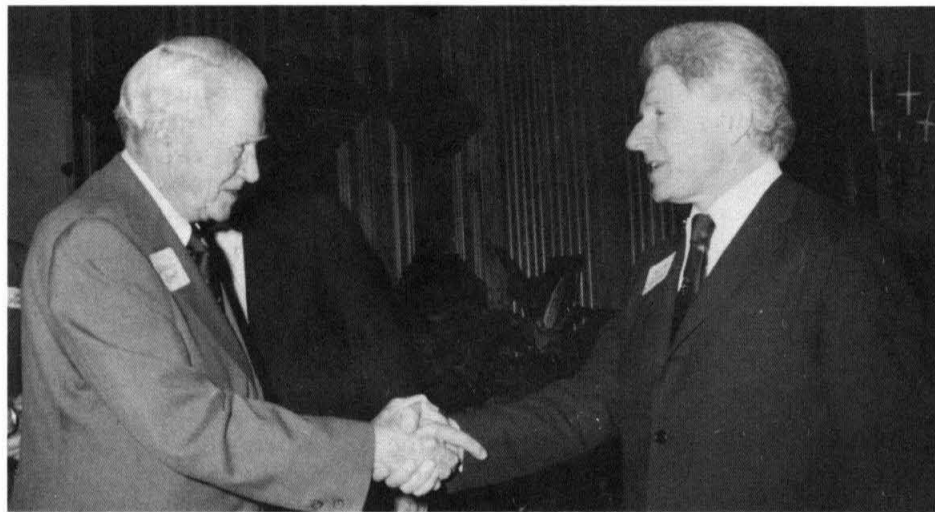


CALTECH NEWS

PUBLISHED FOR ALUMNI AND FRIENDS OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY

New Associates honored



Caltech President Marvin L. Goldberger welcomes Mitchell B. Howe to The Associates' dinner and reception in honor of new members and their sponsors. Mr. Howe is a Life Member of The Associates. A total of 321 members and their guests attended the dinner in the Athenaeum where Mark Konishi, professor of biology, talked about his research on the development of birdsong and his neurophysiological studies on the hearing of birds. In their vocal development, song birds and humans share several characteristics—including the need to hear in order to learn the speech patterns of their species. Thus Konishi's work may help us learn more about speech and its neurological basis.



Dr. and Mrs. Nicholas W. Tschoeogl and Mr. and Mrs. Lynn A. Smith, new members of The Associates, stop to pick up their name tags.

This farm's over the ocean

Caltech environmental engineers and marine biologists have turned their talents to farming. Their experimental agricultural project is four miles off the coast of southern California, their crop is ocean-grown giant kelp, and their projected harvest is a new source of methane gas for fuel.

The farm itself is a 102-foot-diameter steel-ribbed structure that is anchored about 50 feet below the ocean surface and is held in place with cables, buoys, and anchors. Individual kelp plants are moored to stainless steel and nylon rope strung around the perimeter of the steel ribs. From a large pump-equipped buoy at the platform's center a 25-inch-diameter pipe dangles 1,500 feet into the water. Through this pipe, nutrient-rich water from the ocean's depths is pumped up and discharged just below the waterline.

The project is part of a larger cooperative program supported by

the Gas Research Institute and the U.S. Department of Energy. Caltech has played an important role in research and development, and General Electric has handled the management engineering and construction aspects of the facility.

A research group from Caltech's Kerckhoff Marine Biology Laboratory, headed by environmental scientist Wheeler J. North, placed 100 plants on the artificial structure in November and has been measuring harvest yields from the kelp crop. Other laboratories are determining whether enough methane gas can be derived from the yield to make large-scale kelp production economically feasible.

The idea of using the open ocean to grow seaweed for fuel was first proposed in the 1960s. The advantages of unlimited space and water, and the availability of natural plant nutrients from deep ocean water,

Continued on page 2

From drinking water

Reducing cancer risks

Cancer risks from drinking water—as reported in past studies—may have been grossly underestimated. This is the conclusion of researchers at Caltech and UC Berkeley who analyzed the costs and benefits of removing carcinogens in drinking water by filtration with granular activated carbon (GAC).

The research team includes Talbot Page, research associate in economics in Caltech's Division of the Humanities and Social Sciences, along with Robert Harris and Judith Bruser of UC Berkeley. Page's work was sponsored by EQL.

The scientists concluded that filtering drinking water through GAC could reduce the risk of cancer from carcinogens in the water by as much as 90 percent. Drinking water contamination has been consistently linked to gastrointestinal and urinary tract cancers which comprise about 30 percent of the total cancer incidence.

Their study supports the Environmental Protection Agency's proposed regulations requiring GAC installations in large cities with contaminated drinking water. Previous studies had suggested that such filtration might not be cost effective, but the Caltech-UC Berkeley research indicated that the cost of water treatment for carcinogens would be justified.

The team calculated the cost of saving a life by installing GAC at about \$500,000. They obtained this figure by calculating the cost of installing and maintaining the GAC system, and divided it by the estimated number of lives it would save; they projected both figures over a 100-year period. They used the 100-year projection to allow for the full

life-saving benefits of the filtration system, so that the initial cost of installation could be amortized.

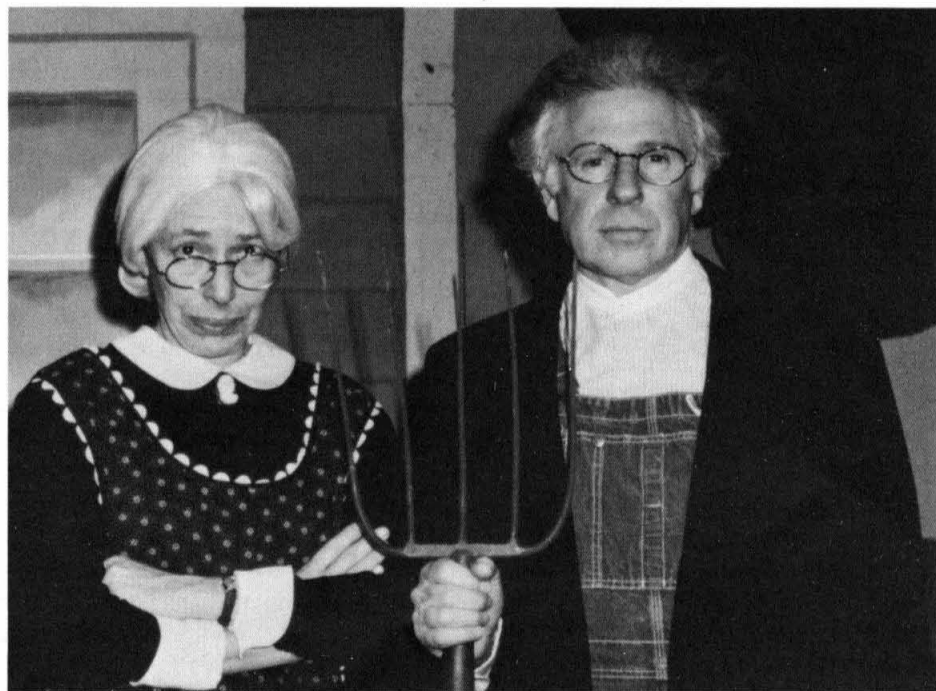
Their calculations included medical costs, lost earnings, and insurance payoffs, taken from various studies with totals that ranged from hundreds of thousands to millions of dollars. The scientists emphasized the difficulty in determining the "reasonable" cost of saving a life, and that an individual's nonmaterial worth cannot be assigned a dollar value.

In calculating the cancer risks from drinking water, the research group reviewed independent sources of evidence based on studies of human, animal, and fish cancers that have been attributed to polluted water, and then made comparisons with research on bacterial mutagenic potency.

Less than 10 percent of the 700 contaminants identified in the drinking water have been tested for their potential carcinogenicity, and those 700 represent, by weight, only about 15 percent of the total organic matter in drinking water. Many contaminants cannot be identified with present methods. The major sources of contaminants are industrial discharges, chemical spills, agricultural runoff of pesticides, fertilizers, etc., and matter from decomposed plants and animals. The team allowed for the effects of the latency period between exposure to carcinogens and the appearance of cancer symptoms—often as much as 20 to 40 years.

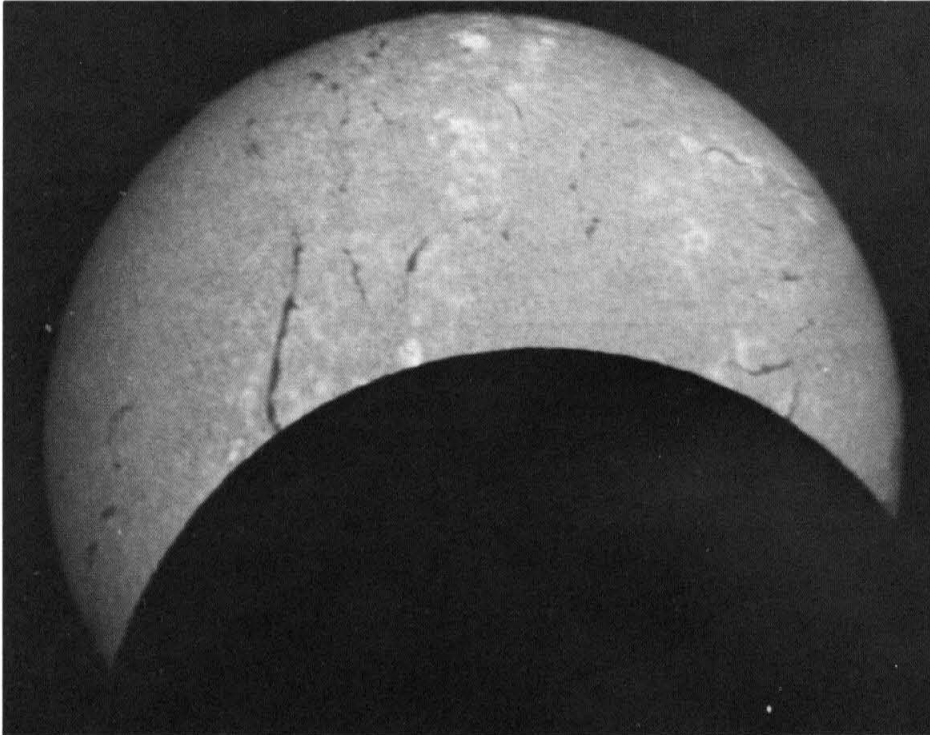
The Page, Harris, Bruser report was submitted to Congressman Paul Rogers for his work with the health subcommittee of the House Interstate and Foreign Commerce Committee.

All in the Caltech family



Traditionally an extended family affair, Caltech's annual musical attracts as participants students, faculty, staff, alumni, members of their families and their pets. This year's production of Meredith Wilson's *The Music Man* featured a cast of 90—including Caltech President and Mrs. Marvin L. Goldberger in a cameo role as Grant Wood's American Gothic farm couple.

Viewing the eclipse



This picture of the February 26 eclipse was taken through a solar telescope at Caltech at a wavelength of light that made the sun's boiling surface clearly visible. Solar astronomers viewed the sun at both visible and radio wavelengths; the eclipse enabled them to map its features at a far greater precision than is normally possible.

Sculpture exhibit on Beckman Mall



Sculptor Eino, at left, supervises the unloading of one of 20 of his marble sculptures that are on exhibit for six months on Caltech's Beckman Mall. A native of Finland, Eino has done more than 100 major marble sculptures since he came to the United States in 1962. Among the pieces on display are a 2,000-pound chain of three links, formed from a single piece of marble, and an 8-foot, 900-pound marble feather.

ALUMNI ACTIVITIES

March 23

Seattle chapter meeting, Horatio's Restaurant, cocktails at 6:30 p.m., dinner at 7:30 p.m., \$10 per person, followed by a Caltech Glee Club concert.

April 2

Houston chapter meeting, the Houston Oaks Hotel. No-host cocktails, 6 p.m.; dinner, 7 p.m.; \$11.00 per person. William H. Corcoran, vice president for Institute relations and professor of chemical engineering, will discuss new research and construction programs at the Institute.

May 1

New Mexico chapter meeting, the Bishop's Lodge, Santa Fe, New Mexico. Cocktails, 6:30 p.m.; dinner, 7:30 p.m.; \$12.50 per person. Eugene Shoemaker, Caltech professor of geology, will speak on "The Origins of the Earth."

May 2

Denver chapter meeting, the Continental Denver Hotel, Valley Highway and Speer Boulevard. Cocktails, 6:30 p.m.; dinner, 7:30 p.m.; \$8.00 per person. Eugene Shoemaker will be the speaker.

May 5

San Francisco chapter meeting. Tour of the Lick Observatory on Mt. Hamilton. Details will be announced later this spring.

May 12

Alumni Seminar Day.

June 2

San Diego chapter meeting. Tour of Scripps Institution of Oceanography and the Nimitz Marine Facility. Details will be announced.

Tau Beta Pi

Suzanne Mills, president of the Caltech chapter of Tau Beta Pi, engineering honor society, is accepting reservations from alumni for the Southern California Area Council's conference on March 24. The conference, at McDonnell Douglas Corporation in Long Beach, will feature four concurrent all-day workshops on engineering and leadership in our society. The Southern California Council of Tau Beta Pi is made up of both student and alumni chapters. Alumni may send reservation requests with \$3 to Mills at Caltech, 1-59.

Goldberger

Seminar Day speaker

Caltech alumni who attend Alumni Seminar Day on May 11 will have the chance to hear the Institute's new president, Marvin L. Goldberger, as he addresses the general session.

Goldberger, who was inaugurated in October, came to the Caltech presidency from a 30-year career embracing research, teaching, and involvement with both national security affairs and international physics. He had been a member of the Princeton University faculty for 21 years; there he was chairman of the department of physics and the Joseph Henry Professor of Physics. Well known for his dedication to undergraduates, he has expressed his intent to teach an undergraduate course at the Institute.

In 1961 Goldberger was awarded the Dannie Heineman Prize for Mathematical Physics. He is probably best known for his work on the application of dispersion methods to a wide variety of problems in the

weak and strong interactions among elementary particles. He received his BS degree from Carnegie Institute of Technology (now Carnegie-Mellon University) in 1943, served in the Army from 1943 to 1946, and received his PhD in physics from the University of Chicago in 1948, working under Enrico Fermi.

Since 1955 he has been an adviser to a number of governmental agencies on national security and arms control. He was a member of the President's Science Advisory Committee from 1965 to 1969, and in 1972 and 1973 he was chairman of the Federation of American Scientists. He was also a member of the Ford Foundation-Mitre Corporation study, *Nuclear Power — Issues and Choices*. His international scientific activities include the chairmanship of the High Energy Physics Commission of the International Union of Pure and Applied Physics from 1963 to 1969, and three trips to the People's Republic of China.

A harvest from the ocean

(Continued from page 1)

make the possibility extremely attractive economically. Sea plants can be converted to fuel via much less complicated processes than land plants because marine algae tissues contain low proportions of refractory materials — such as lignin and cellulose — which lock up carbon needed for combustion.

Giant kelp grows naturally in shallow water close to shore. But growing the large amounts needed for a fuel-producing system requires the use of larger areas farther out to sea. Caltech research has concentrated on determining how kelp can be successfully transplanted from its natural environment to farms over the open ocean.

In earlier experiments, transplanted kelp didn't thrive in its deep sea habitat because the waters there lacked essential nutrients. Caltech researchers worked hard to determine how to supply the kelp with the nutrients necessary for successful growth. They found that when currents created an upwelling from deeper waters where more vegetation grows, then the health of the plants improved. In a series of tests they worked out a balanced diet for the kelp with just the right mix of such essentials as nitrogen, phosphorus, manganese, and iron. At the kelp farm, this mix is maintained by bringing together equal parts of surface water and water from 1,500 feet below the surface.

Class reunions planned

May 11 and 12

Class of 1954. May 11 — Campus tours from the Athenaeum at 4 p.m., followed by cocktails at 5:30 p.m. on the Athenaeum patio and a banquet at 7 p.m. Activities on May 12 will center around Seminar Day with a luncheon for class members in Dabney Gardens and cocktails after Seminar Day in the Trustees' room in Millikan Library.

June 1 and 2

Class of 1929. June 1 — No-host cocktail reception, the Huntington-Sheraton Hotel, at 11:30 a.m., followed by the Half-Century Club luncheon at 12:30 p.m. and campus tours from the Athenaeum at 4 p.m.; a reception from 3 to 7 p.m. at the home of Milt Sperling, BS '29, and Mrs. Sperling; dinner and dancing in the Huntington-Sheraton Hotel at 7 p.m.; and a farewell brunch on June 2 at 10:30 a.m. at the home of Mike O'Haver, BS '29, and Mrs. O'Haver. Cost of the Saturday reception and dinner — \$24.50 per

person; cost of brunch, \$7.50 per person.

June 1

Classes of 1934 and 1949. Campus tours from the Athenaeum at 4 p.m. followed by a no-host cocktail reception at 5:30 p.m. and individual class dinners at 7 p.m. in the Athenaeum.

June 2

Classes of 1939 and 1944. Campus tours from the Athenaeum at 4 p.m. followed by a no-host cocktail reception at 5:30 p.m. and individual class dinners at 7 p.m. in the Athenaeum.

June 9

Classes of 1959, 1964, and 1969. Campus tours from the Athenaeum at 4 p.m. followed by no-host cocktail reception at 5:30 p.m. and individual class dinners at 7 p.m. in the Athenaeum.

Class of 1974. Picnic, Tournament Park, 2 p.m. The Alumni Association will provide beer, soft drinks and charcoal; the alumni will bring the hamburgers.

Alumni Board nominations announced

The Board of Directors of the Alumni Association met as a nominating committee on January 23, 1979, in accordance with Section 5.01 of the bylaws. Six vacancies on the board, in addition to the positions of the president, vice president, secretary, and treasurer, are to be filled. The current members of the board, with the years in which their terms expire, are as follows:

Clarence R. Allen, MS '51, PhD '54 — 1979

James R. Davis, BS '48, MS '49 — 1979

Hiroshi Kamei, BS '51, MS '52 — 1979

Carel Otte, MS '50, PhD '54 — 1979

James W. Workman, BS '57, MS '58 — 1979

Cydnor M. Biddison, BS '40 — 1980

John R. Fee, BS '51 — 1980

James King, Jr., MS '55, PhD '58 — 1980

Louise Kirkbride, BS '75, MS '76 — 1980

Philip L. Reynolds, BS '58, MS '59 — 1980

Stanley A. Christman, BS '65 — 1981

Munson W. Dowd, BS '38, MS '46 — 1981

Steven D. Hall, BS '65, MS '66 — 1981

J. Steven Sheffield, BS '72 — 1981

Thomas A. Tisch, BS '61 — 1981

The following individuals have been nominated for terms beginning at the close of the annual meeting in June 1979:

President: Carel Otte, MS '50, PhD '54 — 1 year

Vice President: James W. Workman, BS '57, MS '58 — 1 year

Secretary: Stanley A. Christman, BS '65 — 1 year

Treasurer: Philip L. Reynolds, BS '58, MS '59 — 1 year

Directors:

Francis H. Clauser, BS '34, MS '35, PhD '37 — 3 years

Vern Edwards, BS '50 — 3 years

David E. Groce, BS '58, PhD '63 — 3 years

Frances E. Janssen, BS '75, MS '77 — 3 years

Arne Kalm, BS '56, MS '57 — 3 years

William J. Karzas, BS '49, PhD '55 — 3 years

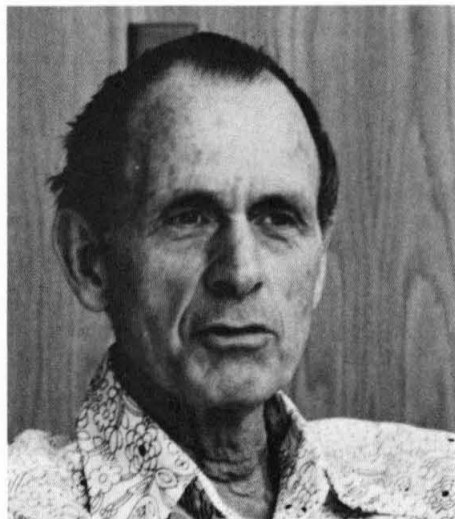
Section 5.01 of the bylaws provides that membership may make additional nominations for directors or officers by a petition signed by at least 50 regular members in good standing, providing the petition is received by the secretary no later than April 15. In accordance with section 5.02 of the bylaws, if no additional nominations are received by April 15, the secretary casts the unanimous vote of all regular members of the Association for the election of the candidates nominated by the board. Otherwise a letter ballot is required.

Below are the biographical summaries of those nominated for directors.

Francis H. Clauser

Francis H. Clauser, BS '34, MS '35, PhD '37, is the Clark Blanchard Millikan Professor of Engineering at Caltech. Clauser, who joined the Caltech faculty in 1969, served as chairman of the Division of En-

gineering and Applied Science from that year until 1974. Previously he was vice chancellor for science and engineering and professor of engineering at UC Santa Cruz, 1967-69, and academic vice chancellor, 1965-67; and professor of aeronautics at



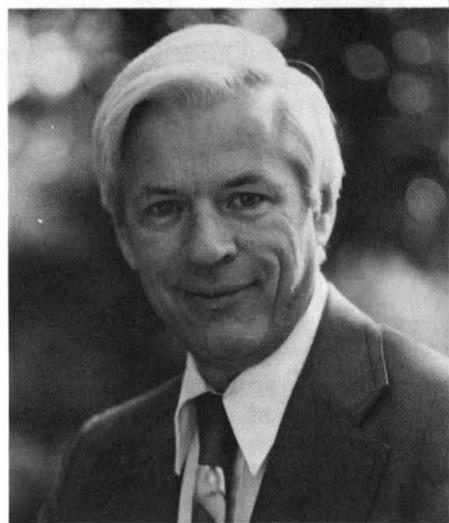
Johns Hopkins University, 1946-65. At that institution he founded the department of aeronautics and was its first chairman. Before joining Johns Hopkins, Clauser was a research aerodynamicist with Douglas Aircraft Company.

He is a member of the National Academy of Engineering and the International Academy of Astronautics and in 1966 he received the highest honor that the Institute confers on its graduates — its Distinguished Alumni Award.

Vern Edwards

Vern Edwards, BS '50, is an independent consulting engineer. His specialty area is industrial facilities and production planning, where he uses 3-D equipment mock-ups.

Edwards has been a member of the Seminar Day Committee for six



years and is finishing his third year on the Alumni Fund Council, for which he served as area chairman for Western Pasadena. He was chairman of the Alumni Leadership Conference in September 1978.

David E. Groce

David E. Groce, BS '58, PhD '63, joined Science Applications, Inc., in La Jolla, California, in 1969 after postdoctoral studies at the Australian National University and five years of experimental atomic and nuclear physics at General Atomic. He has held several corporate and technical positions with the company and currently is the manager of its Applied Medical Sciences Division.

Groce is a member of the Society of Nuclear Medicine, the American



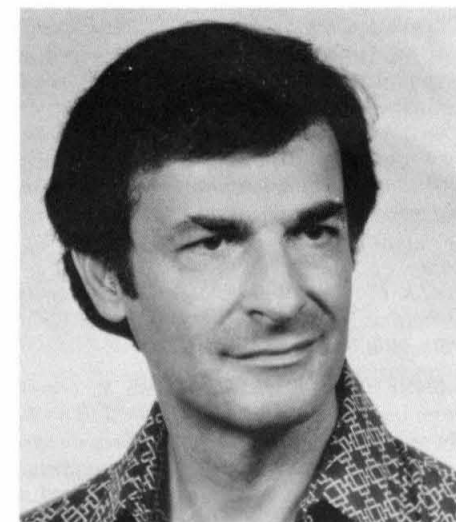
Prior to joining Berry in 1973 to develop a diversification program, Kalm was employed by several companies in corporate acquisition and finance positions. He received his MBA from Harvard University in 1961.

Kalm is a member of the Caltech Alumni Fund Council and has been involved in Harvard Business School alumni fund-raising activities. He has also been an active member of the Estonian-American community in Los Angeles for many years.

William J. Karzas

William J. Karzas, BS '49, PhD '55, is head of the physics department at R&D Associates in Marina del Rey, California.

After graduating from Caltech, Karzas joined the physics division at



RAND Corporation, then left in 1971 to become one of the founders of RDA. His professional career has been concerned primarily with defense-related problems in nuclear weapons design, detection, and effects, with emphasis on the ability of critical elements of our deterrent forces to survive. He has lectured and served on numerous government sponsored committees, both in the U.S. and Europe.

Douglas Fellows

Three Caltech graduate students in aeronautics — Scott Richardson, Bruce Rosen, and Steven Vosen — have been selected as recipients of the 1978-79 Donald Wills Douglas Graduate Fellowships. All are 22 years old and working toward master's degrees in aeronautics.

The Douglas Fellowships were established in 1973 by friends of Donald Douglas, the founder and first president of the Douglas Aircraft Company, on his 80th birthday. The fellowship fund enables students with outstanding ability in aeronautics and related fields to do graduate work at Caltech's Graduate Aeronautical Laboratories (GALCIT).

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Photographer: Richard Kee.



Frances E. Janssen

Frances E. Janssen, BS '75, MS '77, is project engineer with the industrial waste section of the Los Angeles County Sanitation Districts, where she works on the enforcement of the Industrial Waste Ordinance, and

helps to determine the effectiveness of the industrial waste program. She is a member of the Sanitation Districts' Speakers' Bureau.

Janssen is a member of the Water Pollution Control Federation, and secretary of the Los Angeles Basin Section of the California Water Pollution Control Association.

Arne Kalm

Arne Kalm, BS '56, MS '57, is president of Berry Enterprises, Inc., the diversification arm of a group of family-held petroleum companies in California. Berry Enterprises consists of businesses engaged in petroleum



service activities, marine repair, and leather outerwear manufacturing.

PERSONALS

1924

ROLLAND S. THOMAS writes to say, "Have just published a book on our (Thomas) family genealogy. All research and compiling of data was done by me—500 pages."

1925

CARYL KROUSER and his wife, Freda, were guests of the government for a Double Ten celebration at Taiwan. The Krousers toured the island and spent a week in Hong Kong, including a visit to Macao. They visited Bali in the spring and in June took a tour of the Alaskan Inside Passage.

1927

LEWIS E. MEDLIN retired from Tempel Steel in Chicago in 1970 after 20 years' service. He moved, at age 72, to a new home, on which he did most of the building, on a small acreage in Wisconsin. He writes that he is "very comfortable on Fox River. Daughter and family not too far away."

1932

THOMAS DIXON OULTON retired in 1977 after 23 years with Engelhard Minerals & Chemicals Corp. in Menlo Park, New Jersey. For the last several years he has served as technical staff assistant to the vice president for administration. He writes, "Am now engaged part-time as a self-employed consultant, especially in the area of the environment and corporate interface with the regulatory agencies, having all I want to do."

1934

ARZA F. PORTER, MS, retired in February 1978 after 31 years with C F Braun & Co of Alhambra, California.

KENNETH A. WILLARD, MS, MS '35, retired from Lockheed in 1977. He has held two jobs there — special assistant to G/M missile systems division; and chief pilot, remote piloted vehicle programs, R & D division. Willard is currently an associate editor of *Radio Control Modeler Magazine*, and he designs radio-controlled aircraft for sport and industrial use.

1935

ROBERT A. McRAE, director of the Bureau of Right of Way and Land in Los Angeles, was awarded the Samuel A. Greeley Local Government Service Award. DONALD C. TILLMAN, '45, MS '47, the city engineer for Los Angeles, was similarly honored. The Greeley award is given by the American Public Works Association to officials of municipal and county public works from the United States and Canada.

JOHN R. ROSSUM retired after 34 years as sanitary engineer for the California Water Service Company. He lives in San Jose.

1940

EDWARD V. GANT, MS, was appointed acting president of the University of Connecticut on August 1. This is the third time that Gant, a professor of engineering, has served as acting president during the 36 years that he has been at the university.

FORREST H. HALL, MS, professor of civil engineering at the University of Idaho College of Engineering, retired after a 31-year teaching career. He and his wife, Rosalyn, plan to relax and enjoy their ranch home, which Hall designed and built near Moscow, Idaho.

1941

COL. OLIVER K. JONES, USAF, RET., writes, "I am retiring from employment with the Texas Department of Water Resources as a hydrologist engineer after 13 years' service. Having retired from the Air Force in 1967, and now the State of Texas, and Social Security, I look forward to becoming a 'quadruple dipper' — in a VERY modest way, of course."

LLOYD A. LEWIS, MS, retired in August after a 37-year career in petroleum exploration with Shell Oil Co. Lewis and his wife, Mona Mae, live in Midland, Texas.

1942

ELLIOTT A. GREEN has been named vice president for airline customer support at Lockheed in Burbank, California. Green first began working at Lockheed during his student days in 1939, and has played a key role in the development of the L-1011 TriStar since its inception more than ten years ago.

CARL H. SAVIT, MS '43, senior vice president, technology, of Western Geophysical Company in Houston, has been appointed to

the Energy Research Advisory Board (ERAB) of the U.S. Department of Energy. Savit, a former assistant for earth, sea, and air sciences to the President's Science Advisor, will serve an initial term of two years.

1944

FRANCIS E. MACDONALD, JR., writes, "I am enjoying partial retirement from civil engineering practice to manage industrial properties in Upland (California) and traveling, fishing, and motor-home travel."

IRVING S. REED, PhD '49, professor of electrical engineering and computer science at the University of Southern California, has been appointed the first Charles Lee Powell Professor of Computer Engineering at USC.

1946

DONALD R. LINDSAY, Ex, retired from Shell Oil Co. in June and is now working for Occidental Geothermal, Inc., in Bakersfield, Calif.

1948

JULIUS S. BENDAT, MS, has been named president of Structural Monitoring, Inc., in Los Angeles, a firm specializing in vibration analysis services for integrity monitoring of offshore structures. Bendat is also giving short courses on engineering applications of coherence and correlation analysis for acoustics and vibration problems.

1951

DALLAS L. PECK, MS '53, has submitted the announcement that he "was appointed Chief Geologist of the U.S. Geological Survey (head of the Geologic Division) in September 1977. The Associate Chief Geologist is GORDON P. EATON, MS '53, PhD '57. Other Caltech alumni in the Survey include H. WILLIAM MENARD, JR. BS '42, MS '47, director; and JAMES R. BALSLEY, JR., BS '38, assistant director for land resources."

1952

RICHARD H. FULLER was named vice president of Corporate Technology, Emerson Electric Co., in St. Louis, Missouri.

DEANE K. SMITH, JR., has been appointed the chairman of the Joint Committee of Power Diffraction Standards — International Centre of Diffraction Data, a publishing house of X-ray diffraction data. Smith and his wife, Patricia, live in State College, Pennsylvania.

1955

ALFRED A. BARRIOS, clinical psychologist and director of the Self-Programmed Control Center in Los Angeles, has published a handbook for self-improvement, *Towards Greater Freedom and Happiness*.

ROGER J. M. DE WIEST, MS, writes from Belgium, "In '75 I left Princeton, where I became a full professor in 1965, for Belgium, after I obtained the MD degree at my alma mater of Ghent University in 1974. This capped seven years of transatlantic commuting to Belgium (45 round trips and 1½ years of internship). Upon my return, I became a medical doctor with the Belgium National Institute of Sickness and Disability, in Brussels. I enjoy my work very much. My best souvenir of 20 years of residence in the U.S. is my year at Caltech."

THOMAS TRILLING writes, "I received a PhD in computer science from USC in August '78, 23 years after my Caltech BS in physics. I have been with Technology Service Corporation of Santa Monica the past six years."

1960

HARRY H. BINGHAM, JR., PhD, writes that he is "back at Berkeley after a year's sabbatical in the United Kingdom, doing physics at CERN and Rutherford Lab and giving teenagers (my kids, Harry B., Sanford E., and Alison) exposure to British culture."

1961

J. DAVID BOWMAN, PhD '68, reports that he has been a staff member at the Los Alamos Meson Physics Facility (LAMPF) for the past five years. "My research interests have been in the fields of rare meson decays, symmetry principles, and pion nucleus interactions. I have recently been appointed to the LAMPF Program Advisory Committee, the body that advises the laboratory director on establishing physics priorities for the accelerator."

1962

EDWARD T. CLINE, JR., PhD '66, was promoted to associate professor in the mathemat-

ics department at Clark University, Worcester, Massachusetts. He is directing a project in algebraic groups, financed by the National Science Foundation.

JOHN D. CROSSMAN and his family have moved to Tokyo where John has enrolled in Sophia University for a two-year intensive course in the Japanese language. He writes, "My wife is teaching English conversation to assist our finances. We love Tokyo; the challenge is how to afford it! If any of our friends make it to Japan we can be reached at 483-2984 in Tokyo."

1963

PAUL J. NAHIN, MS, assistant professor of electrical and computer engineering at the University of New Hampshire, has been awarded the 1978 M. Barry Carlton Honorable Mention Prize for the best technical paper of the previous year appearing in *Transactions on Aerospace and Electronic Systems*, published by the Institute of Electrical and Electronics Engineers. Nahin's paper, "The Laser BMD," also received the 1979 IEEE Harry Rowe Mimmno Award for speculative writing.

1964

MARC de BLOCK, MS, reports, "After having followed for two years the evening courses at the Boston University (in Brussels), I graduated in August 1978 as a Master in Business Administration. I am still with MBL (a company of the Dutch Phillips), division manager for telecommunications, in the company's headquarters in Brussels."

1965

MICHAEL J. MAHON, MS, has been transferred to Austin, Texas, to develop a new computer architecture for Burroughs Corporation.

1968

EDWARD JOHN GROTH III has been promoted to associate professor of physics at Princeton University. He is also serving as data and operations team leader for NASA's space telescope.

1971

MARK J. NOBLE and his wife, Laura, announce the birth of their son, Samuel Gordon, on December 13, and Mark writes that he is in his fourth year of residency at the Cleveland Clinic, in the urology department. "In addition to patient care responsibilities, I am doing research in transplantation and renal preservation. I recently presented a paper on aorto-renal bypass in Dublin, Ireland. Laura and I hope that Samuel will be in Caltech's class of 2000."

1972

MARC A. AARONSON says, "I obtained my PhD in astronomy from Harvard during August 1977. Since then I have been working as a research associate at Steward Observatory (University of Arizona) in Tucson. This past June my wife, Marianne, gave birth to a beautiful baby girl whom we have named Laura."

GEOFFREY M. LEE sends the following: "I left grad school in Madison, Wisconsin, with a love of combinatorics, a master's degree, and a wife, Leslie Ann. I now work with computers (heavens!) in the nationwide magnetic fusion energy network centered in Livermore, Calif. Les and I square dance a lot, and we go motorcycling whenever we can. To those Teachers I haven't seen over the past 6 years (and to those I have seen): HI!!!"

1973

CLIFF I. DAVIDSON, MS, PhD '77, is an assistant professor of civil engineering and of engineering and public policy at Carnegie-Mellon University. He has been conducting field research in Greenland, measuring long-range transport of aerosols.

JAMES C. VIBBER, BS '74, and his wife, Lee, announce the birth of Brion Lucas on December 1. Their first son, Kelson Thomas, was born in March 1976. Jim is an automated-testing engineer at Edwards Pacemaker in Irvine, Calif.

1974

ROBERT M. KIECKHEFER writes that he "spent two months in the Philippine Sea this year, pitching and rolling through typhoons Rita, Tess, Viola, and Winnie." Kieckhefer spends his on-shore time at Scripps Institution of Oceanography in La Jolla, California.

DOUGLAS B. McELROY reports that, "Linda got her MEd degree at U. of Arizona in 1975. We then spent three years in Phoenix, where I got my MS in physics from Arizona State in '77. Now we're back in Tucson. Linda is teaching sign language at Flowing Wells H.S., while I'm working as a research assistant at Kitt Peak."

1975

BRUCE I. HARROW was married last April and he and his wife, Melanie, live in Dallas, Texas, where he is a third-year student at Southwestern Medical School (University of Texas at Dallas).

OBITUARIES

1924

ALBERT S. GOULD on July 24 at Rosewood Retirement Community, Bakersfield, Calif. He was a long-time employee of the Naval Weapons Center in China Lake, Calif., where his invention of a "folding fin" contributed significantly to the rocket program. Gould served for 23 years on Kern County school boards, at high school and college levels. He is survived by his widow, Charlotte, a son, Albert Jr., a daughter, Elinor Heupel, and five grandchildren.

1946

DONALD J. O'MEARA, MS, Eng '47, on December 20 in West Palm Beach, Florida, following a cerebral hemorrhage. A retired Navy captain, O'Meara had been director of the Atlantic Undersea Test and Evaluation Center in the Bahamas. He is survived by his wife, Jane, two sons, Peter and John, and three grandchildren.

KENNETH W. ROBINSON, MS '48, on January 1, at his home in Ocean Beach, Calif. He played a major role in developing the Cambridge, Massachusetts, Electron Accelerator, the world's largest instrument for studying the basic properties of matter, and was recognized as an expert in high energy synchrotrons and storage rings.

Joseph Weis Memorial

The Department of Physics at the University of Washington is announcing the establishment of a Joseph H. Weis Memorial Traveling Fellowship for graduate students. Weis, BS '64, was killed last fall in a mountain climbing accident in the French Alps. He was a faculty member in the University of Washington physics department from 1972 until his death.

The fellowship will be used to help a graduate student in theoretical physics at the University of Washington to attend a meeting or a summer school, or visit a laboratory. Make checks payable to the Joseph H. Weis Memorial Fund and mail them to Marshall Baker in care of the University of Washington Physics Department, Seattle, 98195.

For the record

This month's sharp memory award goes to Robert M. Kieckhefer, BS '74, who corrects a *Caltech News* photo caption which stated that, "For the first time in 20 years, Caltech finished its football season this year with as many victories as losses." Kieckhefer notes that the Beavers also finished the season with a 3-3 record in 1973, after two victories over the Claremont-Mudd JVs and one over the La Verne JVs.

Kieckhefer concludes, "Bonfires included one in front of city hall, one at Ambassador College, and (I'm not sure about this one), one at Lake and Del Mar."

The athletic department verifies Kieckhefer's recollection about the victories but isn't sure about the bonfires.