

CALTECH NEWS

August 1987

Caltech honors five graduates as distinguished alumni

Caltech conferred its highest honor—the Distinguished Alumni Award—on five graduates at Alumni Seminar Day. The awards are given in recognition of achievement in science, engineering, business, or public service, and are presented to graduates who have made significant accomplishments not common to alumni of the Institute.

Those recognized were:

—James E. Lu Valle (PhD '40), director for many years of the Stanford undergraduate chemistry teaching program.

—Morris Muskat (PhD '29), retired technical advisor in the Gulf Oil Corporation and highly regarded for his technical contributions to the petroleum industry.

—Stanley C. Pace (MS '49), chairman and chief executive officer of General Dynamics Corporation.

—Alvin W. Trivelpiece (MS '55, PhD '58), executive officer of the American Association for the Advancement of Science and former director of the Office of Energy Research, U.S. Department of Energy.

—John Waugh (PhD '53), the Arthur Amos Noyes Professor of Chemistry at MIT, noted for his pioneering nuclear magnetic resonance techniques.

Said President Goldberger in presenting the awards, "Our alumni characteristically go on to distinguished careers. It is a special pleasure to honor these five who have achieved exceptional professional accomplishments."

In 1975, after a career in industry, James E. Lu Valle came to Stanford as director of the undergraduate chemistry laboratories and continued in this role until his retirement in 1984. He is credited by colleagues with having made an "enormous impact on undergraduate education" at Stanford. He also designed highly effective summer programs for minority

Continued on page 3

Thomas E. Everhart named Caltech president

Chancellor of the University of Illinois at Urbana-Champaign is first choice of two selection committees



"You listen. You ask a lot of questions and you listen. You don't come in with a lot of preconceived ideas."

Thomas E. Everhart, chancellor of the University of Illinois at Urbana-Champaign and a professor of electrical engineering, has been named president of Caltech, announced Ruben F. Mettler, chairman of Caltech's Board of Trustees.

"Dr. Everhart comes to Caltech with an outstanding record of scientific and engineering research and teaching as well as academic administration," said Mettler. "His leadership and dedication to excellence will serve Caltech well as it responds to new and exciting research and teaching opportunities."

Everhart will assume his duties as Caltech's president on or about September 1, 1987. He is married to the former Doris Arleen Wentz and has four children.

Before joining the University of Illinois as chancellor of its Urbana-Champaign campus in 1984, Everhart had been dean of Cornell University's College of Engineering. From 1958 to 1978 he was at UC Berkeley in the department of electrical engineering

and computer science. He was assistant professor there from 1958-1962, associate professor from 1962-1967, and professor from 1967-1978. He served as chairman of that department from 1972-1977.

Everhart did his undergraduate work at Harvard, where he earned an AB in physics in 1953. He earned an MSc in applied physics at UCLA in 1955 and a PhD in engineering at Cambridge University in 1958.

He has gained international recognition for his work in the development of electron microscopy. He also is known for his research on electron beams as applied to the analysis and fabrication of semiconductors.

Among his many honors and awards are a Guggenheim Fellowship, the Centennial Medal of the Institute of Electrical and Electronics Engineers (IEEE), and his election as a member of the National Academy of Engineering.

He has served as chairman of a number of important committees, including the Scientific and Educational Advisory Committee of the

Lawrence Berkeley Laboratory and the Committee on Education and Technology of the National Association of State Universities and Land Grant Colleges.

"It is a great honor to have been chosen as Caltech's new president," said Everhart. "Caltech is recognized as one of the world's finest teaching and research institutions, and I look forward to my new job with great anticipation. I will try hard to live up to the sterling example set by my predecessors."

Everhart was selected as Caltech's president after an extensive search that began when Marvin L. Goldberger announced that he would retire no later than June 1988.

"There were two search committees," explained Mettler, "one composed of faculty members and one composed of members of the Board of Trustees. Both committees worked long and hard on this challenging and sensitive task and I commend the members for their diligent efforts."

"I would also like to acknowledge the debt of gratitude the entire Caltech community owes to Dr. Goldberger. His outstanding leadership abilities took the Institute through some of the most important years in its history." Goldberger, who served as president since 1978, will be leaving Caltech to serve as director of the Institute for Advanced Study in Princeton, New Jersey.

"Caltech is a very special place and it deserves the very best," said Goldberger. "I've known Tom Everhart for several years as a scientist and as an administrator. He is unusually well qualified to lead Caltech."

Scientific community: model for human relations?

Scientists can help solve some of the grim problems facing humanity, not only through research but through their ideals and processes and through their participation in the international community of scientists, David A. Hamburg, president of the Carnegie Corporation of New York, told members of the 1987 Caltech graduating class. Hamburg, who has served as president and chairman of the board of the American Association for the Advancement of Science, was at Caltech as a Sherman Fairchild Distinguished Scholar in 1974; however, his time here was cut short when Stanford University prevailed on him to play an active role in securing the release of four Stanford students who were being held hostage in Zaire. As commencement speaker, he spoke on "New Wine in Old Bottles: Can We Cope with Our Success?"

"The scientific community is probably the closest approximation we now have to a truly international community, sharing certain fundamental interests, values, and standards, as well as certain fundamental curiosities about the nature of matter, life, behavior, and the universe. . . . So to some extent the scientific community can provide a model for human relations that might transcend the biases and dogmatism that have torn the species apart throughout history," Hamburg said.

Such support is particularly critical today because "we are challenged as never before to find ways to use our unique capacities as humans to stop killing ourselves."

Hamburg pointed out that we are living in a time when science and science-based technologies have become the key to future well-being and when technological innovation is accelerating dramatically.

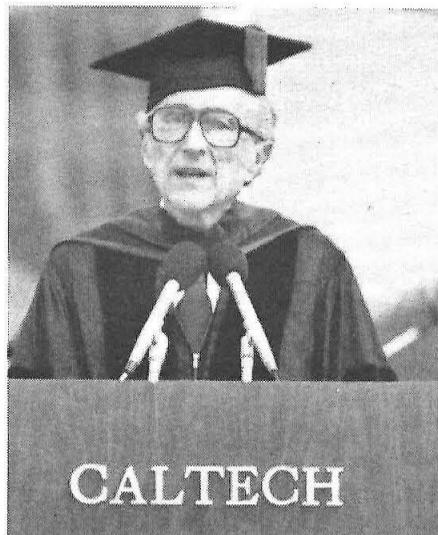
"Science provides the basis for most of the requirements of modern living and much of its promise for the future—not only in a material sense but also in relation to social justice," he said. "Scientific opportunities to deepen knowledge, and to use that knowledge for progress in such crucial spheres as food, health, and energy are exploding."

"We have succeeded so well that the advance of knowledge has accelerated precipitously, giving us an unprecedented base for technological innovation," said the speaker. The pace of such innovation is now the most rapid in all history, but each advance carries with it some side effects, he pointed out.

One of the most notable areas of innovation is medical science, where

the emergence of the modern life sciences has transformed medicine. One side effect is the large number of older people alive today. At least half the people who have ever lived to the age of 65 are currently alive on the planet, Hamburg told his audience.

The age composition of the U.S. population today is thus an evolutionary novelty, he observed, and



one that poses unprecedented problems in health, economics, social services, and human relationships at the same time that it enables us to take advantage of the experience, knowledge, and wisdom of many older people.

Meanwhile, rapid changes in health care have created many potential health care interventions—surgical procedures, for example. The proliferation of these options—which can be damaging to the patient—creates a need to strengthen clinical research and to extend it to include evaluation of health care—including questions of safety, usefulness, cost, organization, and financing, Hamburg observed. A persistent dilemma, he acknowledged, is the lack of hard evidence available to experts seeking to make these judgments.

Even more critical is our growing prowess in nuclear weaponry—and at a time when the world is "awash in a sea of ethnocentrism, prejudice, and violent conflict. The worldwide historical record is full of hateful and destructive indulgences based on religious, racial, and other distinctions—holy wars of one sort or another. . . . To be blunt, we as a species have a rapidly growing capacity to make life everywhere absolutely miserable and disastrous."

As examples he pointed out that:

—We are in danger of extinguishing ourselves in a nuclear war.

—We live in a world where more than half the people survive in abject poverty.

—We are generating a "growing underclass of people gravely damaged for life."

Thus the innovations in science and technology that can transform our society have come at a time when we face grim challenges to our capacity to survive. The crisis that we as humans are facing calls for "a strengthening of institutional capability for objective, scholarly analysis of critical issues based on a broad foundation of knowledge and experience."

"Colleges and universities, academies, and free-standing institutes can mobilize a wide range of talent to address the great issues of our time," Hamburg said. "One potential source of strength lies in interaction between the scientific community and the policy community over a wide range of economic and social questions."

Another great resource is the scientific and scholarly community of the United States, and its links to the worldwide scientific and scholarly community.

"The scientific community is probably the closest approximation we have to a truly international community. . . . Therefore, science can contribute to a better future by its ideals and its processes, as well as by the specific content of its research," Hamburg stressed.

He observed that the scientific outlook flows from some very old features of human adaptation: Our

"The innovations in science and technology that can transform our society have come at a time when we face grim challenges to our capacity to survive."

increasing capacity for learning, for communicating primarily through speech, for complex problem solving and complex social organization, and for advanced tool making and tool using.

"These attributes have gotten us here by enormously enhancing our capabilities, but also by permitting us to modify our habitats profoundly in ways that suit our human purposes," he said.

"Now we are challenged as never before to find ways to use these unique capacities to stop killing ourselves. Doing that will make possible an effective search for a decent quality of life for everyone on the planet. If we have lost our sense of purpose in the modern world, perhaps this perspective can help us regain it."

AT&T Foundation grant to initiate new research effort

The AT&T Foundation has given Caltech a three-year, \$300,000 grant to help support a new program in computation and neural systems.

"This is one of the most exciting intellectual developments at Caltech during the nine years I've been here," said Provost Barclay Kamb as he discussed the new program. "I'm delighted that AT&T Foundation has agreed to provide a large portion of the funds needed to initiate this effort."

According to AT&T vice president William Clossey, neural systems research could lead to the creation of an all-new computer architecture.

"We hope to construct machines that are able to recognize and remember by association—tasks that living organisms now perform much faster and more efficiently than computers," Clossey said. "This can be done through experimental computer-chip designs, called electronic neural networks, that mimic the way some brain cells retrieve stored information and solve problems."

The computation and neural systems program (CNS) will combine aspects of neurobiology, computation, information theory, very large scale integration (VLSI) technology, materials science, and studies of the richness of complex systems.

Students and faculty from three of Caltech's six divisions—the Division of Biology, the Division of Engineering and Applied Science, and the Division of Physics, Mathematics and Astronomy—will participate in this innovative, interdisciplinary program.

The goals are to develop computers and computational schemes patterned on neural networks such as the human brain and to understand the computational aspects of biological brains. One of the world's leading experts in this field is John Hopfield, the Roscoe G. Dickinson Professor of Chemistry and Biology at Caltech.

The funds from AT&T will be used to help set up a network simulation laboratory, for equipment purchases, for space renovations, and to enable researchers to pursue new lines of investigation not funded by traditional research agencies.

Goldberger to graduates: "Do what excites you"

Caltech President Marvin L. Goldberger welcomed 176 new BS, 128 MS, and 147 PhD degree recipients—a total of 451—as he distributed diplomas at his last commencement before leaving the Institute. Of the BS degree recipients, Goldberger said that 85, or 48 percent, were graduating with honors, indicating a grade average of B+ or better.

Degrees were almost equally distributed between engineering and the sciences, with a few in the humanities or social sciences.

Goldberger presented the Frederic W. Hinrichs, Jr., Memorial Award to Jean Tang, who majored in applied physics. The award is given to the senior who has shown outstanding qualities of leadership and character and has made the greatest undergraduate contributions to the welfare of the student body.

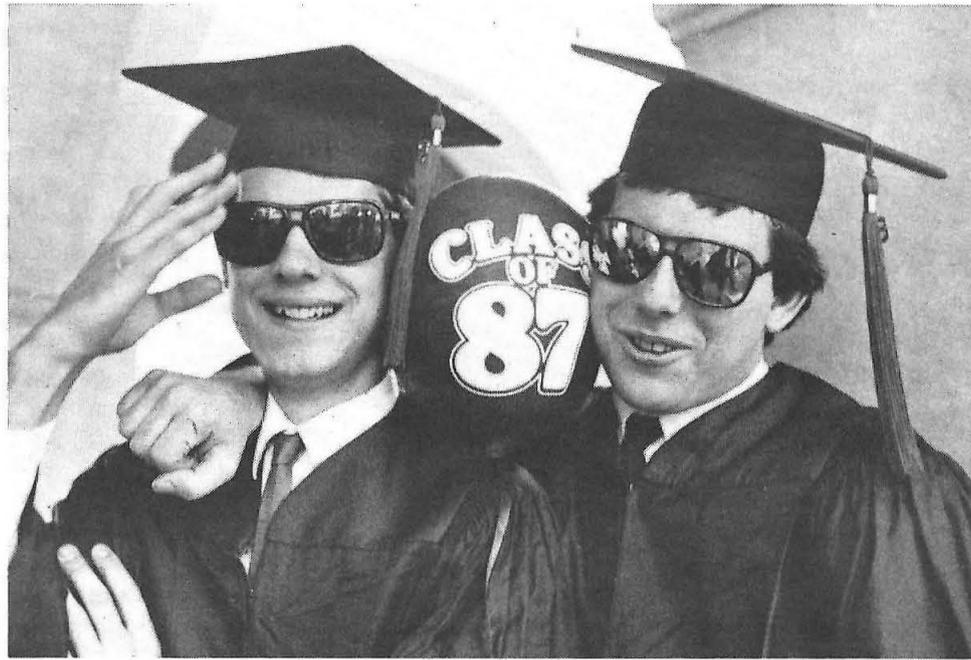
Tang was a student representative on the Academic Policies Committee and the Academic Standards and Honors Committee. She was vice president of Lloyd House and was a leader in organizing the 1986 Student-Faculty Committee. Last year she was the first recipient of the Mabel Beckman Prize.

Goldberger announced that the Milton and Francis Clauser Doctoral Prize was being awarded to Gregory Voth for his chemistry thesis, "Theoretical Studies of Intramolecular Dynamics and Energy Redistribution."

Announced at commencement, this prize goes to the PhD candidate whose research exhibits the greatest degree of originality. Goldberger said that in his work, Voth had demonstrated "outstanding originality, independence, and a strikingly mature professional attitude." The prize carries a stipend of \$1,500.

Pamela Feldman, a graduating senior majoring in electrical engineering, was recipient of the second annual Mabel Beckman Prize. This honor is bestowed upon a woman student completing her junior or senior year with excellent academic credentials, outstanding character and leadership, and contributions to the Institute community.

Feldman has been active on the Board of Control, which administers Caltech's honor code, since her freshman year, and has served as BOC secretary and chairman. She was lauded for making "cautious and fair



For Kenton Noble and Chris Meisl, it's time to celebrate.

decisions" in her work on the board.

Noting that this was the last time he would distribute diplomas to Caltech graduates, Goldberger said, "I like to think that if I had heard of it, I might have been able to get into Caltech and that I might have been able to graduate."

He admonished the graduates that "It is important to know something very well, to learn you can solve hard and specific problems. Then you can go on to apply this knowledge to more complex situations."

He told the new alumni that "This is a good time to pause and think about what you want to do. As you move along the track, the chances for change decrease."

He gave the graduates two related principles for guidance: "Do what really excites you, and make decisions based on where and how you can do that thing best. Then, if you are good enough, the tenure, the money, and everything else will follow."

Goldberger raised the question, "What makes Caltech so good?" and he answered by saying that Caltech accepts only the best, does a few things and does them well, and "doesn't play catch-up." And because it intends to stay small, it seizes opportunities that allow it to make significant changes without growth.

Underneath all this, said Goldberger, there is great warmth, nurtured by the Institute's honor code, which admonishes against taking unfair advantage of anyone in the Caltech community.

"I can't tell you how terribly Mildred and I will miss you," Goldberger concluded. "It's been a ball."

And then the audience rose to give him a standing ovation.

Zewail awarded Guggenheim Fellowship

Ahmed Zewail, professor of chemical physics at Caltech, has been awarded a Guggenheim Fellowship by the John Simon Guggenheim Foundation of New York City to support his research on ultra-fast laser chemistry. He is one of 173 scientists, scholars, and artists selected from among more than 3,000 candidates for the fellowships, which are awarded annually on the basis of outstanding performance and future potential.

Zewail has pioneered the development of ultra-fast laser techniques for recording the behavior of molecules during chemical reactions. His work is yielding the first precise measurements of the rates at which molecular bonds are forged and broken. Zewail's research will also be applied to the development of laser selective chemistry in which custom-designed, laser-made molecules may be created in the laboratory.

He will use the fellowship to develop new laser techniques for studying molecular activity that occurs within one quadrillionth of a second, the amount of time it takes for atoms to link up to form several kinds of organic molecules. This research, aimed at producing the first recordings of the "birth" of molecules in real time, is also expected to shed light on some of the most important and elusive reactions in organic chemistry.

Caltech honors distinguished alumni

Continued from page 1

young people.

Lu Valle began his career as a winner of the bronze medal for the 400-meter run in the 1936 Berlin Olympics. He went on to work in chemical research for several firms including Eastman Kodak Company; Technical Operations, Inc.; Fairchild Camera and Instrument Company; Microstatics Laboratory of the SCM Corporation; and Palo Alto Research and Engineering Center of the SCM Corporation.

He earned his BA and MA degrees in chemistry from UCLA in 1936 and 1937. Based on the results of an alumni survey, in 1985 the UCLA Board of Regents named the graduate student commons in his honor in recognition of his outstanding service to young people.

Morris Muskat served as technical advisor in the Gulf Oil Corporation. Among petroleum engineers, he is regarded as the founder of the science of petroleum reservoir engineering. He began his career with Gulf Oil in 1929 as a research engineer with Gulf Research and Development Company.

Much honored for his work in the petroleum industry, he was the recipient in 1953 of the Anthony F. Lucas Gold Medal from the American Institute of Mining, Metallurgical, and Petroleum Engineers for distinguished achievement in improving the understanding of methods of producing and finding petroleum, and was later made an honorary member. He received the Lester C. Uren Award of the Society of Petroleum Engineers in 1969 for outstanding professional accomplishment. He is a member of the National Academy of Engineering.

Muskat has authored more than 100 research papers on fluid flow through porous media, oil production, theoretical geophysics, and lubrication. His book, *Physical Principles of Oil Production*, was for many years the standard text for students of advanced petroleum engineering. Muskat earned his BA and MA degrees from Ohio State University in 1926.

Stanley Pace assumed his position with General Dynamics in 1985. Previously he had been with TRW Inc. for 31 years, serving as vice chairman of the board since 1985 and as president and chief operating officer since 1977. He had been a director since 1965 when he was also elected executive vice president.

He is the immediate past chairman of the National Association of Manufacturers and chairman of the group's

Continued on page 4

Distinguished alumni honored

Continued from page 3

executive committee. He was chairman of the Greater Cleveland Roundtable, a group of community leaders committed to creating jobs and improving housing and education. He has long been active in the Boy Scouts of America.

A World War II B-24 pilot with 39 combat missions, he earned a BS degree in engineering from the U.S. Military Academy in 1943.

Previously he was corporate vice president of Science Applications, Inc., and vice president for engineering and research at Maxwell Laboratories, as well as assistant director in the division of controlled thermonuclear research at the Atomic Energy Commission.

Alvin W. Trivelpiece left his post as director of the Office of Energy Research, the U.S. Department of Energy (DOE), in April to become executive officer of the AAAS. He was confirmed by the Senate in the DOE position in 1981. There he served as science adviser to the secretary of energy, and managed DOE's programs for basic energy research, health and environmental research, high energy and nuclear physics, and nuclear fusion, and was responsible for the DOE's non-weapons national laboratories.

Prior to that, he was professor of engineering at UC Berkeley and professor of physics at the University of Maryland. He received a BS degree from California State Polytechnic University in 1953. He is the author of *Principles of Plasma Physics*, coauthored by N. A. Krall.

John S. Waugh did work at MIT that was instrumental in opening up matter in the solid state to nuclear magnetic resonance (NMR) examination. His MIT laboratory became one of the leading NMR spectroscopy centers in the world. Techniques developed there are now in widespread use. Many ideas originating from his work are finding use in fields such as laser spectroscopy. He has also done important research in thermodynamics and statistical mechanics. He joined the MIT faculty in 1953 after one year as a Caltech research fellow.

Among his honors are the Hazeltine Chemistry-Physics Prize, the Wolf Prize in Chemistry, the Linus Pauling Medal, an Alfred P. Sloan Research Fellowship, a Guggenheim Fellowship, and membership in the National Academy of Sciences and the American Academy of Arts and Sciences. He earned his AB degree from Dartmouth in 1949, *summa cum laude*.

Verdict on Seminar Day: "Smashing!"

Research seminars, programs and exhibits, a picnic luncheon served to the music of the Caltech Brass Quintet, wine and cheese, a barbecue dinner, and a concert by the Caltech Glee Club packed the day for some 1,400 alumni and guests who returned to campus on May 16 for the 50th Seminar Day.

At the morning general session, 1986-87 Alumni Association President Paul Winter recognized several faculty members who had spoken at the first Seminar Day in 1938: physicist and Nobel laureate William A. Fowler, who had led a physics seminar; business economist Horace Gilbert, who had spoken on "This World and Its Troubles"; and engineer Frederick C. Lindvall, who had described "The Cancer Problem."

Not present to be recognized were Nobel laureate Carl Anderson, who had talked on "New Particles in Physics"; Nobel laureate Linus Pauling, who had led a chemistry seminar; and Frederick Converse, who had led a civil engineering seminar.

President Marvin L. Goldberger, who presented the Distinguished Alumni Awards, said his goodbyes to the audience. Goldberger, who left to become director of the Institute for Advanced Study in Princeton, praised the alumni body for its dedication, noting that "you are small in numbers but mighty in spirit."

In return, "in lieu of an endowed chair," Winter presented the Caltech president with a birch arm chair bearing the Institute logo.

"What I will miss most about this place is the people," said Goldberger. "Caltech is unique, and it is made so by the interrelationship of all the components in the community."

Clarence Allen emerged as a popular favorite for his seminar on "Fault-Finding in Tibet," along with Al Hibbs, who talked about "JPL in Space: Past, Present, and Future." Perhaps most controversial was Jeni-joy La Belle, whose talk on "Face to Face: Women, Mirrors, and Identity" drew many raves and also the comment that "this is a trivial subject of interest only to women."

"SURFers! Inspiring!" commented another visitor about members of the Summer Undergraduate Research Fellowships program who described their projects.

In the Athenaeum, a series of 11 portraits of distinguished Caltech faculty members by Sylvia Posner were on public display for the first time. There, on the patio and outside under trees, alumni ate their box lunches as the Caltech brass quintet performed on the Olive Walk.

A newly developed backpack instrument for geologists, a space exhibit from JPL, and a showing of episodes of Caltech's award-winning course in physics, "Beyond the Mechanical Universe," filled breaks and lunchtime with rich offerings.

In Dabney Garden, alumni could purchase newly designed limited-edition Caltech sweatshirts and mugs bearing the likeness of Albert Einstein. The bookstore was open all day and drew throngs of customers.

The Red Door Cafe offered refreshments for visitors not satiated by lunch. Many members of the class of 1962 had lunch in Dabney Garden after their 25th reunion dinner the evening before.

Several high school students admitted to next year's freshman class came to Seminar Day bringing friends, in the hopes of broadening their perspective on what Caltech is all about.

Alumni and students mingled in line for a barbecue and some graduates took time out for visits to their old houses. The barbecue followed wine and cheese in the Alumni House, and a Glee Club concert in Beckman Auditorium put the finishing touch on the day. "Smashing!" concluded one graduate about the program, and that seemed an apt summary of the visitors' feelings.

Vol. 21, No. 4

August 1987

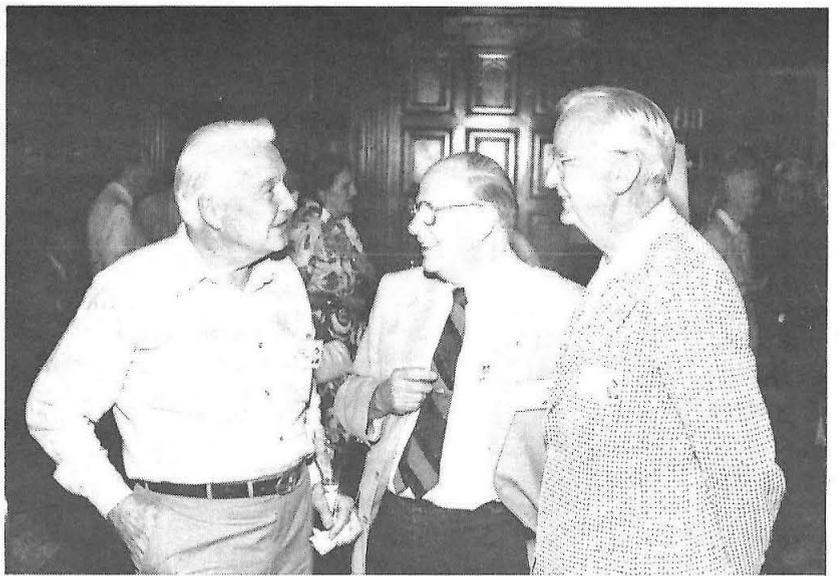
Issued six times a year (Feb., April, June, Aug., Oct., and Dec.) and published by the California Institute of Technology and the Alumni Association, 1201 East California Blvd., Pasadena, California 91125. Second class postage paid at Pasadena, California. Postmaster: Please send address changes to *Caltech News*, 1-71, California Institute of Technology, Pasadena, CA 91125. (818) 356-4692

David Harper: *President Alumni Association*
Theodore P. Hurwitz: *Vice President for Institute Relations*
Robert L. O'Rourke: *Director of Public Relations*
Paula S. DiConti: *Director of Publications*
Winifred J. Veronda: *Executive Editor*
Barbara Wirick: *Production artist*
Robert Paz: *Photographer*
Phyllis Brewster, Heidi Aspaturian: *Contributors*

USPS 085-640



Herman Englander (BS '39) and Ernest Gustafson (MS '74) register for Seminar Day.



Wendell Miller (BS '37), George Mann (BS '36, MS '38), Munson Dowd (BS '38, MS '46), and Richard Ridgway (BS '37) are ready for the first annual Caltech golf tournament, at left. Center: Martin Poggi (BS '37) and Janet Poggi are among guests at the reunion dinner for the class of 1937. Right: George Mann (BS '37, MS '38), Dorr Kimball (BS '37), and Paul Schaffner (BS '37) reminisce at the Half Century Club luncheon.

Golf, tours, dining, memories mark 50-year reunion

Forty-seven members of the class of 1937 returned in June to celebrate a 50-year reunion so vigorous that 1986-87 Alumni Association President Paul Winter remarked they'd all find life membership in the Alumni Association a sound investment.

Under the leadership of reunion committee chairman Paul C. Schaffner (BS '37), members of the class met for a dinner at the Annandale Country Club on Friday, JPL tours and the Half Century Club luncheon at the Athenaeum on Saturday, and a golf tournament with alumni from other classes at the San Dimas Country Club on Sunday. (The golf tournament was so successful that it is slated to become an annual event.)

Wendell Miller (BS '37) won the second flight in the men's division of the golf tournament with a score of 78. Hunt Holladay (BS '56) won the second flight with a score of 71, while Mark Cohen (RhD '87) won the third flight; his score was 73. Janet (Mrs. Hunt) Holladay won the women's section with a net score of 74.

Schaffner was assisted in reunion efforts by committee members Tom Davis (BS '38, MS '47, Eng '48), Carl Johnson (BS '37, MS '44, Eng '46), George Mann (BS '37, MS '38), Joseph Peterson (BS '37), and Richard Ridgway (BS '37).

Irving L. Ashkenas (BS '37, MS '38, MS '39), chairman of the reunion gift committee, presented a check for \$42,805 to the Institute and before the luncheon was over, that amount had swelled to \$50,000. Mario Capozzoli, assistant director of the Alumni Fund, accepted the gift and noted that 68 percent of the class alumni had contributed to it.

Memories of pranks and other adventures of student days proliferated as classmates received their Half Century Club certificates. Le Van Griffis (BS '37, MS '38, PhD '41) remembered watching the blank from which the 200-inch Palomar mirror would be ground as it was pulled on a flatbed truck across the campus. A swath of axle grease painted on the walk with a broom enabled the truck to maneuver around a tricky corner. "I had visions of calculus and linear algebra doing the job," said Griffis, "but they went back to the fundamentals."

Donald Hyers (PhD '37) recalled the power shovel on campus on which someone had painted "Jesus saves"—and to which someone had added "But Millikan gets credit."

Owen Johnson (BS '37) talked about the professor who wandered into Throop Club during finals week for a cup of coffee and asked a student there how many cups he had consumed. "Twenty-five," answered the student. "Oh, my," responded the professor. "Doesn't that keep you awake?" "No," said the student, "but it helps."

Martin Poggi (BS '37) remembered that engineering students concocted smelly compounds in chemistry lab and rubbed them on bed springs in Fleming House—creating mystery scents that sometimes lingered for weeks.

Walton Wickett (Ex '37) reminisced about being tossed into the liquid air pond in Bridge Laboratory after he enticed a pretty young woman at a Fleming House party over to Dabney House for some conversation.

Jack C. Kinley (BS '37) related that he once returned to his house from vacation and heard a terrible racket in a room down the hall. The source

of the noise proved to be a cement mixer—pouring out cement.

James R. Seaman (BS '37) remembered the time his stool toppled over in a classroom on the top floor of Throop. The Long Beach earthquake was in process and cornices were falling when Seaman reached the first floor. Among those milling about on the Olive Walk was Albert Einstein, who was a visiting faculty member at the time.

Dorr Kimball (BS '37) reminisced about the student who left his room unlocked and his keys in the room. When the student came back the door was locked, and even after much effort with master keys and locksmith techniques, neither the student nor the supervisor could unlock the door. Neither noticed that the door bore the wrong number; it had been switched with the door to another room.

Wilbur Snelling (BS '37, MS '38) remembered the dinners hosted by the Robert Millikans, and that Mrs. Millikan insisted there was a right way and a wrong way to pronounce research.

Shao W. Yuan (MS '37, PhD '42) remembered waiting for two hours for Theodore von Kármán to evaluate his thesis, and then walking with him to the famous aeronautical scientist's car—to find the keys in the ignition, the engine turned on, and the automobile out of gas. Yuan remedied the situation by walking to Lake Avenue for a refill for the gas tank.

John Rinehart (MS '37) recalled working as the assistant to Carl Anderson, who had just discovered the positron and who would soon win the Nobel Prize—and who would sometimes extinguish at the laboratory sink a flaming wastebas-

ket ignited by a cigarette

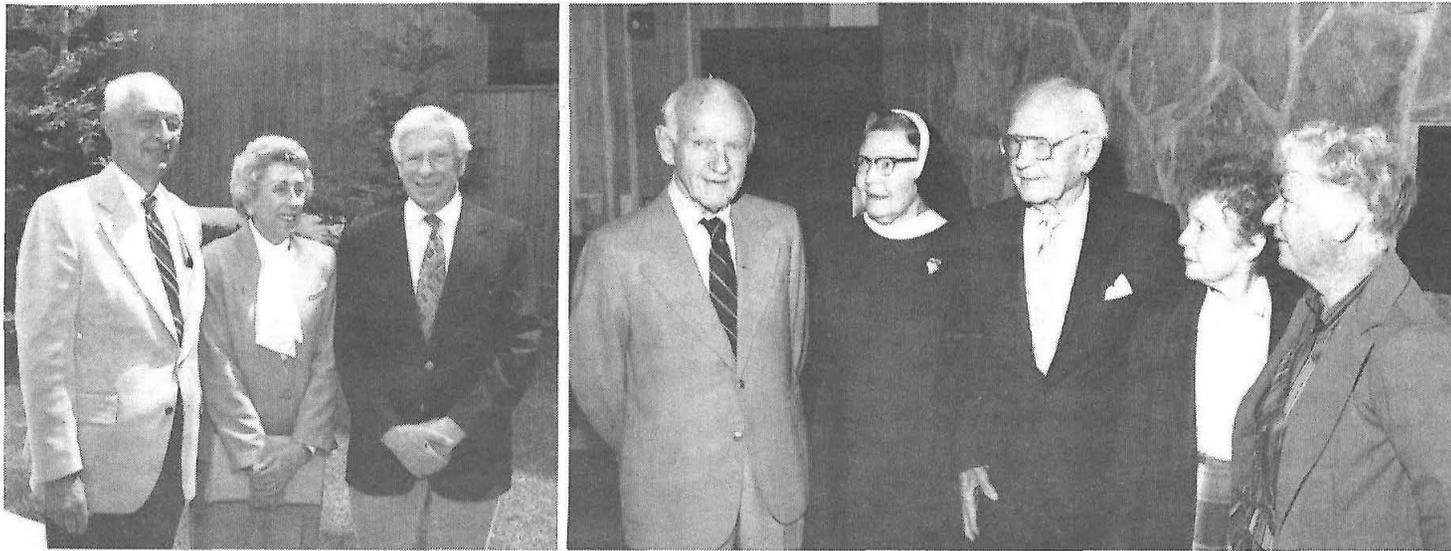
Edward Horkey (BS '37, MS '38) said his most impressive memory was getting a job in the middle of the depression for \$150 a month. And William Wetmore (BS '37, MS '39, PhD '41) said he has learned over the years that Caltech graduates can become productive at new jobs much more rapidly than those from other schools because they have mastered fundamentals.

Caltech's oldest living alumnus, Virgil Morse (BS '14), who is 101 years old, was introduced, as was Robert Allen (BS '16). Other members of classes that graduated more than 50 years ago were recognized. Then Frank Pine (Ex '24) concluded luncheon by leading everyone in singing the alma mater, "Hail C.I.T."

Wasserburg receives honorary degree

Gerald J. Wasserburg has received an honorary doctor of science degree from Arizona State University, his third in three years and his first from a U.S. institution. At the presentation ceremony, he was described as a "fearless and demanding academician, a premier geophysicist of our time, whose laboratory work has refined the time scale for events in the early history of our solar system."

Wasserburg is the John D. MacArthur Professor of Geology and Geophysics, chairman of the Division of Geological and Planetary Sciences, and executive officer for geochemistry. His other honorary doctorates are from the Free University of Brussels and the Université Pierre and Marie Curie in Paris.



Fred and Marvis Maloney with President Goldberger at the dedication of the Maloney House, at left. Right: Gilloon family members at the dedication of the Gilloon House — In the center, Frank Gilloon, in whose honor the graduate residence is named; to his right, his brother, James, and his sister, Sister Maria Theresa; to his left, Mrs. James Gilloon, and his sister, Virginia.

Gilloon, Maloney Houses dedicated

Gilloon House and Maloney House, two portions of the new Catalina II graduate student residences, were dedicated recently in honor of couples who are long-time Caltech supporters: Frank and Elizabeth Gilloon and Fred V. and Marvis Maloney.

Gilloon, 92, came to Caltech in 1919 as an instructor in civil engineering. He returned to New York City but later came back to California, where he purchased an orange and avocado grove near the city of Del Mar. He joined The Associates in 1966 and is a member of the President's Circle. Maloney (BS '35, MS '36) is a retired Texaco executive.

The student residences are on Del Mar Boulevard at Catalina Avenue; each contains 15 apartments. Rustic in exterior design, they are of plaster with rough-hewn wood trim and shingle roofs, and are clustered around a central recreation building.

Braun gift endows Goldberger Professorship

Caltech has established the Marvin L. Goldberger Professorship with a gift of \$1.5 million from John G Braun, trustee of the Carl F Braun Trust of Pasadena. The first Goldberger Professor will be James J. Morgan, professor of environmental engineering science and vice president for student affairs.

The new chair is named for Marvin L. Goldberger, who became Caltech's fourth chief executive officer in 1978 and who recently accepted the post of director of the Institute for Advanced Study in Princeton, New Jersey.

The chair's donor, John G Braun, is the former president, chairman, and chief executive officer of C F Braun and Company, and a Life Member of the Caltech Board of Trustees. The endowment for the Goldberger chair is the most recent of numerous gifts that the Braun family, through the

Braun Trust and the Braun Foundation, has presented to Caltech during the last three decades.

Goldberger, a theoretical physicist, became Caltech's president after 21



James J. Morgan

years on the faculty of Princeton University.

Morgan, a specialist in aquatic pollutants and water purification, joined Caltech's faculty as associate professor in 1965. He received his doctorate from Harvard in 1964. He was

appointed professor of environmental engineering science in 1969.

His research at the Institute was focused on the development of new techniques for water treatment, for controlling pollution in coastal waters, and on acid rain. He is a member of the National Academy of Engineering and in 1980 received the American Chemical Society Award for creative advances in environmental science and technology.

For many years Morgan has also played a major role in the administration of student affairs on the campus. He was dean of students from 1972 to 1975, acting dean of graduate studies from 1981 to 1984, and has been Caltech's vice president for student affairs since 1980. From 1974 to 1980, he was executive officer for environmental engineering science in the Division of Engineering and Applied Science.

Patterson elected to NAS

Caltech geochemist Clair Patterson, who established the age of the earth and alerted the modern world to the dangers of industrial lead pollution, has been elected to the National Academy of Sciences (NAS).

Patterson is a senior research associate in geochemistry at Caltech. Election to the NAS is one of the highest honors that can be bestowed upon a scientist or engineer.

Dr. Patterson's election brings to 59 the number of NAS members currently on the Caltech faculty.

Alumni sharpen their gold-panning skills



Alumni practice their gold-panning techniques at the Crow Creek Mine in Girdwood, Alaska, on the recent Alumni Association trip to the south-central portion of the state: From left — Paul Armstrong (BS '51, MS '55), Joan Armstrong, Barbara Rawn, and Stanley R. Rawn, Jr. (BS '52, MS '53), a Caltech trustee. Robert Sharp (BS '34, MS '35), the Sharp Professor of Geology, Emeritus, and Leon Silver, the W. M. Keck Professor for Resource Geology, led the trip.

President's Circle members are honored



Marvin L. Goldberger shares information with Mrs. Robert Henigson in June at a dinner for members of the President's Circle at the Goldbergers' home. Mrs. Arnold O. Beckman is at left. Robert Henigson is president of The Associates.

Caltech says "good-bye" to the Goldbergers

The Caltech community bid two fond farewells to its first family of almost a decade as Marvin and Mildred Goldberger prepared to leave the Institute in July.

Faculty, staff, and students gathered at the Athenaeum for good-byes at a reception under a banner reading "Farewell Murph and Mildred," and even the Caltech Beaver mascot showed up for the festivities. At a second event, the faculty reminisced with the Goldbergers at dinner in the Athenaeum.

"Time has passed extraordinarily rapidly. It's hard to believe we've been here nine years. You have been very kind and we're going to miss you," Goldberger told guests at the reception.

Barclay Kamb, vice president and provost, said he had searched for a way of presenting Goldberger with a 10-year pin for the president's nine years of service. To solve the problem, Kamb said, he had considered various time warp theories, including those in which electrons move forward in time while other particles move backward.

As going-away gifts, each of the Goldbergers received a limited edition Halcyon Days box—his with a design featuring Parsons-Gates Hall of Administration and hers with the Athenaeum.

ASCIT president Jeff Tekanic spoke for Caltech students and presented Goldberger with a photograph album beginning with a shot of the president being tossed into the Pacific when he first attended freshman camp.

Among the other pictures were shots of the 1984 Rose Bowl scoreboard (which students rigged to read "Caltech 38, MIT 9") and the Hollywood sign, temporarily renovated this May to read "Caltech."

William Thomson, vice mayor of Pasadena, thanked the Goldbergers for "binding together the city of Pasadena with Caltech to a degree that had not existed before."

Gifts proliferated at the faculty dinner, which had as its master of ceremonies B. Vincent McKoy, chairman of the faculty. Samuel Epstein, the William E. Leonhard Professor of Geology, gave the toast.



The Caltech beaver joins in the good-byes at a reception for the Goldbergers.

A bolo tie designed by a prize-winning Indian craftsman also went to Goldberger, and Mrs. Goldberger received a benitoite gemstone, the state stone of California. A portrait-sized photograph of the Goldbergers and an album featuring shots of the two around campus and at the president's home, along with a faculty retirement medal, were other gifts.

In a musical program four students reminisced to the tune of lyrics from "The Pirates of Penzance" about Goldberger as a teacher of undergraduate physics: "He is the very model of a theoretic physicist, / To physics frosh without a doubt the devil's own inquisicist! / The homework he assigned was full of integrals elliptical, / with outside readings so obscure and references so cryptical!" . . . John J. Hopfield, the Roscoe G. Dickinson Professor of Chemistry, humorously recalled Goldberger's days as a Princeton physics professor, reminiscing about his love of tennis, his penchant for making smoked gourmet delicacies, and his friendly competition with fellow physicist Murray Gell-Mann about everything from trips to China to finding obscure mushrooms in Aspen.

On behalf of the faculty, the president was given a Questar telescope, something insiders learned he had coveted since he almost bought one 30 years ago with the money from a physics prize.

James J. Morgan, vice president for student affairs, talked about Goldberger and the students, and provost Barclay Kamb showed slides of the president on a river rafting trip with members of the geology faculty.

Goldberger will begin his new assignment as director of the Institute for Advanced Study in Princeton, New Jersey, in September, after a few weeks' vacation.

1987 SURF program attracts 142 summer students

A total of 148 students, including 16 from other campuses, and 92 faculty and JPL sponsors are enrolled in the 1987 SURF (Summer Undergraduate Research Fellowships) program, now in its 12th year. The highly successful program gives undergraduates the opportunity to pursue 10 weeks of independent research in cooperation with a senior researcher.

Three students are doing off-campus research this summer under the program's auspices: one at Harvard in biology; one in Italy for a firsthand look at the setting of the controversial *Cantos* of poet Ezra Pound; and one in China for a history project involving demographic measurement of the fertility, mortality, and nuptial patterns of the Chinese population between 1750 and 1950.

Schmidt named Moseley Professor

Maarten Schmidt, whose discovery of the red shift of quasars ranks as one of the premier achievements of modern astronomy, has been named the Francis L. Moseley Professor of Astronomy at Caltech. Schmidt, who has been the Institute Professor of Astronomy at Caltech since 1981, will be the first holder of the endowed chair, established last year with a grant from the Flintridge Foundation.

Francis L. Moseley, who died in 1984, was a pioneering electronics engineer and founder of the F. L. Moseley Company, now the San Diego division of Hewlett-Packard. In 1964, he founded Servo Products Company, a manufacturer of numerically controlled tools and related products. With his wife, Louisa, he was a lifetime member of The Caltech Associates.

Schmidt was born and educated in the Netherlands and received his doctorate from the University of Leiden in 1956. He joined Caltech three years later. In 1972 he was named



Maarten Schmidt

executive officer for astronomy and was appointed chairman of Caltech's Division of Physics, Mathematics and Astronomy in 1976. From 1978 to 1980, he was director of the Hale Observatories.

Much honored for his professional achievements, Schmidt has received the Helen B. Warner Prize and the Henry Norris Russel Lectureship of the American Astronomical Society, the Rumford Premium of the American Academy of Arts and Sciences, and the Gold Medal of the Royal Astronomical Society.

In 1965 he was named (with Caltech astronomer Jesse Greenstein) California Scientist of the Year, the state's highest civilian honor, by the California Museum of Science and Industry. He was elected a foreign associate of the National Academy of Sciences in 1978 and is a Fellow of the American Academy of Arts and Sciences.

Men's tennis team strongest in recent Tech history

Baseball

The 1987 Caltech baseball team concluded a frustrating season, winning only 2 of 29 attempts. Despite its overall record, however, the team members posted several noteworthy accomplishments and provided strong indications that the future of the Tech baseball program is on the upswing.

Jim Coykendall, a sophomore catcher, led the team in total hits (20) and batting average (.274) and was second in RBIs with 11. Junior outfielder Doug Roberts broke the all-time school record for stolen bases in a season with 20. Sophomore third baseman Jim Burleigh led the team in extra base hits. Pitching duties were primarily divided between sophomore Brian Colder and senior Brett Bush. Team awards went to Bush, who won the Alumni Trophy for most valuable player; Colder, who won as outstanding competitor; Coykendall, who received the coaches' award for outstanding accomplishment; and second baseman Dwight Berg, who was awarded the Peterson Trophy for outstanding freshman.

La Verne won the SCIAC conference this year with a perfect 18-0 record. La Verne was followed by Redlands (14-4), Claremont (10-8), Occidental (9-9), Whittier (7-11), Pomona-Pitzer (5-13), and Caltech (0-18).

The 1987 Caltech baseball team was one of the largest squads in recent years, with 23 players on the roster. The fact that 20 of these players expect to return to the program next year indicates that the 1988 team will have talent and experience on which to build. These 20 returning players—along with some talented newcomers—are sure to make Caltech baseball much more competitive.

Golf

Four Tech golfers gave their best efforts this year, but without the necessary fifth player they were unable to score in conference matches. The team was composed of seniors Dan Bikle, John Mann, and Scott Virgil, and sophomore Chris Habecker.

The J. Ben Earl trophy for the most valuable golfer was won by John Mann, who had the best individual score for the season and led the team at both the Southern California Invi-

tational and at the conference tournament. John is a three-year golf letterman who has also been a football letterman for four years. He will be missed by both teams next year.

Dan Bikle, also a three-year letterman, deserves special recognition for his play in the SCIAC Tournament. His 86 was the best single round by a Caltech golfer.

Because three seniors are leaving the team this year, hopes for the future lie with incoming students who may have played golf in high school.

In SCIAC competition, University of Redlands continues to dominate; this year, Redlands won all its dual matches and the conference tournament. Claremont-Mudd-Scripps replaced Pomona-Pitzer as runnerup with Occidental, La Verne, and Whittier following in that order.

Men's Tennis

The 1987 men's tennis team turned out to be the strongest in recent Caltech history. Although the team won only 6 of 20 matches, the men played well in a number of close 5-4 losses to teams that used to dominate them. The number one player, Mark Holdsworth, won over excellent players from Christ College and Occidental, giving Tech points not attained from the top of the ladder in many years.

Raleigh Chiu, playing number two singles, had big wins against Occidental in league play and upset Pomona-Pitzer's number two player in the league tournament. Together Holdsworth and Chiu won eight times this year at number one doubles.

Fine performances were realized by number three singles player Steve Roskowski and number five singles player David Garza (with a 10-win and 6-loss record) throughout the season. Tom Nolan teamed up with Roskowski to form a strong number two doubles and Garza teamed with Gene Pottenger, Mark Berman, and Khanh Nguyen at third doubles. Pottenger and Berman shared number six singles.

In conference play, Caltech finished in fifth place, ahead of La Verne and Whittier. Conference champion this year for the second straight time was Claremont-Mudd-Scripps, followed by Redlands, Occidental, and Pomona-Pitzer. Claremont finished the year ranking sixth nationally in Division III tennis; Redlands finished ninth. Claremont will compete for the Division III title in a tournament comprised of the best eight teams in the nation.

Prospects for next year may be good, as the team's number one and two players will be returning, along with Pottenger and Berman. Junior varsity students Anh Tuan Le and Tung Yin have improved and may

lead the starting lineup. Several incoming freshmen have had considerable experience in high school. With luck, the playing quality of this year's team may be duplicated next season.

Women's Tennis

The Caltech women's tennis team experienced a frustrating season. The team lost Tammy Choy, who had ably anchored the number one position for the previous three years. But Tech was strengthened by two freshmen, Laura Hernandez at number one and Jennifer Low at the fourth spot, and by the return of Linda Schlueter at number six.

The team lost several close matches 4-5, and ended at the bottom of the league this year. However, the SCIAC tournament went well as three players advanced to the second round in singles—Jennifer Low, Carol Mullenax, and Linda Schlueter—and the women scored a good win over Christ College in non-league play. Next year the team should improve because only one player left and at least two new and experienced players will be joining the Tech contingent.

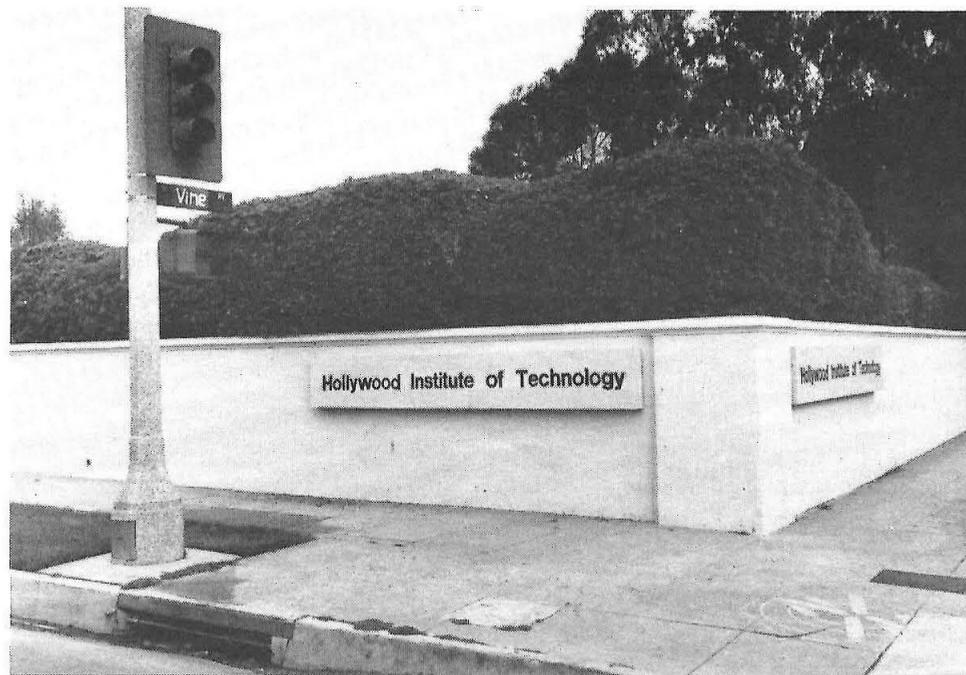
Caltech students grade their teachers

After months of being graded by their teachers, Caltech students have *their* opportunity once a year when they rank faculty members for the Teaching Quality Feedback Report. Based on these ratings, the ASCIT Board of Directors names six faculty members as recipients of awards for teaching excellence on the basis of clarity of presentation, course material, and personal interest in students, among other factors.

This year the faculty members honored were Donald S. Cohen, professor of applied mathematics; Dennis A. Dougherty, associate professor of chemistry; Valentina A. Lindholm, lecturer in Russian; Thomas A. Prince, associate professor of physics; Jean-Paul Revel, Albert Billings Rudock Professor of Biology; and Thomas A. Tombrello, professor of physics.

According to ASCIT president Jeff Tekanic, the awards emphasize the high value that undergraduates place on outstanding teaching.

Hollywood and Vine moves to a new location



Shortly after the Hollywood sign was altered to read "Caltech," unknown persons temporarily changed names on street signs at California and Hill to Hollywood and Vine — and gave the Institute a new name as well.

From the president

A column of alumni news
by Alumni Association President David Harper

The Caltech Alumni Association is beginning a new year, and I'm proud to serve as your 1987-88 association president. First, we should all thank Paul Winter (BS '44) for his outstanding leadership during the past year. We will continue to work to accomplish the goals he set, and also to expand in several areas.

Our main goals for the coming year include the development of new chapters to provide more service and support to alumni living in areas remote from southern California. We are also seeking to expand our network of alumni throughout the country who support admissions work through visits to high schools and college nights. If you are interested in representing Caltech at local college nights or visiting high schools to meet with prospective students, please complete the form below and return it to the Alumni Association office, 1-97, Pasadena, California 91125.

Another priority is to facilitate greater student/alumni interaction through the house activity program. This is an ongoing program to support student activities and programs that enhance the quality of life at Caltech. We need the backing of all alumni through their association membership to help provide expanded sports programs, music and drama opportunities, Freshman Camp, and assistance for many campus clubs.

In this column during the year, I'll be informing you about progress of the projects that the board is pursuing on your behalf, and about new directions in which we are moving. We want you to know the people involved in accomplishing these tasks, and we hope to share with you a little about them in this column.

The board's agenda is set by the executive committee, which consists of the board's officers. Paul H. Winter (BS '44) is our immediate past president and is vice president, Johnson & Nielsen Associates. Paul does structural design of buildings, including seismic design and analysis. He

has served on the board since 1982.

Charles H. Holland, Jr. (BS '64), vice president, is vice president, Citicorp Technology Office, and is responsible for the effective use of technology in the delivery of financial services worldwide. He has served on the board since 1984.

Rhonda L. MacDonald (BS '74), treasurer, is a project structural engi-



David Harper

neer for TRW Inc. in Redondo Beach and has served on the board since 1984. Mike Boughton (BS '55), secretary, is a program manager for TRW Inc. in the Systems Development Division, working on large-scale computer-based communication systems. Mike has served on the board since 1985.

I've been on the board since 1983 after serving as general chairman for Seminar Day that year. I received my MS degree from Caltech in civil engineering in 1977, and am vice president, finance, for James M. Montgomery, Consulting Engineers, Inc., in Pasadena.

We invite you to join us as we help to create a more dynamic Alumni Association to keep alumni in touch with the Institute and with each other.

Alumni Fund gifts total \$1.85 million

The Alumni Fund concluded its 1986-87 year with total contributions of approximately \$1.85 million (final tabulations were still being made when the publication went to press). The amount raised was about the same as that for the previous year.

During the campaign year, 44 percent of alumni made contributions, raising approximately the same amount of money as the 50 percent who contributed in 1985-86.

Campaign chairman E. Ted Grinthal (PhD '69) noted that the Fund is still well ahead of where it would have been without the Irvine Challenge, which concluded in 1984-85. The year before the first of three Irvine Challenge years, contributions were at \$1,167,000 with participation at 43 percent. "We have retained the

James Olson: new Caltech trustee

James E. Olson, chairman and chief executive officer of American Telephone & Telegraph, has been named to the Caltech Board of Trustees.

Olson, 61, is a native of Devils Lake, North Dakota. He has worked in the telephone and telecommunications business since 1943 when he was hired as a splicer's helper with the Northwestern Bell Telephone Company in Grand Forks, North Dakota.

Twenty-three years later, he had moved up through the ranks of the company to become vice president and general manager in its Iowa area. He was transferred to Indiana Bell in 1970 as vice president, operations, and became president of that company two years later.



James Olson

In 1974 Olson assumed the presidency of Illinois Bell and in 1977 became executive vice president of AT&T headquarters in New York City. He was made vice president and chief operating officer in June 1985, after serving as vice chairman of the board since 1979. He assumed his current position in September 1986.

Olson is a graduate of the University of North Dakota.

gains that the Irvine Challenge helped us make," he said.

Grinthal added that this year there was no special challenge program as additional motivation for donors and that donor participation decreased. "Thankfully, we have a solid core of annual supporters; those who gave only because of the Irvine Challenge dropped off this year. We hope to have them back in the future. Fifty percent is a milestone in participation."

Grinthal added that he is optimistic about 1987-88.

"Although I can't discuss it yet, it looks as if we will have a very special opportunity in 1987-88 to make the year the most successful ever," he concluded.

Rodman Paul dies on May 15

Rodman W. Paul, the Edward S. Harkness Professor of History, Emeritus, and a research scholar of the Huntington Library, died May 15. He was 74.

A member of the Caltech faculty for the past 40 years, Paul was an authority on the history of the American West. In addition to teaching and research, he was instrumental in helping to develop the Huntington Library's western history collection. Twice he received the ASCIT Award for Teaching Excellence from Caltech students.

A Fellow of the California Historical Society since 1980, Paul received the Society's Henry R. Wagner Memorial Award in 1984 honoring his authorship of eight books on California history. The best known of these are *California Gold: The Beginning of Mining in the Far West*, and *Mining Frontiers of the Far West, 1848-1880*. His latest book, *The Far West and the Great Plains in Transition, 1859-1900*, will be published in March 1988.

Paul was president of both the Western History Association (1977-78) and the Pacific Coast Branch of the American Historical Association (1980-81). He was a member of the boards of directors of both the Pasadena and the Santa Barbara historical societies.

From 1966-77, he was a member of the National Archives Advisory Council in Washington, D.C., and served as its chairman in 1977. Paul was born November 6, 1912, in Philadelphia. He received three degrees (AB 1936, AM 1937, and PhD 1943) from Harvard University and was instructor and tutor in history there, as well as assistant dean of Harvard College before he came to Caltech in 1947.

Three on faculty retire as emeritus professors

Three Caltech faculty members retired this summer, all with emeritus status. They are: Richard Dean (BS '45), professor of mathematics, who joined the Caltech faculty in 1954 as Harry Bateman Research Fellow and was named professor in 1966; James P. Quirk, professor of economics, who joined the faculty in 1971; and David F. Welch (Eng '43), who became an instructor in industrial design and engineering drafting in 1947 and professor of engineering design in 1984.

ADMISSIONS VOLUNTEER NETWORK

Name _____

Class Year _____

Address _____

_____ Phone _____

Business Phone _____

(Return to: Alumni Association,
1-97, Pasadena, CA 91125)

ALUMNI ACTIVITIES

September 12: PALOMAR OBSERVATORY TOUR for Los Angeles and Orange County alumni, featuring the 200-inch and 48-inch telescopes. Sign-up information has been mailed to alumni. Contact the alumni office for additional information.

September 20: PASADENA PLAYHOUSE, featuring dinner and an evening at the theater enjoying the comedy *Room Service*. Sign-up information has been mailed to Los Angeles and Orange County alumni.

December 4: SEATTLE CHAPTER MEETING at Triples Restaurant on Lake Union.

January 1, 1988: ROSE PARADE VIEWING. Information will be mailed to most California alumni in November. Alumni living outside California who want ticket information should contact the alumni office.

May 21: FIFTY-FIRST ANNUAL SEMINAR DAY on the campus.

June 16: ALUMNI ASSOCIATION ANNUAL MEETING in the Athenaeum.

Chester Carlson posthumously honored

The late Chester F. Carlson (BS '30) has been posthumously inducted into the National Inventors Hall of Fame for his invention of xerography, the process that revolutionized paper copying. He is the second Caltech alumnus to be so honored.

In receiving this honor, he joined 67 inventors—among them Thomas Edison, Alexander Graham Bell, Eli Whitney, Guglielmo Marconi, Rudolf Diesel, Charles Kettering, and Arnold O. Beckman (PhD '28). The award announcement appears in the National Inventors Hall of Fame annual publication.

Harry Gray twice honored

Harry Gray, Arnold O. Beckman Professor of Chemistry and director of the Beckman Institute, received an honorary doctor of science degree from the University of Rochester and a second honorary doctorate from the University of Chicago this spring. He was cited at Rochester's commencement ceremony as a "research scientist of high achievement and a leading statesman in his profession."

Association welcomes new officers, honorary alumnus

Robert W. Oliver, professor of economics and new master of student houses, was welcomed as an honorary alumnus at the annual dinner of the Caltech Alumni Association.

Elected as officers for 1987-88 were: David J. D. Harper (MS '77), president; Charles H. Holland, Jr. (BS '64), vice president; Rhonda L. Mac Donald (BS '74), treasurer; Edward M. Boughton (BS '55), secretary.



David Harper



Charles Holland, Jr.



Rhonda MacDonald



Edward M. Boughton

Elected as board members were George C. Barber (BS '40), Dale R. Burger (BS '56), Mark R. Johnson (BS '74), LeVal Lund, Jr., (BS '47), and Peter V. Serrell (BS '36, MS '39).

Paul H. Winter (BS '44), 1986-87 president, was presented with a birch arm chair with the Institute logo and a plaque bearing the presidential gavel. A short business meeting preceded festivities.

San Diego-area alums make plans for new chapter

Ten San Diego-area alumni met together on May 29 to plan for the development of an Alumni Association chapter. They evaluated results of a survey mailed to alumni earlier this year and began planning events of interest to Caltech graduates.

Frank Davis (BS '36) and Al Kellner (BS '79) are co-chairmen of the chapter, supported by Pierre Baldi (PhD '86), Leendert de Witte (MS '47), Bob Foss (BS '32), Doug Gage (BS '66), Olly Gardner (BS '51), Dan Schwartz (BS '85), Wally Swanson (BS '36), and Rod Thompson (BS '85). The group plans to meet again early in September to make plans for the coming year, and ideas from other alumni in the area are welcome. The group is looking forward to providing ways for Caltech alumni to keep in touch with the Institute and with each other.

Seattle-area alumni plan several events

Caltech alumni in the Seattle area gathered for a spring outing on June 13 when they toured Tillicum Village at Blake Island Marine State Park. A salmon dinner was served in an Indian longhouse and the group watched traditional Indian dances during dinner.

About 30 alumni and guests took the four-hour tour. The evening was a warm and friendly one as people shared conversation and watched the festivities.

The Seattle chapter, headed by Gil Peppin (BS '53), is planning several opportunities to bring alumni together—including the annual Christmas dinner on December 4, when a Caltech faculty member will be guest speaker.

Greenstein honored for contributions

The scientific contributions of Jesse Greenstein, Lee A. DuBridge Professor of Astrophysics, Emeritus, were twice honored this summer in two symposia that the International Astronomical Union (IAU) dedicated to him. The first, "Faint Blue Stars," was held at the University of Arizona in Tucson, where Greenstein received an honorary doctor of science degree; the second, on stellar spectroscopy, was in Paris.

Reunion classes contribute \$176,600 to Institute

The five classes holding reunions this year contributed more than \$176,600 in unrestricted funds to the Institute. Chairmen of the campaign committees for reunion gifts were: Irving L. Ashkenas (BS '37), Hugh A. Baird (BS '42), William J. Rihn (BS '52), Wilfred P. Charette (BS '62), and Steve Mitchell (BS '77). The committees worked closely with the Alumni Fund in their efforts. The totals, including corporate matching

gifts, and a comparison with gifts for the previous year, appear below:

At the year's conclusion, Tway Andrews (BS '44), chairman of the reunion gifts committee, thanked the volunteers and said, "One of the Institute's greatest strengths is its alumni. They are a dynamic group who pull together to support Caltech, particularly during their reunion years. Their generosity is appreciated."

CLASS	DOLLARS THIS YEAR	DOLLARS LAST YEAR	NUMBER OF VOLUNTEERS
1937	\$50,006	\$ 8,620	14
1942	55,077	35,533	14
1952	32,626	23,720	13
1962	20,359	12,164	16
1977	18,540	8,740	1

OBITUARIES

1926

JAMES F. P. THOMSON, on April 25, in Monrovia. He was 84. A retired engineer with the Southern California Gas Company, he had been Past Master of Arcadia Masonic Lodge and a member of Pasadena Scottish Rite and the Al Malaikah Shrine. He is survived by his wife, Ruth; sons Bruce and Richard; daughter Anne; and ten grandchildren.

CHARLES F. HUMPHREY, of La Crescenta, on April 29. In 1982 he presented the Grandmother clock to the Alumni House. He is survived by two daughters, Dorothy and Susan.

1928

CYRUS G. MINKLER, on January 30, in Royal Oak, Michigan. He had worked for the law firm of Harness Dickey & Pierce as a patent lawyer since 1935. He is survived by his wife, Edna; daughters Christina and Joanna; five grandchildren and three great-grandchildren.

1934

DAVID W. LUTES, of Boise, Idaho, on May 1. He spent his career as a civil engineer with the firm of Morrison-Knudsen Co., Inc., working on such projects as the All-American Canal in Arizona and California; the San Vicente Dam in San Diego; the Dale Hollow Dam and Power House in Tennessee; Big Creek Dam in the California Sierras; and Lookout Point Dam near Eugene, Oregon. He retired as assistant chief engineer for Morrison-Knudsen in 1976. Survivors include his wife, Margaret; daughter Catherine; and two grandsons. MARSTON C. SARGENT, PhD, of San Diego, in 1986. He is survived by his wife. G. SIDNEY SMITH, of St. Louis, Missouri, in March. He was a retired plant manager for Indian Head, Inc., in Woodland, California. He is survived by two daughters, Dana and Mimi.

1940

WALTER RAMEY LARSON, of Hampstead, New Hampshire, in January. He was a Life Member of the Alumni Association and very active in fund-raising at Caltech. He is survived by his wife, Harriet, a daughter, and grandchild. WILLIAM R. V. MARRIOTT, MS '42, of Everett, Washington, on April 16, of pancreatic cancer. He spent much of his life as an Air Force medical officer, stationed everywhere from Turkey to Viet Nam to Germany. After retirement from the Air Force, he taught at Oregon State University, becoming professor emeritus in 1980. He is survived by his wife, Asako. JOHN M. WILD, of Rancho Sante Fe, California, on March 14. He was a key figure in Northrop Aircraft's aerodynamics section and in the design of the P-61 series, the XP-56, XB-35, and YB-49. He was a professor in the graduate school of aeronautical engineering at Cornell University until 1950 and later became chief engineer and director of engineering of ARO, Inc. In 1959 he joined General Dynamics in San Diego, where he was involved with Project Orion. He retired in 1976. He was an Associate Fellow of the AIAA. He is survived by his wife.

1943

GEORGE P. ZEBAL, MS, of Laguna Hills, on February 28, of arteriosclerosis. Before starting his own geothermal consulting business in 1979, he worked in mining geol-

ogy in the Sierra, oil geology in New Orleans, and space geology in Newport Beach. He was the foremost authority on small geological faults in the Newport-Costa Mesa area and traveled widely, looking for geothermal energy sources. He was a Life Member of the Alumni Association and is survived by his wife, Patricia; sons Bradley and Ronald; and three grandchildren.

1950

ROBERT N. CURTIS, of Bellevue, Washington. He is survived by his wife, Anne.

PERSONALS

1918

FRANK CAPRA, Oscar-winning film director, celebrated his 90th birthday in May in La Quinta, California, with his family.

1922

FRANCIS L. HOPPER, of Kernersville, North Carolina, recently reminisced on his long career at Western Electric for the *Winston-Salem Journal*, detailing the birth of sound in motion pictures and his time spent on studio lots in Hollywood, where he met such luminaries as Mae West, Garbo, Bob Hope, and Bing Crosby. He helped design sound equipment and was a pioneer in developing stereophonic sound. When Western Electric shut down its movie-sound business in 1950, Hopper transferred to work on defense projects until his retirement in 1965. "I spent about half my life doing things to entertain people and the next half doing things to get rid of them."

1937

JOE M. SMITH, of Davis, California, won the 1987 Phillips Lecture Award, given annually by the Oklahoma State University school of chemical engineering and the Phillips Petroleum Company. He received the award in recognition of his extensive contributions to chemical engineering education. He is a professor of chemical engineering at UC Davis. In 1960 he won the William Walker Award for research publications; in 1970, the American Society for Engineering Education Award for chemical engineering research; in 1977, the R. H. Wilhelm Award for research in chemical reaction engineering; and in 1983 the Warren K. Lewis Award for chemical engineering education. He was elected to the NAE in 1975.

1942

CAROL M. VERONDA, of Annandale, Virginia, was elected a Fellow of the AAAS for "novel contributions to microwave electron tubes, and for management and leadership of aerospace and military electronic systems design and development." He is currently head of the identifications systems branch in the radar division of the Naval Research Laboratory.

1947

DONALD STEWART, Jr., and his wife, Evelyn, of Upland, California, recently completed a three-week tour of the People's Republic of China as culture students in the spring.

1948

WILLIAM J. CARROLL, MS '49, of La Canada, was elected a member of the NAE for "outstanding contributions to the advancement of water supply and wastewater system planning and design." He was

also nominated president-elect of the ASCE, and will serve from 1987-88. He will assume the presidency from 1988-89. He is chairman of the board of James M. Montgomery, Consulting Engineers, Inc., of Pasadena.

HARRY LASS, PhD, of Altadena, recently graduated with a degree in law from Glendale University's College of Law. So did his daughter, Leslie—she at the top of her class and he as the oldest graduating student. He worked for 30 years at JPL researching relativity and probability and statistics, and has taught math at several universities, including UCLA and USC. Leslie's reaction to having her father in classes with her? "A few times he really embarrassed me. During my first year, in a contracts class, he offered \$5,000 to any guy who would marry me!"

BENOIT B. MANDELBROT, MS, ENG '49, of Cambridge, Massachusetts, received the 1986 Franklin Medal for Signal and Eminent Service in Science "for outstanding contributions to mathematics and the creation of the field of fractal geometry and important and illuminating applications of this new concept to many fields of science." Mandelbrot is an IBM Fellow at the T. J. Watson Research Center and Professor of the Practice of Mathematics at Harvard University. He is a Fellow of the American Geophysical Society.

1951

EDWARD A. STERN, PhD '55, professor of physics at the University of Washington, Seattle, has been elected a Fellow of the AAAS. His specialty is solid-state physics, and he is an authority in the field of X-ray absorption. He is also a long-time activist on behalf of Soviet Jewry. He joined the University of Washington faculty in 1965.

1952

HENRY L. RICHTER, Jr., PhD '56, of Arcadia, gave the Oscar C. Schmidt Memorial Lecture on free enterprise at the Rose-Hulman Institute of Technology in Terre Haute, Indiana, on April 15. He also received the Chauncey Rose Medal, presented annually to the Schmidt lecturer. He is president of the Richter Group, a consulting firm involved in the public safety communications field, engaged in designing microwave, computer-aided dispatch and mobile radio systems.

1955

SIGMUND M. REDELSHEIMER, MS, has retired from McDonnell-Douglas Astronautics Company in St. Louis, Missouri. He was director of space programs and spent 32 years with the corporation, during which time he was involved with the conceptual design of the Mercury spacecraft. He resides in St. Louis and will continue to pursue his hobbies of golf and sailing.

1962

PHILIP R. KENNICOTT, PhD, an information scientist at the General Electric Research and Development Center in Schenectady, New York, received the Jacquard Memorial Award of the Association for Integrated Manufacturing Technology for his work in developing the Initial Graphics Exchange Specification, a standard for exchanging design data between different computer systems. He is a member of the Association for Computing Machinery and a Fellow of the AAAS.

1963

THOMAS A. COLE, PhD, of Crawfordsville, Indiana, was recently honored with a 25-year service award by Wabash College, where he has been the Norman E. Treves

Professor of Biology since 1976. He is a member of the Indiana Academy of Science and the American Society of Microbiology. ROBERT HICKLING, PhD, was named a Fellow of the ASME. He is a senior staff research engineer in the engineering mechanics department of General Motors research labs in Warren, Michigan. CHIANG C. MEI, PhD, professor of civil engineering at MIT, received the 1986 Rosenstiel Award in Oceanographic Science at the University of Miami for "a number of important contributions to the understanding of the dynamics of ocean surface waves." He is a member of the NAE.

1967

J. BRENT HOERNER, PhD '71, is president of J. Brent Hoerner and Associates, an earthquake and structural engineering firm in Montrose, California.

1969

MARTIN ISRAEL, PhD, has been named acting dean of the Faculty of Arts and Sciences at Washington University in St. Louis. He is a professor of physics and associate director of the McDonnell Center for the Space Sciences. His area of research is cosmic ray astrophysics. He and his wife, Margaret, have two children and reside in Ladue, Missouri.

1970

ROBERT J. GRAY writes from Framingham, Massachusetts: "For the past few years I've been director of the Men's Rights Parental Leave Project, which promotes parental leave legislation and aids fathers in obtaining paternity leave. Career-wise, I'm happily working at Prime Computer as a principal software engineer in an AI group." He and his wife, Robin, have two children.

1972

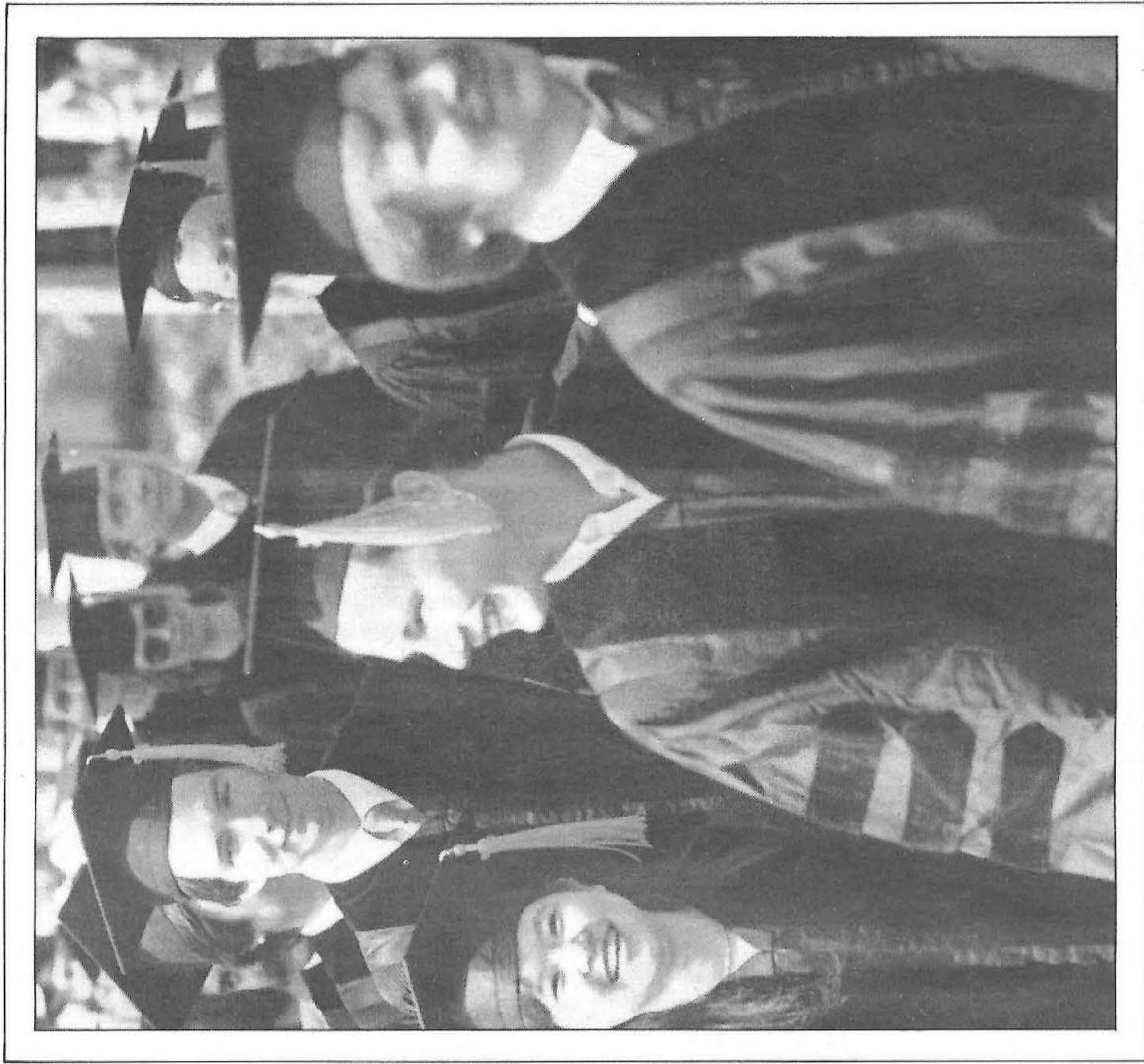
JOHN WEBB, PhD, is "still enjoying life at Murdoch University, Perth [Australia], even without the America's Cup being down the road in Fremantle. My research group continues in bioinorganic chemistry and biomineralization. For the past few years I have also coordinated a regional network in chemistry for UNESCO. The network provides assistance in research and training for analytical and inorganic chemists." He and his wife, Sandy, have two daughters.

1977

CHRISTOPHER HENLEY, assistant professor of physics at the Boston University College of Liberal Arts, received a \$25,000 Sloan Research Fellowship from the Alfred P. Sloan Foundation in New York. His research lies in the field of theoretical condensed-matter physics.

Posters (\$4.50) and postcards (four for \$1, minimum order) of the Hollywood sign transformed to read "Caltech" are available by contacting Dwight Berg, 1-53, Page House, Pasadena, California, 91125. T-shirts (\$12 or less) may be available if there is sufficient demand. Please add \$2 for shipping costs for the first 10 posters and \$1 for postcards. For more information call Berg at 301-345-4318 before September 15.

CALTECH NEWS



Caltech students join the ranks of alumni, above.

Thomas E. Everhart, chancellor of the University of Illinois at Urbana-Champaign, is named the new president of Caltech. See page 1.

August 1987



"I've been wanting to do this ever since I got here, but today is the only day I can do it without security catching me," said Erik Hille after he rappelled Millikan Library on Ditch Day to retrieve a clue taped half way up the 9-story structure. An experienced climber from Seattle, Hille stopped in midair and took pictures of the crowd below and the students holding ropes above.

CALTECH
RECEIVED

AUG 5 1987

ALUMNI OFFICE

CALTECH NEWS

Published for Alumni and Friends of the
California Institute of Technology
Volume 21, No. 4, August 1987