

CALTECH NEWS

PUBLISHED FOR ALUMNI AND FRIENDS OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY

Prufrock House on the move



Prufrock House is destined for a new location at 373 South Wilson Avenue. The graduate student residence is one of three houses at the northwest corner of Wilson and San Pasqual that have yielded to the impending construction of the new Braun Laboratories of Cell Biology and Chemistry, scheduled to begin in November. Another of the houses — former site of the public relations offices — has been relocated on Lura Street, while the third — the Caltech coffee house — was torn down (a new coffee house will open at 300 South Holliston and public relations is in new quarters at 315 South Hill). November also will mark the start of construction of the Thomas J. Watson, Sr., Laboratories of Applied Physics, just north of Steele Laboratory.

Robert Gray, Sechler die

Two Caltech faculty members — Robert D. Gray, professor of economics, emeritus, and Ernest E. Sechler, professor of aeronautics, emeritus — died this summer after extended illnesses.

Gray, 69, served 39 years on the Caltech faculty and was director of the Industrial Relations Center from 1941 until 1977. He came to Caltech in 1940 as associate professor of economics and industrial relations, becoming a full professor in 1942. During World War II, he served as an adviser to the Railway Labor Emergency Panel, and then organized a massive program as supervisor of the engineering, science, and management war training classes in production engineering and industrial relations at Caltech.

As director of the Industrial Relations Center, he was widely recognized as an authority on wage and salary administration, managerial compensation, management development surveys of employee opinions, and employee benefit plans. Active as a leader or consultant in several governmental agencies, he was twice president of the California State Personnel Board and was chosen to be on the Governor's Advisory Council in the Department of Employment.

A leader in numerous service and civic groups and professional societies, he received awards including the Thomas P. Pike Industry Award of the Alcoholism Council of Greater Los Angeles and the Phil

Carroll Award of the Society for the Advancement of Management.

Sechler, 73, devoted his professional life to teaching and research on the design of safe, lightweight structures, including aeroplane fuselages and the thin shells of rockets and boosters. He had been a faculty member at the Institute since 1930 and was executive officer for aeronautics from 1966 to 1971. In 1976 he retired as emeritus professor.

A consultant in the field of aerospace structures throughout the aerospace industry, Sechler also served as member and chairman of various national advisory committees for the Air Force and NASA. He was active in recent years in promoting the development of windmills as a power source.

Sechler was a member of the National Academy of Engineering, the American Association for the Advancement of Science, California Academy of Sciences, and National Defense Preparedness Association.

Born in Pueblo, Colorado, Sechler entered Caltech as a freshman in 1924, and was the first person to receive its MS degree in aeronautics. He also held a BS in engineering (1928), an MS in mechanical engineering (1929), and a PhD in aeronautics (1934) from Caltech.

Contributions may be made to the Ernest E. Sechler Memorial Fund, Office of Memorial Funds (1-36), Caltech.

For neuroscience research

\$500,000 grant to Caltech

Caltech has been awarded a grant of \$500,000 from the Pew Memorial Trust in support of its neuroscience research program, according to President Marvin L. Goldberger.

"This magnificent grant will be of tremendous help in allowing Caltech's neuroscientists to continue their efforts to understand the operation of the nervous system and the causes of neurological disorders," Goldberger said. "Their work holds great promise for solving mysteries

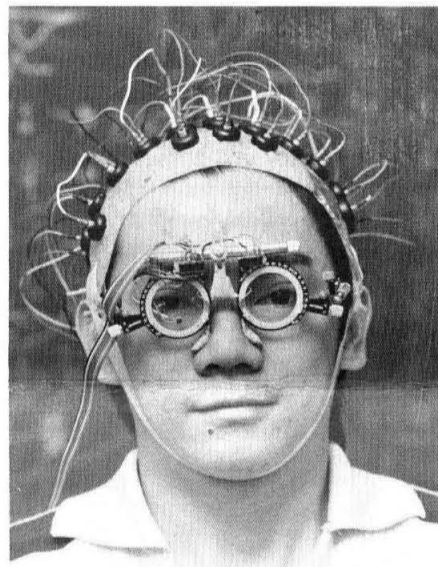
of the brain and for improving our understanding of the causes of diseases of the central nervous system."

Goldberger explained that scientists at Caltech are concentrating on two aspects of neuroscientific research: cellular mechanisms in development and behavior, and sensory processes and perception. Their work can yield insights into the role of hormones in behavior, the transmission of nervous impulses from one nerve to another, and the role of genes in learning. They may also discover more about the function of circadian rhythms — basic regulatory mechanisms of cells that govern the activity of enzymes and neurons — and of protein synthesis.

Caltech neuroscientists are also studying how the central nervous system processes auditory information and how vocal learning develops; how the central nervous system processes sound, and how visual and auditory data are integrated; and how the eyes integrate visual data to produce a three-dimensional world. Work that is improving our understanding of the inner ear may help to prevent or cure deafness, vertigo, and related problems caused by damage to the inner ear's tiny hair cells.

Research on the independent functioning of the two hemispheres of the human brain is helping to provide clues on how brain mechanisms generate conscious experience.

The Pew Memorial Trust, located in Philadelphia, is one of the largest private foundations in the United States. It was founded by Joseph N. Pew, Jr., J. Howard Pew, Mary Ethel Pew, and Mabel Pew Myrin, in memory of their father, Joseph N. Pew, Sr., the founder of Sun Oil Co., and their mother, Mary Anderson Pew.



Caltech graduate student Michael Chen wears an electrode-studded helmet tailored to fit his head, and a pair of infrared photodiode spectacles that trace his eye movements. His goal is to learn whether his eye movements initiate specific responses in the brain's visual cortex. Chen is working with Derek Fender (professor of biology and applied science) in research to understand how the body's system of eye movements and the brain work together to enable an individual to perceive the world as standing still — even though the eyes may be in rapid motion. The work is part of Caltech's Neuroscience Research Program.

Reed: Caltech benefactor

William G. Reed, managing partner of Simpson Reed & Co. in Seattle, has endowed the William G. Reed Graduate Fellowship at Caltech. President Marvin L. Goldberger said income from the endowment will provide tuition and expenses each year for a graduate student. He stressed that the gift meets a vital need for graduate student support.

"Fellowship support from federal agencies has dropped sharply in recent years, and private gifts such as this one are more important than ever in providing educational opportunities for outstanding young scientists," he said.

A native of Shelton, Washington,

Reed earned his AB degree from the University of Washington and studied at the Harvard Graduate School of Business. The son of Mark E. Reed, a pioneer in the lumber industry and an early legislative leader in the Pacific Northwest, he is chairman of the Simlog Corporation and the former chairman of the Crown Simpson Pulp Company, the Simpson Timber Company, and the Simpson Lee Paper Company, the Shelton State Bank, and the Seattle Foundation.

A member of the President's Council at Caltech in 1968-70, he headed the U.S. delegation to the Economic Commission for Europe in 1960.

The Alumni Fund

How to stay on top of the mountain

"Progress in society is made by a handful of men and women — and many of them graduate from Caltech." That's the belief of Caltech alumnus Gordon Weir, BS '40, and the reason he agreed in 1976 to become an area chairman for the Alumni Fund. Weir, who calls his Caltech degree his "14-karat gold diploma," says that helping to finance Caltech is one way he connects with the past — and with the future.

Weir is one of some 3,500 alumni who have volunteered as workers for the Alumni Fund during its seven-year history. And sentiments like his have enabled the Fund to win honors for three straight years in a competition among private universities sponsored by the Council for the Advancement and Support of Education (CASE).

This year the Fund again took first place in the sustained performance category. This award singled out the 1977-78 Fund headed by Ed Foss, BS '32. That year the Fund raised \$796,477 and achieved a 36 percent participation.

Charles F. Thomas, BS '35, national chairman in 1975-76, is not surprised that Caltech was able to win the award three years in a row. "Caltech alumni are very competitive," he says. "Once we get on top, our attitude is, 'You'll have to pull us off the mountain.'"

As a group, Caltech alumni are highly loyal, Thomas observes. Building on this loyalty through personal contacts among graduates was emphasized from the beginning as the key to the Fund's success. Donald D. Davidson, BS '38, national chairman in 1972-73, observed as he announced the Fund's reemergence: "If we can build on the enthusiasm that an alumnus already has for Caltech, then the giving will take care of itself. Caltech alumni have had an extra-special education, and they know this. Caltech doesn't want to produce a lot of number twos. It wants to graduate number ones."

The Alumni Fund as it reemerged in 1972 was guided by 15 members of an Alumni Fund Council. An original alumni solicitation effort had merged for a five-year period with the Science for Mankind development program in 1967. As that campaign drew to a close, the Fund was reorganized as a separate and permanent entity.

"Everyone agreed that we should run the Fund on an annual basis," says Harrison W. Sigworth, BS '44, national chairman in 1973-74. "We wanted to mount a long-range effort to encourage alumni to give regularly."

"We agreed that alumni leadership would be essential, and that the Fund would be run by the volunteers," says Reuben B. Moulton, BS '57, national chairman in 1974-75. "You can't snow Caltech graduates with high-pressure sales techniques. But a high percentage of them have positive feelings about the Institute, and they respond to those feelings when they're contacted by another alumnus."

"The willingness of alumni to help is amazing," according to Martin J.

Poggi, BS '37, national chairman in 1976-77. "Not many Caltech alumni actually enjoy raising money, but when they take on a responsibility, they do an excellent job."

The Fund Council members in 1972 stressed total alumni participation rather than the size of the gift. "We want all alumni to realize that they're part of the Caltech institution — that they have the opportunity to contribute financially and also to communicate their ideas about education and research," Davidson said in 1972. "This will make both the alumni and the Institute stronger."

This kind of communication is evident in personal calls by Fund workers to other alumni, and also in the annual telephone program. Each spring, some 220 workers use Sears Roebuck & Company's WATS line (thanks to Charles H. McDougall, BS '47) to call former classmates throughout the nation. Says Richard K. Smyth, BS '51, national fund chairman in 1978-79, "The workers spend about 10 percent of their time asking for money, and 90 percent exchanging news and information."

At the Sears headquarters, the workers are given a list of prospects — most of them people they knew

as students. "This guy was best man at my wedding," or "I haven't seen Frank since we both lived in Dabney 20 years ago" are typical remarks as workers scan their lists.

Outgoing calls from one alumnus, an attractive young woman who received her graduate degree at Caltech, produced some unique results. Favorably remembered by the individuals she contacted, she was invited out on a couple of dates.

Another caller was due for an even more surprising experience. Warned in advance to expect some rejections from the people on his list, he made his first telephone call. The prospect, an alumnus who had never given to the Fund before, promptly pledged \$7,500.

On other occasions, it has been the Alumni Fund staff that was in for a surprise. The Alumni Fund office once received an envelope indicating a \$25 gift but containing a check for \$2,500. A query revealed that the donor had accidentally added two zeroes when he wrote the check.

Another time, an envelope indicated a \$25 contribution but contained a check for \$683.27. Some detective work on that one showed

that the donor had reconciled his bank balance just after filling out the Fund envelope, and had written the check for the balance in his bank account. He was so pleased when the check was returned that he doubled his contribution.

Sharing a financial commitment to the Institute is one of the most effective ways to strengthen ties among alumni, Moulton believes. "The Fund has tapped people all over the country as Fund raisers," he says, "people who had had no direct contact with Caltech since their graduation. Their backing helps in many ways beyond the financial value of their gifts."

"Through the Alumni Fund, we've developed a group of workers who are attuned to Caltech and its needs and ready to be of assistance. They can give powerful support in our dealings with Congress, for example, or in student recruitment. We're trying to attract more students from outside the western United States. Our alumni are very impressive people, and their contacts with young people in their home areas have a lot of impact."

Sigworth notes that alumni — having become familiar with Caltech programs through involvement in the Fund — have gone on to join The Associates. A total of 138 alumni have become members of The Associates since the Fund was reactivated in 1972, he points out.

The professional successes achieved by Caltech alumni — and the measure of credit they give Caltech for these successes — is one reason why they support the Fund. But many alumni have a more far-reaching and altruistic motive for contributing. "Giving to Caltech isn't like giving to a charity," says Foss. "When you give to a charity you're giving to people who need help. But when you give to Caltech, you're investing in the future of your society, in the continuing growth of knowledge, and in solutions to the world's problems. Knowing this makes you feel a little better when you read the morning newspaper."

A "Thank You" for the President's Circle



Dr. and Mrs. Marvin L. Goldberger and Dr. and Mrs. Henry Lee, Jr., recently welcomed members of the President's Circle of The Associates to a garden luncheon at the president's home, in appreciation for their support for the Institute (members contribute at least \$5,000 a year). One hundred and nine members of the President's Circle, and faculty guests, attended. From left: Vernon Barrett, Mrs. Eaton Ballard, Mrs. Vernon Barrett, Francis S. McComb, and Eaton Ballard—all Life Members of The Associates. Dr. Lee is The Associates' president.

High school students learn in Caltech labs

More than 200 high school students from 80 southern California and 20 out-of-state high schools (including ones in Illinois and Wisconsin) studied at Caltech's 1979 summer secondary school science program this year.

The classes were taught by Cal-

tech upperclassmen and graduate students with faculty members as guest lecturers. Subjects included advanced molecular biology, chemistry, physics, physics/calculus, and pre-engineering. No credit is given by the Institute, but recommendation is made to the school district

that credit be given to students who achieve A or B grades.

There is no admission fee (the program is privately funded) and students are not required to submit transcripts for entry to the program. However, there are prerequisites for each subject.

Bruce Gold Medal to Fowler

William A. Fowler, Institute Professor of Physics at Caltech, has been awarded the 1979 Catherine Wolfe Bruce Gold Medal of the Astronomical Society of the Pacific. The medal is given for distinguished service to astronomy.

Fowler's research has included studies of the origins of the chemical elements, the production of deuterium and helium in the universal fireball and in massive objects,

and the release of gravitational and nuclear energy in massive objects. In 1978, he was awarded the Eddington Medal of the Royal Astronomical Society for his pioneering work in nuclear physics and its impact on astrophysics.

He is a member of the National Academy of Sciences and in 1976 he was president of the American Physical Society and he is recipient of numerous other awards.

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EDITORIAL STAFF

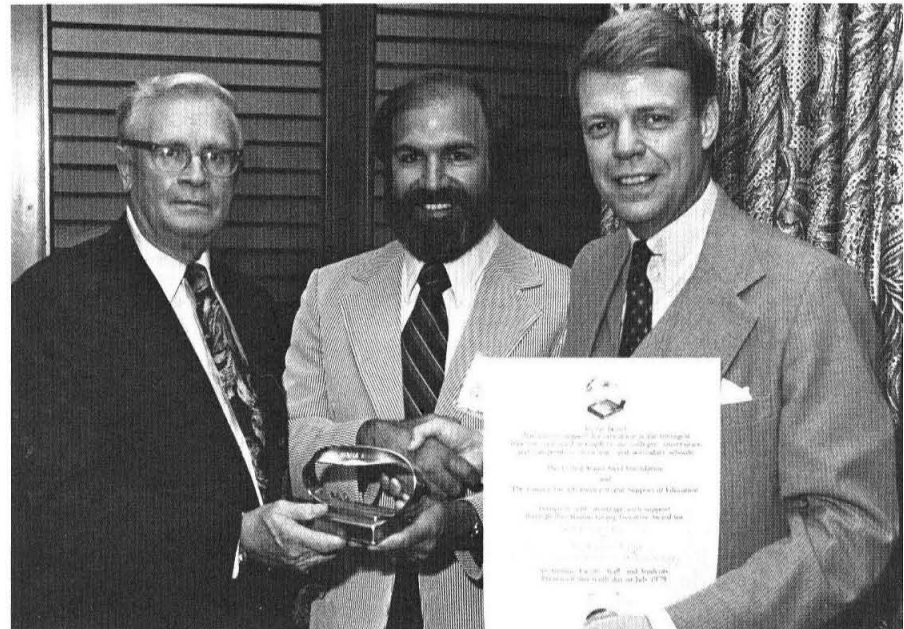
Executive editor: Winifred Veronda.

Staff associates: Phyllis Brewster, Diane Davis, Paula Hill, and Kay Walker.

Photographer: Richard Kee.

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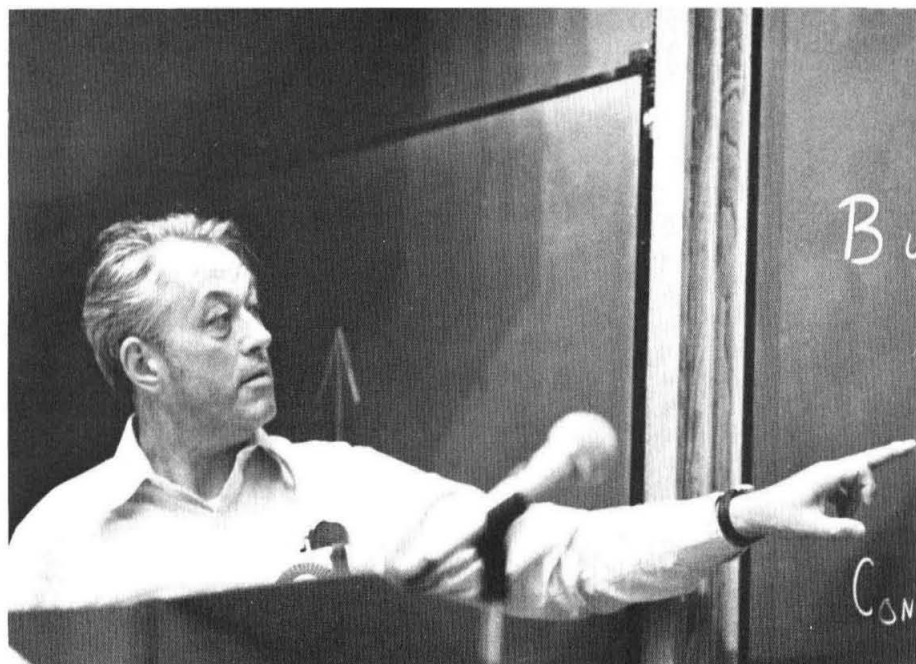


Joe Farmer, director of annual giving (center), accepts an award for sustained excellence among major private universities—the third successive award to Caltech in a competition sponsored by CASE. The award included a \$1,000 grant from the U.S. Steel Foundation, Inc. With Farmer are James T. Hosey, vice president and executive director of the U.S. Steel Foundation, Inc. (left), and James L. Fisher, president of CASE (right).

How much was given?

Summary table of alumni fund gifts: Alumni Fund gifts received directly from 4655 alumni \$924,014; 741 matching grants resulting from alumni gifts \$108,429; Gifts made by 9 honorary alumni and other individuals \$ 11,745; Total gifts to the Alumni Fund \$1,044,188; Gifts made by alumni to other institute projects \$1,383,470; Grand Total of 78/79 Alumni Fund Gifts to Caltech \$2,427,658

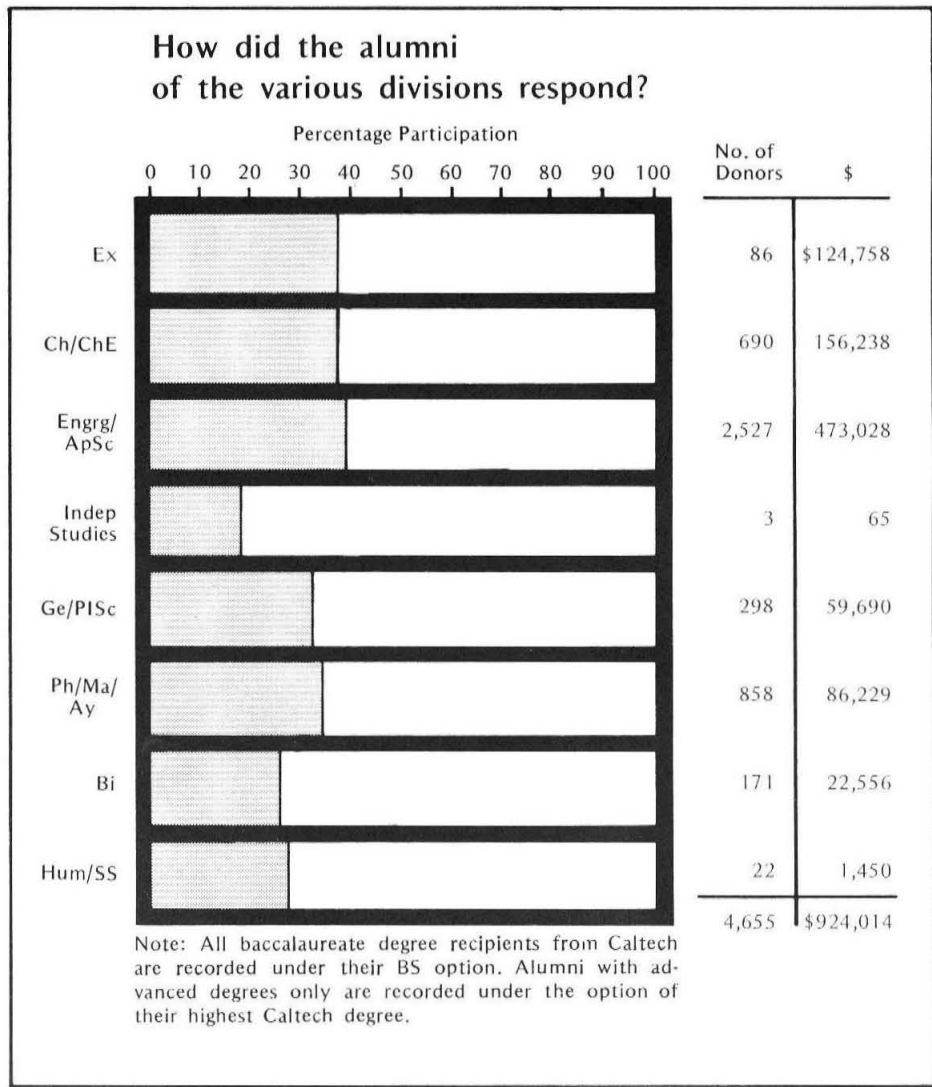
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George J. Gleghorn, BS '48, leads a discussion at the Leadership Conference.

Table of names and numbers, organized into columns. Includes names like Carl W. Carlmark, Richard H. Cox, Jackson C. Brownson, etc., and years like 1942, 1943, 1944, 1945.

Table of names and numbers, organized into columns. Includes names like Bruno W. Augenstein, Dennis J. Ahern, Orison Wade, etc., and years like 1946, 1947, 1948.





Chemist Harry Gray demonstrates an ear-splitting catalytic reaction for alumni at the 1978-79 Leadership Conference as he admonishes: "You're the catalysts for the Alumni Fund. You have to catalyze the alumni to want to give." Gray is chairman of the Institute's Division of Chemistry and Chemical Engineering and the William R. Kenan, Jr. professor of chemistry.

- Harvey K. Holm 4
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How has participation in the Alumni Fund grown in recent years?



Placement Assistance To Caltech Alumni

The Caltech Placement Service may be of assistance to you in one of the following ways:

- (1) Help you when you become unemployed or need to change employment.
- (2) Inform you of possible opportunities from time to time.

This service is provided to alumni by the Institute. A fee or charge is not involved.

If you wish to avail yourself of this service, fill in and mail the following form to:

Caltech Placement Service
California Institute of Technology
Pasadena, California 91125

Please send me: (Check one)

- An application for placement assistance.
- A form indicating a desire to keep watch for opportunities although I am not contemplating a change.

Name:

Degree(s): Year(s):

Address:

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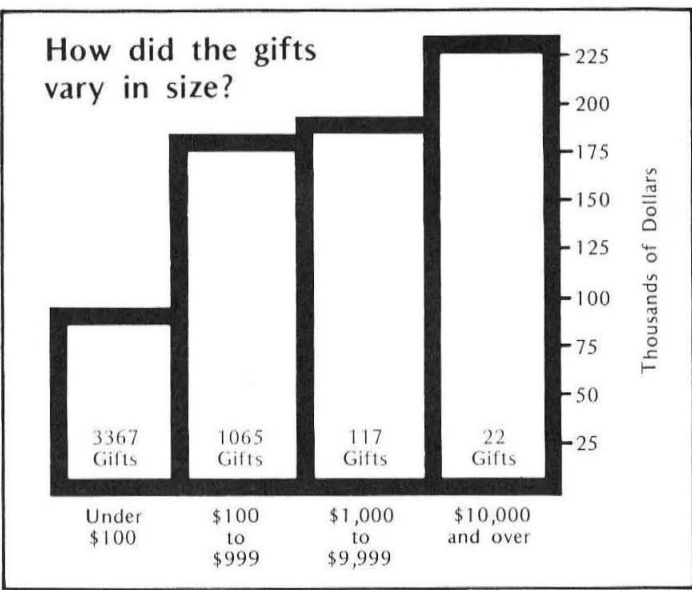
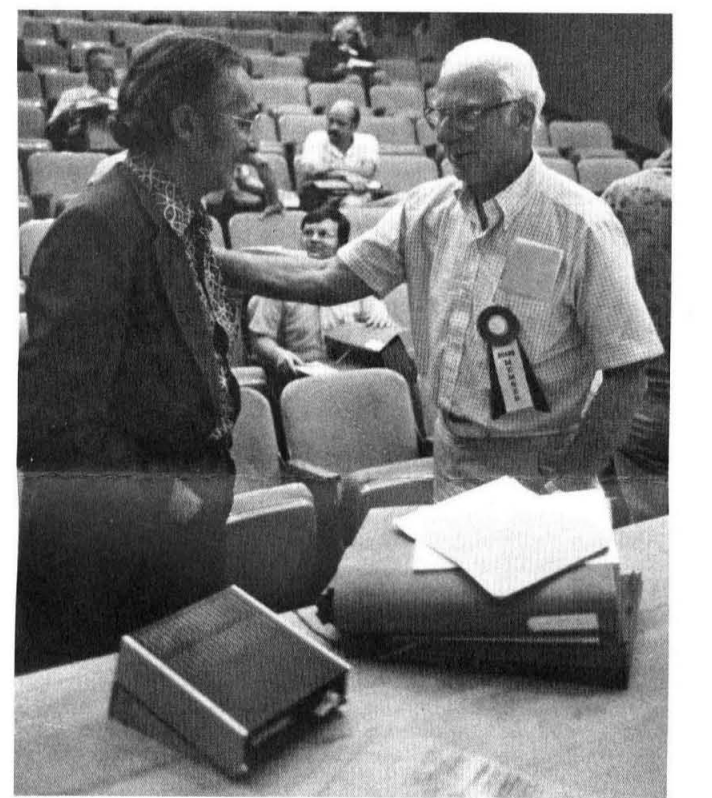


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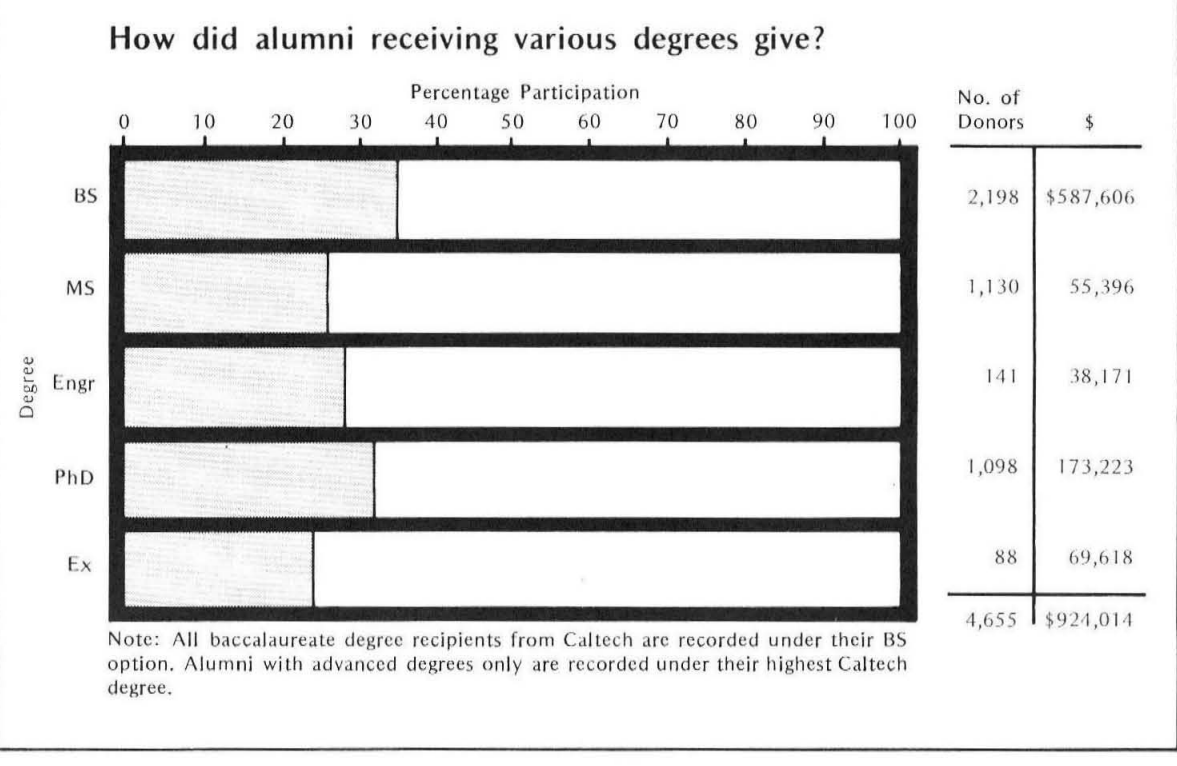


Harold B. Crockett, BS '40, and Ed Foss, BS '32.

Large table of names and numbers, organized in columns. Includes names like James M. Bell, William C. Benton, Walter D. Biggers, etc.

Large table of names and numbers, organized in columns. Includes names like Kenneth L. Laws, Donald W. Lewis, James R. Lloyd, etc.

Table of names and numbers, organized in columns. Includes names like Ernest R. Cram, Malcolm G. Davis, Robert P. Dawson, etc.





Chemist Harry Gray demonstrates an ear-splitting catalytic reaction for alumni at the 1978-79 Leadership Conference as he admonishes: "You're the catalysts for the Alumni Fund. You have to catalyze the alumni to want to give." Gray is chairman of the Institute's Division of Chemistry and Chemical Engineering and the William R. Kenan, Jr. professor of chemistry.

A large multi-column list of names and their corresponding years of graduation or affiliation, such as Harvey K. Holm '4, Vincent R. Honnold '4, Robert C. Hopkins '2, etc., continuing down to Robert Zacharias '6.

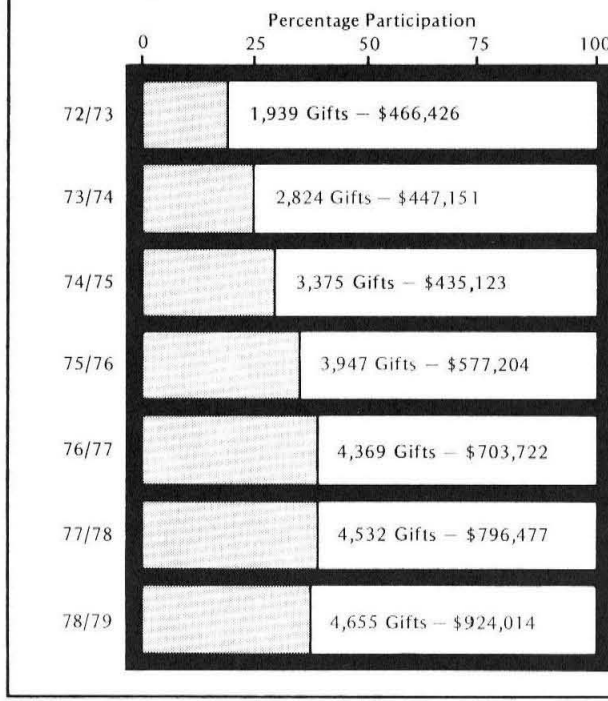
A multi-column list of names and years, including Murray S. Bornstein '5, Franklyn H. Brady '5, Gerald P. Breaux '7, Davenport Browne '7, Arthur E. Bruington '6, etc., continuing down to Robert Zacharias '6.

A multi-column list of names and years, including C. Harris Adams '5, William L. Alford '6, Charles W. Allen '6, Forrest S. Allinder '5, J. M. Andres '7, William E. Archer '3, etc., continuing down to Ernest W. Blair '5.

A multi-column list of names and years, including Robert R. Pilling '5, Richard J. Pollak '2, Robert L. Pons '5, David O. Powell '7, William D. Pyle '7, etc., continuing down to William C. Woods '3.

A multi-column list of names and years, including Jared Abell '4, Robert T. Adams '2, Harvey J. Amster '7, George M. Arcand '3, Donald O. Asquith '5, etc., continuing down to Marvin C. Brooks '7.

How has participation in the Alumni Fund grown in recent years?



A multi-column list of names and years, including Caryl Otte '5, Robert E. Parker '3, J. H. Pinckard '7, Calvin E. Porcher '1, William H. Proud '7, etc., continuing down to Wayne M. Beebe '2.

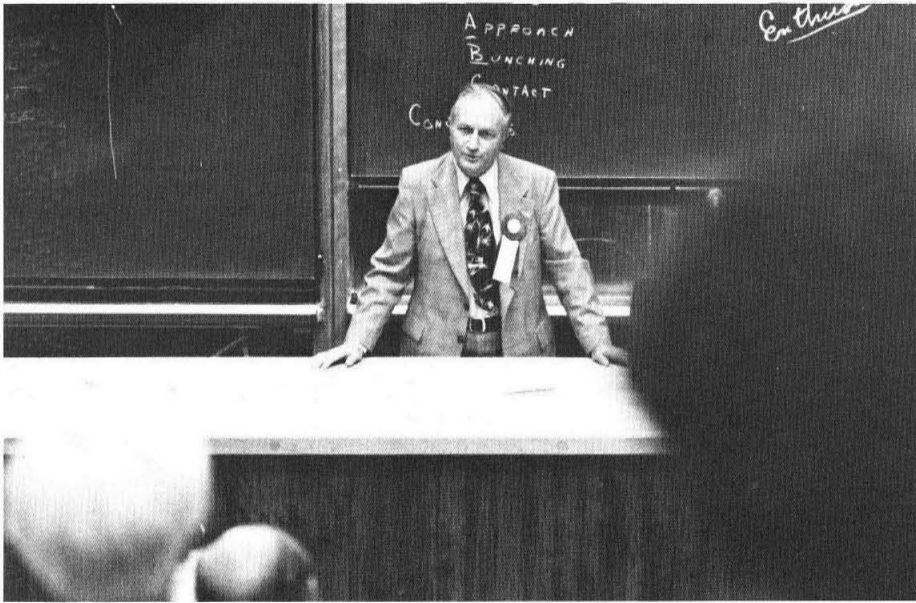
A multi-column list of names and years, including George O. Abell '1, Robert G. Adler '7, Clarence R. Allen '7, Raymond L. Angelo '3, Paul L. Armstrong '5, etc., continuing down to Wayne M. Beebe '2.

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(2) Inform you of possible opportunities from time to time.
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If you wish to avail yourself of this service, fill in and mail the following form to:
Caltech Placement Service
California Institute of Technology
Pasadena, California 91125
Please send me: (Check one)
[] An application for placement assistance.
[] A form indicating a desire to keep watch for opportunities although I am not contemplating a change.
Name: _____
Degree(s): _____ Year(s): _____
Address: _____



Ernest Wade, BS '43, MS '47, shares information with alumni at the Leadership Conference.



Stanley R. Rawn, Jr., BS '52, MS '53, delivers the Leadership Conference keynote address.



Don E. McFaddin, BS '28, talks about presenting Caltech's needs to other alumni.

- Robert H. Bond 7
- Walter K. Bonsack 7
- J. P. Bromberg 4
- William D. Burnett 4
- Robert E. Chandos 3
- Frank W. Childs 2
- Douglas R. Christman** 7
- Joseph M. Colucci 7
- Ritchie B. Coryell 1
- Mert Cramer 2
- Walter J. Cribbs 2
- John I. Dick-Peddie 6
- Richard D. Dietz 3
- Eugene R. Doering 7
- Rolf Engleman 7
- Richard M. Goldstein 5
- William R. Graham 5
- L. D. Green 3
- Joel D. Greenberg 4
- David Handel 1
- H. J. Hansen 4
- Philip D. Harriman 4
- Timothy M. Harrington 7
- Robert H. Hertel 3
- David K. Himrod 3
- W. N. Huse 7
- Edgar T. Irons 2
- C. R. Johnson 6
- R. M. Jones 6
- John J. Kalvinskas 6
- H. J. Keisler 2
- Donald J. Ketter 4
- Gerhard J. Klose 1
- Murray A. Koerner 7
- Kalman I. Krakow** 6
- Norman B. Kramer 3
- Wayne C. Kreger 4
- Dennis W. Kuli 6
- Robert J. Kwik 2
- Dewitt Landis 7
- James D. Larson 4
- Kaye D. Lathrop 3
- Anthony Leonard** 7
- Lewis M. Linson 3
- Richard F. Long 2
- David G. Luenberger 5
- Richard B. MacAnally 5
- Gary L. Marlotte 6
- Gail A. Massey 5
- Robert J. McElvain 4
- Francis C. McMichael 6
- Harvey J. Meyer 4
- Richard C. Montgomery 2
- Andrew R. Nasser 4
- Gordon C. Oates 1
- Ralph B. Owen 6
- Robert M. Pailthorp** 6
- Dennis L. Paull 4
- Michael W. Peters 4
- James S. Petty 6
- Kirk A. Polson 7
- Allan R. Porush 7
- John C. Price 6
- Donald O. Rasmussen 5
- Michael H. Rusin 3
- Robert M. Schmidt 4
- Alan Soler 5
- Ivo Tammaru 6
- Terry O. Teigen 2
- Lawrence F. Tenn 3
- Frank L. Vernon** 4
- Joseph L. Vogl 3
- Willard H. Wells 4
- John W. Wesner 6
- Donald M. Wiberg 6
- William Y. Wong 4

- 1960
- Eric G. Adelberger 4
- Donald W. Anderson 1
- William L. Anderson 4
- Dean W. Anschutz 2
- Charles E. Antoniak 3
- John A. Bard 2
- Carl S. Benson 5
- Harry H. Bingham 2
- Thomas K. Bjorklund** 6
- Graeme A. Blake 3
- David J. Blakemore** 5
- Billy R. Blanchard 4
- Thomas E. Bowman 4
- Lowell E. Clark 7
- Frank H. Cormia** 4
- Philip D. Davis 2
- Kendall L. Dinwiddie** 4
- Bruce R. Doe** 6
- Douglas J. Dunham 3
- Robert B. Eglinton 2
- Dennis C. Evans 2
- David A. Evensen 6
- Henry T. Falvey 5
- Norman S. Farha 5
- James L. Farmer 4
- Edward A. Flinn 4
- Jonathan Francis 1
- Samuel Ginsburg 4
- Robert Goldstein 7
- Walter C. Gottschall** 5
- Egbert Graeve** 6
- William F. Greenman 3
- Jerry D. Griffith 4
- Alfred W. Hales 6
- Rogers W. Harder 2
- Herman G. Hartung 6
- Kenneth E. Harwell 5
- Henry H. Hilton 1
- Melvin E. Holland 4
- Leroy E. Hood 6
- Theodore A. Jacobs 6
- Gerald R. Jantscher** 3
- Paul C. Jennings 7
- Peter A. Johnson 3
- Anthony E. Johnson 3
- Gordon Kramer 5
- Allan Laderman 3
- Marshall Lapp 1
- Ronald G. Lawler 4
- Erick L. Lindman 6
- D. M. Lindquist 4
- Hans D. Linhardt 1
- Gordon D. Long 7
- Norman E. MacLean 1
- Jacob V. Maizel 2
- Leonard A. Maley 3
- Donald M. Malone 3
- Richard L. Mauger 4
- Douglas R. McLane** 1
- Karl L. Meier 1
- Jean C. Meuris** 6
- Carleton B. Moore** 7
- Gerry Neugebauer 7
- Robert L. Norton 3
- Peter E. Oettinger 4
- Daniel B. Olfe 4
- Jerald V. Parker 4
- William W. Porterfield 4
- David F. Rearick 6
- Roy E. Reichenbach 7

Outstanding Volunteer Achievement

The basic Alumni Fund Solicitation effort is conducted on a geographic basis. Each year some 80 alumni volunteers agree to serve as Area Chairmen and to lead the solicitation of fellow alumni within a certain region. The success of the Area Chairmen

- Hugh Kendrick 2
 - Philip R. Kennicott 6
 - Joseph Kohler 5
 - Robert G. Langsner 6
 - Roy N. Levitch 3
 - Thomas J. Little 3
 - Chung C. Liu 4
 - Orval G. Lorimer 3
 - Gerald Marxman 3
 - John E. McCarthy 7
 - Stanley B. Mellisen 3
 - Hugh T. Millard 6
 - Edward S. Miller 3
 - Gary F. Mitchell 4
 - Ralph C. Moore 3
 - William J. Moore 1
 - P. D. O'Riordan 2
 - David J. Osias 2
 - Michael T. Palmiter 1
 - Julian F. Prince 6
 - Charles H. Raddy 3
 - Marc L. Renard 5
 - Robert L. Rosenfeld 7
 - Carl M. Rovainen 7
 - Peter T. Rux** 3
 - Fred I. Shimabukuro 7
 - John C. Stansel 7
 - Millard Susman 2
 - Raynold A. Svenson 4
 - Robert J. Tait 7
 - Joel Tenenbaum 4
 - Kip S. Thorne 1
 - Michael J. Townsend 4
 - Howard M. Stainer 2
 - Harold M. Stark 3
 - John P. Stenbit 3
 - Douglas K. Stewart 3
 - Gary W. Stupian 3
 - Kaytaro G. Sugahara 6
 - Samuel R. Sutt 6
 - Henry A. Thiessen 3
 - Gary G. Tibbetts 4
 - John A. Todoroff 6
 - John B. Trenholme 6
 - David P. Turner 4
 - S. R. Varanasi 1
 - Gary O. Walla** 6
 - Frederic A. Wallace 1
 - Francis W. Wang** 4
 - Kenneth W. Wood 7
 - Victor L. Yen 4
 - Robert C. Yost 2
 - Clyde S. Zaidins 7
-
- 1962
 - Ahmad K. Abu-Shumays** 6
 - John T. Armstrong 4
 - Ronald D. Bercov 7
 - Glenn L. Berge 5
 - Robert L. Blinkenberg 5
 - R. C. Brosi** 3
 - Stephen W. Bruenn 2
 - Robert B. Bump 5
 - Richard G. Burke 1
 - Gary C. Chamness 6
 - Tsiu C. Chan 7
 - Wilfred P. Charette 6
 - Don P. Clausing** 6
 - Reginald W. Clemens 6
 - Donald H. Close 3
 - James E. Cordes 6
 - John D. Curtis 2
 - Alan B. Dager 2
 - James I. Davis** 1
 - William F. Dove 1
 - Victor S. Engleman 4
 - Charles M. Flynn 2
 - Samuel T. Furr** 3
 - Robert Gershman 1
 - John R. Golden 7
 - Charles S. Gratch 1
 - Harrison B. Hall 6
 - Fred J. Hameetman 5
 - Peter D. Parker 4
 - John D. Pearson 7
 - James M. Peterson 4
 - Richard E. Peterson 5
 - Alfred C. Pinchak 3
 - Raymond H. Plaut** 4
 - John C. Porter 7
 - Stephen W. Prata 1
 - James H. Renken 6
 - William F. Saam 6
 - Robert W. Schmieder 7
-
- 1963
 - John C. Alleman 2
 - William J. Anderson** 5
 - Brian C. Belanger** 6
 - William H. Bettes 2
 - Richard C. Blish 1
 - Thomas T. Bopp 7
 - John M. Caywood 1
 - Gerald D. Chandler 2
 - Donald R. Davis 7
 - Robert P. Foss** 6
 - William F. Francis 5
 - Terry R. Galloway 4
 - Robert W. Gammon 1
 - James T. Geddis 3
 - Lawrence K. Gershwin 7
 - William P. Gruber 1
 - David W. Hall 5
 - Carole L. Hamilton 3
 - Dwight H. Harrison 3
 - Harold R. Harrison 5
 - Harold J. Haskins 6
 - Thomas M. Helliwell 5
 - Robert Hickling 5
 - Wayne C. Huber 4
 - Jackson I. Ito 7
 - John L. Kleiderer 4
 - Michael M. Krieger 3
 - Alvin L. Kwiram 2
 - James E. Lancaster 2
 - Jark C. Lau 4
 - Alan Lippert 7
 - Stephen L. Lowe 1
 - Ben E. Lynch 7
 - Egon Marx 2
 - James E. McCoy 4
 - Wendell W. Mendell 2
 - Barry K. Moritz 7
 - Frederick R. Norwood 5
 - Howard Oringer 6
 - David R. Owen 5
 - Peter D. Parker 4
 - John D. Pearson 4
 - James M. Peterson 4
 - Richard E. Peterson 5
 - N. N. Nielsen 3
 - Raymond H. Plaut** 4
 - John C. Porter 7
 - Stephen W. Prata 1
 - James H. Renken 6
 - William F. Saam 6
 - Robert W. Schmieder 7
-
- 1964
 - Curtis L. Atkin 3
 - Donald Baganoff 7
 - Peter Baine 3
 - Bruce R. Beeghly 5
 - Michael W. Blasgen 1
 - Richard R. Burgess 5
 - John R. Burke 6
 - George R. Cannon 5
 - Herbert H. Chen 3
 - John E. Clauser 4
 - Spicer V. Conant** 7
 - Wayne R. Cooper 6
 - Albert E. Cosand 6
 - Wayne F. Covington 3
 - Thomas H. Crocker 5
 - Jerry W. Crossett 2
 - Robert W. Diller 7
 - Fred W. Dorr 7
 - Steven M. Farber 1
 - William T. Fehlberg 6
 - Ronald G. Findlay** 6
 - Lorraine L. Foster 2
 - Jonathan A. French 6
 - Melbourne F. Giberson** 7
 - Lynn W. Glover 3
 - Tomifumi Godai 1
 - Augustine H. Gray 4
 - Hans W. Grellmann 3
 - Russell D. Hageman 4
 - Wayne W. Haigh 5
 - Charles R. Hamilton 1
 - David A. Hammer 7
 - Thor P. Hanson** 7
 - Howard E. Harry 2
 - David R. Hearn 6
 - David A. Hewitt 2
 - Douglas W. Hill 7
 - Steven A. Hillyard 7
 - Alan C. Hindmarsh 7
 - James W. Hole 5
 - David Holtz 3
 - Henry C. H. Hsiung 1
 - Raul Husid 1
 - Hideo Ikawa 6
 - Boris J. Kayser 6
 - Bruce M. Lake 6
 - David R. Lambert 7
 - Thomas W. Latham 2
 - Stephen S. Lavenberg 4
 - Robert C. Leif 5
 - Charles F. Leonard 5
 - Mark Levinson 7
 - Robert C. Liebermann 6
 - Arthur D. Lipson 3
 - Joseph T. Liu 1
 - Ponzy Lu** 7
 - Tom C. Lubensky** 7
 - John M. Madey 5
 - Kenneth F. Manly 4
 - Frank F. Matthews** 5
 - Richard D. Maxson 5
 - John H. McCoy 2
 - Robert J. McElicie 3
 - Francis K. McGinnis 1
 - John H. McKinley 5
 - Roger L. Minear** 5
 - R. A. Moline 5
 - Malcolm C. Morrison 6
 - Hans-Karl Mueller** 5
 - J. B. Murphy 3
 - Stanley N. Nathanson 2
 - Carter G. Naylor 6
 - N. N. Nielsen 1
 - Donald J. O'Hara 1
 - Lee L. Peterson** 5
 - George T. Preston** 7
 - George N. Reeke 7
 - William R. Ricks** 2
 - Allan J. Rosen 3
 - William E. Schoknecht 3
 - John R. Schuster 6
 - George L. Scott** 6
 - Richard A. Scott 7
 - Lionel S. Senhouse 1
 - Leroy E. Sievers 4
 - Ralph V. Skarda** 1
 - Lionel J. Skidmore 7
 - William C. Stwalley 5
 - Don W. Terwilliger 2
 - Gerald H. Thomas 4
 - Hsueh-Sheng Ts'ao 2
 - Arthur P. Turner 6
 - Dwayne R. Vanbesien 2
 - Volker M. Vogt 4
 - Janusz Warszawski 4
 - Michael T. Wauk** 4
 - Wilkes H. Weber 6
 - Dennis R. White** 6
 - P. F. Winkler 6
 - Thomas H. Wirth 1
 - Alvin B. Young 3

AREA	CHAIRMAN	DOLLARS RAISED
ARLA		
TRW Employees	George J. Gleghorn	\$57,929
Phoenix	David L. Hanna	53,201
Newport/Corona del Mar	Lee I. Carleton	47,594
San Diego	Delano A. Brouillette	46,045
West Pasadena	Vern Edwards	37,170
Laguna Beach	Allan M. Goldberg	33,230
Altadena	Joseph A. Dobrowolski	31,995
East Pasadena	Frank A. Fleck	31,902
San Marino	Andrew B. Campbell	29,241
Houston	Thor P. Hanson	24,413
Oakland/Berkeley	Rayman Y. Wong	24,038
Connecticut	Steven Hall	23,998
Orinda/Moraga	Paul L. Armstrong	20,907
Caltech Faculty and Staff	Ernest E. Sechler	20,040
Manhattan	Christopher Diamantoukos	18,151
Arcadia/Sierra Madre	Arne Kalm	17,374
Redondo Beach / Marina del Rey	Paul A. Levin	17,331
East San Fernando Valley	Raymond G. Richards	17,315

can be gauged in two ways — dollars raised and the percentage of alumni giving to the Fund. A special thanks goes to the following Area Chairmen who represent the top 20 percent in both categories outlined above.

AREA	CHAIRMAN	PERCENTAGE PARTICIPATION
Hawaii	Sheldon C. Crane	77
West Pasadena	Vern Edwards	68
San Marino	Andrew B. Campbell	62
La Canada	Harold B. Crockett	59
Arcadia/Sierra Madre	Arne Kalm	58
Newport/Corona del Mar	Lee I. Carleton	57
El Monte/Covina	David B. McCarroll	57
Orinda/Moraga	Paul L. Armstrong	57
Central San Fernando Valley	William J. Williamson	54
Marin County/North Coast	Thomas V. Tabet	54
Phoenix	David L. Hanna	54
Downey/Whittier	Edward S. Peer	53
Alhambra/So. Pasadena	Don E. McFaddin	52
Westchester County	Harry J. Moore	52
Pomona/Claremont	Donald Stewart, Jr.	51
Laguna Beach	Allan M. Goldberg	49
TRW Employees	George J. Gleghorn	49
East San Fernando Valley	Raymond G. Richards	48
San Luis Obispo	Daniel Markoff	48

Jessica Tuchman Mathews

Needed: More scientists in Washington

by Winifred Veronda

Jessica Tuchman Mathews's quarters in the Old Executive Office Building in Washington, D.C., overlooked the west wing of the White House, center of executive policy-making for the nation. Her vantage point was in some ways symbolic of her responsibilities: Her job as head of the Office of Global Issues of the National Security Council gave her an extraordinary overview of the foreign affairs of the United States.

In July she began to apply that overview in a new role. She left the National Security Council to join the editorial board of the *Washington Post*, where she will write about science and resource issues. She was one of at least seven National Security Council aides who recently decided to leave. *Science* magazine suggested the exhausting pace of the work and "mid-term blues" as reasons for their exodus.

Mathews, 33, was one of three or four women in key foreign policy roles in the Carter administration. She reported to Zbigniew Brzezinski, assistant to President Carter for national security affairs, and she dealt with issues ranging from arms sales and nuclear waste management to the international environment and human rights.

She presented papers on such topics as "Technology and the Diffusion of Power," "Human Rights and U.S. Foreign Policy," and "Non-Proliferation: Successes and Setbacks." The nuclear power plant crisis at Three Mile Island had her sitting up nights for a week, assembling facts, figures, and projections for the President.

All this is a far cry from the career in a scientific research laboratory that she envisioned when she was a Caltech student (PhD '74), but neither those dreams nor today's realities are particularly surprising. Mathews grew up in a New York City family with interests well balanced between the humanities and the sciences and with complete acceptance of the idea of both parents having satisfying careers. Her mother, Barbara Tuchman, is the two-time Pulitzer Prize-winning author of such historical works as *A Distant Mirror* and *The Guns of August*, and her father, Lester Tuchman, is a distinguished physician.

Choosing Caltech

Mathews decided in high school to become a scientist. She made up her mind to go on to graduate school when she was a student at Radcliffe, choosing Caltech for her work in biochemistry and biophysics because of its reputation and "because the East was all I knew, and I liked the idea of going to school in another part of the country."

At the Institute she conducted her research on development in the cellular slime mold, *Dictyostelium discoideum*, completing her work under the supervision of Caltech biologist James Bonner.

"I loved Caltech," she says. "My years there were wonderful, both educationally and personally. There

was so much science to soak up. Caltech's small size is a tremendous advantage, too, because you get to know almost everyone in your division. You learn about their research, and you gain a much broader view of your field than you would at a bigger institution."

As she was completing her PhD, Mathews thought about applying for a postdoctoral appointment that might eventually lead to an academic career. "But first," she says, "I decided to give myself a year in Washington."

Interested in the world of politics ever since she worked for eight months in the 1967-68 McCarthy-for-President campaign, she (and 89 other young people) applied for a one-year fellowship in Congress offered by the American Association for the Advancement of Science. Mathews got the nod. She chose to work on the staff of Congressman Morris K. Udall, then chairman of the Subcommittee on Energy and the Environment of the House Interior Committee and, after the fellowship terminated, she continued as a professional staff member of the committee. As one of only a dozen or so scientists in staff positions on the Hill, she worked on legislation ranging from national energy conservation to nuclear waste disposal and breeder reactor authorization.

Mathews's absence from academia was to have lasted only a year or so, but she postponed her return when Udall decided to run for president and asked her to become his campaign director for issues and research. She accepted ("He is a very impressive man and a real pleasure to work for") and soon found herself immersed in the job "almost 20 hours a day."



Jessica Tuchman Mathews as a Caltech graduate student.

The campaign turned out to be "a tremendous learning experience. By the time it ended, we had prepared about 3,000 pages of position papers on everything from tax reform to energy policy to farm price supports — and I wrote about 90 percent of those pages. It was the best general education I could have had."

What gave Mathews an education also gave her visibility, and her performance did not go unnoticed among political observers. For her work with Udall, the Capitol Hill Women's Political Caucus chose her as the most influential woman in the

1976 presidential campaign. By that time, the year she had given herself in Washington had stretched to almost three, but when she was offered a position with the National Security Council, she couldn't refuse. She stepped into it two weeks before President Carter's inauguration — and her transition from academic science to government policy was complete.

Was the bridge difficult to cross? "No. Working on the Hill before the campaign, I learned that I had something of a natural feeling for policy questions," she says. "But I do miss science, and I know that the bridge the other way — the bridge back to research — would be much, much harder to cross. Knowledge in science builds up so fast that unless you keep up with it, you're soon obsolete. Working on the Udall campaign was a wonderful experience, one I wouldn't have missed, but when it was over, it was almost already too late to go back."

But despite a few lingering regrets, Mathews has been well satisfied with the way her career has evolved. "Being on the National Security Council staff is being in one of the most exciting places in Washington," she says. "Because its staff members sit outside the governmental bureaucracy, they have a unique perspective on all the agencies — and especially on the executive branch and how it functions. One develops a special feeling for the magnitude of the President's job and for the problems he faces."

Science and Government

Mathews was only 31 when she started to work in the Old Executive Office Building. Brzezinski's idea in creating the Office of Global Issues was to find a resting place for all issues that could not be solved on a regional basis. With one colleague, Mathews found herself in charge of preparing national policy on nuclear nonproliferation; chemical, biological, and radiological warfare; human rights; international environment; international organizations; and Africa.

In all this, she found her scientific training useful, and she would like to see more technically trained people in government. When she and five other young people came to Congress as science fellows in 1973, "there were about 10,000 professional staff members on the Hill, and we six fellows just about doubled the percentage who were scientists. The proportion of scientists in Congress has gone up since then, but it's still very small, and the need for them is tremendous. Technical issues are becoming more important every day, so science has an enormous impact on both domestic and foreign policy. But there are still many fields of government where scientists play no role at all.

"The traditional line of thinking has been that scientists are too specialized in their training and unable to work in ways that are helpful to a congressman, and to some degree this is true. More and more, legislators are adding scientists to

their staffs, but the process of increasing their influence in government is a slow one."

For those scientists who cross the bridge into government policy making, Mathews says the most essential — and probably the most difficult — thing to learn is "to make decisions in the face of uncertainty. The amount of uncertainty involved in a research project is quantifiable, and you work to eliminate it. But politicians constantly have to make final decisions in the face of large uncertainties. Many scientists find this foreign and distasteful, and those who can't adjust don't cope well in Washington."

Mathews represented two minorities in government policy — scientists as well as women. She was certainly one of the highest ranking women in foreign policy in Washington, although she considers exaggerated a newspaper article terming her "one of the most important women in the Carter administration." She does appreciate the fact that she was well accepted in her role. "People here are quite willing to expand their attitudes about you in proportion to the quality of your achievements," she says.

Mathews left the National Security Council because she wanted to get into resource management and materials policy. "I think these are really key issues," she said. "Another reason is that I wanted to deal with issues in depth. My personal view is that no one in government contemplates — it just isn't possible. The time to do contemplative thinking is outside government."

In spite of the long hours she has devoted to her work — sometimes 80 hours a week when she first joined the National Security Council — she finds time for a full personal life, including marriage early in 1978 to Colin D. Mathews, an assistant general counsel for legislation in the Department of Energy. She met him when she was a staff member in

"Politicians constantly have to make decisions in the face of large uncertainties. Many scientists find this distasteful, and those who can't adjust don't cope well in Washington."

Congress, and the relationship blossomed as they both worked for the Udall campaign.

The Mathews live in a home in the northwest section of Washington. When she's relaxing, she likes to work in the garden there, and she also likes to ski and jog.

On the Caltech campus, Jessica Tuchman Mathews is remembered as intelligent and hard working as well as attractive, vivacious, and personable. "It was obvious that she had a bright future," says James Bonner as he recalls her as a graduate student. The focus of that future may have changed, but it's certainly no less bright. After all, politicians and newspapers in Washington are as able as scientists to appreciate a good thing when they find it.

Class of '83: Diversity is the spice

by Phyllis Brewster

Here they are again — 217 young men and women entering the classrooms of Caltech for the first time — this year bearing the distinctive label of The Class of 1983.

What makes one Caltech freshman class differ from the last? Statistics vary, of course, but only slightly. SAT scores and academic records reach the same high-level marks; dedication to science remains relatively constant. Geographic distribution doesn't change much — this year 45 percent of the class is from California, 13 students are U.S. citizens born overseas, 10 are foreign students, and the rest are from 33 states in the U.S.

The number of women increases slightly each year — up from 32 to 34 this year, as do the number of minorities — eight Hispanic, eight blacks, and two American Indians in the freshman class. And the distribution between science and engineering hasn't changed significantly from the freshman class of 1978 — 66 percent say they will opt for science, 32 percent for engineering, and 2 percent are undecided. (In 1977, however, 68 percent indicated science, 17 percent engineering, and 15 percent were undecided.)

More important differences are in the individuals — their personalities, their passions, their backgrounds, their adventures, and their expectations.

Because it would be impossible in these pages to sketch each of the 217 entering freshmen, we have chosen to introduce you to a random few — examples of the diversity of interests and energies and enthusiasms throughout the entire class.

John Garvey came to campus with an extraordinary knowledge of cardio-pulmonary resuscitation operations. To qualify for his Eagle Scout award, Garvey cooperated with the local fire department to set up a community education program in CPR. As a result of the project, 3 percent of the people in Bonita (Cal.) can now do CPR.

Beverly Robertson is entering Caltech a year later than she had intended. After high school graduation, Beverly was invited to go to the Yukon to help set up a daily newspaper in Whitehorse. (All of Beverly's letters to Caltech were printed in offset.)

Before he came to Caltech, Anthony Harjo was attending three schools — two of them full time — and working a 40-hour week as a relay system assembler. Anthony had been disappointed in his high school classes, but in his junior year he discovered, in the community college system, the excitement and challenge he had been looking for. While he was required to continue his regular high school program, he enrolled in one college full time, took several classes at another, and supported himself financially.

Rusty (Russell) Schweikart came to Caltech without his twin, Randy — the first time they have been separated in their 18 years. Randy is enrolled at MIT because the brothers decided a coast-to-coast split would help them move toward more separate lives.

In her letter of acceptance to Caltech, Sonia Balcer wrote that she would be late for registration. The reason: she would be on Pitcairn Island. For the past three years Sonia has been one of the project leaders on a team of high school students who designed and built the world's largest solar-thermal-electric generator of its particular type, in the parking lot of JPL, under the guidance of free-lance inventor Frank Broyles. The group is planning to deliver the 25-ton Sunfire — via a U.S. Navy ship — to Pitcairn

and to set it up for the islanders. (Recently Caltech learned that Sonia will defer her Caltech entrance until 1980, because the Pitcairn adventure will extend into January.)

Before he came to Caltech, David Durham was designing, building, and testing his own aircraft.

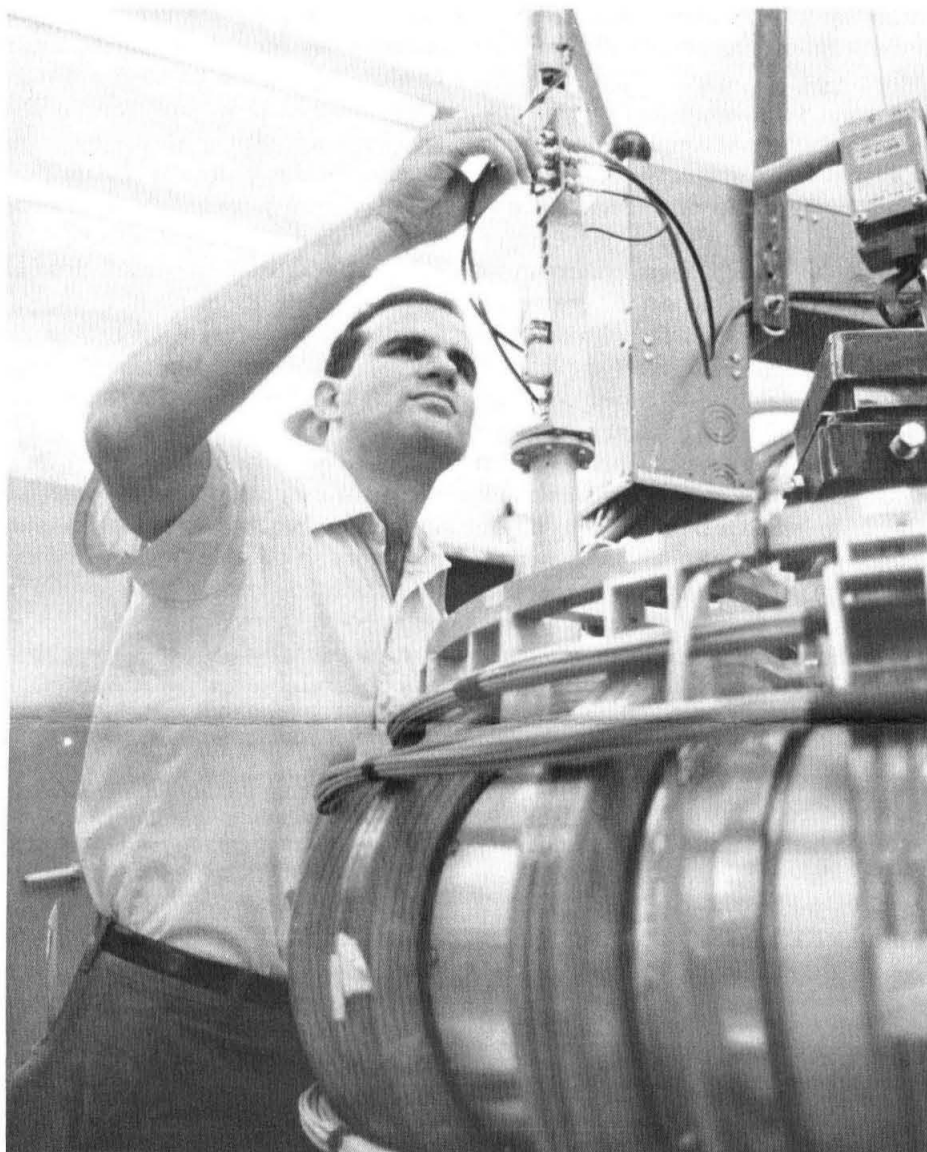
Wendy Rasmussen, who plans to be an aerospace engineer, took her private pilot's license test last January when she was 17.

Charles Lindsey, of Merritt Island, Florida, is attending Caltech for the second time. As a fifth grader,

Charles learned about carbon-14 dating from Dr. Gerald Wasserburg under a special elementary school Talented Students Program.

And so it goes, one provocative interest after another, as well as a wide variety of more common ones. Chess, tennis, cycling — track, jogging, backpacking — science fiction, war games, music — these are some of the pastimes and pursuits of the Class of 1983. And all in addition to their top scholastic achievements and devotion to science.

A boost for fusion research



Paul Bellan gives the finishing touches to his tokamak — a type of device viewed as the most likely candidate to become the first commercial energy-producing fusion reactor. Tokamaks use intense magnetic fields to contain superhot plasma gases. The goal is to hold the plasmas long enough and at high enough temperatures and densities to allow fusion of the plasma particles to occur, releasing energy in the process. Bellan's tokamak is an experimental one that should make substantial contributions to fusion research by yielding information about how plasmas behave. He is an assistant professor of applied physics.

Seminar Day in San Francisco

Alumni who live in the Bay Area and could not attend Seminar Day on the Caltech campus this spring will have an opportunity to hear about some of the current research on campus by attending the second annual Mini Seminar Day on Saturday, October 20, sponsored by the San Francisco alumni chapter.

Africanist Ned Munger, professor of geography, will be the luncheon speaker at the one-day program in the Dunfey Hotel, 1770 South Amphlett Boulevard (at the intersection of the Bayshore Freeway and Highway 92) in Burlingame.

Events will begin with coffee at 9 a.m. in the Lancelot Room and an opening seminar at 9:30. A reception from 3:30 to 5 p.m. for faculty, alumni, and their guests will conclude activities.

Describing their research will be: Jenijoy La Belle, associate professor of English, "Dark Visions of the Fallen World: William Blake's Color Printed Drawings of 1795"; Edward C. Stone, professor of physics, "Voyager 1 at Jupiter: An Encounter with a Giant"; Karen C. McNally, senior research fellow in geophysics, "Prophecy and Fact: The Oaxaca, Mexico, Earthquake of November 29, 1978"; and Fred E. C. Culick, professor of applied physics and jet propulsion, "Learning to Fly in 1903 — The Origins of the First Airplane." Munger will speak at noon on "What's Really Happening in Africa."

Cost of the program, including coffee, lunch, and reception, is \$19.50 per person. Reservations can be made through the Alumni Office, it has been announced.

New football coach on board

Robert B. Davies has been named head football and wrestling coach at Caltech. Davies comes to the Institute from Springfield College in Massachusetts where, as a graduate assistant, he coached varsity football and wrestling. He holds an MEd in guidance and physical education from Springfield College and a BS in health and physical education from Rutgers University where he played varsity football for four years and participated in varsity wrestling his senior year.

Immediately after graduating from Rutgers, Davies coached football and wrestling and taught physical education at Cresskill High School in New Jersey. After two years there he went on to graduate school and coaching at Springfield.

Grand Canyon hike for alumni

Caltech geologists Eugene Shoemaker and Leon Silver will be the guides next April 17-21 on a hike to the bottom of the Grand Canyon and back.

Forty participants, including alumni and guests, will leave Pasadena for the canyon by bus early on April 17, accompanied by their geologist guides. En route, Silver and Shoemaker will describe the geology of the surrounding terrain. The group will spend the evening on the canyon's south rim at the El Tovar Hotel. There, after a social hour and dinner, Shoemaker and Silver will show slides about the canyon's geology and history.

Next morning, the alumni will hike down the Kaibab Trail to Phantom Ranch and spend the night. The following day will feature a hike around the bottom of the canyon (with plenty of opportunities to stop along the trail for geological discussion) and a second night at Phantom Ranch. Then the group will hike up Bright Angel Trail for dinner and a final night at El Tovar before returning to Pasadena by bus the next morning.

Five mules will accompany the caravan into the canyon, in case anyone needs an emergency ride, and to help carry supplies. Reservations can be made through the Alumni Association on a first-come basis at approximately \$425 per person.