

December 19, 1990, *Orange County Chapter Event:* Newport Beach Christmas Boat Parade

December 21, 1990, *Phoenix Chapter Event:* Joseph L. Kirschvink, associate professor of geobiology

January 1, 1991, *Rose Parade Viewing Event*. Reserved seating at Hill and Colorado for the 102nd Tournament of Roses Parade. A Caltech float will be featured in the parade.

January 17–24, 1991, *Pre-Safari trip to the East African coast* with Edwin S. Munger, professor of geography, emeritus.

January 22–February 6, 1991, *East African Safari (Kenya/Tanzania) Travel/Study Program* with Edwin S. Munger.

May 31, 1991, *Boston Chapter Event:* Kerry E. Sieh, professor of geology

June 20, 1991, *Alumni Association Annual Meeting and Honorary Alumni Dinner,* the Athenaeum

June 23–30, 1991, *Yellowstone Travel/Study Program* with Robert P. Sharp, the Robert P. Sharp Professor of Geology, Emeritus, and Leon T. Silver, the W. M. Keck Foundation Professor for Resource Geology

September 27–30, 1991, *Owens Valley and Yosemite Travel/Study Program* with Le Val Lund (BS '47), civil engineer of water resources and earthquake engineering, and Suzanne Granger, associate curator, Los Angeles Arboreta and Botanic Gardens.

October 19–25, 1991, *Hawaii Travel/Study Program* with Robert P. Sharp

PERSONALS

1924
WILLIAM L. HOLLADAY and his wife, Louise, celebrated their 65th anniversary at a weekend party at La Casa del Zorro in Borrego Springs, California, with 20 family members in attendance. They were married on September 24, 1925, in the First Presbyterian Church of Inglewood. Also in attendance was Hazel Griswold, Louise's maid of honor, widow of Loys Griswold, BS '24, a past president of the Alumni Association. Holladay has served as president of the American Society of Heating, Refrigerating & Air-Conditioning Engineers (ASHRAE), of the Caltech Alumni Association, and of the Pasadena Lung Association. At the time of his retirement from engineering in 1988, he was believed to be the oldest practicing consulting engineer in California. Holladay and his wife have three children, nine grandchildren, and five great-grandchildren.

1926
TED C. COLEMAN, of Pasadena, California, writes that, after a varied and enjoyable fifty-five-year professional career, he soon became bored with retirement and spent the next five years writing *Jack Northrop and the Flying Wing*. It was published in 1988. The timing was good since it is the story behind the B-2 Stealth Bomber.

1928
ROBLEY D. EVANS, MS '29, PhD '32, professor of physics, emeritus, at the Massachusetts Institute of Technology, is a recipient of the 1990 Enrico Fermi Award, the highest scientific award given by the Department of Energy. Evans, a health physicist, is being honored "for pioneering work in nuclear medicine, in measurements of body burdens of radioactivity and their effects on human health, and in the use of radioactive isotopes for medical purposes." Evans currently resides in Scottsdale, Arizona.

1932
MERIT P. WHITE, MS, PhD '35, was awarded honorary membership in the American Society of Civil Engineers for "his outstanding contributions in the areas of seismic analysis and design, the responses of structures to blast and impact, and the dynamic plastic behavior of materials."

1934
GEORGE W. HOUSNER, MS, PhD '41, was elected to honorary membership in the American Society of Civil Engineers for his leadership in the study of earthquake engineering for more than three decades.

1936
LEO J. MILAN, of Los Angeles, California, has combined his interest in chemistry and photography into a unique art form. Milan produces photomicrographs of crystals of various birefringent chemicals, viewed under cross polarization, and then enlarges the pictures to 20 by 30 inches. His work was shown in a one-man exhibition in Pasadena in October. Milan is also a volunteer for the Alumni Fund.

1937
JOHN S. RINEHART, MS, of Santa Fe, New Mexico, has been honored by the conveners of EXPLOMET, a series of international conferences held every five years. They have established the John S. Rinehart Award, to be presented at each conference. The award will recognize "outstanding effort and creative work in the science and technology of dynamic processes in materials, processes by which materials are welded, formed, compacted and synthesized as well as dynamic deformation, fracture and extreme shock loading effects."

1939
ROBERT F. TANGREN, BS, BS '40, ENG '47, of Gig Harbor, Washington, and his wife, Dorothea, celebrated their fiftieth wedding anniversary. Joining in the celebration were their daughter, five sons, and nine grandchildren.

1940
MILLER W. QUARLES, MS '41, of Houston, Texas, announces the $100,000 Quarles Prize, which will be paid in cash to the first person, group, or institution that discovers and demonstrates a cure for the disease of senescence, commonly called old-age disease.

1942
ROBERT J. CLARK, MS '43, of Channel Islands, California, is helping with the Veterans Food Bank Program, which has raised more than $300,000. He has also participated in other community programs, ranging from child car seats for working mothers to a juvenile justice cooperation program with Tijuana, Mexico. For five years, before his retirement from Northrop, Clark was a member of the Los Angeles City Private Industry Council, a $40-million job-training program. And for fifteen years Clark has served as a board member of the Children's Institute International.

FRANK A. FLECK, of Yucca Valley, is vice president of Thomas Green Securities.

C. M. VERONDA, head of the identification systems branch, radar division, of the Naval Research Laboratory in Washington, D.C., has received the Commanding Officer's Award for Achievement in the Field of Equal Employment Opportunity. Veronda's nomination stated, "His efforts represent the true spirit of EEO. . . . He has been exceptionally effective in motivating, encouraging, and assisting his employees to develop their full potential, regardless of their background." Veronda and his wife, June, live in Annandale, Virginia. They have three grown children, William, Christopher, and Cheryl.

1946
DONALD R. LINDSAY, EX, has been busy since his retirement in 1988. He was guest conductor at a summer concert of the Bakersfield Symphony. He is a member of many clubs, including the Classic Film Club, the Count Dracula Society, and the Lost Horizons science-fiction club. He has been digging dinosaur bones in Montana, and trekking in the Himalayas. Lindsay served as chairman of his high school reunion committee.

1947
MAX L. WILLIAMS, MS, ENG '48, PhD '50, dean of engineering, emeritus, at the University of Pittsburgh, has retired as Distinguished Service Professor of Engineering, Emeritus. He had recently completed a four-year term as a member of the U.S. Air Force Scientific Advisory Board. He will continue his work as editor of the *International Journal of Fracture.*

1948
GEORGE J. GLEGHORN, Jr., MS, PhD '55, has been named vice president and chief engineer responsible for reviewing the flight readiness of TRW spacecraft and for providing management assessment of critical programs in the group.

Continued on page 14

PERSONALS

Continued from page 13

ANDREW P. ROLLINS, MS, was awarded honorary membership in the American Society of Civil Engineers "for directing significant design construction research and teaching efforts and for demonstrating leadership in combat commands in three theaters."

1953

COY RICHARD ("DICK") CANTRELL, Jr., MS '54, writes, "I am proud to report that I shared with two of my Lockheed coworkers the 1990 Aircraft Design Award of the American Institute of Aeronautics and Astronautics . . . 'for the development of the world's first operational stealth aircraft, the U.S. Air Force F-117A.'" He shared the award with Norm Nelson, who was project engineer, and Alan Brown, whose job "was to make the plane 'invisible.'" Cantrell's own job "was to make it fly! Being 'invisible' and still able to fly was the 'trick.'!" Cantrell also reports that the team received the Collier Trophy in May 1990 for "the greatest achievement in aeronautics or astronautics." Cantrell went to work at Lockheed three days after receiving his MS. He plans to retire in January after more than 36 years with the company, all in Burbank. He lives with his wife, Emma Lou, in Chatsworth. They have a daughter, Lee Anne; a son, Tom; and two grandsons.

ROLF D. WEGLEIN, MS '54, writes, "After a 35-year productive technical career I retired from the Hughes Aircraft Company to a life of tennis, hiking, genealogy, private consulting and travel." The tennis and hiking, he says, "are for fun and good physical health"; the private consulting, primarily in microacoustic techniques, "is more for fun and mental health than for profit"; and the family genealogy (covering more than 11 generations and spanning two continents) "is for tying up loose ends." Finally, "the international travel makes it all possible and keeps boredom from the door. . . . With all this going on, I still find time to enjoy my expanding family, especially the everchanging miracle of our two grandchildren, one local and one in the U.K., unfolding into toddlers at the moment. I also find time to attend splendid Caltech functions, such as the annual SURF program, that weren't around in my day."

1955

SHANKAR LAL, PhD, a professor in the department of mechanical engineering at the Naval Postgraduate School in Monterey, California, has been elected a fellow of the Indian National Academy of Engineering.

1957

FRANK J. KOFSKY, professor of history at California State University, Sacramento, has been named the Harry S. Truman Library's Senior Scholar for 1990–91. The award will enable Kofsky to take a sabbatical from teaching to pursue research on his hypothesis that "the Truman administration launched a war scare in March 1948 to steamroll public and congressional opposition to the European Recovery Program (Marshall Plan) and to obtain a big (40 percent) increase in military spending from Congress."

1958

RICHARD K. NELSON, ENG, has been appointed principal scientist at Cray Research, Inc., in Minneapolis. He joined Cray in 1973 as the first employee of the software division. Most recently, he was investigating massively parallel processing technology and developing it for future Cray products.

1960

VLADIMIR A. HVOSCHINSKY, MS, writes that he has found a method "to live in poverty and dignity." Before making that discovery, he spent many years in engineering, research, and technical management, then joined the UN Secretariat to help streamline projects designed to assist developing nations around the world. In 1974, he departed to Moscow to represent General Electric, and later he was director of the Moscow office of a Belgian trading company belonging to Bank Brussells–Lambert. After returning to California and making several attempts to reenter Silicon Valley, he decided to go it alone and, five years ago, opened a travel agency—Travel Pro—in Menlo Park, California. Now he and his wife both do what they like to do—travel.

1962

JOHN D. CROSSMAN has finished a year's assignment in Korea and has returned with his wife to Japan, their home for the previous ten years. He is located at Ford Motor Company's Hiroshima Operations and works with Mazda and other affiliates of Ford's automotive components group. The Crossmans' two sons are both living in the U.S.; one is working in broadcasting and the other is a computer science major at the University of Colorado.

JOHN M. KLINEBERG, MS, PhD '68, writes, "In July, 1990, after three years as Director of NASA's Lewis Research Center in Cleveland, I became Director of NASA's Goddard Space Flight Center in Greenbelt, Maryland. We are engaged in scientific research through six space and Earth science laboratories and in the management, development and operation of several current and future space projects, such as the Hubble Space Telescope, Cosmic Background Explorer, Gamma Ray Observatory, Upper Atmospheric Research Satellite, and Earth Observing System. . . . I am enjoying the work and the people at Goddard, and I look forward to a long stay here."

1963

WILLIAM STUDIER, PhD, a biophysicist at Brookhaven National Laboratory, has been appointed chairman of the biology department there. On the staff for the past 26 years, Studier has done pioneering work on a bacterial virus called T7, in order to learn more about the fundamental processes of life. He and his colleagues have succeeded in sequencing the nearly 40,000 base pairs in the virus's DNA and have cloned virtually every one of its genes. In 1977, Studier received the Department of Energy's Ernest Orlando Lawrence Memorial Award, and in 1989 he was elected to the American Academy of Arts and Sciences.

1965

STEPHEN MORSE has a new book, *Windows 3 in Business,* published by Simon & Schuster/Brady Books. He is working as a system architect at Manufacturers Hanover Trust in New York. His daughter, Audrey, is spending her junior year at Cambridge University, studying math.

A. FREDERICK THOMPSON, MS, PhD '68, has been appointed vice chairman of Roy F. Weston, Inc., in West Chester, Pennsylvania. Thompson has devoted his entire career to Weston, beginning in 1967 with technical projects and technical line management responsibilities. He became vice president of engineering design in 1975, and in 1980 was named vice president of quality assurance and finance. He was elected to the board of directors in 1975.

1966

LINCOLN S. HOLLISTER, PhD, a professor in the department of geological sciences at Princeton University, has been awarded the Mineralogical Association of Canada Past Presidents' Medal for 1990. He was cited for his extensive contributions to metamorphic petrology and mineralogy, based on many years of field work in the Coast Mountains of British Columbia. Hollister's research has ranged from the details of crystal zoning and fluid inclusions to crustal deformation and continental collision.

JULIO KUROIWA, MS, ENG '67, has been awarded the Sasakawa-Undro Disaster Prevention Award for 1990. The award stated that he has for many years supervised a research group seeking to improve the earthquake resistance of adobe, brick, masonry, and reinforced concrete buildings; to analyze the characteristics of tsunami impact and discover methods for risk reduction; and to study flood damage and soil erosion related to the El Niño phenomenon. Kuroiwa is a member of the engineering faculty at the National University in Lima, Peru, and is also the director of the National Disaster Research Institute in Lima.

1967

IRA HERSKOWITZ has been appointed chair of UC San Francisco's department of biochemistry and biophysics. He has been vice chairman since 1982. Herskowitz has won honors for his research in microbial genetics; he received a MacArthur Fellowship in 1987, and was elected to the National Academy of Sciences in 1986.

S. TOM PICRAUX, MS, PhD '69, of Albuquerque, New Mexico, manager of the surface, interface, and ion beam research department at Sandia National Laboratories, has been awarded the E. O. Lawrence Award, the highest award given by the U. S. Department of Energy.

ARVEL B. WITTE, PhD, of Rolling Hills, California, was named director, IR&D, space and technology group, space and defense sector, TRW.

1969

JOHN M. VITEK, MS, has been named one winner of the 1990 Jacquet-Lucas Award for Excellence in Metallography by the Materials Information Society. The award is given for the best display at an annual competition for metallographic exhibits. Vitek has worked at the metals and ceramics division at Oak Ridge National Laboratory since 1980. He has authored more than 60 technical publications and holds nine patents.

1971

CHRIS G. WHIPPLE, MS, PhD '74, of Moraga, California, has joined Clement International Corporation, a nationwide environmental and health-science firm, as vice president and director of western operations. He was formerly technical manager, environmental risk analysis, for the Electric Power Research Institute, where he had been for 16 years.

1972

THOMAS R. HOLM, MS, PhD '78, has been named director of the office of environmental chemistry at the Illinois State Water Survey. Previously, he was a postdoc at the University of Wisconsin and an assistant professor (nontenure track) at the University of Minnesota.

1973

MARK E. BLECK writes that he recently returned to Sandia National Laboratories, in Albuquerque, New Mexico, from a two-year temporary assignment in Washington, D.C., as a technical advisor to the nuclear command and control system support staff, where he received the Secretary of Defense Medal for Outstanding Public Service. Upon his return, he was promoted to supervisor, advanced command and control division.

1974

DAVID M. PEPPER, MS, PhD '80, a senior staff physicist at Hughes Research Laboratories in Malibu, California, and an adjunct professor at Pepperdine University, is an author of an article in the October 1990 issue of *Scientific American.* The article, entitled "The Photorefractive Effect," describes a novel class of crystals that will be used in conjunction with lasers in a new generation of computers.

1976

JOHN B. BACON has moved to Houston, Texas, where he is the system integration manager for the onboard software for the space station *Freedom.* His new job takes him to all of the NASA field centers, as well as to Europe and Japan. He has been keeping busy lecturing at various schools and colleges and writing a short book. Bacon writes, "I expect to be having some REALLY great fun soon, as a flight medicine test subject aboard the 0-gravity simulating KC-135 aircraft here at NASA. . . . Karin and I have a small home business in educational materials. . . . We are gradually getting this and other parts of our lives reestablished here in Texas following our move."

THOMAS A. GERARD, MS, of Alexandria, Virginia, writes, "My wife, Beth, and I rejoice at the birth of our third child, Sarah, on August 6. Our older children, Carol, 12, and Paul, 11, think Sarah is really special also."

JEFFREY D. SANDERS, MS '77, and his wife, Terri, are pleased to announce the birth of their son, Michael, on May 6.

KEEP US INFORMED!

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Name _____

Degree(s) and Year(s) Granted _____

Address _____

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Is this a new address? ____ Day phone _____ Occupation _____

News _____

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_____

1977
ROBERT R. LINDERMAN is now an assistant professor in the department of civil engineering at the University of Idaho.

WING KAM LIU, MS, PhD '81, professor at Northwestern University, Evanston, Illinois, has been named a fellow of the American Society of Mechanical Engineers.

MADELINE A. SHEA, of Iowa City, Iowa, was named a Presidential Young Investigator by the NSF in May. Shea is currently an assistant professor of biochemistry at the University of Iowa College of Medicine. Her research in biophysical chemistry focuses on energetic properties of cooperative protein interactions.

1979
SANGTAE KIM, BS, MS, was promoted in June to full professor in the department of chemical engineering at the University of Wisconsin.

ERIK R. SIRRI, of Cambridge, Massachusetts, writes, "Last year my wife, Jennifer Bethel, and I finished our PhDs at UCLA. I am now an assistant professor of finance at Harvard Business School. Jennifer works as a management consultant for Temple, Barker, and Sloane, in Lexington."

1981
JOEL G. CHAIKEN, MS, stays at home taking care of his 18-month-old son, Benjamin. His wife works full time. He tried to join a mother/infant group and was turned down, so he has filed a sex-discrimination complaint and is awaiting a public hearing.

JEFFREY A. HARVEY, PhD, professor of physics at the University of Chicago, is conducting research on string theory—heterotic strings—which has earned him a Sloan Fellowship and a Presidential Young Investigator Award.

STEVE J. TILLMAN, MS, and his wife, Pamela, are happy to announce the birth of their first child, Michelle Pamela, on August 4. He is a Distinguished Member of the Technical Staff at AT&T Bell Laboratories in Middletown, New Jersey, and designs telephone systems.

1983
JANE E. NORDHOLT, MS, has won a 1989 Los Alamos National Laboratory Distinguished Performance Award for the development of the linear electric field device, a compact high-resolution mass spectrometer that is used in space-based plasma measurements.

1984
DONALD J. FOSSGREEN writes that he and his wife, Véronique, and their children have moved to Soquel, California, near Santa Cruz. He will be working for Borland International as senior software engineer on Quattro Pro. "We are looking forward to being close enough to enjoy the Gnome events."

GEORGE S. TOLOMICZENKO, of Brighton, Massachusetts, recently earned his PhD in clinical psychology at Boston University and started work at the Beth Israel Hospital. He is also involved with clinical and research work at the Massachusetts Mental Health Center and at the Charles River Health Management Company.

1985
GLEN D. CRAWFORD writes, "I am happy to announce my wedding to Loren Ann Frost on June 16 in Ithaca, New York. Despite holding two degrees from a certain technical school in Cambridge, Massachusetts, Loren is a lovely and talented person and not *too* nerdy. I am also proud to report that several Caltech alums attended the ceremony and completely routed the MIT alumni in a food fight at the wedding reception."

KEVIN J. GUNNING was transferred to Tokyo by his company, TRW Technar, which manufactures and markets automotive airbags worldwide. Gunning does much of the engineering to adapt the products to different car models.

NABEEL A. RIZA, MS, PhD '89, an electrical engineer/scientist at the GE Research and Development Center, in Schenectady, New York, has received a GE NewStart Award for his research on optical control of radars.

TIMOTHY R. WHITE has received his PhD from Harvard and joined the Peace Corps. He will be teaching science in Kenya for the next two years.

1986
ROBIN K. WILSON married Eric Kindahl (who earned his BS in 1985 from MIT), in a pastoral ceremony in Ithaca, New York, on August 11. They are both working on degrees in the genetics department at Cornell University. They also teach canoeing and trail maintenance for Cornell's outdoor education program.

1988
DAVID J. BRUNING, of Germantown, Maryland, married Betsy Ritz, a public school teacher, on October 20. He has been promoted to quality-control manager at Oncor, a biotechnology firm.

1990
CHAITAN S. KHOSLA, PhD, recipient of the Milton and Francis Clauser Doctoral Prize at Caltech in June, has accepted the position of assistant professor of chemical engineering at Stanford and will join the faculty in 1991. Currently, he holds a postdoctoral position in the department of genetics at the John Innes Institute in Norwich, England.

OBITUARIES

1931
ROGER T. ROBINSON, MS '32, of cancer, on July 21. He was 85 years old. Robinson was an apiarist and operated his own honey business for 45 years, and was a pioneer in food dehydration and air precipitation. He was a member of the Alumni Association and of Trinity Episcopal Church. Robinson's first wife, Lois, died in the 1940s. His second wife, Dr. Lucile T. Robinson, died in May. He is survived by his daughter, Diana Woolbright; his stepdaughter, Susan Couch; a sister, Dorothy; and four grandchildren.

1932
GEORGE WOFFORD, Jr., EX, on March 31, in Roseville, California. He was a long-time resident of Rocklin, California, and served on the city planning commission and the city council, and as mayor. He was a past president of the Rocklin Area Chamber of Commerce and had served on the chamber's business and industrial development committee. He was a member of the Finn Hall restoration committee, and the library city–county joint powers agreement committee. He retired in 1974 from the position of principal engineer after more than 40 years with the California Department of Transportation. Wofford was a member of the Photographic Society of America, and his black-and-white photographs had been exhibited throughout the United States and in Canada. He is survived by his wife, Geraldine; two sons, James and John; a sister, Janet Raile; and three grandchildren.

1933
ARNOLD P. WILKING, of Franklin, Louisiana, on August 28. He is survived by his son, Arnold.

1934
LOUIS P. SEXTON, MS '35, of Bakersfield, California, on July 18, at the age of 76 years. Sexton worked as a geophysicist for Standard Oil for many years. When his father became ill, Sexton retired from business to operate the family cotton ranch in Buttonwillow, California. He finally turned the management over to others and retired to travel. Sexton and his wife, Alice, were active at Calvary Bible Church, and he also worked with the Boys Brigade. He is also survived by his sister-in-law, Marjorie Bisbee; and many nieces and nephews.

1936
WILLIAM K. STEVENSON, EX, on August 18, at his home in Oceanside, California. A 37-year veteran of the Southern California Gas Company, he is survived by his wife, Jean; three children; and six grandchildren. An active member of the Alumni Association, Stevenson and his grandchildren made Seminar Day an annual event.

1937
JOHN H. BLUE, in March. He is survived by his daughter, Barbara.

JOHN L. SULLWOLD, of Palos Verdes Estates, California, on August 5, of pneumonia and congestive heart failure. He is survived by his wife of 53 years, Ruth; three daughters; and seven grandchildren.

1939
FRANCIS L. CARLISLE, MS '53, of Fallbrook, California, on October 26, of a heart attack, after a short illness. A mechanical engineer, he worked on railroad equipment for PRECO CO. until 1944, then came to Caltech in 1945 to do underwater ordnance research and engineering for the Naval Ordnance Test Station in Pasadena. He transferred to the NOTS facility at China Lake in 1954. Until his retirement in 1975, he was head of the electromechanical engineering division on ordnance systems. He is survived by his wife, Lillian; brother, Thomas; and four stepchildren.

FRANK E. MCCREERY, of Poway, California, on October 7. He was a former president and vice chairman of Rohr Industries, which manufactures engine systems and components for a variety of aircraft. He joined Rohr as assistant chief engineer in 1940. McCreery served as executive chief engineer, vice president of engineering, vice president of manufacturing, senior vice president, and executive vice president. He was a member of the American Institute of Aeronautics and Astronautics, an officer of the Aerospace Industries Association and the Society of Automotive Engineers, a supporter of the Boy Scouts of America, and an avid golfer. He is survived by his wife, Ruth; brother, Jack; sons James, Douglas, and Michael; daughter Maureen Nicks; four grandchildren; and one great-grandchild. Another son, William, died in 1979.

1941
CARL F. DAMBERG, ENG, of Palos Verdes Estates, California, on May 2, of pancreatic cancer. He is survived by his wife.

MARTIN J. GOULD, PhD, of Rancho Palos Verdes, California, on September 17. He is survived by his wife, Gloria; daughter, Shawn; and son-in-law, Richard Spencer.

1943
ROBERT A. MOORE, of lung cancer, on August 11. He is survived by his wife, Betty; and two children.

1944
JAY E. HAMMEL, on July 19. He is survived by his wife.

1945
JAMES H. MORAN, of Spicewood, Texas, on August 7, of cancer. He is survived by his wife, Rita.

1947
FRANKLIN O. MYERS, on July 15, after a brief illness. He worked for 43 years as an engineer. For five years he served as Costa Mesa's city civil engineer. Many public spaces in Orange County, including John Wayne Airport and TeWinkle Park, were shaped, in part, by Myers. He is survived by his daughter, Karen Myers-Perry, who writes, "Frank Myers was my father and my oldest and best friend. . . . My skills as a person, and now as a listening professional, came largely from him. For my family, as well as for Orange County, Frank Myers' gifts have been truly enriching."

1948
WILLIAM J. ("JEFF") WILLIAMSON, MS '49, ENG '55, of Sherman Oaks, California, on August 1. His service in the Army Air Corps from 1943 to 1946 interrupted his education at Caltech, but he received his BS in mechanical engineering in 1948. After receiving his advanced degrees, he was employed by Douglas Aircraft, McDonnell Aircraft, Marquardt Corp., Lockheed Aircraft, and finally the Los Angeles City Planning Department. He had served as a regional chairman for the Alumni Fund. He is survived by his wife, June; stepson, William Baker; and sister, Judith Kieffer. The family requests that any contributions be made to the Caltech Alumni Fund.

1950
RICHARD A. MCKINNON, of Mentor, Ohio, on August 29, 1986, following an illness of one and a half years. He is survived by his wife, Maxine; and two children, Suzanne and Douglas.

1952
RICHARD H. FULLER, of Longwood, Florida, on October 2. He was dean and chief operating officer at the Gordon Institute in Wakefield, Massachusetts, an accredited graduate school for engineers. Previously, he was vice president for digital communications at General Instrument; vice president for corporate technology at Emerson Electric; and general manager of the Sperry Corporation's research center. He was a fellow of the Institute of Electrical and Electronic Engineers, and technical editor for IEEE's computer magazine. He is listed in *Who's Who in America* and *American Men of Science*. He is survived by his wife, Lorna; stepdaughter, Dana Valentine; sister, Mary Engelkin; and brothers, Charles and Robert.

1953
BUDD W. LETOURNEAU, on June 29. He was an engineer at the Westinghouse Bettis Atomic Power Laboratory in West Mifflin, Pennsylvania, for more than 30 years. He is survived by his sister, Lillias.

1956
MOSHE (MIKE) KUPFER, MS, on May 29. He is survived by his wife.

1979
PETER B. MATHEWS, of Northfield, Minnesota, in June.

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