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Arnold Beckman cuts the ribbon at the Beckman Institute dedication. With him on the platform are Ruben F. Mettler; Governor George Deukmejian; Harry Gray; President Thomas Everhart; Robert Wund of Turner Construction; and Chris Martin of A. C. Martin Associates, architects.



Dedicating Beckman Institute

Guests who streamed to the new Beckman Institute for a late-October dedication were amazed at the beautiful building that had emerged from what for months had been a hectic construction site. The blue-tile-lined reflecting pool, the covered outdoor arcade, the alcoves filled with greenery—all thrilled the several hundred members of the Caltech community who turned out for the celebration. Tables heaped with food and drink awaited them after the formal portion of the ceremonies. In silent and impromptu testimony to the intensive work that has been underway on the structure, a pitchfork, spade, shovel, and hoe leaned against a wall.

California Governor George Deukmejian, the keynote speaker, was introduced by Ruben F. Mettler, chairman of the Board of Trustees. Deukmejian praised Arnold O. Beckman, who, with his late wife, Mabel, made the Institute possible. "Dr. Beckman is one of our true scientific pioneers," said Deukmejian. "From his first invention to the countless other new products that came out of Beckman Instruments, Dr. Beckman has placed his own mark on scientific history."

"But what separates him from many of his peers is his broad vision of what the future could hold for society."

Governor Deukmejian announced during his speech that he was naming George W. Housner, the Carl F. Braun Professor of Engineering, Emeritus, to be chairman of a committee to make recommendations about earthquake safety in the wake of the Bay Area temblor. (A complete text of Deukmejian's remarks can be found on page 2.)

"This is the first time I've been in the Beckman Institute without a hard hat," said Harry B. Gray, the Arnold O. Beckman Professor of Chemistry and director of the Beckman Institute, who gave the opening remarks and welcomed the guests.

Gray told the guests that the Beckman Institute will mark a turning point in the history of chemistry and biology. Scientists designing molecules will work side by side with other scientists who will make machines to analyze those molecules, he said. This will be the first time this kind of relationship has been established, he added.

Arnold O. Beckman (PhD '28) cut a ribbon symbolizing the formal opening of the building. He introduced his family members, and expressed his grief that his late wife Mabel, a partner in the creation of the Institute, could not be there to share in the excitement of the dedication.

"My passport says I'm an executive," Beckman concluded. "I looked 'executive' up in the dictionary to see what it means, and I learned it means someone who delegates responsibility to others. So I'm delegating responsibility for speaking to the others here."

Dr. Leroy E. Hood, the Ethel Wilson Bowles and Robert Bowles Professor of Biology, and Carver A. Mead, the Gordon and Betty Moore Professor of Computer Science, spoke briefly, describing their research that will be done in the building. David Packard, chairman of the board of Hewlett-Packard Company, appeared on the program and spoke at the dinner that evening. President Thomas E. Everhart expressed

his appreciation for what the Beckman gift would mean to the Institute, and to the future of biology and chemistry.

After the dedication the guests ate refreshments, toured a lab, and visited the Beckman Room where they saw an exhibit of pictures tracing the history of chemistry, viewed a replica of Beckman's original Caltech lab, and watched a film on Beckman's early life. Photographs of the Beckmans and other memorabilia filled a display case. The Beckman Room drew strong interest from its visitors and was an immediate success. "I really didn't expect to go away feeling excited, but I am," said one member of the audience. "This is really a wonderful building."

Work at the Beckman Institute will focus on the invention of methods, instruments, and materials that hold the promise of opening new avenues for fundamental research in chemistry, biology, and related sciences. While providing technological support for these endeavors, the Beckman Institute will also furnish an environment for promoting the initiation and development of research that may be too innovative for more conventional funding institutions. The research center will further Caltech's educational role by involving students in its activities. At 160,000 square feet, it is the largest building on campus. It will be fully completed in the spring.

The Beckman Institute endowment will support major research endeavors undertaken in its own resource centers. And, through its research grants program, the endowment will also fund other innovative research projects on

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Guests turn out to welcome Beckman Institute as an official part of the campus, and find themselves charmed by the building's beauty.

Beckman Institute dedication

Continued from page 1

campus. The first Beckman Institute resource centers and their faculty principal investigators are:

- A center for developing and applying instrumental methods for synthesizing and sequencing genes and proteins (Leroy E. Hood)

- Laser spectroscopy and X-ray diffraction facilities for studies of bioinorganic and organometallic molecules (Harry B. Gray, John E. Bertaw, Sunney I. Chan)

- Facilities for synthesizing and characterizing novel organic and inorganic materials (Nathan S. Lewis, Robert H. Grubbs, John D. Baldeschwieler)

- A center for advanced mass-spectroscopic methods for the structural characterization of large biomolecules (Jesse L. Beauchamp)

- A laboratory of biomolecular design (Peter B. Dervan, John H. Richards, John D. Roberts, Douglas C. Rees)

Other associated major activities to be included in the Beckman Institute are the Beckman Hearing Laboratory (Carver A. Mead) and research in computation and neural systems (John J. Hopfield).

Deukmejian names Housner to head quake safety panel

The following is the text of Governor George Deukmejian's remarks at the Beckman Institute dedication.

"The Beckman Institute represents the vision and generosity of Dr. Arnold Beckman and his late wife, Mabel.

"Dr. Beckman is one of our true scientific pioneers. From his first invention to the countless other new products that came out of Beckman Instruments, Dr. Beckman has placed his own indelible mark on scientific history.

"But what separates him from many of his peers is his broad vision of what the future could hold in store for society.

"With the founding of the Beckman Foundation 10 years ago, Dr. Beckman was able to promote his philosophy of innovation, and help others discover breakthroughs necessary for the advancement of mankind. In its decade of existence, the Beckman Foundation has given more than \$100 million in gifts to support a wide range of scientific and medical research at numerous hospitals and universities.

"Of all the research centers that Dr. Beckman and his wife helped create,



however, none may be as important as the Beckman Institute.

"The Institute will bring together the best tools and some of the finest scientific minds from around the world. The work that will go on here will have a real practical value for each and every one of our citizens. The dramatic advances we can expect to come from the Institute in areas such as molecular biology, chemistry, and instrumentation could lead to people living longer, healthier lives. Discoveries made in Institute laboratories can be channeled into our high technology industries, providing our nation with an important edge over our tough, foreign competitors.

"Exploring the possibilities is what Caltech is all about. During its history, Caltech and its scholars have been responsible for developments that have revolutionized thinking in every scientific discipline.

"For example, while we are all greatly saddened by the deaths, injuries, and destruction that last week's Bay Area earthquake caused, it should be noted that most of the newer structures in the quake zone held up very well. This is not only a testimony to the advances that have been made in earthquake science, but to Caltech, where earthquake science was born.

"It was here at Caltech where the first seismograph was invented. It was also here that Charles Richter and Beno Gutenberg invented the Richter Scale. And today Caltech continues its leadership in earthquake science with the operation of its world-renowned seismological laboratory.

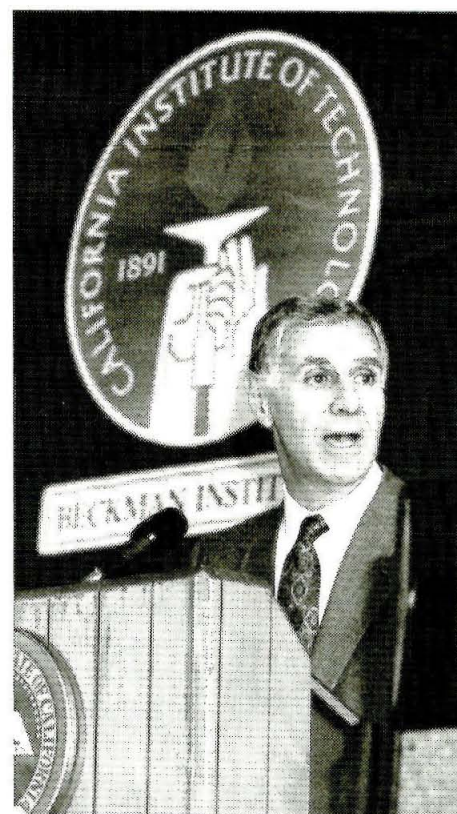
"In view of Caltech's preeminence in earthquake research, I am pleased to announce that I am today naming a Caltech professor emeritus as the chairman of our Independent Examining Team to ascertain the reasons for the collapse of the A section of Interstate 880 in Oakland. As the chairman of the Committee on Earthquake Engineering for the National Academy of Sciences, and the past president of several

respected earthquake research organizations, I am confident that Professor Housner is extremely well qualified to lead this important inquiry.

"Caltech's record of leadership is one of the reasons I often refer to California as the leadership state. With 20 Nobel Prize winners and 29 Medal of Science recipients among its faculty and alumni, no other institution in the country matches Caltech's intellectual firepower.

"A leading British astronomer, Martin Rees, once summed up Caltech's record in astronomy by saying that, 'The universe of astronomy has no center, but the universe of astronomers does. For years, that center has been in Pasadena, California.' Mr. Rees's astute observation could apply to all the scientific disciplines here at Caltech. And with the dedication of this new Beckman Institute, scientific research will also have its center here at this unique university.

"So, again, on behalf of all Californians, I want to thank Dr. Arnold Beckman for his great contributions, not only to Caltech, but to all the citizens of our state."

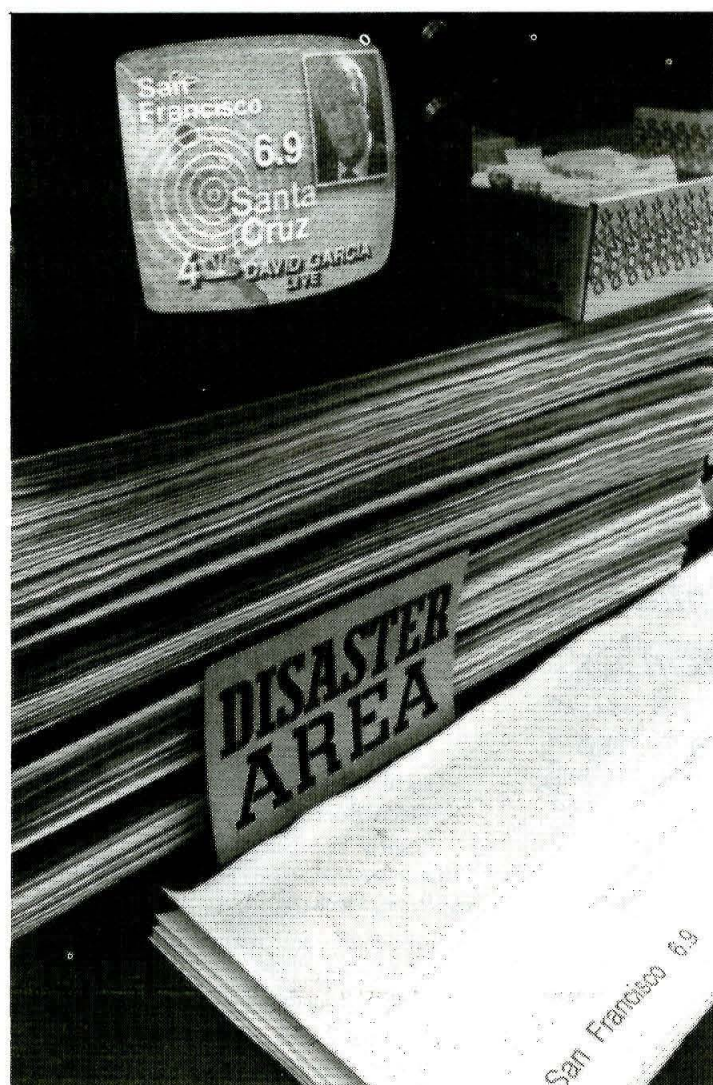


Governor Deukmejian addresses guests at the Beckman Institute dedication.



President Thomas Everhart and Arnold Beckman view busts of the Beckmans in the new building.

The San Francisco quake tests the readiness of the Seismological Laboratory to deal with the "Big One."



Signs of a quake as reflected in the Seismo Lab.

Bob Finn had worked out at Brignole's gym many times, but he had never been paged there before. The page, at about 5:20 p.m. on October 17, meant that his workout was over and that a busy evening was ahead for the Caltech public relations science writer. "There's been a big one in San Francisco," Hall Daily, Caltech's director of media relations, told Finn over the telephone. "You'd better get over to the Seismo Lab right away." (Daily would handle calls from his home, while Doug Smith, writer for *Engineering & Science* magazine, fielded calls in the public relations office.)

As Finn hurried out after dressing, scenes of the damaged Bay Bridge were starting to be shown on the gym's television as clientele gathered around to watch. News of a disaster travels quickly.

Most of Caltech's seismologists were already at the lab when Finn arrived, along with an increasing number of television and radio reporters. Normally Caltech does not handle earthquakes outside the southern California area, but neither the seismology laboratory at UC Berkeley nor USGS at Menlo Park were accessible by telephone, and the media of the world were turning to the Institute for information.

Paleoseismologist Kerry Sieh was one seismologist who didn't stay at the lab very long. He got a group of graduate students together and headed for the Bay Area to look for surface rupture.

Finn spent the next six hours arranging interviews for news media ranging from Dan Rather to KBRT, a Christian radio station, and trying to match a small number of seismologists with a horde of eager reporters. Telephones rang constantly (hundreds of calls were received, Finn estimates), and cameras and lights were set up all through the

San Francisco quake brings out the media

laboratory.

Attracting some special media attention and acquiring a nickname for the season was much-interviewed Steve Bryant, a seismic analyst for Caltech and the U.S. Geological Survey, who had come to work wearing a Captain Midnight T-shirt. "This will teach me to keep up with my laundry," said Bryant. "You never know when there's going to be an earthquake. The only reason I wore this shirt was because it was all I had that was clean."

By 11 p.m. telephone calls were beginning to taper off as the 11 o'clock news was wrapped up. Seismologist Kate Hutton stayed on to do several overnight national television interviews, and Finn went home to get some sleep at 12:30, returning the next morning at 7. Calls came in, and media visitors arrived, throughout the morning and early afternoon. By midafternoon the phones were quieting, because the Bay Area was now accessible by telephone.

"We have nothing to say about that," was the way Finn responded to one reporter who called. This was a typical response to questions about myths, theories, rumors, and predictions Finn and the others had been asked time and

again since the quake had struck.

So, for the record:

- Weather had nothing to do with the quake. As Bryant put it, about the "earthquake weather" theory, "It's hot 80 percent of the time here. During the daytime, people are usually in air-conditioned buildings. So after a quake, they're outside with nothing to do, and all they have to talk about is the fact an earthquake just struck and they're hot."

- The shaking up north has nothing to do with the possibility of quakes in southern California. Even though the San Andreas Fault runs through both areas, the portion that caused the October 17 quake is one that seismologists call "locked." That means there is no movement between the plates of earth there. Tension builds up and is finally released. However, segments of the fault between the Bay Area and southern California are "slipping," or have movement from time to time to release that stress. For example, seismologists have recorded numerous earthquakes caused by this slipping. These quakes range between 3.0 and 4.0 on the Richter scale and occur along a fault segment just south of the deadly portion

responsible for the October 17 action. So tension in the locked segment of the fault does not travel south.

Media calls may have dissipated within 24 hours, but not calls from anxious members of the general public. During the week and a half following the first three days after the quake (an interval when he was too busy to count), Finn says he received 52 calls from private citizens—most asking for referral to a safe place to live, wanting to know when the "Big One" is coming, or asking for an explanation of the Richter Scale. Finn has developed succinct responses to all of these questions, and he refers people who are seriously anxious to a help line.

The debate goes on about San Francisco's state of preparedness for the quake. But there seems no reason to debate how well the Caltech Seismology Lab is prepared to handle the "Big One" when it comes.



Subcommittees create plans for centennial

Eleven subcommittees are hard at work formulating plans for Caltech's centennial year in 1991. Sunney I. Chan, professor of chemical physics and biophysical chemistry, is chairman of a steering committee to oversee plans for the commemoration. Theodore C. Combs (BS '27) represents the Alumni Association on the committee.

Major events will be the entry of a Caltech float in the Rose Parade, January 1, 1991, and the celebration of Caltech's 100th birthday. During the rest of the year, Caltech will host events targeted for a variety of audiences—symposia, an open house and exhibits, student-oriented activities, and programs in the community.

Yearly, established activities—Watson lectures, Alumni Seminar Day, the SURF program, and others will be expanded or planned with the centennial in mind. A focus of the planning process is to devise ways that Caltech can share its special qualities with the community.

FRIENDS

Abelson new chairman of biology division

Professor of Biology John N. Abelson has been named chairman of the Division of Biology at Caltech, succeeding the acting division chairman, Norman R. Davidson, the Norman Chandler Professor of Chemical Biology, Emeritus.

A physics graduate of Washington State University, Abelson earned his PhD in biophysics from Johns Hopkins University in 1965, and did postdoctoral work in biochemistry at the Laboratory of Molecular Biology in Cambridge, England, from 1965 to 1968. He was on the chemistry faculty at the University of California, San Diego, for 14 years before becoming a Caltech biology professor in 1982.

Abelson's scientific work has concentrated on the mechanisms of gene expression in yeast. In particular, he has conducted important experiments on the nature of DNA transcription to messenger RNA (mRNA) and the further processing of mRNA by organelles called spliceosomes before its translation into protein. He is also interested in transfer RNA (tRNA) and the interaction of tRNA with proteins, specifically the enzyme aminoacyl tRNA synthetase.

Abelson has received the American Cancer Society Faculty Award and a John Simon Guggenheim Memorial Foundation Fellowship. He is editor-in-chief of *Methods in Entomology*, associate editor of the *Annual Review of Biochemistry*, and a member of the board of reviewing editors of *Science* magazine.

Ahmanson gift strengthens humanities

The Ahmanson Foundation has made a substantial gift to Caltech to establish the Ahmanson Endowed Postdoctoral Fellowship in the Humanities. The endowment will make it possible for the Institute to bring to the campus some of the brightest and most creative young scholars in the nation. Fellows will teach classes in their areas of specialization, adding to the breadth of courses offered to Caltech undergraduates. The Ahmanson Fellows will also pursue their research interests, drawing on the expertise of Caltech faculty and, in some cases, the resources of the Huntington Library.



Carl Larson ('52), a member of the President's Circle, presents Professor Eleanor Searle with a Norman flag at Chateau d'Audrieu during The Associates' trip to Normandy which had Searle as guide.

Board of Trustees welcomes Ronald Linde as member

Ronald K. Linde (MS '62, PhD '64), founder of Envirodyne Industries, Inc., has joined the Caltech Board of Trustees. Prior to the company's sale last May, Linde had served as chairman of the board, president, and CEO of the



Ronald Linde

Chicago-based firm. In two decades, Linde built Envirodyne into a worldwide leader in the development and manufacture of food packaging materials and systems, operating in virtually every country of the world.

Linde was the first person to be granted a doctorate from Caltech in materials science. While at Caltech he was an Institute Scholar, an ARCS Scholar, and a Rutherford Scholar. In 1961, he earned summa cum laude honors with his baccalaureate degree from UCLA.

At present, Linde is chairman of the board of the Ronald and Maxine Linde Foundation. While leading Envirodyne to a position as one of the fastest-growing companies in America, he engineered dozens of corporate acquisitions and/or divestitures. The company's operations ranged from energy conservation and pollution control, to steel making.

Before joining Envirodyne, Linde worked as an engineer at Litton Industries, Inc., as a materials scientist at SRI International, and at Stanford Research Institute as chairman of solid-state research, chairman of the shock-wave and high-pressure physics department. He was also director of physical sciences and chief executive of Poulter Laboratories.

A member of the Founding Friends of Harvey Mudd College and the Northwestern University Associates, Linde is also a devoted collector of contemporary art.

Rosenberg joins Caltech Board of Trustees

Banking executive Richard M. Rosenberg has accepted a seat on the Caltech Board of Trustees. Rosenberg is currently vice chairman of the board of BankAmerica Corporation in San Francisco, with responsibility for consumer, commercial, and real estate banking.

Rosenberg, 59, is a graduate of Suffolk University in Boston, and he earned his MBA and law degrees at Golden Gate College in San Francisco. Before joining the BankAmerica board in 1987, he was president and chief



Richard Rosenberg

operating officer of Seattle-First National Bank. Prior to that, he served as vice chairman of the board of Crocker National Corporation.

He began his banking career in 1959. At Wells Fargo Bank, N.A., Rosenberg worked in business computer services, marketing, and advertising before becoming executive vice president in 1975. He was named vice chairman in 1980.

A member of the State Bar of California and the American Bankers Association, he is also a director of American Magnetics Corporation, Airborne Express Corporation, VISA, San Francisco Economic Development Corporation, and the San Francisco Symphony. Rosenberg also serves as a trustee for BankAmerica Foundation.

His university affiliations include positions as a trustee of his alma mater, Golden Gate, and as a past member of the board of regents of the University of Colorado's School of Bank Marketing.

Rosenberg is also active as a trustee of the City of Hope Pilot Medical Center and was a founding director of the Marin Ecumenical Housing Association.

Stevenson named geology division chairman

David J. Stevenson, professor of planetary science, has been appointed chairman of the Division of Geological and Planetary Sciences at Caltech. Stevenson succeeds Gerald J. Wasserburg, the John D. MacArthur Professor of Geology and Geophysics, who had been the division chairman since 1987.

Stevenson is known for his work on the formation, evolution, and internal structure of the solar system and the planets, including the Earth/Moon system and the other terrestrial planets, as well as the solar system's giant planets. He has investigated the application of fluid dynamics, magnetohydrodynamics, and condensed-matter physics to the study of planetary interiors and degenerate stars.

Stevenson, 41, is a native of New Zealand. He earned a BS degree in physics and an MS with a distinction in theoretical physics from Victoria University in Wellington, New Zealand. He earned a PhD in theoretical physics from Cornell in 1976. From 1976 to 1978, Stevenson served as a research fellow in the Research School of Earth Sciences at the Australian National University. From 1978 to 1980 he was assistant professor of planetary physics in UCLA's Department of Earth and Space Sciences. He came to Caltech in 1980 as an associate professor, and in 1984 he was promoted to professor of planetary science.

Among Stevenson's honors and awards are: selection as a Fulbright Scholar for the years 1971 to 1976; the 1984 Urey Prize of the American Astronomical Association's Division of Planetary Science; and his 1986 election as a Fellow of the American Geophysical Union.

Schwarz named first Harold Brown Professor

Caltech has established the Harold Brown Professorship in honor of its former president Harold Brown, and has named theoretical physicist John Schwarz, one of the founders of superstring theory, the Harold Brown Professor of Theoretical Physics.

Harold Brown served as Caltech's president from 1969 to 1977, when he left the Institute to become Secretary of Defense in the administration of President Jimmy Carter. The Brown Professorship has been created with the support of several members of the

Caltech Board of Trustees, and through corporate gifts from IBM, Phillip Morris, and Synergen. The professorship has been established as an Institute-wide chair, meaning it may be awarded to an outstanding faculty member in any discipline.

John Schwarz became internationally famous in 1985 as one of the two founders of superstring theory, today considered the best candidate for a unified field theory (or "theory of everything") that would account for the four forces of nature—electromagnetism, gravity, and the strong and weak nuclear forces—as aspects of a single, fundamental "superforce." Albert Einstein spent the last 20 years of his life in a futile quest to develop such a theory. In 1984, after more than a decade of work in relative obscurity, Schwarz and his colleague Michael Green, of the University of London, proposed a framework for unification in which the elementary particles of matter, previously thought of as points, are treated as loops, or "strings," and in which the universe could have as many as ten dimensions—nine of space and one of time—instead of the usual four.

After six years on the faculty of Princeton, Schwarz joined Caltech as a research associate in 1972. He became a senior research associate in 1981 and was made a full professor of theoretical physics in 1985. In 1987, he received a coveted "genius" award from the John D. and Catherine T. MacArthur Foundation. This past August, he and Michael Green were awarded the prestigious Dirac Medal of the International Center for Theoretical Physics in Trieste, Yugoslavia, for their work on superstring theory.

A physicist by training, Harold Brown joined UC Berkeley's Lawrence Radiation Laboratory as a research scientist in 1950 and began a steady upward climb through the ranks of the organization. In 1952 he moved to the lab's newly established nuclear physics facility at Livermore, and went on to succeed Edward Teller as Lawrence-Livermore director in 1960.

Brown began his career in government service the following year, when he left Livermore to become director of research and engineering during the Kennedy administration. He was appointed Secretary of the Air Force by President Johnson in 1965, a position he left in 1969 to become president of Caltech. In 1977, shortly after he resigned as president to join the Carter administration as Secretary of Defense, Brown received the Institute's Distinguished Service Award.

Brown was awarded the Presidential Medal of Freedom in 1981, and the National Engineering Award of the American Association of Engineering Societies in 1980.

Jennings selected new provost

Four years ago when Paul Jennings (MS '60, PhD '63) became chairman of the Division of Engineering and Applied Science, he commented that the opportunity to serve in that position came at a time in his life when he was "willing to try something different—to accept a new challenge."

Jennings, it seems, is again willing. This time the challenge is the office of



Paul Jennings

the provost. As of November 13, Jennings became the sixth provost of Caltech.

Colleagues who are acquainted with Jennings's administrative abilities were not surprised at the appointment. David Goodstein, who, as vice provost, will be working closely with Jennings, says, "Paul is not only deeply intelligent, he is also very patient. His approach to a problem or a project is careful and cautious. He does his homework thoroughly, but when the time comes for action, he takes it."

In addition to abilities, "caring" is an element of the choice. Jennings himself says that his "feelings for the Institute" are important among the several reasons he accepted the appointment.

The new provost's attachment to Caltech has roots reaching back to 1959, the year he came here as a graduate student. In 1965, two years after he completed his PhD, he accepted a visiting faculty appointment on campus. (He was teaching at the Air Force Academy at the time.) The following year he joined the Caltech faculty permanently. In the years since, Jennings has served as executive officer for civil engineering and applied mechanics (1975-80), and as chairman of the division from 1985 to the present.

As Goodstein suggested, Jennings is approaching his new assignment carefully and cautiously. "I don't come with a preconceived agenda," he says. "I need to become more familiar with the aspirations and problems of the Institute that I don't know as much about."

When asked about a book on earthquake engineering that he had intended to start just before he became division chairman in 1985, Jennings replied, "The book has receded further into the future."

Three on faculty receive National Medal of Science

Three Caltech faculty members and three alumni were among 19 men and women to receive the National Medal of Science—the nation's highest scientific honor—at a ceremony in the White House on October 18. In addition, an alumnus received the National Medal of Technology.

The faculty members are Rudolph Marcus, the Arthur Amos Noyes Professor of Chemistry; Robert P. Sharp (BS '34, MS '35), the Robert P. Sharp Professor of Geology, Emeritus; and Roger W. Sperry, the Board of Trustees Professor of Psychobiology, Emeritus. The alumni recipients are Arnold O. Beckman (PhD '28), founder, Beckman Instruments, Inc.; Harden M. McConnell (PhD '51), professor of chemistry, Stanford, and a Sherman Fairchild Distinguished Scholar at Caltech; and Eugene N. Parker (PhD '51), professor of physics and



Arnold Beckman (PhD '28) receives the National Medal of Science from President George Bush.

astrophysics, the University of Chicago. Alvin V. Tollestrup (PhD '50), director of research and development at Fermilab, was awarded the National Medal of Technology.

Receiving the National Medal of Science represents a clean sweep for Beckman, who last year was awarded the National Medal of Technology—the first time the medal was presented.

Marcus received the medal for "fundamental, far reaching, and eminently useful development of theories of unimolecular reactions and of electron transfers in chemistry and biochemistry."

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

world recognition."

Sperry, who received the Nobel Prize in 1981, was awarded the medal for "work on neurospecificity which showed how the intricate brain networks for behavior are effected through a system of chemical coding of individual cells, which has made fundamental contributions to the understanding of human nature."

This year's awards bring to 29 the number of Caltech faculty or alumni who have been awarded the National Medal of Science.

IA sponsors Research Directors' Conference

The Office for Industrial Associates will sponsor three conferences during the remainder of the academic year. The first, the Research Directors' Conference, is an annual review of research at Caltech, geared for vice presidents, research and development managers, and professors. It will be held February 6 and 7.

Edward C. Stone, Voyager project scientist, will be the featured faculty speaker. Several Caltech faculty members will present overviews of their research.

The conference is open to the public, and registration fees are waived for all Industrial Associates representatives, the faculty, students, staff, and alumni of Caltech, and for the faculty, students, and staff of other universities. There is a \$450 registration fee for persons not included in the above categories.

The other conferences will be announced in the February issue.

More information is available from Rachel Wells, events coordinator, Development, 105-40, Pasadena, California, 91125, or by calling 818-356-6599.

Seinfeld honored by University of Rochester

John Seinfeld, the Louis E. Nohel Professor and professor and executive officer for chemical engineering, has received a Distinguished Alumnus Award from the University of Rochester. Seinfeld is internationally known for his work in the chemistry and physics of air pollution.

By Betsy Hatch

To enter a float nowadays in the Tournament of Roses Parade, as Caltech is going to do in 1991, requires many committee meetings, months of planning, a professional float designer, and big bucks. But for the parade of January 2, 1950, the year of Caltech's last previous entry, building a float was a grass-roots project accomplished by a handful of students in three months. Caltech's float, entitled "New Frontiers," was planned, organized, built, decorated, and driven by students.

In October 1949, the Tournament of Roses Association invited Caltech to enter a float in the pageant; the theme that year was "Our American Heritage." The idea was approved at a student meeting, and John Michael (Mike) Sellen, Jr., (BS '50) became general coordinator of the project. Helping him were Henry Clutz (BS '52); Robert Cobb (BS '51); Richard Libbey (BS '51, MS '52); Anthony Malanoski (BS '51); Dallas Peck (BS '51, MS '53); Peter Price (BS '51); and Ronald Willens (BS '53, MS '54, PhD '61).

The 200-inch Hale Telescope, which was completed in 1948, was the natural choice for the float's subject. Henry Dreyfuss, an internationally known industrial designer who was a member of the Caltech faculty from 1947 until his death in 1972, created the design from a stack of photographs of the Hale Telescope and Palomar Observatory, which were shot from every conceivable angle. The preliminary design was finished by Thanksgiving, and the final design was ready by mid-December.

Meanwhile, Sellen found a local florist who agreed to donate the flowers—thousands of chrysanthemums—and the materials needed for gluing them to the float. The Institute supplied a jeep as the float's transportation, and provided the basic float-building materials—lumber, steel rods, chicken wire, cheesecloth, plaster of paris, and paint.

Work began on the frame on Saturday, December 17, the day after finals ended. Anyone whose home was too far away and was spending Christmas vacation on campus was drafted into service. Robert Cobb recalls, "The framework was assembled over the jeep in a driveway between the astrophysics shop and the optics shop."

The *Engineering and Science* issue of January 1950, gave a detailed account of building the frame. "The float consisted of a basic wood frame made up of load-bearing four-by-fours with two-by-fours around the skirt, and one-by-fours to form the outline. Over this, a lattice of 1/4-inch steel rods,



Project chief Mike Sellen paints the theme on the front of the float. The photos on this page were taken by Ralph Lovberg (BS '50).

Caltech's 1950 rose float

bent to give a smooth contour, was welded." The telescope for the float, being built in the astrophysics shop, consisted of an 8-foot-long tube set onto a turntable that was 9-feet in diameter. The turntable was connected to a bicycle-chain drive assembly, and so the telescope could "scan the skies." (A Tournament of Roses historian said that this type of animation was quite imaginative for its time.) The telescope was mounted on the framework and everything was covered with chicken wire. When Henry Clutz saw the float he said, "I don't believe anybody outside knew what the design was—I didn't, until I was told."

Next the float was carefully driven several blocks away to a staging area at McKinley Elementary School, where several dozen floats were being completed under a huge circus tent. Additional ornaments consisting of a comet, stars, and 9-inch-tall wooden men were added, and the float was covered with cheesecloth dipped in plaster of paris. Then, the float was painted to look just as it would when covered in flowers.

Gluing on the flowers was the final, and most labor-intensive, step. From December 31 to January 2, a crew of 8 to 12 people was there around the clock, gluing on flowers. Extra hands were rounded up and girlfriends were also enlisted to help. It is the float-building step that the participants remember best. Cobb remembers, "There were two or more days and

nights of flowering. Petals were used extensively, and placed individually so there were no skips. I put the last one on at 3:00 a.m." Henry Clutz says, "We glued flowers for several days; the last day was 24 hours straight." Cobb recalls, "We decided that calculating the total number of petals used would be

Unlike Caltech's 1991 float, the 1950 float was a grass-roots project created by students in three months.

an excellent way for freshmen to conceptualize infinity!"

The float was driven to the pre-parade area, and Anthony Malanoski climbed inside. For the entire five-and-a-half-mile length of the parade he would turn the crank and provide the power to turn the telescope. The float was then inspected by Tournament Officials for safety and judged for beauty. The float examiners were very impressed with the craftsmanship and construction of the Caltech entry. They awarded it a Merit Award—equivalent to an honorable mention—in the float-design judging.

The float builders saw their creation roll down Colorado Boulevard, then headed for the Rose Bowl. Peter Price remembers, "We each received two tickets to the Rose Bowl game; that was a great experience." One assumes that after all the long hours, the builders then headed home to bed. Robert Cobb has some advice for the builders of the next float, "Do not do the following things sequentially: build a float, sell programs along the parade route, and then go to the Rose Bowl Game—you sleep through the third quarter."

Workers on the night shift apply flowers.





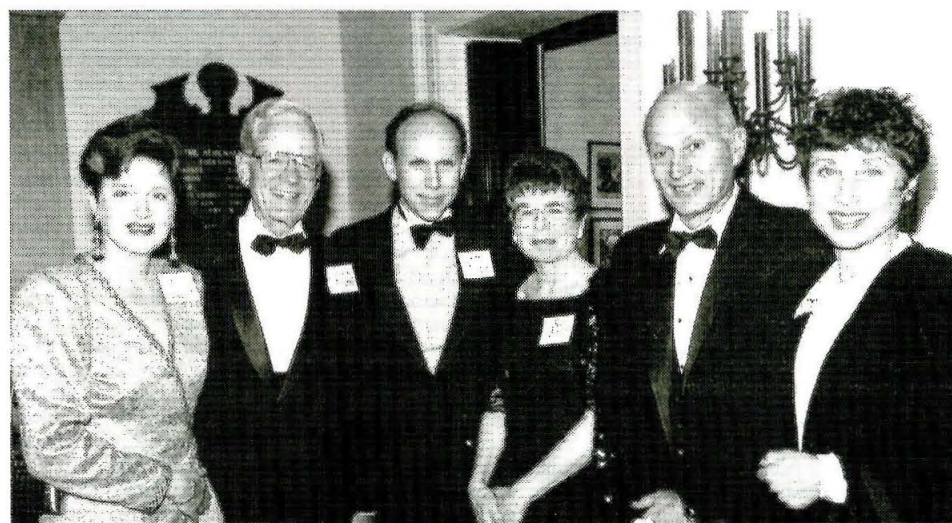
Downie Muir III, Jesse (BS '43) and Mary Jane Graner with Robert Perpall (BS '52, MS '56).



Joanna (Mrs. Downie) Muir, Helen and Edward Tuttle (BS '28), Victoria and Norman Williamson.



Esther (Mrs. Abe) Zarem with Marian Schuster and Charles Newton.



Kitty and Arthur Chester (PhD '65), George and Jean Smith, Professor Amnon Yariv and Fran Yariv.



J. Stanley Johnson (BS '33, MS '34) and President Emeritus Lee A. DuBridge.



Gordon (PhD '54) and Betty Moore with Professor Carver Mead.

Gordon Moore speaks to Associates

Gordon Moore (PhD '54), chairman of the board of Intel Corporation, was the speaker at the annual dinner of The Associates on October 17. Joanna Muir, president of The Associates, presented President Thomas E. Everhart, who introduced the speaker. Moore, who is a Caltech Trustee, spoke on "The Computer Chip—Keystone of Modern Electronics," on the night when the San Francisco earthquake had just shaken his home terrain.



Berneice Anglea and Thornton Ladd.

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, 818-356-6592, 1- 97, Caltech, Pasadena, CA 91125.

| | | | |
|----------------------|-----|-----------------------|-----|
| 1922 | | Hsih-Heng Wang | MS |
| Blake Beatty | BS | James W. Watson | BS |
| Arthur J. Garfield | BS | 1939 | |
| 1923 | | Richard H. Bishop | BS |
| Robert J. Hammond | BS | Andrew Frejer | BS |
| Lewis M. Mott-Smith | BS | Winthrop G. Jones | MS |
| 1924 | | Spencer W. Oakley | BS |
| Mitchell C. Lukens | BS | John M. Peat | BS |
| Willard H. Tracy | BS | Walter B. Powell | BS |
| 1925 | | David H. Scott | BS |
| Wilfred G. Thompson | BS | Lester G. Zukerman | BS |
| Conrad J. Waller | BS | 1940 | |
| 1926 | | George A. Brettell | MS |
| Hung Yuan Chang | BS | Arthur M. Compton | BS |
| Riley L. Gilbert | EX | William E. Gentner | MS |
| Fray Hardwick | BS | Arville C. Gibson | MS |
| John R. Howell | BS | William J. Green | MS |
| Frank H. Streit | BS | George A. Hatton | MS |
| 1927 | | William J. Howell | MS |
| Frank F. Peterson | BS | Orson B. Lolmaugh | BS |
| 1928 | | Adolph Lovoff | MS |
| Francis C. Martin | MS | Luigi Menis | BS |
| Huston W. Taylor | BS | Norman L. Peterson | MS |
| 1929 | | Robert A. Phillips | BS |
| John D. Elder | PhD | Shih Chen Tao | MS |
| Lawrence J. Grunder | BS | Sabin A. Ustel | MS |
| Reymond J. Kircher | BS | Tsung-Su Wang | MS |
| Kam Hu Lau | BS | James M. Watkins | BS |
| Julius Nelson | BS | 1941 | |
| True W. Robinson | BS | Norman Z. Alcock | MS |
| Willem Uytendhoeven | PhD | Chieh-Chien Chang | MS |
| 1930 | | Morris R. Clark | BS |
| Donald K. Allison | BS | Samuel J. Easley | MS |
| William Kelley | BS | John M. Feeley | BS |
| Frank N. Moyers | BS | Glyn Frank-Jones | BS |
| Jack D. Pritchett | BS | Robert C. Geitz | BS |
| Katsunoshin Suzuki | BS | Donald L. Harvey | BS |
| 1931 | | Leo C. Levitt | BS |
| Jack H. Amann | BS | Lloyd A. Lewis | MS |
| Tseng-Loh Ho | MS | Blaine R. Nelson | BS |
| James B. Taylor | EX | George I. Reimers | BS |
| William T. West | BS | Frederick G. Robinson | BS |
| T. Robert White | BS | C. B. Stadum | BS |
| Carl K. Yoshioka | BS | Clyde T. Standridge | MS |
| 1932 | | Robert L. Weaver | MS |
| F. B. Phleger | MS | Colman Zola | MS |
| Richard A. Searle | BS | 1942 | |
| 1933 | | Mehmet F. Bebe | ENG |
| Thomas C. Burk | EX | Orhan M. Emre | ENG |
| Ralph R. Hultgren | PhD | Frank I. Given | BS |
| Luis E. Kemnitzer | MS | Chong-Hu Go | MS |
| William A. Larsen | MS | Alfred Landau | BS |
| Wyatt H. Lewis | BS | Victor H. Martinez | MS |
| Edwin B. Michal | MS | Charles B. Metz | PhD |
| Winston H. Rice | BS | George F. Meyer | BS |
| Maple D. Shappell | PhD | Enver M. Muradoglu | ENG |
| Warren H. Smith | BS | Russell Rhyne | BS |
| 1934 | | Everett P. Tomlinson | PhD |
| Duncan L. Hooper | MS | 1943 | |
| Francis G. Tracy | BS | Kenneth E. Anspach | BS |
| 1935 | | James M. Brown | EX |
| Leon S. Becker | BS | Wayne H. Brown | BS |
| Edward A. Bertram | MS | Ted L. Crosthwait | MS |
| M. Harrison Evans | BS | Benjamin A. Daleon | MS |
| Paul F. Genachte | PhD | Warren V. Eaton | MS |
| Fun-Chang Huang | MS | Edward G. King | MS |
| Russel L. Maycock | EX | Robert H. Koch | MS |
| Dagoberto Rivas | BS | William L. Leeds | MS |
| 1936 | | Roland E. Lundquist | MS |
| W. Bruce Beckley | BS | Klaus Mampell | PhD |
| Calvin M. Bolster | MS | Robert W. Mitchell | EX |
| Howard F. Hamacher | BS | Norman Newsome | MS |
| Larry L. Young | MS | Lawrence K. O'bert | EX |
| 1937 | | Richard E. Pentoney | EX |
| Thomas R. Burnight | BS | Fred D. Roberts | MS |
| Ju-Yung Cheng | MS | Dan R. Scholz | MS |
| Anthony Easton | MS | Leslie A. Shannon | MS |
| James A. Hurst | EX | Thomas B. Smitherman | MS |
| Paul F. Jones | MS | William Snyder | BS |
| Thomas N. Shaw | BS | Peter A. Tileston | EX |
| Ellis W. Shuler | MS | Ernesto Vicente | MS |
| Meyer J. Test | BS | Courtland L. Washburn | MS |
| Clark H. Wiget | BS | 1944 | |
| 1938 | | Frank A. Alonso | BS |
| Kamal Djanab | PhD | William O. B. Ballard | BS |
| Duane W. Farnham | MS | Francisco Barriga | MS |
| Hyman D. Goodman | MS | William E. Bell | MS |
| Arthur G. Gross | BS | Donald G. Benjamin | MS |
| Arnulfo G. Gutierrez | MS | Mehmet N. Berkant | MS |
| Frank C. Lowe | BS | Ertugrul Birdik | BS |
| William Rhett | BS | Joseph E. Burch | MS |
| Chi-Cheng Tsao | BS | William G. Burke | MS |

| | | | |
|-----------------------|-----|----------------------|-----|
| Ahmed Cebeci | MS | Yin-Ching Au | BS |
| Carlos A. De Medeiros | MS | James A. Bunce | MS |
| Weldon R. Donsbach | BS | Tao-Hung Chu | MS |
| Almeron J. Field | BS | Albert R. Clark | MS |
| E. J. Goehring | EX | Burgess F. Collins | BS |
| Charles P. Harrison | MS | James R. Dale | MS |
| Robert F. Laabs | BS | Charles D. Edwards | MS |
| Paul J. Labanaukas | MS | Perry H. Eubank | MS |
| John W. Marshall | BS | Patrick N. Glover | BS |
| Carl O. Mattinson | BS | James A. Harder | BS |
| Kenneth L. McBrean | MS | Omer Ismet Inonu | ENG |
| Merrill E. Onstad | MS | Robert J. MacNeill | MS |
| Ethem Ozkaragoz | MS | Herman A. Mason | BS |
| Jim M. Ridlehuber | MS | Walter P. Murphy | ENG |
| David F. Rutland | BS | Winton G. Roe | BS |
| Mayo G. Shults | MS | John S. Swain | BS |
| Enrique F. Silgado | MS | Robert K. Swank | MS |
| Roberto L. Stein | MS | William H. Voelker | MS |
| R. S. Tanyildiz | BS | James E. Whitney | MS |
| Garland S. Taylor | BS | Robert S. Winniford | MS |
| William M. Trimble | BS | 1949 | |
| D. Roger Wight | MS | Thomas E. Allen | ENG |
| Ye Ke Wu | BS | Thomas J. Andrews | MS |
| 1945 | | Laurence I. Baumann | BS |
| Victor A. Ari | MS | Arthur R. Benton | BS |
| Harry F. Bunze | MS | Joseph F. Burkholder | BS |
| Harry Wm. Carlson | MS | Harold D. Cooper | MS |
| Roy G. Killian | BS | Harold W. Davidson | MS |
| Emanuel J. Miller | BS | Warren W. Ford | ENG |
| Jonathan F. Rice | BS | Francis C. Foster | ENG |
| Grant D. Sullivan | BS | George M. Hrebec | BS |
| Robert G. Trout | BS | Frank G. Hylton | BS |
| Necat Turkbas | MS | Fred E. Krasin | BS |
| Bruce R. Vernier | BS | Max Krauss | PhD |
| 1946 | | Pierre J. Leroux | MS |
| Charles W. Allison | BS | Michael F. Marx | ENG |
| Clyde C. Andrews | MS | Dan M. Parker | MS |
| Morton M. Astrahan | MS | Charles C. Petty | MS |
| Khosrow Behroon | MS | Marion C. Rinehart | BS |
| Ke-Yuan Chen | MS | Dale D. Ryder | BS |
| Robert H. Conradt | BS | Robert Schwarz | ENG |
| Daniel Cortes-Guzman | MS | Salim Solomon | MS |
| Jerome P. Dyson | BS | Donald C. Stinson | MS |
| Hassan F. Fateh | MS | John W. Wilkening | EX |
| Robert W. Foote | BS | Jean F. Wiren | BS |
| George S. Gill | BS | 1950 | |
| Luther A. R. Hall | MS | Joseph B. Alexander | MS |
| Benjamin S. Hayne | BS | Weldon O. Bergreen | BS |
| H. T. Huang | BS | Stanley C. Boicourt | BS |
| Frederick J. Lewis | MS | Julian Brody | BS |
| Norman J. MacDonald | BS | James C. Conly | PhD |
| Stanley R. Nixon | BS | John R. Doe | BS |
| Carl K. Salbach | MS | Robert McMillan | MS |
| Elmer R. Shepard | BS | H. Reha Mesara | BS |
| Harvey F. Smith | MS | Donald J. Nelson | MS |
| Yu-Sin Tung | MS | Robert W. Paulson | MS |
| Thomas F. Weldon | MS | Richard H. Perry | BS |
| 1947 | | M. Darwin Quigley | ENG |
| Rolland S. Asher | BS | Howard E. Reinecke | BS |
| Adolfo J. Atencio | MS | Marco A. Romero | BS |
| Paul K. Charlu | MS | Martin N. Ross | BS |
| Fredric B. Clarke | ENG | Philip Rosten | MS |
| Hugh H. Collins | ENG | Charles A. Savant | BS |
| Brian D. Dagnall | MS | Howard R. Schmidt | MS |
| Subodh C. Das | MS | David A. Strange | MS |
| Leo Fiorello | MS | Robert S. Welte | BS |
| Eric Gillam | MS | Norris D. Whitehill | BS |
| John A. Graf | MS | John D. Wilkes | PhD |
| Walter Harrington | MS | 1951 | |
| Merwyn E. Hodges | BS | Ricardo M. Arosemena | MS |
| Ea-Qua Huang | MS | Kenneth R. Berg | BS |
| Paul T. Hutchison | MS | Richard B. Campbell | MS |
| Felix A. Kalinski | MS | Edward B. Crichton | BS |
| James S. Lesko | MS | Howard C. Goodell | MS |
| Rodin Lesovsky | BS | Carl-Nils Hildabrand | BS |
| Vicente H. Lim | MS | Jacob P. Lafdjan | MS |
| John Manoukian | MS | Gerald M. Monroe | PhD |
| Michael K. Molloy | MS | Wilfred C. Mosier | MS |
| Basil E. A. Moorehead | BS | Joseph E. Padgett | MS |
| Raymond L. Olson | BS | Raymond A. Sjodin | BS |
| John L. Orr | MS | Richard K. Smyth | BS |
| Loys M. Satterfield | ENG | Allan J. Summers | MS |
| Robert W. Shackford | ENG | Arthur E. Wennstrom | BS |
| Alexander Smith | PhD | 1952 | |
| Francis D. Sullivan | BS | Paul E. Arbo | ENG |
| Russell A. Thompson | ENG | Elias G. Arcoulis | MS |
| George Vanden Heuvel | MS | Oswin N. Brown | MS |
| Arthur F. Vieweg | BS | Smith V. Bucy | MS |
| Clifford M. Wimberty | MS | Frank Capra, Jr. | EX |
| Edward B. Winters | BS | Wesley Caspers | MS |
| 1948 | | Frank C. Lang | BS |
| Fred P. Adler | MS | Bernard J. O'Neill | MS |

| | | | |
|-----------------------|-----|----------------------|-----|
| Basil R. Parnes | BS | Joseph M. Cauley | BS |
| William C. Robison | MS | Jacques De Barbeyrac | MS |
| Yung-Chung Shen | MS | Alain N. Genko | MS |
| Jack I. Simmons | BS | Gary C. Goodman | BS |
| Robert E. Stanaway | BS | Ernest A. Isaacs | BS |
| Donald E. Sutton | BS | Pierre E. Joffres | MS |
| William L. Wallace | MS | Louis Kingsland | MS |
| Richard W. Weeks | BS | Thomas R. Koehler | PhD |
| Howard E. Wilson | MS | Jimmy C. Larsen | MS |
| 1953 | | Melvin K. Neville | BS |
| Stuart G. Lennox | MS | Richard A. Newcomer | BS |
| Wilbur F. Offermatt | ENG | William A. Sinoff | BS |
| Sherman H. Ripley | PhD | Stephen V. Stephens | BS |
| Norman M. Schroeder | BS | Michael R. Thomson | BS |
| Thomas R. Slodowski | BS | Paul R. Widess | BS |
| Fred P. Storrer | MS | 1961 | |
| David S. Twining | BS | Charles A. Allen | MS |
| 1954 | | Roland Kitten | MS |
| Otto Cardinale | BS | Etienne Macke | MS |
| John T. Coughlin | MS | Ann R. Massar | PhD |
| Christian P. Dambrine | MS | Lawrence W. McCombs | BS |
| Wesley R. Guebert | MS | Nick S. Mousouris | BS |
| James E. Guinane | MS | Demetrius Philippou | MS |
| Irvin G. Henry | MS | Jean-Pierre Quent | MS |
| Richard C. Heyser | MS | Dwain J. Reed | BS |
| Richard R. Hodges | BS | Rolf Richter | BS |
| Herberto Jimenez | BS | Lewis L. Smith | MS |
| Eugene A. Kaiser | BS | Jeanne M. Weiler | PhD |
| Berdine H. Rogers | MS | 1962 | |
| John C. Ruckmick | MS | Nazeer Ahmed | MS |
| Francis F. Scott | BS | Clement C. Audet | MS |
| Bruce J. Watkins | BS | James T. H. Chang | PhD |
| Paul F. R. Weyers | MS | Michel M. Cousin | MS |
| Herbert H. Winters | MS | Thomas E. Creighton | BS |
| 1955 | | Michel D'Arbaumont | MS |
| Alain Brethes | MS | Jean C. Dubois | MS |
| John D. Britton | PhD | Larry D. Fitzgerald | MS |
| Roger J. M. Dewiest | MS | Donald C. Garwood | PhD |
| Lewis F. Ellmore | BS | Scott E. Gilles | MS |
| Jean Garcin | MS | John M. Grover | BS |
| William E. Huber | MS | Peter W. Hammond | BS |
| Shankar Lai | PhD | Marlyn T. Jakub | MS |
| James Meacham | BS | Miguel E. Levy | BS |
| 1956 | | Alexander N. Lyon | BS |
| Arthur H. Blair | MS | John F. Murphy | MS |
| Wilmot G. Brownlee | MS | Jean M. Noel | MS |
| Robert W. Edwards | MS | Barry N. Pines | BS |
| Jacques Feige | MS | 1963 | |
| James R. Foster | ENG | Michael F. Behrens | BS |
| E. Mark Gold | BS | Pierre J. Facon | MS |
| Maurice Granier | MS | Leo Horowitz | MS |
| Sander Herzfeld | MS | Stephen H. Mastin | BS |
| David W. Hill | MS | Raymond F. Poggi | MS |
| James L. Kelly | MS | Lee W. Samuelson | EX |
| Duncan E. MacDuffie | BS | David S. Siegel | BS |
| Rolland G. Moody | BS | Will G. Spiegelman | BS |
| William N. Spence | BS | Randle W. Ware | BS |
| Tran N. Truong | BS | John Y. Wu | BS |
| Robert M. Young | EX | 1964 | |
| 1957 | | Bruce J. Aborn | MS |
| Anthony A. Dupont | MS | Eudoxia Aliferis | MS |
| John F. Edsforth | MS | Eliot B. Bradford | BS |
| Douglas B. Holdridge | MS | Tzeu-Ching Chang | MS |
| Donald T. Meyer | BS | Der-Shyr Chen | MS |
| Robert T. Moore | BS | William S. Cheng | BS |
| Girair M. Nazarian | PhD | Duygu M. Demirtoglu | BS |
| James M. Short | BS | Jean-Marie F. Grange | MS |
| Franklin C. Silvey | ENG | Takehiko Ikeda | MS |
| Joseph E. Stuteville | BS | Karl H. Kanus | MS |
| Andre A. Treyer | MS | Chung-Mo Kwok | BS |
| John C. Uthoff | MS | George E. Mager | BS |
| Chi-Hsiang Wong | PhD | Jacques A. Parisot | MS |
| 1958 | | Andreas Puhl | MS |
| David A. Ackley | BS | George E. Radke | BS |
| Majid Arbab | MS | Leroy E. Sievers | BS |
| Alain Boulanger | MS | Nelson M. Skalbania | MS |
| David G. Byles | BS | Harold P. Waits | PhD |
| Paul L. Donoho | PhD | David E. Wood | PhD |
| George Gerson | MS | 1965 | |
| Lawrence I. Kittiver | MS | Philip R. Austin | MS |
| Jean P. Lacrouts | MS | Raymond P. Cej | MS |
| Rene E. Maurice | MS | Philippe R. Chaliar | MS |
| Hugh D. Palmiter | EX | Inder Cheema | MS |
| Edwin M. Perrin | MS | Richard S. Frenk | BS |
| Gerald M. Pjerrou | BS | John G. Hartnett | MS |
| Jacques M. Rieunier | MS | Ronald E. Hutton | BS |
| Gunnar E. Stenberg | MS | Michel A. Lagorce | MS |
| 1959 | | Dennis L. Oberg | BS |
| Kenneth H. Adams | BS | Roger L. Peterson | PhD |
| Victor Baekelandt | MS | George A. Repasy | BS |
| Louis N. Bathish | MS | Robert B. Scott | BS |
| Chai B. Byun | BS | Bernard C. Solelhac | MS |
| Clark E. Carroll | BS | Benjamin Stackler | BS |
| Ronald A. Christensen | MS | Melvin M. Stephens | BS |
| Andre J. Fossard | MS | David O. Swint | MS |
| Michel P. Guillemet | MS | Matias J. Turteltaub | MS |
| Jay H. Harris | MS | Philippe Vidal | MS |
| Ronald B. Leonard | BS | Anthony B. Williams | BS |
| Robert Maltz | BS | Robert O. Winkler | MS |
| Didier Morane | MS | Felix S. Wong | MS |
| Kenneth A. Muraoka | BS | 1966 | |
| Stanley Roth | BS | Robert T. Barron | MS |
| Walter V. Weber | MS | Joe Ching | MS |
| 1960 | | Harold T. Couch | PhD |
| Neville A. Black | BS | Richard C. Crewdson | PhD |
| Paul R. Calaway | BS | Shaukat M. Feroz | MS |

| | | | |
|-----------------------|-----|-----------------------|-----|
| Dario Iacucelli | BS | John D. Gallivan | PhD |
| Larry R. Miller | BS | Ralph B. Graham | BS |
| Lawrence R. Newkirk | BS | Thomas C. Gunderson | MS |
| Thomas E. Oberjat | BS | Gregory E. Kandel | BS |
| Robert E. Serafin | BS | Milan H. Karspeck | BS |
| Richard D. Sherman | MS | Alan S. Lederman | BS |
| John C. Urey | PhD | Chi Cheung Lo | MS |
| Donald H. Valentine | PhD | Kirk A. Mathews | BS |
| John K. Yoh | MS | Terrence M. Morris | MS |
| 1967 | | Ahmet Ozkul | BS |
| Surendra N. Adodra | MS | Jean-Marie Quitin | MS |
| Philippe J. M. Blondy | MS | Richard J. Schwall | BS |
| James R. Boyd | MS | Jack K. Tam | BS |
| Martin D. Cooper | BS | John G. Victor | BS |
| John B. Davies | MS | Paul T. Wegener | BS |
| Terrall De Jonckheere | MS | William M. Weigel | BS |
| Larry E. Dillehay | BS | William W. Yue | MS |
| Douglas M. Eardley | BS | 1972 | |
| Payton D. Fuller | MS | Carl R. Anderson | BS |
| William C. Galley | PhD | Richard B. Baxter | MS |
| Robert E. Goldwasser | MS | Richard J. Blint | PhD |
| Eitan Gonen | MS | Eric R. Boissaye | MS |
| G. Laurie Hatch | PhD | Emmy T. Chan | MS |
| Michel J. Henry | MS | Robert L. Derham | MS |
| Louis Kircos | MS | Samuel R. M. Gardiner | MS |
| Chien-Shih Lu | PhD | Frank Kendall | MS |
| Panos Z. Marmarelis | MS | Sai-Kit A. Law | BS |
| Duane P. McClure | BS | Jan Lipson | BS |
| Jean M. Moysan | MS | Andrew H-Y Lo | BS |
| Robert C. Neveln | BS | Kirk T. McDonald | PhD |
| Karuppagounder | | Robert N. Miller | MS |
| Palaniswamy | MS | Robert J. Panek | BS |
| John C. Perrin | MS | Dan A. Sinema | BS |
| Michael Plouf | EX | Lawrence K. L. Tu | MS |
| Michel A. Scavennec | MS | Keikichi Yagii | PhD |
| Nagendra Singh | MS | 1973 | |
| Vivian L. Steadman | MS | Frederick H. Auld | MS |
| Duke A. Sun | BS | Bruce W. Bennett | BS |
| Mathilde J.H. Swank | PhD | Raymond E. Carhart | PhD |
| Paul F. Williams | BS | Deborah D. L. Chung | BS |
| 1968 | | Bruce S. Eisenhart | BS |
| Alain A. Artaud | MS | Daniel P. Haake | BS |
| Gerald M. Cotreau | MS | Michael A. Piliavin | PhD |
| William M. Denny | MS | Richard A. Shaw | BS |
| William J. Driskell | MS | Clifford E. Smith | MS |
| Jacques P. Fleuret | MS | Clement L. Tai | MS |
| Ender M. Kaya | MS | Wayne K. Warzecha | MS |
| John M. Lehman | BS | Rodney K. Womer | MS |
| Leroy C. Lin | PhD | Bruce Woodford | EX |
| David M. MacKenzie | BS | 1974 | |
| Dale L. Miller | MS | Neil S. Berkey | BS |
| Brian M. Schaefer | MS | John J. Cipar | MS |
| George K. Tucker | BS | Mark W. Coles | BS |
| 1969 | | Dennis B. Creamer | BS |
| James B. Andrew | BS | Jay D. Doty | BS |
| Jean-Henry Barth | MS | Andrew P. Dowsett | BS |
| Joseph W. Blum | PhD | Robert B. Fisher | BS |
| James N. Brantner | MS | John E. Gettosky | PhD |
| James P. Cerne | MS | Joseph F. Karnicky | PhD |
| George K. Chan | MS | Harold J. Katz | MS |
| Shuan-Ping Chao | MS | Betty P. Kwan | BS |
| Ted W. Dillingham | BS | Daniel F. Lam | MS |
| Theresa K.Y. Dodds | PhD | David Y. Leung | MS |
| Michel H. Flandrin | MS | George B. Levin | PhD |
| Luis N. Ikwueke | MS | Thanh Luu | BS |
| Barry R. Keller | BS | Albert T. Ng | BS |
| Thomas O. Mahon | BS | David Poffard | MS |
| Yavuz Rona | MS | D. Wilmer Rivers | BS |
| John A. Roth | BS | Sedigheh Salim | MS |
| Stephen E. Savas | BS | Charles F. Schmidt | PhD |
| George J. Siltanen | MS | Satish C. Sharda | PhD |
| Murray D. Smigel | BS | Arlan D. Steinolfson | MS |
| Richard L. Sweet | MS | Donald J. Sullivan | MS |
| William E. Wright | MS | W. Scott Thompson | BS |
| 1970 | | Frederick D. Williams | BS |
| Luiz T. Auler | MS | 1975 | |
| Robert C. Balcer | MS | Wolfram H. W. Blume | BS |
| David Boss | MS | Erik J. Brune | BS |
| Sydney P. Craig | PhD | James C. Conwell | MS |
| Kevin G. Donohoe | MS | Christopher L. Cooper | BS |
| Richard F. Doyle | BS | Peter J. Drivas | PhD |
| Helio Fagundes | MS | Alexander C. Egwuatu | BS |
| Abdol Reza Faiz | MS | Klaus H. Engelhardt | BS |
| Atef I. Gircuis | MS | Manuel R. Florez | MS |
| Edwin J. Hamilton | PhD | Ralph R. Hayward | BS |
| William C. Hocker | BS | Sylvan A. Jacques | MS |
| James D. Hutchinson | MS | Ravi Jain | MS |
| Nicole H. Imbert | MS | Jonathan D. Katz | MS |
| Juan E. Leon | MS | Diane J. Kent | MS |
| Pierce A. Lynne | MS | Melvin J. Knight | PhD |
| Isaac A. Majerovicz | BS | Robert W. Lim | BS |
| Jovka Michova | MS | Brian T. Luke | BS |
| Vivek C. Monteiro | MS | William C. Moss | BS |
| Carl R. Neu | BS | Michael L. Norman | BS |
| Richard W. Noren | MS | John P. Pelegano | MS |
| Robert E. Powell | MS | Michael D. Rourke | MS |
| Peter Stavroulakis | MS | Barry Schneidman | MS |
| Juan L. M. Steimle | MS | Jeffrey B. Smith | PhD |
| George Z. Voyiadjis | MS | Robert E. Sullivan | BS |
| Sheldon H. Zemell | MS | Gregory K. Taylor | BS |
| 1971 | | Eric N. Vella | BS |
| Luis Y. M. Aranguren | BS | Bruce D. Westermo | MS |
| David W. Arnett | PhD | Eric D. Williams | BS |
| Theodor S. Colbert | MS | 1976 | |
| Brian T. Cox | BS | Ahmet V. Arslan | MS |
| Ronald A. Friedland | EX | Wesley M. Brown | PhD |

| | | | | | | | |
|------------------------|-----|------------------------|-----|-----------------------|-----|------------------------|-----|
| Charles R. Byler | BS | David L. Keller | MS | Loudon L. Campbell | BS | Bruno C. Nadd | MS |
| Michael L. Cooper | MS | Ahmad F. Khorrami | MS | Ina Chang | BS | Phu T. Nguyen | BS |
| James W. Deutsch | PhD | Robert R. Krchnavek | MS | Michael V. Chobotov | BS | Shouleh Nikzad | MS |
| Robert H. Higley | BS | Aleksander Kupiszewski | BS | Pascal O. Correc | MS | Nonkululeko Nyembezi | MS |
| Andrew J. Jankevics | BS | Albert Y. Lam | BS | Kathryn L. Doughty | BS | Jeffrey P. Rhinesmith | MS |
| Barbara F. Keenan | MS | Thomas K. Lee | PhD | Ilknur Erbas | MS | Helio T. Rodrigues | MS |
| Thomas F. Lawler | BS | Brian T. Lew | BS | Graeme F. Fowler | PhD | Nadira B. Sabanovic | MS |
| Keith D. Neerman | BS | Mark G. McHarg | BS | Joseph A. Garcia | BS | John J. Schaeck | BS |
| Chiu-Yuen J. Ng | BS | Charles E. Novitski | PhD | Nak-Hui Hwang | BS | Michael P. Schatz | PhD |
| Douglas G. Petrie | BS | Richard C. Parker | PhD | Abdo G. Kadifa | MS | Steven G. Schlifp | BS |
| Stephen Robsky | EX | Michael B. Porter | BS | Randal D. Koster | BS | Howard D. Stone | MS |
| Stephen R. Roe | BS | John M. Pursch | BS | Linda B. McAllister | BS | Barry A. Swartz | PhD |
| Mark G. Rowan | BS | Michael Rubinstein | BS | David P. Millar | PhD | Emre Tokor | BS |
| Alan B. Saul | BS | Augusto Sagnotti | MS | David A. Myers | MS | Nadecm Tufail | BS |
| Alan J. Shusterman | BS | Eric J. Siskind | PhD | Hisup Park | BS | Harold M. Weiser | BS |
| Don J. Slankard | BS | Dean G. Sturtevant | MS | Pamela J. Phillips | BS | Kriengkrai Wisanrakkit | BS |
| Karl D. Stephan | BS | Jebriil A. Swedan | MS | Russell O. Redman | PhD | 1985 | |
| Steven M. Sweeney | BS | James L. Taylor | PhD | Philip A. Sackinger | BS | Manuel Acevedo-Ruiz | BS |
| Steven K. Wake | BS | Steven G. Trabert | BS | Edward Schepps | MS | Sean M. Callahan | MS |
| Gerald A. Wedekind | BS | David R. Van Alstine | PhD | Kenneth R. Sieck | BS | Ariel Caticha | PhD |
| Mustafa Abushagur | MS | James C. Walseth | BS | Michael E. Stibila | MS | Keming Chen | MS |
| Adi R. Adiwoso | MS | Tak-Yiu Wong | MS | Yun-Chen Sung | BS | Gary T. Chow | BS |
| Kwok-Shing Au-Yeung | MS | 1980 | | Saleh A. Tanveer | MS | Ivo Klemes | PhD |
| Jeffrey R. Barnes | MS | Jean-Luc R. Aschard | MS | Paul D. Thomas | BS | Kikis M. Kyriacou | MS |
| Andrew Bewsher | MS | Pamela R. Auburn | MS | Anuchit Tiranuchit | BS | Blake H. Lewis | BS |
| Mark S. Bickford | BS | Thomas C. Banwell | MS | Liem Thanh Tran | BS | Konstantinos | |
| Duane K. Boman | BS | Meir Bartur | MS | Santosh S. Venkatesh | MS | Papadimitriou | MS |
| John L. Chambers | PhD | Robert J. Bensoussan | MS | Joana M. Vizgirda | PhD | Stephen D. Prowse | MS |
| Don S. Goldman | PhD | Barry J. Bentley | MS | Bimal Wadhwa | BS | Jeannine-Marie | |
| Bruce G. Herring | BS | Roland L. Bouchard | MS | Russell E. Walker | MS | St. Jacques | BS |
| Kau-Kwok F. Ho | BS | Alan H. Boyar | BS | Xian-Li Yeh | BS | Cynthia C. Walker | MS |
| Bart Jackson | BS | Johanan L. Codona | BS | 1983 | | Michael J. Walsh | EX |
| James J. Kelly | BS | David M. Cole | PhD | A. V. Anilkumar | MS | Thomas C. Zietlow | PhD |
| Thomas D. Little | BS | Brian R. Davis | PhD | Tadgh P. Begley | PhD | 1986 | |
| Kai-Yan M. Ma | BS | Alain Delsupexhe | MS | Philip S. Beran | MS | Douglas D. Axe | MS |
| Vega D. Sankur | PhD | Reda Abdu El-Damak | MS | Alejandro A. Borbolla | MS | Douglas J. Bennett | MS |
| Michael J. Savage | MS | James R. Ellison | MS | David P. Brady | MS | Geoffrey A. Blake | PhD |
| Frank Stackhouse | MS | M.G. Finn | BS | Clark D. Brooks | BS | Gregory S. Cardell | MS |
| Michael A. Surkes | MS | Jeffrey L. Fordon | MS | William M. Bruno | MS | Wei Chen | MS |
| Paul M. Whitmore | BS | Patrick W. Goalwin | MS | James M. Cummings | BS | Harry S. Chu | MS |
| Glenn D. Wood | BS | Charles E. Goodhart | BS | Walter A. Coole | BS | Sung Hwan Chun | MS |
| Gong Ping Yeh | MS | Peter M. Goodwin | BS | Yongbum P. Cuevas | MS | Karen L. Condie | BS |
| Ronald W. Zimmerman | MS | John A. Goree | BS | Barry D. Davidson | MS | Uma D. Dasika | MS |
| 1978 | | Mohammed F. Helwa | MS | Keith A. Echelmeyer | PhD | Denise L. Draper | BS |
| Farhad Barzegar | MS | Kwok Kee Ho | MS | Lisa Lynn Flitz | BS | Diana Foss | BS |
| William I. Behen | BS | James N. Jensen | BS | James E. Flowers | MS | Brian L. Foster | BS |
| William E. Bratton | BS | Jeffrey B. Johnson | MS | Hamid Johari | BS | Marc E. Herant | BS |
| Daniel G. Canin | BS | David M. Joseph | BS | Julia A. Kornfield | BS | Chi Fai Ho | PhD |
| Reazuddin Chaudhuri | MS | Norman T. Lee | BS | Baruch D. Kupperman | PhD | Tyler L. Housel | MS |
| David A. Chin | MS | Bosco H. Leung | MS | Wayne Wing Lam | MS | Justin T. Ip | MS |
| Robert M. Claudson | BS | Herman S. Li | MS | Anthony Magaldi | ENG | Toru Katsumoto | MS |
| Mark B. Dolson | MS | Mark A. Ludwig | MS | Maclen B. Marvit | BS | Julie A. Kern | MS |
| Christopher L. Frenzen | MS | Christian Mailhot | MS | Frank A. Meyer | BS | Paul T. Kinney | MS |
| Samy M. Hanna | MS | Max Marshall | PhD | Roman Movshovich | BS | Michael J. McDowell | BS |
| Syed J. Husain | EX | Kevin S. McLoughlin | BS | David J. Muraki | BS | Milagros Montalvo | BS |
| Edward N. Keller | BS | Hsiao-Ping H. Moore | PhD | Matthew P. Newlin | MS | James J. More | MS |
| Miral E. Kim-E | BS | Karolen I. Paularena | MS | Wendy A. Olson | MS | Tak-Kwong Ng | MS |
| Bing Ho Ko | BS | Frank A. Perez | MS | Richard L. Paquette | BS | Kevin C. Power | MS |
| Kristen M. Larson | BS | Michael K. Reach | BS | Jonathan E. Parker | BS | Todd M. Przyhygien | MS |
| Moses Lin Ma | BS | Charles S. Reynolds | BS | Alexios Polychronakos | BS | Irene L. Replogle | BS |

Alumni Fund chooses chairmen

Each year over 750 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 key volunteer for the Special Gifts I Campaign, which solicits gifts of \$5,000 - \$25,000, is Mr. J. 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 Mr. Gordon McClure BS '47. The volunteers working with Gordon this year are; Albert Albrecht BS '42, Paul Allen, Jr. BS '42, Michael Baskes BS '65, PHD '70, Frank C. Bumb, Jr. BS '51, MS '52, Robert Chapman, Jr. MS '62, James Crabtree BS '65, Roger Davissan BS '65, MS '66, Erik DeBenedictis BS '78, PHD '83, Craig Elliott BS '58, Elliott Green BS '42, Lewis Grimm BS '44, Robert Herzog BS '56, MS '63, ENG '64, Earl Jacobs BS '53, MS '54, PHD '61, Kenneth Johnson BS '43, Theodore Johnson BS '57, Neville Long BS '44, MS '48, John McClain BS '42, Jr., Boude Moore BS '48, MS '49, Harry J. Moore BS '48, Jr., Fred Morris BS '44, Richard Ridgway BS '37, Alfred Schaff BS '41, Jr., Richard Seed BS '44, Fred Wheeler BS '29, Stanley Wolfberg BS '38, Bruce Worcester BS '48, and James Workman BS '57, MS '58.

The Reunion Campaign is directed at all alumni who are celebrating their 10th, 25th, 40th, 45th, and 50th reunion. Mr. Kirk Dawson BS '61, MS '62 is the volunteer coordinator for this campaign. Serving as Class Chairs are, Mark Fischer BS '80, Michael Baskes BS '65, PHD '70, Ralph Lurwack BS '50, PHD '55, John Davis BS '45, Theodore Weaver BS '40, MS '42.

Last year the Young Alumni Campaign was inaugurated. This campaign solicits all alumni who earned a bachelor's degree within the last nine years. Leslie Paxton-Rousseau BS '79 is serving as the Young Alumni Campaign Chair again this year.

Finally, all remaining alumni are contacted through the Regional Campaign. This campaign is geographically based with 14 national regions consisting of approximately 10 areas each. In addition, there is one international region. Mr. Ben Burke BS '61, MS '62 is serving as the Chair of this campaign for the second year.

The Regional Chair for Region 1 - Pasadena and Vicinity - is Mr. David Ritchie BS '80. His Area Chairs are Don McFadden BS '28, area 005 Alhambra-S. Pasadena, Ralph Kehle BS '56, MS '57, area 010 San Marino, Andy Campbell BS '46, area 015 South Central Pasadena, Maurice Whitaker EX '55, area 025 Northeast Pasadena, James Kosmicki MS '71, ENG '73, area 026 Arroyo, Bob Covey BS '51, MS '52, area 035 JPL, Daniel Deutsch BS '48, PHD '51, area 045 La Canada-Crescenta Valley, Albert Whitlesley BS '62, area 050 Altadena, and Bill Woods BS '49, area 055 Arcadia-Sierra Madre.

The Regional Chair for Region 2 - South Coast Counties - is Mr. Mike Stefanko BS '70. This is Mike's first year as a Regional Chair. The Area Chairs working with him are Calvin Kempton BS '46, area 060 Laguna Beach, Malcolm Morrison BS '64, PHD '69, area 061 South Laguna Beach, Sanford Sweet BS '51 , area 065 Huntington Beach, Bob Hawthorne BS '47, area 070 Anaheim, Terry Simpson BS '65, area 071 Anaheim-Orange, Mark Morrisett BS '81, area 075 Newport Beach, Don Hyers PHD '37, area 085 Long Beach, John Kennedy BS '61, MS '62, area 086 Artesia-Westminster, Dave McCarroll BS '66, area 090 Downey-Whittier, Steven Goldner BS '64, MS '65, area 095 Covina, Don Stewart BS '47, area 100 Pomona-Claremont, Mike Kaiserman MS '70, area 105 Desert, and Frank Fleck BS '42, area 110 Riverside-San Bernardino.

The Regional Chair for Region 3 - Western Los Angeles - is Mr. Reinaldo Gutierrez BS '54. The Area Chairs he is responsible for are Augusto Soux BS '52, MS '53, area 115 Palos Verdes, Paul Dergarabedian PHD '52, area 120 Aerospace, J. Robert Shull MS '49, area 125 Torrance, Mitch Seidman BS '58, MS '59, area 130 TRW, and Robert Ditchey ENG '73, area 140 Santa Monica.

The Regional Chair for Region 4 - Central Coast Counties - is Dr. Bud Mittenthal BS '48. The Area Chairs under him are John S. Davis BS '45, area 170 East San Fernando, W. Jeff Williamson BS '48, area 175 South San Fernando, G. Richard Morgan BS '49, area 180 West San Fernando, Gordon Glattenberg BS '58, area 185 North San Fernando, Ricky Leo MS '81, area 190 Thousand Oaks, Dean Daily BS '51, area 192 Ventura, Tad Reynales BS '72, area 195 Santa Barbara, Donald Moore BS '50, area 200 Bakersfield, and Daniel Markoff BS '50, area 205 San Luis Obispo.

The Regional Chair for Region 5 - San Francisco - is Mr. Robert Talbot BS '57. His Area Chairs are Robert Shacklett PHD '56, area 210 Monterey-Santa Cruz, Jack Stephenson MS '43, area 214 Los Gatos-Saratoga, Bill Bounds MS '66, area 215 San Jose, Luther Perry BS '68, area 220 Santa Clara, Robert De Grasse BS '51, area 225 Los Altos, Lawrence Giver MS '61, area 230 Sunnyvale, Alan Breakstone BS '72, area 234 Mountain View, Talso Chui BS '77, area 235 Palo Alto, Ed Rea BS '77, area 240 Stanford, Eugene Nelson BS '56, area 245 Menlo Park, William R. King BS '47, area 250 San Mateo, and Peter Clark MS '61, PHD '64, area 255 San Francisco.

The Regional Chair for Region 6 - E. Bay - N. California - is Mr. Thomas Buckholtz BS '67. The Area Chairs he is responsible for are Robert Sherwin BS '43, MS '50, ENG '52, area 260 Marin County, Rodney Supple BS '55, area 261 Napa-North Coast, Rod Park PHD '58, area 264 Northeast Bay, Rollic Myers BS '47, MS '48 area 265 Berkeley, David Sams MS '80, PHD '86, area 270 Oakland - Southeast Bay, Ray Chow BS '76, area 275 Contra-Costa, David Oakley BS '50, MS '52, PHD '53, area 280 Livermore, Tracey Peterson BS '86, area 285 Sacramento, and Clinton West BS '57, area 286 Sierra

The Regional Chair for Region 7 - Southwest - Sun Belt - is Dr. Clay Smith BS '38, MS '40, PHD '43. His Area Chairs are Lang Lao BS '76, MS '76, area 290 Rancho Santa Fe, Orin Shoemaker BS '34, area 295 North San Diego, Dwain Bowen BS '42 MS '46, area 300 San Diego, Ralph Geisberg MS '44, ENG '50, area 305 La Jolla, Gary Fitzpatrick BS '65, area 310 South Bay - San Diego, Jean-Paul Frignac MS '56, area 320 Phoenix, Dale Harris MS '37, area 325 Tucson, John Cummings BS '69, MS '70, PHD '73, area 330 Albuquerque, and Klaus Lackner EX '79, area 335 Los Alamos.

The Regional Chair for Region 8 - Northwest - is Mr. Fred Thiele BS '41. His Area Chairs are Susan Smith BS '75, area 340 Portland, John Deniston BS '47, area 345 Non-Metro Oregon, Frank Woodward ENG '52, area 348 Northwestern Washington, Rex Peters BS '56, MS '63, ENG '69, area 349 Bellevue Eastside, Henry W. Stoll BS '35, area 350 Seattle - Tacoma, Elizabeth Yelverton BS '76, area 351 University of Washington, Ronald Gatterdam BS '61, area 352 Alaska, Ernest Janzen BS '61, area 355 Boeing, Richard Forester MS '71, PHD '75, area 360 E. Washington, - N. Idaho, Keith Anderson BS '40, area 361 Big Sky, John Allemen BS '63, area 365 Utah - Nevada, Bill Rogers BS '42, area 375 Denver, and Greg Bourque BS '68, area 380 South Colorado.

The Regional Chair for Region 9 - the South - is Mr. Arch Corriher MS '50. The Area Chairs he is responsible for are Leon Zelby MS '57, area 385 Oklahoma - Arkansas, Kristian Meisling MS '78, PHD '84, area 390 Dallas - Ft. Worth, Dick Montgomery BS '59, area 395 Austin, R. Michael Lloyd PHD '60, area 400 Houston, Ted Mitchel BS '33, area 405 Southeast Texas, Al Schweizer PHD '74, area 410 Louisiana, Don Street MS '66, ENG '66, area 415 Tennessee - Alabama, Alvin Fehrman MS '55, ENG '55, area 420 North Florida, Nicholas Djeu BS '65, area 421 South Florida, Sam Bradley MS '69, area 425 Georgia - S. Carolina, and William Wright BS '51, PHD '55, area 430 North Carolina.

The new Regional Chair for Region 10 - Midwest - is Mr. Ed Seidman BS '55. The Area Chairs working for him are David Atkinson BS '75, area 435 Missouri - S. Illinois, Gregg Wright BS '69, area 440 Central Plains, John Mathis PHD '56, area 450 Wisconsin, Roger Brandt BS '42, area 455 South - West Chicago, Arthur Gooding BS '77, area 460 North Chicago, Kenneth Suslick BS '74, area 465 Champaign - Urbana, Edward Simon PHD '60, area 470 Indiana, Erdogan Gulari PHD '73, area 472 West Michigan, Donald Peterson PHD '55, area 475 East Michigan, Joe Elmers MS '73, area 480 Cleveland, and Lawrence Hunt BS '69, area 485 Cincinnati.

Continued on page 11

Caltech's Industrial Relations Center (IRC) is celebrating its 50th anniversary during the 1989/90 academic year, but director Nick Nichols and associate director Valerie Hood are already looking ahead to the next 50 years.

The Center, which was founded in autumn 1939, originally emphasized labor and management relations, and its programs continued for many years to be influential in the southern California area. But as times changed, new needs became apparent, and the Center moved forward to meet them.

IRC started to diversify in a major way several years ago when its staff began developing new programs for technical managers in such areas as the management of technical innovation, production operations, and research and development.

Specifically, the IRC program today focuses on these objectives: to link emerging technologies with management strategies and practices, to improve the effectiveness and efficiency of operations, to develop the managerial and leadership skills of technical professionals, and to encourage new business ventures.

To celebrate its 50th anniversary and to lead into Caltech's 1991 centennial celebration, IRC is sponsoring a Distinguished Speakers Series that is bringing prominent leaders of business, industry, and academia to the campus throughout the coming year. The lectures, which center on the theme of technological leadership, are directed to the business community, the Caltech community, and the general public, free of charge. The series began in November with John Young, CEO of Hewlett-Packard, speaking on "Technological Leadership: A New Global Game Plan."

Other scheduled lecturers include David Kearns, CEO of Xerox; Martin Feldstein, Harvard economist and President Reagan's chief economic advisor; and Lester Thurow, dean of MIT's Sloan School of Management.

Coincidental with its 50th year, the Center is planning a new series of programs called "Advanced Technology Briefings," targeted at high-level executives, who need to be aware of how new technologies fit into their own strategic planning. These one-day technological briefings will consist of two lectures by Caltech faculty, each lasting three hours, including question-and-answer sessions.

"A pilot program will be offered early in 1990, and we think there will be a tremendous demand from industry for these briefings. In the future we're going to have to make better use of our technologies in order to get them to the market faster, and to manage their deployment more wisely, and this pro-



Valerie Hood and Nick Nichols

The IRC celebrates 50 years

gram can be a help to executives in meeting these challenges," says Nichols.

Nichols and Hood are especially proud of the number of top-level executives who are coming to intensive two- and three-day seminars designed for senior management. "The last several years have seen an increase in the level and number of executives who attend the Center's seminars, and the geographic participation has been considerably broadened," says Nichols. "Often more than 50 percent of the participants come from out of state and sometimes from out of the country."

Another program—one that complements the seminars for executives—is the Executive Forum—an evening speaker series featuring CEOs or high-level executives who address important business and economic concerns. In addition, a research report is given by a Caltech faculty member. A special program each year, the Science and Society Program, features two speakers—one from Caltech and another from business and industry—who deal with the same issue from two perspectives.

Still another program is called the Productivity/Quality Management Forum. This forum features executives who come to Caltech to give case presentations on what they've done to improve quality, productivity, opera-

tional effectiveness, or competitiveness in their firms. Usually the audience for these presentations numbers around 150 executives and managers from member companies. Videotapes of the presentations allow participants to carry the case study back to their own organizations and use it to promote change.

The Center has maintained and added to another tier of programs that concentrates on leadership issues at the middle-management level and that includes problem-solving skills, communication skills, teamwork, and negotiating. These offerings are drawn together under an umbrella called the Engineering Management Program, which was started by director emeritus Victor Veysey. The participants are technically trained people who are seeking to build their management skills.

"The different educational modes we use go very well together," says Nichols. "Larger conferences utilize case presentations. Seminars, in a complementary way, synthesize concepts and practices in a two-day format. We keep the seminars small to promote discussion and interaction among 25 to 30 people."

"We're pleased with the synergism and with the number of people who come to multiple programs. What we're building up here is a very widespread partnership with numerous

*As times
changed, new
needs became
apparent,
and the
Center moved
forward to
meet them.*

technology-based companies. We think they represent an important set of contacts for Caltech," Nichols adds.

With MIT, the IRC also sponsors the Enterprise Forum, which brings to Caltech entrepreneurs from technology-based companies to present their firms' business plans. A panel of experts counters with suggestions and criticisms and there are lively questions from an audience of 200-300 who are interested in entrepreneurial issues. Presenters have included a number of Caltech alumni.

IRC makes itself accessible to Caltech students as much as possible, because many who are thinking of entering management can benefit from the Center's offerings. Several free openings are held for students in each program, and students are making increasing use of these opportunities. The programs offer students not only information, but also the chance to interact with practicing managers and to learn, firsthand, about the challenges they face.

In addition, the IRC conducts with the Caltech Y the annual Ametek Leadership Institute, for student leaders in campus organizations and for other students with leadership potential. The conference delivers short courses in leadership skills and brings a distinguished speaker to address the students. A growing endeavor, the conference, during its initial meeting two years ago, attracted 17 students; in 1989, there were 42, Hood is pleased to note. This year the speaker was Michael Scott, donor of the Feynman Professorship. Scott was the first president of Apple Computer, and he now advises small start-up companies.

Although programs have evolved at the IRC, Nichols believes that what is happening definitely links back to the precepts set out by Robert A. Millikan when the Center was founded. "Ultimately, all the economic virtues inherent in our system have to be realized through people. The Center started out stressing the relationship between management and labor. Today the conditions of work have changed dramatically. But the central thrust is essentially the same in that all the progress we hope to achieve through society has to be accomplished through wise management of human resources in the

nation's industries, businesses, and public sector," says Nichols.

Another way the Center has maintained continuity with its heritage is through its library—an original part of the Center's program and part of Millikan Library. The library provides extensive literature on management, economics, technology, human resources, and the management of technology. Reference services through computer data banks is provided by staff. "We believe in a strong, constantly enhanced collection of information," says Nichols. "We have an up-to-date library that enables us to keep current with what corporate leaders are thinking and talking about. It's an essential tool in helping us develop new programs."

Hood adds, "The management library supports the ongoing learning process for participants. Checking out articles and books to study can reinforce and expand on ideas presented in the seminars. This was the way the Center started, and the way we're continuing."

Changes over the past several years also extend to the colonial structure on Hill Avenue that the Center has occupied for 28 years. The facility has been updated, and its interior redecorated in keeping with the integrity of the original design.

"We wanted to create a comfortable, attractive environment with the ambience of a retreat center that would still be practical for seminars," says Hood, "one that would promote interaction among participants. Many of the people who come here for programs tell us how much they enjoy it."

The IRC's 50th year will bring much-needed expansion for a facility that is normally filled to capacity with programs. The annex is being converted into an additional classroom. The new facility will be a welcome addition. The center presents about 125 programs a year with a total of around 5,000 participants. Many programs are booked several months in advance, and extra sessions are often added. "It isn't fair to make someone wait months for information they need right away," says Hood.

Nichols is quick to pay tribute to the Center's previous directors, the late Robert Gray, and Victor Veysey, director emeritus, who is still active in the Center's programs. "Valerie and I recognize that we're working on a base built up over the years by people who cared intensely about the IRC," Nichols says. "We're very fortunate in having that as a foundation."

Nichols also expresses thanks to a group of alumni volunteers—most of them retired executives, who work actively for the Center.

He concludes, "Caltech is a small institution with great leverage and influence. We at the Center believe we're mirroring that way of operating. We're small, but we reach out to a great number of people, and we believe we have an influence that transcends our size."

"It's been a good 50 years, and we're looking forward to the next."

Alumni Fund leaders

Continued from page 9

The Regional Chair for Region 11 - D.C. - Virginia - is Mr. Ray Cromley BS '33. The Area Chairs he is responsible for are Knox Long, Jr. PHD '76, area 495 Baltimore, Robert Williams BS '62, area 505 D.C. - East Maryland, Stewart Davey BS '67, area 507 Washington D.C., Frank Ridolphi BS '62, MS '63, will be co-chairing with Bill Harkins ENG '54 for area 510, James McDonald BS '67, area 515 Northeast Virginia, Robert Von Gerichten ENG '54, area 518 Government Agencies, Brian Storrie PHD '73, area 520 Southern VA - West VA, and William Hardam PHD '65, area 525 Delaware.

The Regional Chair for Region 12 - Mid-Atlantic - is Dr. E. Ted Grinthal PHD '69. His Area Chairs are Harold Almond, Jr. BS '56, PHD '61, area 526 Philadelphia, John Austen BS '37, area 530 East Pennsylvania, Francis Fairman MS '48, area 533 West Pennsylvania, Jack Walden MS '59, area 535 Princeton, Bruce Brown, Jr. MS '47, PHD '50, area 540 Northern New Jersey, Dhiraj Sharma MS '72, PHD '75, area 545 Central New Jersey, Gerald Ash MS '65, PHD '69, area 548 East New Jersey, Lance West MS '83, area 550 New York City, Lim Cheung BS '75, area 555 Long Island, Frank Johnson BS '69, area 560 Southeastern New York, John Golden BS '62, area 565 West New York, and Robert Kjelgaard BS '77, area 570 Central New York.

Mr. Gary Tanigawa BS '83, and Mr. Robert Hall BS '42, PHD '48, will be serving as Co-Chairman for Region 13 - New England. The Area Chairs in this region are William Tivol BS '62, area 575 Eastern New York, Bernard Malofsky BS '59, area 580 Connecticut, Daniela Bonafede BS '84, area 582 Massachusetts - Rhode Island, Fan-Chia Tao BS '81, area 585 Framingham, Richard Homewood MS '51, area 595 Boston, Jo Laird PHD '77, area 600 Upper New England, and Don Strange PHD '72, area 610 Eastern Canada.

For our Alumni in Europe, Mr. Jean-Pierre Dolait MS '70, ENG '72, and Dr. John Lehmann BS '68 are responsible for soliciting France, and Mr. Ronald S. Douglas BS '66, MS '67 will be responsible for West Germany.

Finally, Mr. Justin Bloom BS '48, will be responsible for soliciting all alumni in the Far East, with greatest concentration on Japan.

MacGinitie dies at age 100

George E. MacGinitie, director of Caltech's Kerckhoff Marine Laboratory for 25 years, died September 6 in Friday Harbor, Washington, at age 100. MacGinitie joined the Caltech faculty in 1932. During a two-year leave of absence, he served as scientific research director of the Arctic Research Laboratory at Point Barrow, Alaska. He retired from Caltech in 1957, but from 1962 to 1964 was a consultant in marine biology at the U.S. Naval Missile Center at Point Mugu, California, where he was influential in preserving Mugu Lagoon as a natural area for education and research.

He was the author of many scientific papers on marine invertebrates, and with his wife, Nettie, was coauthor of *Natural History of Marine Animals*.

CALTECH IN THE NEWS

• "Teams of geologists fanned out into the rugged mountains above Santa Cruz today to piece together the nature and extent of Tuesday's earthquake, map aftershocks and gather data to help determine earthquake risk in the nearby areas.

"The scientists, from the United States Geological Survey, the California Institute of Technology, and the University of California, were looking for places where the ground had broken, measuring the distances between mountain peaks to determine where land had shifted, and retrieving from the brush special instruments, called strong ground motion seismometers, that are burly enough to continue taking readings of ground motion even in an earthquake.

"Surprisingly, by late today, geologists in the field had been unable to find places where the ground had actually broken. 'We need to confirm that it was the San Andreas that broke, or if any branch faults were involved,' said Dr. Clarence Allen, a professor of geology at Caltech." *The New York Times*, October 19.

• "When it comes to science education, few institutions anywhere are the equal of the California Institute of Technology in Pasadena, fourth in the national university category. When Caltech boasts about its close student-faculty relations, it means 'close.' The school maintains a 7-1 ratio of students to faculty . . . And the Caltech faculty is no ordinary collection of newly minted PhD's, but a star-studded group of world-famous researchers . . ." *U.S. News & World Report*, in a survey of "America's best colleges," October 16.

• "An understanding of the molecular basis of inherited diseases may lead to improved diagnosis and treatment. Leroy E. Hood of the California Institute of Technology in Pasadena, for example, makes synthetic bits of protein

that resemble myelin—the protective coating around nerve cells. By injecting these proteins into mice, he induces a white blood cell response against the rodents' natural myelin, causing a syndrome resembling multiple sclerosis." *Science News of the Week*, October 14.

• "Pitting their wits against competitors from some of the Southland's major universities, Caltech engineering students took first prize in the Collegiate Technology Challenge at Universal City. The contestants were asked to build a contraption that would inflate a 16-inch globe. Caltech's winning entry included a couple of old shoes, an aquarium, and the usual number of chutes, lines, and pulleys, but ultimately used liquid nitrogen to compress the air needed to fill the globe. The winners share a \$10,000 scholarship from competition sponsors, the accounting firm Coopers & Lybrand." *Los Angeles Times*, October 13.

• "Less than an hour before he was to appear at The Associates of the California Institute of Technology black-tie dinner, Gordon E. Moore, chairman of Intel Corp. and a Caltech trustee, got word that his son, who lives in Los Altos, was fine, but that 18 inches had slopped out of the pool and that every book in his library was on the floor.

"Like a trooper, Moore persevered at Caltech, mesmerizing The Associates with his comments on 'The Computer Chip—Keystone of Modern Electronics.' If the automobile industry, he said, had made the same progress as the electronics field, we'd have 'autos that were getting a million miles to the gallon and going 500,000 miles an hour.'" *Los Angeles Times*, October 22.

Retired Caltech Y Director Wesley L. Hershey dies

Wesley L. Hershey, retired director of the Caltech Y, died November 10 after a long illness. Hershey came to the Y at a time when it was traditional for directors to stay two or three years and move on. He broke that tradition, staying 30 years and retiring in 1976.

Hershey was honored on his 20th anniversary with the Y with a musical, "A Broader View" written and produced by members of the Caltech Stock Company. The show celebrated Hershey's unending efforts to broaden the horizons of Caltech students.

Hershey was an honorary alumnus and he was presented a medallion by the Institute when he retired.

ALUMNI

From the alumni president

An exciting year is underway for the Alumni Association. I would like to introduce the chairmen of two outstanding committees and explore some of their programs and activities.

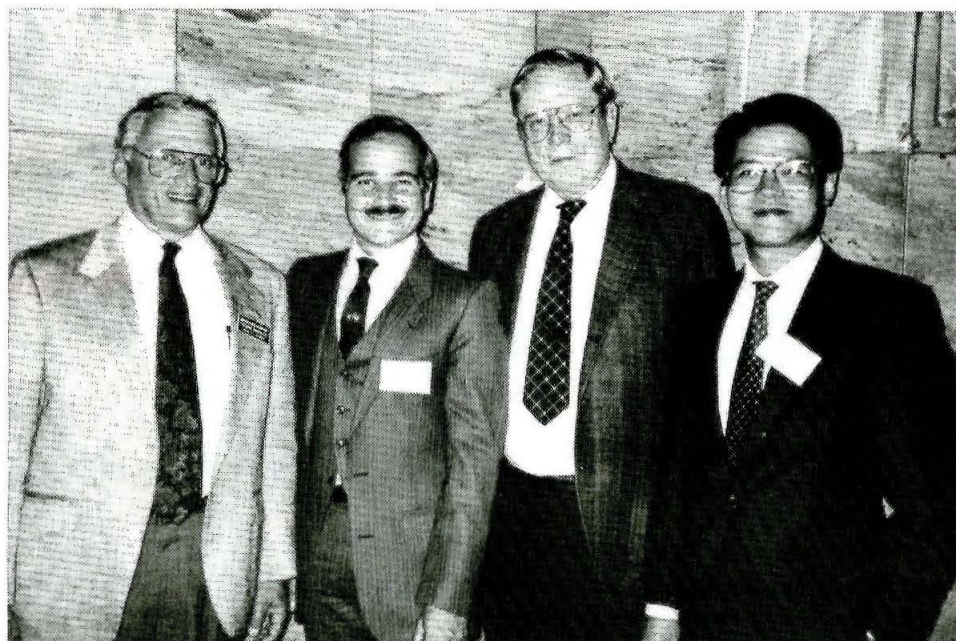
The Program Committee plans the social and cultural programs along with travel/study programs for Caltech alumni. The committee chairman is Tway Andrews (BS '44), a resident of Arcadia, California, and president of the A-F Sales Engineering Co. in Pasadena. Other members of the committee are Jim Crabtree (BS '65), David Holtz (BS '64), Yogi Krikorian (BS '89), Ed Lambert (BS '82), Vic Veysey (BS '36), Don Wilkinson (BS '48), and Paul Winter (BS '44).

The alumni travel/study programs featuring Caltech faculty and alumni trip leaders, offer a strong mix of education, camaraderie, unique learning opportunities, and fun. Future destinations include Africa, Hawaii, and Iceland. Upcoming issues of *Caltech News* will provide information and sign-up opportunities when these trips become available.

Other events of a social or cultural nature planned by the Program Committee include museum tours, wine tastings, and dinner/theater evenings such as the recent excursion to "The Phantom of the Opera" on October 8. More dinner/theater programs are being planned, as the combination of entertaining theater, and dinner with friends, appeals to many alumni.

The annual Rose Parade viewing, scheduled for January 1, continues to be one of the most popular alumni programs, and a sellout each year. The day starts with a continental breakfast in the Athenaeum, and a walk to reserved parade seating on Colorado Boulevard, followed by a buffet lunch in the Athenaeum. The price is \$55 per person, which includes parking at Caltech and a copy of the official Rose Parade program. Seats are going fast. Call the Alumni Association if you would like more information.

The Publications Committee reviews and directs the production of Alumni Association publications, including the alumni directory, *Engineering & Science*, *Caltech News*, and special interest publications for alumni such as *Legends of Caltech* and *More Legends of Caltech*,



At the San Francisco chapter meeting: Fredric Raichlen; Alan Breakstone (BS '72), chapter president; George Housner; Peter Tong (MS '81, PhD '85), chapter vice president. Raichlen and Housner were the featured speakers. See story on page 13.

which chronicle famous pranks by Caltech students.

Pete Mason (BS '51, MS '52, PhD '62) and Bill Whitney (BS '51) are co-chairmen of the Publications Committee this year. Pete Mason, a resident of Altadena, is a research scientist and



Rhonda MacDonald

member of the technical staff at JPL. Bill Whitney lives in Pasadena and is a technologist in the Observational Systems Division at JPL. Serving with them are Ed Bryan (BS '54), Terry Cole (PhD '58), David Holtz (BS '64), Arne

Kalm (BS '56, MS '57), Bill Pence (BS '65, MS '67), and Tony Skjellum (BS '84, MS '85).

In close association with Caltech Public Relations, the committee has generated advertising for *E&S*, and has encouraged qualified alumni contributions to the magazine. These activities are recent additions to those of the Publications Committee, and they demonstrate the members' commitment to broadening the services they provide. With the success of *Legends of Caltech* and *More Legends of Caltech* as a guide, they are researching ideas for new special-interest publications. Suggested topics have included a history of the student houses or a look at outstanding women at Caltech.

The accomplishments of both the Program and Publications Committees reflect the dedication and hard work of the members. We are grateful to them for their efforts and wish them success in all their undertakings.

We appreciate feedback from alumni concerning any Association issue. Please contact us by mail or phone.

CALTECH ALUMNI ASSOCIATION
MAIL CODE 1-97
PASADENA, CA 91125
(818) 356-6592



Jurg Waser (PhD '44) and Pludi Waser at the theater at Ephesus while on the Alumni Association's autumn travel-study program to the Mediterranean.

Alumni Activities

For information about any of these programs, contact the Caltech Alumni Association, mail code 1-97, Pasadena, California, 91125, (818) 356-6592.

January 1, 1990—Rose Parade event. Reserved seating at the 101st Tournament of Roses. Breakfast and lunch at the Athenaeum, parking and Rose Parade program included. Reservation information has been mailed to alumni in the Los Angeles area. If you live outside the Los Angeles area, contact the Alumni Association for information.

May 31, 1990—Class of 1940 50th reunion dinner in the Athenaeum.

June 1, 1990—Half Century Club luncheon in the Athenaeum.

June 1, 1990—Reunions for the classes of 1945, 1950, 1965, and 1980.

June 2, 1990—53rd Alumni Seminar Day on campus.

June 24–July 1, 1990—Yellowstone Travel/Study Program with Robert P. Sharp, the Robert P. Sharp Professor of Geology, Emeritus.

Trip to Russia open to alumni, friends

Alumni and other friends of Caltech are invited to become participants in a trip to Russia and Copenhagen over spring break (March 23–April 2), with George Cheron, a Russian instructor at the Institute.

The cost, \$1,859, includes hotels, air fare, three meals a day, city tours with English-speaking guides, and visa fees.

Included will be four days in Moscow, with visits to the Bolshoi Theater, the Tretyakov Art Gallery, Moscow University, the GUM Department Store, and other sites; three days in Leningrad, with visits to the Hermitage, St. Isaac Cathedral, and an excursion to Pushkin, the summer residence of the czars; and two days in Copenhagen.

More information and application forms are available from: George Cheron, 2232 Jeanette Place, Costa Mesa, California, 92627. Deadline for payment is January 1.

San Francisco chapter elects officers

Results of the election of officers for the San Francisco Chapter were announced during a dinner and chapter meeting at the San Francisco City Club on September 19. Elected were: Alan Breakstone (BS '72), president; Peter Tong (MS '81, PhD '85), vice president; and Stephanie Charles (BS '73), secretary/treasurer.

Featured speakers at the chapter meeting were George W. Housner, Carl F Braun Professor of Engineering, Emeritus, and Dr. Fredric Raichlen, professor of civil engineering, discussing "Confronting Natural Disasters with Technological Advances."

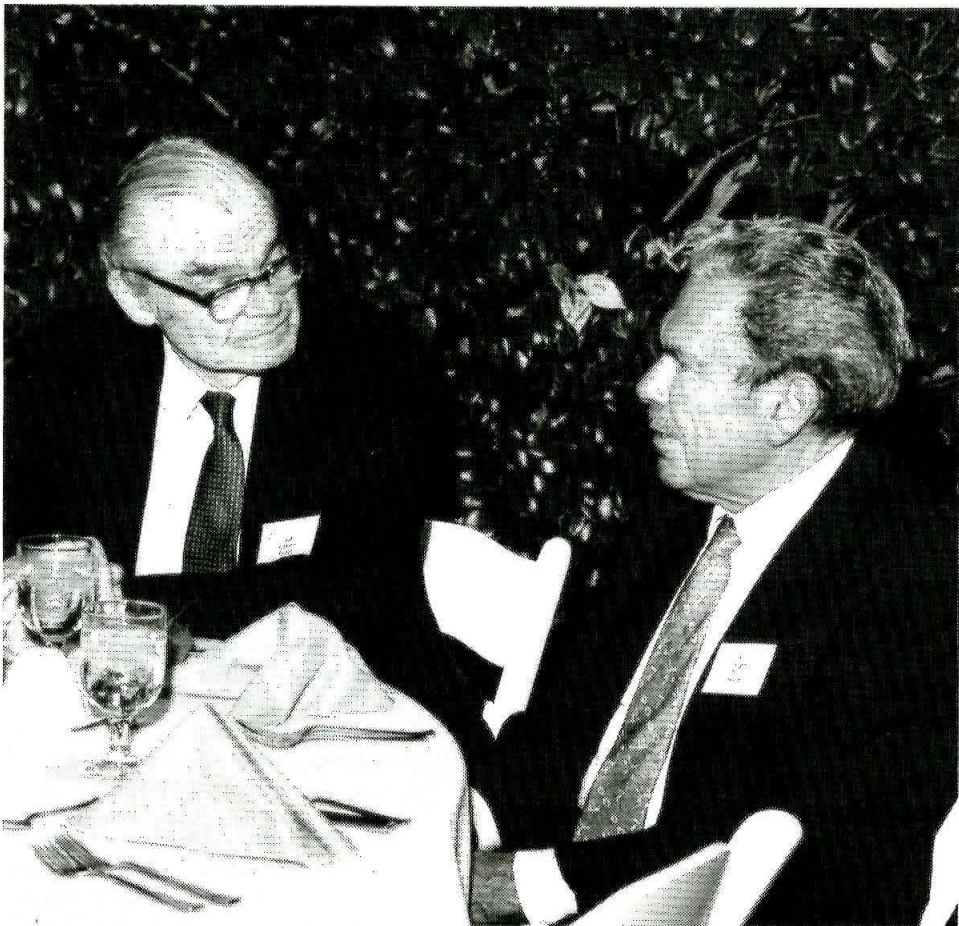
Joining more than 60 local alumni and guests at the chapter meeting were 27 alumni participants in the Alumni Association's San Francisco travel/study program led by Housner and Raichlen.

The next event for the chapter will be a mini-Seminar Day on Saturday, February 3, 1990, at the San Francisco Airport Hilton. The event features several outstanding Caltech faculty speakers and is cosponsored by the Alumni Association and the Office of Annual Giving. Save the date and watch your mail for information and registration materials.

Reunion of '41 Football Team

The pre-war era, games in the Rose Bowl in front of 2000 cheering fans, and an era of excellence and tradition that was about to end with the retirement of long-time athletic director Fox Stanton—these are the things that G. Stanley Holditch (BS '48) remembers about the 1941 football season. So, for the past five years he has been organizing a reunion of Techers and their wives. This year, for the first time, members of opposing teams from Occidental, Whittier, Pomona, and Redlands, and their wives, were also invited. Twenty-two people gathered at the Athenaeum on November 6 to reminisce about Caltech football in the pre-war years. Banners listing scores of the games and the coaches' names added to the festivities.

Members of the Beaver football team in attendance included: Holditch, reserve center, who received an honorable mention in the All-Conference voting; Jesse B. Graner (BS '43), who received his varsity letter in 1941; John F. Mc Clain, Jr., (BS '42), another football letterman; Charles H. McDougall, (BS '47) member of the 1940 JV team, and editor of the 1941 yearbook; and Harry J. Moore (BS '48), winner of a JV numeral. Such a good time was had by all that they voted to make the reunion an annual event, says Holditch.



Professor Rolf Sabersky chats with William Rogers (BS '42), Denver area Alumni Fund chairman, at the Alumni Fund Leadership Conference on the campus. More than 100 volunteers came to the conference to receive training for their work of contacting former classmates to support the Fund.

ALUMNI ASSOCIATION FINANCIAL STATEMENTS

ALUMNI ASSOCIATION
CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena, California

BALANCE SHEET
June 30, 1989

| ASSETS | |
|----------------------------------|--------------------|
| Cash on Hand and in Bank | \$ 26,049 |
| Investments: | |
| C.I.T. Consolidated Portfolio | 1,215,420 |
| Money Market Funds | 146,350 |
| Investment Income Receivable | 18,000 |
| Other Receivables | 7,999 |
| Deferred Program Expenses | 14,083 |
| Postage Deposit and Other Assets | 2,458 |
| Computer Equipment | 12,036 |
| TOTAL ASSETS | \$1,442,395 |

| LIABILITIES, RESERVES AND SURPLUS | |
|--|--------------------|
| Accounts Payable | \$ 60,860 |
| Deferred Income: | |
| Annual Membership Dues Paid in Advance | 4,035 |
| Investment Income from C.I.T. Consolidated Portfolio | 50,000 |
| Program Income | 4,125 |
| Life Membership Reserve | 1,222,525 |
| Reserve for More Legends of Caltech | 8,231 |
| Reserve for Electronic Database | 2,000 |
| Investment in Computer Equipment | 12,036 |
| Surplus | 78,583 |
| TOTAL LIABILITIES, RESERVES AND SURPLUS | \$1,442,395 |

STATEMENT OF INCOME, EXPENSES AND SURPLUS
For the Year Ended June 30, 1989

| INCOME | |
|-------------------------------|-------------------|
| Dues of Annual Members | \$ 89,329 |
| Investment Income: | |
| C.I.T. Consolidated Portfolio | 66,482 |
| Money Market Funds | 12,051 |
| Net Income of Programs | 5,086 |
| Other | 3,554 |
| TOTAL INCOME | \$ 176,502 |

| EXPENSES | |
|--|-------------------|
| Publications | \$ 19,021 |
| Net Expenses of Annual Seminar | 4,167 |
| Net Expenses of Class Reunions | 11,248 |
| Net Expenses of Chapter Meetings | 3,431 |
| Student Support and Educational Programs | 20,662 |
| Undergraduate Admission Support | 2,973 |
| Administration | 53,425 |
| Computer Equipment | 7,354 |
| Membership | 9,703 |
| Allocation for Directory | 13,924 |
| Allocation for More Legends of Caltech | 5,000 |
| Allocation for Electronic Database | 2,000 |
| TOTAL EXPENSES | \$ 152,908 |
| INCOME IN EXCESS OF EXPENSES | \$ 23,594 |
| Surplus, June 30, 1988 | 54,989 |
| Surplus, June 30, 1989 | \$ 78,583 |

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, 1989 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, 1989 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 26, 1989

Caltech tops on the turf

Caltech has an unlikely namesake—a three-year-old racehorse. And the namesake is a winner. He topped the field of contenders in the Lawrence Realization for three-year-olds at Belmont, earning \$74,280 for his owner, David Romanik. He went on to win the \$750,000 Budweiser International, a

victory worth \$450,000.

How did Caltech get his name? His breeder, Dave Goldman, a Florida turf reporter, explains it this way, "It was one of those dreamy times, and the mare is named Starpiece. I got to thinking about his sire, Explosive Bid. The Voyager space mission was under way, and at first I thought about naming him Jet Propulsion Laboratory. But that didn't sound good. I'm watching PBS television about the Voyager program, and they switched to Caltech. I liked that name."

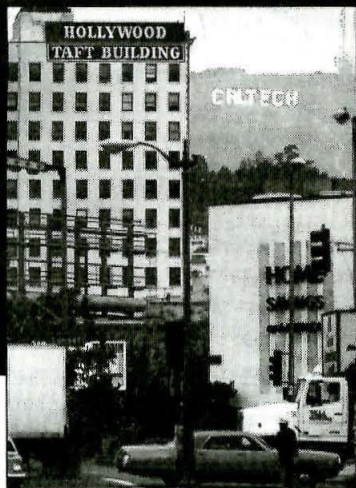
James Morgan presented honorary degree

James J. Morgan, the Marvin L. Goldberger Professor of Environmental Engineering Science, is the recipient of an honorary doctor of science degree from Manhattan College. The degree was presented at the college's fall honors convocation on October 22.

TACIT moves to new headquarters

Caltech's theater arts program (TACIT) moved to a new headquarters in the fall, with plans for a long-term stay and long-term renovations. The two-story TACIT house is located at 424 South Chester, just north of the office of public events. TACIT held auditions during the fall for Caltech's spring musical, *Camelot*.

MORE LEGENDS OF CALTECH



- It has become a southern California landmark.
- It is as famous and enduring as Disneyland, the Rose Bowl, or Tommy's.
- It has been looked up to as a source of wonder by millions.
- It is *Legends of Caltech*.

And now, we are proud to present *MORE Legends of Caltech*. • Yes, we think our

readers are ready for the whole story. • We finally reveal how Caltech took its rightful place on that hillside dominated by Hollywood for so many years. • We tell the true story of how Caltech won its cosmic football game against MIT (with undisputable proof on the Rose Bowl scoreboard). • We reveal the amazing truth behind Dr. Cohen's dancing blackboards. • And we tell the sad but unforgettable story of how a Caltech undergrad spent hours playing a prank on himself. • In fact, everything we didn't dare reveal in the first *Legends* is here, in incredibly believable black and white.

Read it if you dare!

ORDER FORM

I not only dare to read *More Legends of Caltech*, I dare to buy it.

- ☐ Please send me ____ copies of *More Legends of Caltech* at \$13.00 each. Price includes postage and handling. (Allow six weeks for delivery)
- ☐ I want my order sent first class. I have enclosed an additional \$3.00 per book. Enclosed is my check for \$_____ made payable to the Caltech Alumni Association.

Name _____

Address _____

City _____ State _____ Zip _____

Daytime phone _____

Mail your check with this form to: More Legends of Caltech
Caltech Alumni Association
Mail Code 1-97
Pasadena, CA 91125

OBITUARIES

1927

EDWARD P. JONES, on October 11. He is survived by his wife, Bonnie.

1928

RAY K. JACOBSON, of Newhall, California, of a heart problem. He was a vice president of United California Bank before his retirement. He is survived by his wife, Maxine, and a son.

1929

WILLIAM W. BOOTH, of San Jose, California, of failing health on September 10. He was 81. Booth taught mathematics at Claremont High School until his retirement, and then developed an intense interest in the science of computers, which he continued to explore for the rest of his life. His enthusiastic search for new knowledge continued up until the time of his death. He is survived by his daughter, Virginia, and two grandchildren. He was a member of the Half Century Club.

1930

TOM G. BERNHARDI, last year. He is survived by his brother, John.

1942

JACK C. HOAGLAND, of Santa Ana, California, on September 18. Hoagland and his wife, Jeanette, were killed in the crash of their small plane near Concord, California. They are survived by their son, Lawrence. A memorial fund has been established at Caltech. Those wishing to contribute should write to: The Jack C. Hoagland Memorial Fund, Caltech, 1201 East California Boulevard, 105-40, Pasadena, California, 91125.

1943

JOHN W. BUCHANAN, and his wife, Eugenie Hannon Buchanan, on August 14, when their Piper Aztec plane crashed into Lake Tahoe after they had requested landing permission at South Lake Tahoe Airport. A member of Dabney house, his BS was in civil engineering. He was president of Chadwick and Buchanan, General Contractors. A veteran of WWII and the Korean War, he served with the Army Corps of Engineers in the South Pacific and Alaska. He was a member of The Associates and enjoyed, with his wife, the Alumni trips to Yellowstone, to Alaska, and, most recently, to Antarctica. They are survived by four children and six grandchildren. A memorial fund has been established at Caltech. Those wishing to contribute should write to: The John W. and Eugenie H. Buchanan Memorial Fund, Caltech, 1201 East California Boulevard, 105-40, Pasadena, California, 91125.

1952

DUDLEY W. WAGNER, of Santa Barbara, California, on June 24, after a two-year battle with cancer. He was 59. Wagner was a member of the technical staff of Santa Barbara Research Center. He is survived by his wife, Josephine; his children, Brian and Andrea; and two granddaughters.

1955

RONALD W. DANKLEFS, of Woodland Hills, California, on March 18. He is survived by his wife, Catherine.

1960

JAN RAMPACEK, on September 23. He was an engineering specialist.

PERSONALS

1932

HENRY H. BRUDERLIN, of Corona del Mar, California, writes, "My son, James Brolin (of 'Hotel' and 'Marcus Welby') is working on a new series and two new movies. His son, Josh Brolin is in the new series 'Young Riders.' I am working to develop a large ski resort near Grand Junction, Colorado, called Powderhorn, and a marina and hotel resort in Tahiti, where we lived for one year in 1960-1961."

1939

R. KENNETH COLLINS, of Foster City, California, retired in 1982 and started Collins & Associates, a private computer and software consulting company. He just celebrated his 50th wedding anniversary on September 19, and has a new granddaughter, Kelly Morgan Miller.

1943

PETER DEHLINGER, MS, PhD '50, has moved to Issaquah, Washington.

1944

IRVING S. REED, PhD '49, of Santa Monica, California, has received the Richard W. Hamming Medal from the Institute of Electrical and Electronics Engineers. The medal was awarded for Dr. Reed's "contributions to multiple error-correcting codes, digital computer design, and automatic detection and processing of signals in noise."

ENRIQUE SILGADO, MS, retired in 1971 as professor of geophysics at the University of San Marcos, in Lima, Peru. He has been a consultant to the Regional Center of Seismology for South America since 1971.

1946

SANTIAGO H. RODRIGUEZ-ROZO, MS, of Tucson, Arizona, worked at various chemical engineering jobs in Colombia after graduation and then in 1952 went to work for the Utah Construction and Mining Company. In 1970 he moved to the Fluor Corporation where he stayed until 1976, when he moved to Raymond International-Kaiser Engineers. After his retirement in 1985 he became a self-employed consultant. He has three daughters, one son, and many grandchildren.

1948

BENOIT B. MANDELBROT, MS, ENG '49, has received the 1989 Harvey Prize for Science and Technology. He is an IBM fellow at the T. J. Watson Research Center, and the Abraham Robinson Adjunct Professor of Mathematical Sciences at Yale University. In 1988, he received the Steinmetz Medal, a D.H.L. (h.c.), a D.Sc. (h.c.), and the Caltech Distinguished Alumni Award.

DAVID S. STOLLER, MS, of Placentia, California, will have his biography appear in *Who's Who in California*, for "outstanding professional achievement, superior leadership, and exceptional service." Stoller is professor emeritus, formerly chairman of the management science department, at CSU Fullerton. The volume will be published in December.

1949

ROLF M. SINCLAIR, of the physics division, National Science Foundation, writes, "I am just finishing a year's sabbatical, spent in the P-division of Los Alamos National Laboratory. It's been a pleasure to be active again in research; I will return soon to science administration at NSF."

KEEP US INFORMED!

Keep us informed so we can keep your fellow alums informed. Send us news about you and your family, about a new job, promotion, awards—anything you'd like to see printed in the Personals section of *Caltech News*. Return this coupon and any additional materials to: *Caltech News*, Caltech Mail Stop 1-71, Pasadena, CA 91125.

Name _____

Degree(s) and Year(s) Granted _____

Address _____

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

News _____

1950
ALVIN TOLLESTRUP, PhD, manager of research and development at the Fermi National Accelerator Laboratory, is the winner of a 1989 National Medal of Technology for his part in "the design, construction, and initial operation of the TEVATRON particle accelerator." This instrument was designed to explore the fundamental properties of matter.

1956
DONALD W. LEWIS, of Moraga, California, has been named general manager of exploration for the Western Region of Chevron U.S.A. Lewis joined Chevron in 1958 as a geologist and worked in the San Joaquin Valley, Salt Lake City, Seattle, Australia, and Indonesia. He was named a senior geologist in 1971. After several senior exploration and corporate planning jobs, he became exploration division manager for Europe in 1984, the post he is vacating to become general manager. Lewis earned an MS in geology from Northwestern University in 1958.



Richard H. Petersen

1957
RICHARD H. PETERSEN, MS, director of NASA's Langley Research Center, in Hampton, Virginia, received a Distinguished Presidential Rank Award from President Bush in a special ceremony in Washington, D.C. He received the award for "sustained extraordinary accomplishment in management of programs of the United States Government and for leadership in exemplifying the highest standards of service to the public, reflecting credit on the career civil service."

1959
WILLIAM R. GRAHAM, of McLean, Virginia, is senior vice president of JAYCOR. He has been elected to the board of directors of the Watkins-Johnson Company, of Palo Alto, California, and has been named a distinguished visiting scholar at the Hoover Institute at Stanford.

1961
JAMES M. KALLIS, MS, of the Hughes Aircraft Company in El Segundo, California, is the program manager of two Air Force contracts to develop life-prediction methods for electronic equipment, using techniques such as fracture mechanics.

1962
JOHN D. CROSSMAN writes, "Our youngest son is off to college at the University of Colorado at Boulder, and we are off to Korea after 10 years in Japan. I am still working for Ford Motor Company in a liaison function with our partners and associates in the Far East."

1963
PAUL J. NAHIN, MS, of Dover, New Hampshire, writes, "My book, *Oliver Heaviside: Sage in Solitude*, was published last year by the IEEE Press and has won first prize in the book division of the 1989 International Competition of the Society for Technical Communication."

1965
JOHN C. SIMPSON, JR., vice president, M&R planning, Mobil Oil Corporation, has moved to Virginia with the relocation of Mobil's headquarters.

1966
JERRY YUDELSON, of Garden Grove, California is president of Yudelson Associates, specializing in bringing new energy and pollution-control products to market in California.

1968
STEVEN D. COLSON, PhD, of Yale University, has been named associate director of chemical kinetics and dynamics for the new Molecular Science Research Center at the U.S. Department of Energy's Pacific Northwest Laboratory.

MARIO MARTINEZ-GARCIA, MS, PhD '71, of Ensenada, Mexico, has been a faculty member in the department of applied geophysics at the Centre of Research and Higher Education for 15 years, and served as chairman of the department for the last 12 years. Recently, he was promoted to be the institution's new general director. He writes, "I feel deeply honored for being selected to lead one of the country's top research institutions. I look forward to this challenge."

1970
THOMAS H. DUNNING, JR., PhD, has been appointed associate director of molecular theory and modeling for the new Molecular Science Research Center at the U.S. Department of Energy's Pacific Northwest Laboratory. He recently led the theoretical and computational chemistry group at the Argonne National Laboratory in Chicago and managed the chemical dynamics program within the chemistry division.

1972
MARK S. WRIGHTON, PhD, head of the department of chemistry at MIT, was named the first holder of the CIBA-GEIGY Professorship and Research Endowment.

1974
RALPH W. ALEWINE III, PhD, director of the nuclear monitoring research office of the Defense Advanced Research Projects Agency, was honored by President Bush in September as a winner of the 1989 Presidential Rank Award. The award recognizes excellence in the federal government's senior executive service and is given annually to federal managers for extended, exceptional performance in government.

JERRY M. HARRIS, MS, PhD '80, assistant professor of geophysics at Stanford University, has received a 1989 David and Lucile Packard Fellowship in Science and Engineering.

1975
DAVID W. QUANCE, MS, has been accepted to Southwestern University School of Law's two-year program leading to the Juris Doctorate.

1977
WING KAM LIU, MS, PhD '81, of the department of mechanical engineering, Northwestern University, has been named a corecipient of the Thomas A. Jaeger Prize, which is awarded by the International Association for Structural Mechanics in Reactor Technology.

1979
VEIT ELSER, assistant professor of physics at Cornell University, has received a 1989 David and Lucile Packard Fellowship in Science and Engineering.

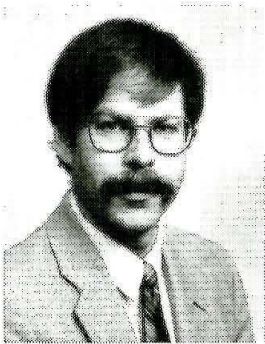
ROBERT M. HANSON writes, "I am now in my fourth year as assistant professor of chemistry at St. Olaf College, a liberal arts college in Northfield, Minnesota. This year I received a Presidential Young Investigator Award, one of the first three ever given to faculty at a liberal arts college. This past July, I married Debbie Hadas, an English-as-a-second-language teacher at Apple Valley High School. We have recently bought a house in Northfield and are enjoying tremendously living in a small town near Minneapolis."

1980
WEN LIU, MS, has recently accepted a position as an associate attorney in the legal department of Beckman Instruments in Fullerton, California. He writes, "For the past three years since graduation from UCLA law school, I practiced at the intellectual property law firm of Spensley Horn Jubas & Lubitz in Century City. As a patent attorney, I am constantly being introduced to the state of the art of diverse technological fields, some of which initially were unfamiliar to me. I enjoy working with innovators; especially those who are able to solve complex problems in a simple yet nonobvious way (the ultimate test for patentability!). In the present technologically competitive era, there is an increasing but unmet demand for attorneys who have a solid technical background. I encourage all students and fellow alums to seriously consider the legal field as a career after a Caltech education. I have often been asked why I made a career change to become an attorney. My reply is that I have not changed my career, but I have instead chosen to pursue a technical career in a specialized setting, without compromising my contribution to the advancement of technology. I married Elizabeth Wu last year; we moved into our new home and are expecting our first baby next January."

1981
ANDREW J. GELLMAN, assistant professor of chemistry at the University of Illinois at Urbana, has received a 1989 David and Lucile Packard Fellowship in Science and Engineering.

ANNE M. HOFMEISTER, MS, PhD '84, assistant professor of geology at UC Davis, has received a 1989 David and Lucile Packard Fellowship in Science and Engineering.

DANIEL J. JACOB, MS, PhD '85, assistant professor of geoscience at Harvard, has received a 1989 David and Lucile Packard Fellowship in Science and Engineering.



Clifford Spiro

CLIFFORD L. SPIRO, PhD, of Schenectady, New York, has been appointed manager of the newly created Advanced Materials Program at the GE Research and Development Center. He will direct research on ultra-hard abrasives and coatings, protective films for high-temperature corrosive environments, superconducting substances, and high-stress materials.

1982
CATHRYN A. MANDUCA, MS, PhD '88, has been appointed assistant professor of geology on the W. M. Keck Foundation at Carleton College in Northfield, Minnesota. She worked as a geologist with the USGS during the summers of 1982 to 1985.

1983
BARRET (BARRY) LIPPEY, of Los Angeles, California, has received his MBA from Pepperdine and works for Hughes Aircraft. He has had his first U.S. patent issued. Lippey has married, his wife's name is Hiroko.

1984
MARCUS CHOWN, MS, has become science news editor of the magazine *New Scientist*. His science fiction novel *Double Planet*, co-written with John Gribbin, will be published in the U.S. by Avon. They have just finished another novel, *Reunion*, which they hope to sell in the U.S. very soon.

GEORGE H. PITT III, MS '89, of Redmond, Washington, and his wife, Kristin, had their first child, Thomas Michael, on September 26. Thomas's grandma, Pat Stevens, works in condensed matter physics at Caltech.

NED S. WINGREEN received his PhD in condensed matter physics from Cornell in May, and has started a two-year postdoc at MIT.

1986
OLIVER COLLINS, MS '87, PhD '89, has been appointed to the department of electrical and computer engineering at The Johns Hopkins University. He specializes in information theory, computer coding, and parallel processing. Prior to this appointment, Collins worked as a research scientist at JPL, Hughes Aircraft, and IBM.

FRANK E. KRAGH, LT., USNR, has been promoted to director of electrical engineering at the Naval Nuclear Power School.

DANIEL E. LOEB writes, "I recently passed my thesis defense at MIT's department of math under the direction of Professor Gian-Carlo Rota. I am engaged to Helene Cohen-Scali of Toulouse, France, and I will soon be moving there to work for Professor Alain Lascoux at Universite Paris 7 and the CNRS."

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Personals/Obituaries — Betsy Hatch
Photographer — Robert Paz
Contributors — Phyllis Brewster,
Heidi Asparurian

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The San Francisco quake brings a horde of media representatives to the Seismology Lab for information.

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Caltech's 1991 float requires months of planning. The Institute's first rose float, in 1950, was created and built entirely by students, and was a simpler affair.

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