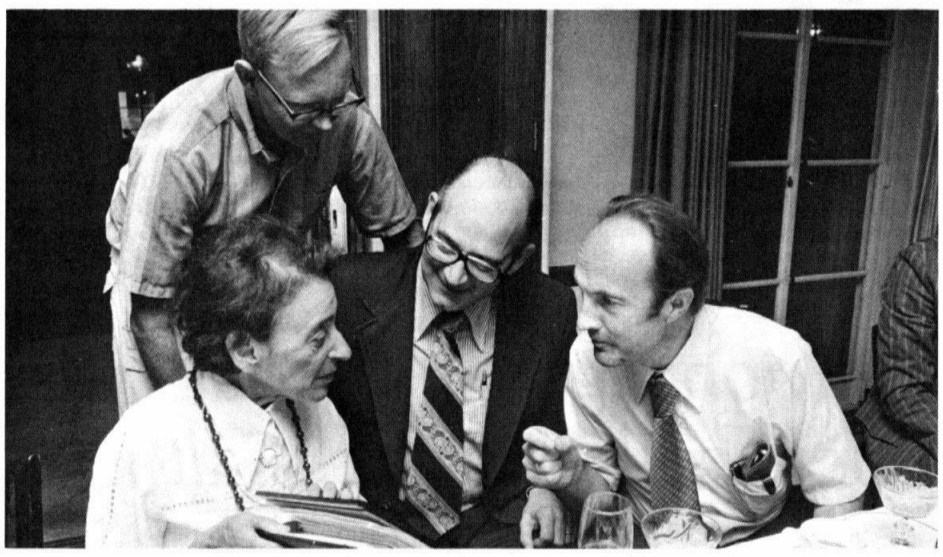
VOLUME 10, NUMBER 8, NOVEMBER 1976

CALTECH NEWS

PUBLISHED FOR ALUMNI AND FRIENDS OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY



During her 19 years as a member of the Caltech faculty, Olga Taussky Todd, professor of mathematics, has earned a reputation as one of the world's foremost living women mathematicians. This fall, more than 40 of her colleagues from throughout the country met to honor her at a symposium where four professors presented papers in recognition of her accomplishments. Later, at a dinner in the Athenaeum, she was given a book containing 62 mathematics papers that were dedicated to her. Here, with several friends, she examines her gift. With Dr. Todd are, from left: Robert C. Thompson, PhD '60 (standing), professor of mathematics, UC Santa Barbara, who worked with her as a graduate student; Richard S. Varga, University Professor of Mathematics, Kent State University, a former Sherman Fairchild Distinguished Scholar who has collaborated with Dr. Todd on research; and W. A. J. Luxemburg, Caltech professor and executive officer for mathematics.

Time machine travel: too hot for comfort?

If human beings could travel by time machine 3 billion years back into the past, they would probably find the climate much too hot for their comfort. For the findings of Caltech geophysicists indicate that it was much warmer then than it is today. Their conclusions are based on geochemical "thermometers" in rocks that suggest temperatures ranged as high as 160 degrees Fahrenheit.

The "thermometers" are found in samples of chert — microcrystalline quartz containing small amounts of water. Hydrogen and oxygen isotopes in the cherts indicate that climate temperatures in the rock declined to 90 degrees Fahrenheit about 1.2 billion years ago.

These findings were developed by Samuel Epstein, professor of geochemistry, and one of his former graduate students, L. Paul Knauth, who is now a member of the geology faculty at Louisiana State University. Their paper was published in *Geochimica et Cosmochimica Acta*, the official journal of the Geochemical Society and the Meteoritical Society.

In the course of their research, Epstein and Knauth assembled data from 66 samples of chert collected from the central and western United States — from Arkansas to Montana to California. In addition, they took one sample each from southeastern Canada, South Africa, and England. The temperature readings were consistent for geological periods, no matter how far apart the samples were located or how deep they were buried.

The geophysicists' conclusions suggest that annual temperatures dropped from about 93 to 68 degrees during the Paleozoic era (600 to 270 million years ago), then climbed to 95 to 104 degrees in the Triassic (225 million years ago), and declined through the Mesozoic (135 to 225 million years ago) to the Cenozoic (10 to 70 million years ago) down to about 63 degrees.

Their calculations for more recent times correspond to trends found by other scientists based on paleontological and further data. Reasons for the warmer temperatures are not understood, but it has been suggested that the sun may have been hotter earlier in the earth's history than it is today.

"If our estimates are even approximately correct," Epstein said, "then these temperatures may be one reason why multicelled organisms didn't appear on the earth until about one billion years ago. The earth may have been too hot for sophisticated life to evolve, although it wouldn't have been too warm for bacteria or primitive blue-green algae — both of which have existed for at least 3.3 billion years."

Cherts are produced by the dehydration of opal — which can originate either from volcanic ash or from biological material such as diatoms. Their isotopic record reflects a temperature within 10 to 15 degrees of the atmosphere's, and this is frozen into the cherts at their formation. The record seems to remain unaltered if the cherts are not recrystallized.

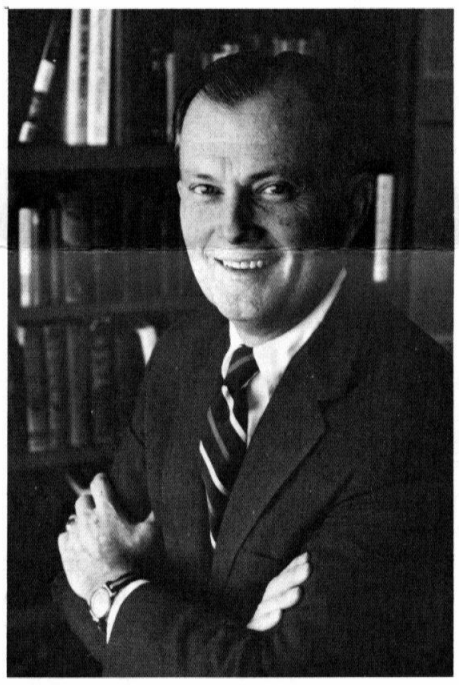
The "thermometers" in the cherts are based on the ratio of two kinds of isotopes of oxygen and hydrogen, and on the fact that the heavier isotope of these elements partitions unequally between the cherts and the host water, depending upon the temperature at which the partition takes place. It is generally true that the colder the temperature, the greater the difference in the isotopic composition of the water in which the cherts are formed.

Caltech elects Medberry to Board of Trustees

Chauncey J. Medberry III, chairman of the board of the Bank of America NT & SA and BankAmerica Corporation, has been elected to the Caltech Board of Trustees.

The former chairman of the Bank of America's General Finance Committee and its worldwide senior lending officer, Medberry heads the World Banking Division and is chief executive officer for the bank's activities in southern California. He began his career with the Bank of America in 1939 and was appointed a senior vice president in 1965.

As a Trustee, Medberry plans to become active in the Caltech community. "I've known and admired Caltech all my life," he said. "Back in the forties I remember watching lightning-making demonstrations on the campus; those were exciting displays.



Chauncey J. Medberry III

"Through the years, Caltech has retained the high quality of its programs and graduates. It is one of the great educational institutions in the country. My company supports Caltech, not because we expect to hire many of its graduates but because we believe it is an important part of our society.

"I don't know much about science at this point, but I feel that as a businessman I can fill a useful role on the board and I'll seek to learn and to make a contribution. One of my tenets is never to join an organization unless I can be active, so I expect to be on the spot and to perform my responsibilities."

A leader in a number of other community roles, Medberry is a director of the Getty Oil Company, the Southern California Symphony-Hollywood Bowl Association, and the Yosemite Institute. He is a trustee of the Committee for Economic Development, the Good Samaritan Hospital, and Pomona College, and is a member of the Board of Overseers of the Huntington Library.

In addition, Medberry is a member of the executive board of the Los Angeles Area Council of the Boy Scouts of America, and chairman of the Board of Visitors of the Graduate School of Management at UCLA, and of the Board of Trustees-Industry Education Council. A graduate of UCLA, he lives in Los Angeles.

New merit scholarships honor able students

Caltech has inaugurated a new program to recognize the academic accomplishments of a few outstanding students by means of scholarships based solely on merit, President Harold Brown has announced.

Except in the case of athletes, financial aid to college students is commonly related both to the academic merit of the recipients and to their financial need. Brown said the innovation, called the Caltech Prize Scholarship Program, is designed to recognize the "intellectual athlete," and to reduce or eliminate the difference between tuition costs at Caltech and those at a public university.

Seven students, chosen from this year's exceptionally able freshman class, were selected as the first recipients. All enrolled for the fall semester and received scholarships ranging from $750 to $1,500. They are Russell Dailey, Minden, Louisiana; Steven Eaton, Salina, Kansas; John B. Reinitz, Colorado Springs, Colorado; Raymond L. Thomas, New York City; and three Californians: Josh Levin, Beverly Hills; William Power, San Rafael; and Michael Reach, Oxnard.

The scholarships will be renewed for their sophomore year if the students pass all their courses. It is expected that similar scholarships will eventually be awarded on a competitive basis to juniors, with renewal for the senior year conditional on satisfactory academic performance. Recipients who have held the scholarships as freshmen and sophomores will also be eligible for competition in their junior year.

Research yields insight into cystic fibrosis causes

An engineering study of the ciliary propulsion systems of microorganisms has yielded important insight into a human genetic illness — cystic fibrosis. Anthony T. W. Cheung, senior research fellow in engineering science, has discovered that one of the most serious symptoms of this hereditary disease — suffocation — isn't related to the failure of these propulsion systems, as had been believed.

The system under study by Cheung is made up of microscopic, constantly waving hair-like arms called cilia. Essential to life, these tiny arms are used by microorganisms to propel themselves through fluids; they are also used to remove bacteria and mucus from the human respiratory tract.

One of the deadly symptoms of cystic fibrosis is the accumulation of mucus in the patient's tracheal and bronchial tubes. Medical scientists had speculated that mucus accumulated there because the disease caused the cilia to stop moving. But Cheung's work proves that this isn't the case. The reason why mucus accumulates — in quantities large enough to cause choking — is that it becomes so viscous the cilia can't remove it.

Cystic fibrosis occurs about once in every 1,200 live births and only among Caucasians. Between 2,000 and 3,000 new cases are reported annually. Its presence is usually detected early in childhood through respiratory symptoms and other physiological problems. Pneumonia is a frequent complication because of the buildup of mucus in the respiratory tract.

In his studies, Cheung has developed a way to take high-speed movies showing microscopic cilia in action — each beating at the rate of about 22 times per second. Their motion — like the waving rhythm of grain in the wind — sets up a conveyor belt of mucus that moves unwanted matter such as bacteria and dust from the respiratory system to the mouth where it can be expelled.

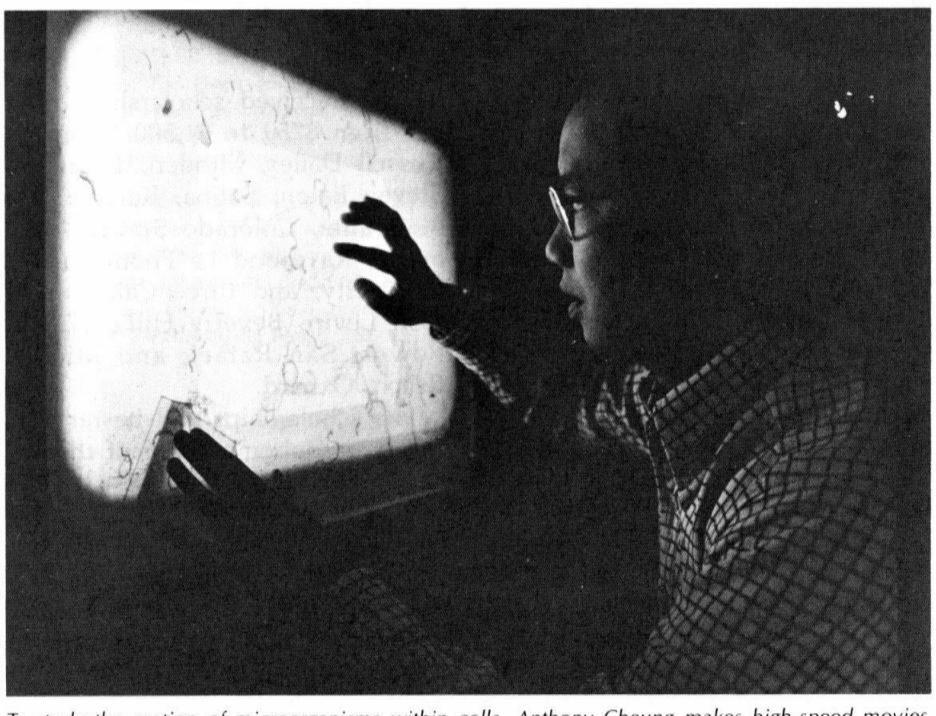
Cheung's movie system consists of a camera capable of filming up to 500 frames per second and a microscope equipped with special optics. In addition to showing the cilia in motion, the film technique has revealed evidence of an unknown factor that destroys the surface cells of the trachea containing the cilia. This factor may be related to the complement system in the blood serum of cystic fibrotic patients.

In his experiments, Cheung used samples of rabbits' tracheal ciliated lining, which he could keep alive for more than a week in a culture medium. He obtained blood serum from 25 cystic fibrotic patients and blood from the patients' parents — who are the carriers of the disease. He used his own blood serum as a control.

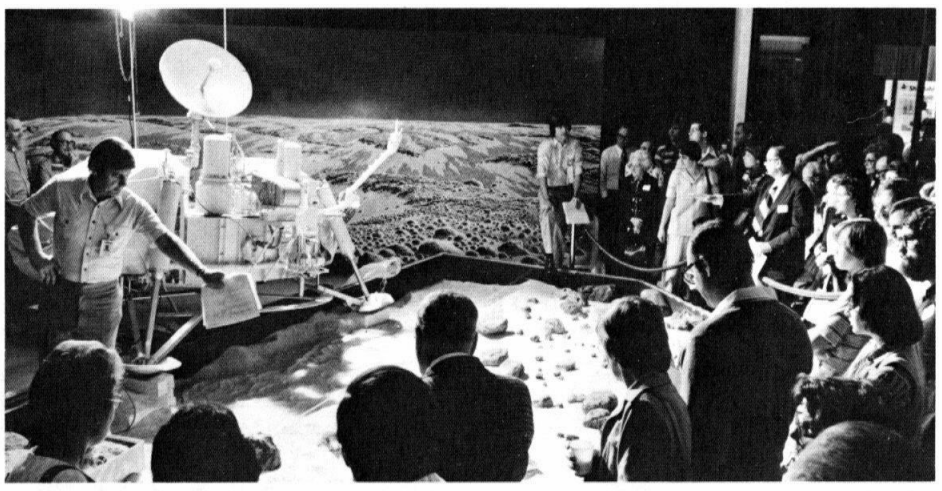
Each of the three kinds of serum was applied to segments of rabbit trachea. Then high-speed movies of cilia activity in the segments were taken.

The film showed that in 35 out of 39 cases in which tracheal cilia were treated with cystic fibrotic serum, debris from individual cells appeared, and the cells began detaching from one another showing that cytolysis was taking place. Some floated free after about two hours, although their cilia continued to beat. Eventually after about two and a quarter hours, the cells died and the cilia stopped beating. None of these changes occurred in the samples treated with carrier serum or normal blood serum.

In other experiments, Cheung determined that the cilia continued to beat in the trachea of cystic fibrotic patients as mucus accumulated. But eventually the mucus became too viscous for the cilia to remove.



To study the motion of microorganisms within cells, Anthony Cheung makes high-speed movies, using a microscope. Here, he analyzes the movements recorded in one of his movies by means of a film reader that enables him to study one frame at a time.



Until space travel becomes a reality, a simulated visit to Mars is as close as anyone can come to actually being there. In October the Alumni Association provided opportunities for 470 members and their families to have such a visit. As participants in one of two identical programs at JPL, alumni met members of the flight team and heard reports of the most recent data from the planet's surface. Here Donald Crouch, deputy team leader of the Viking Surface Sampling Team, describes terrain that carefully simulates the rock-strewn Chryse Plain landing site. Behind him, a duplicate of the Viking lander sits before a panoramic view of the Martian landscape.

DuMond gives his personal book collection to Caltech

Jesse W. M. DuMond, Caltech professor of physics, emeritus, recently received an expression of thanks from Institute President Harold Brown for what Brown called "the magnificent gift" to Millikan Memorial Library of the distinguished physicist's personal collection of books and treatises.

"The data contained in the books and journals certainly will assist present and future generations of Caltech students and faculty," Brown said in a letter to the retired professor, who has been associated with Caltech since he became a teaching fellow at the Institute in 1921. "The fact that these materials have been provided through your generosity will give them a special value and importance to us."

The collection consists of fundamental treatises and monographs concerning the development of physics. It contains classic works by Max Planck, Paul Drude, Sir Arthur Eddington, Werner Heisenberg, H. A. Lorentz, and P. A. M. Dirac. Much of the material is valuable and now out of print, according to the librarians who are cataloguing it.

Included in the collection is a letter from Albert Einstein to George Ellery Hale dated March 4, 1932, in which the great scientist comments on interesting work under way at Caltech by a young physicist named DuMond. Einstein terms the work "among the most important experimental physics of the decade."

DuMond, who began his career as an electrical engineer, soon switched to physics, where his skill was apparent in his design and construction of high-precision instruments.

He became a leading authority on the precise values of the physical constants and in the field of X-ray and gamma-ray spectra. One of his early contributions to the field of physics was the analysis and publication of the theory behind powerful X-ray spectrometers. Later he built and used these spectrometers to make accurate measurements and precision studies of X rays. His work has also been recognized as important in the theory of solids and the values of fundamental atomic constants.

Ireland receives Guenther Award in chemistry

Robert Ireland, professor of organic chemistry at Caltech, has been selected as the 1977 recipient of the $2,000 Ernest Guenther Award in the Chemistry of Essential Oils and Related Products for his contributions to the field of terpene chemistry. Ireland was recognized both for his work in the laboratory manufacture of highly complex organic molecules and for the development of original techniques useful in the synthesis of various compounds.

Seinfeld's chemical engineering work lauded for excellence

John H. Seinfeld, professor of chemical engineering at Caltech, is the 1976 recipient of the Allan P. Colburn Award of the American Institute of Chemical Engineers for excellence in publications that promise to influence chemical engineering.

Seinfeld, 34, Caltech's executive officer for chemical engineering, received the award for his work in two areas of research. He has pioneered in developing mathematical models of the behavior of air pollution that are being used by the State of California and the U.S. Environmental Protection Agency to analyze emission regulations for air pollutants in Los Angeles and other urban areas. In addition, he has been recognized for his development of techniques to estimate the properties of dynamic systems such as underground oil fields.

Hood brothers to collaborate in biomathematics research

Thanks to a National Science Foundation faculty fellowship, Leroy E. Hood, Caltech professor of biology, and his brother, J. Myron Hood, will be working together at Caltech this fall on a project they have been collaborating on for the past three years.

The fellowship, one of 79 given nationally, will enable Myron Hood, assistant professor of mathematics at Occidental College, to study biology and biomathematics on the Caltech campus. Here he will work with his brother on the use of mathematics to determine protein diversity through mathematical calculation and to answer such questions as whether proteins in different species are closely related to one another.

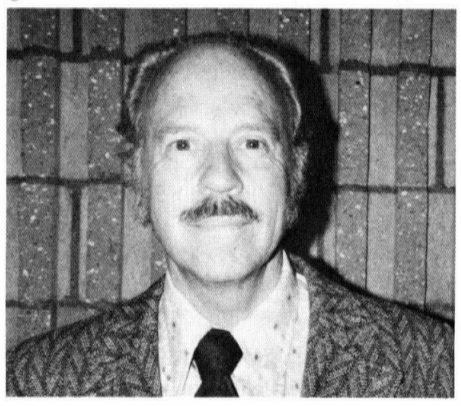
His best vacation

Alumnus helps rebuild in Guatemala

Frank W. Tunglen, MS '48, recently wrapped up the "best vacation I've ever had" — despite the fact that it involved enormous amounts of work and effort.

But Tunglen didn't mind the work because he was using his engineering skills in the way he believes to be the most important of all: helping other people.

Tunglen, chief mechanical engineer with Mackintosh & Mackintosh, Inc., in Los Angeles, believed his training could be of practical use in earthquake-shattered Guatemala. A devout Methodist, he talked before the quake with the executive secretary for overseas relief about his church's programs of practical assistance to countries hit by catastrophes. And he asked to be included the next time people were needed to help in a disaster.



Frank Tunglen

Soon after that conversation the February 4 earthquake jolted Guatemala, and in May Tunglen was on his way there — traveling light. He took with him only a travel bag, a T square, and a sketchpad and pencil.

He found extensive damage, for many of the country's adobe houses had been reduced to dust and rubble. Although the homes of the poor had suffered the most, many large, modern buildings were also damaged.

Traveling mostly by public transportation, Tunglen inspected and designed repairs for more than 40 churches, a municipal building, a college, several schools, and many private homes. He worked in cooperation with the Church World Service, the United Methodist Committee for Overseas Relief, and an interdenominational group of 27 agencies assisting with the reconstruction.

Sometimes he sketched the necessary repairs. Sometimes he gave simple suggestions, such as, "Replace this beam with two new ones." Sometimes he had to say, "This building can't be repaired. You'll have to tear it down."

During more than half of his time in Guatemala, Tunglen communicated with people who couldn't speak English, using what he calls his "engineer's Spanish." His formal training in the language consists of only three college semesters.

"But we got along all right," he said. "I spoke carefully and they didn't mind repeating."

A good start toward rebuilding has been made, but Tunglen believes it will be another three to five years before reconstruction is complete. Meantime, he feels that anyone expert in building engineering and design could make as important a contribution as he did by volunteering time.

"First you should make sure of your ability to contribute," he said. "Ask yourself, 'Can I really be of help?' If the answer is yes, then you should go. I can't speak highly enough of my own experience. Using one's skills to help other people is what life is all about. I'd go again if I had the opportunity."

While the earthquake brought great destruction to Guatemala, Tunglen believes it also had the positive effect of bringing people of different economic levels closer together.

"Before the destruction many wealthy Guatemalans seemed to have little concern for the poor," he said. "But the quake changed all that. Now, everyone is working together."

Tunglen said the most rewarding feature of his trip was the chance to work with the Guatemalan people and to experience their courage in the face of tragedy. "They aren't remorseful or bitter," he commented. "They're cooperating with one another and are determined to rebuild. Working with them was a wonderful experience."

ALUMNI ASSOCIATION
CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena, California

BALANCE SHEET
June 30, 1976

ASSETS

Cash on Hand and in Bank	$ 9,300.98
Investments	
C.I.T. Consolidated Portfolio	316,877.16
Deposit in Fixed Term Savings Account	25,506.57
Short-term Promissory Notes	
Deposits in Passbook Savings Accounts	3,118.57
Investment Income Receivable	16,228.33
Other Receivables	2,654.24
Postage Deposit and Deferred Expenses	1,262.32
Furniture and Fixtures, at nominal value	1.00
Total Assets	$374,949.17

LIABILITIES, RESERVES AND SURPLUS

Accounts Payable	$ 4,021.85
Deferred Income:	
Annual Membership Dues paid in advance	25,932.00
Investment Income from C.I.T. Consolidated Portfolio	16,228.33
Life Membership Reserve	327,087.16
Surplus	1,679.83
Total Liabilities, Reserves and Surplus	$374,949.17

STATEMENT OF INCOME AND EXPENSES
FOR THE YEAR ENDED JUNE 30, 1976

INCOME

Dues of Annual Members	$ 48,624.24
Investment Income:	
C.I.T. Consolidated Portfolio	15,033.10
Deposit in Fixed Term Savings Account	506.57
Short-term Promissory Notes	1,078.17
Deposits in Passbook Savings Accounts	598.38
Annual Seminar	9,434.04
Program and Social Functions	20,475.85
Area and Chapter Meetings	1,974.04
Total Income	$ 97,724.39

EXPENSES

Publications	$ 12,000.00
Annual Seminar	10,621.56
Program and Social Functions	27,992.55
Area and Chapter Meetings	6,854.69
Student Programs	9,612.55
Institute Secondary School Relations	781.87
Administration	17,932.83
Membership Committee	5,602.45
Directory	5,648.55
Total Expenses	$ 97,047.05
Excess of Income over Expenses	$ 677.34
Surplus, July 1, 1975	1,002.49
Surplus, June 30, 1976	1,679.83

AUDITOR'S REPORT

Board of Directors
Alumni Association
California Institute of Technology
Pasadena, California

I have examined the Balance Sheet of the Alumni Association, California Institute of Technology as of June 30, 1976, and the related Statement of Income, Expenses and Surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the accompanying Balance Sheet and Statements of Income, Expenses and Surplus present fairly the financial position of the Alumni Association, California Institute of Technology at June 30, 1976, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Calvin A. Ames
Certified Public Accountant

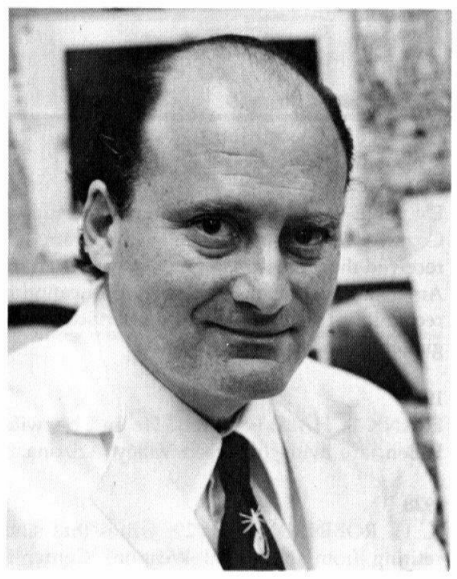
September 28, 1976

ASCE honors Jack McKee

Jack E. McKee, professor of environmental engineering at Caltech, has received the Edmund Friedman Professional Recognition Award from the American Society of Civil Engineers. The award is given annually to a member of the society who is judged to have contributed substantially to the status of the engineering profession. Earlier this year, McKee received the Karl Emil Hilgard Hydraulic Prize from the same organization.

New Aerospace Corporation trustee: Pierce

John R. Pierce, professor of engineering at Caltech, has been elected to the Board of Trustees of the Aerospace Corporation. Before coming to Caltech, Pierce had been associated for 35 years with the Bell Telephone Laboratories, working in electronics research and communication sciences. He served on the President's Science Advisory Committee.



Seymour Benzer

Benzer shares biology research prize

Seymour Benzer, James G. Boswell Professor of Neuroscience, is the co-recipient of Columbia University's 1976 Louisa Gross Horowitz Prize for outstanding research in biology or biochemistry. Benzer and Charles Yanofsky of Stanford University share the award for studies of gene structure and function.

Of the 16 scientists who have won the Horowitz Prize since its establishment in 1967, half of them have gone on to win the Nobel Prize for their work.

The research recognized by this year's prize helped explain how genes code instructions for life, molecule by molecule. Along with studies by James Watson and Francis Crick that revealed the double-helix shape of the instruction-carrying chemical of genes, the research by Benzer and Yanofsky laid the foundation for today's understanding of genetics.

According to the award citation, Benzer "established the field of fine-structure genetics" and "rescued the concept of the gene from . . . confusion." In the 1950's, his research demonstrated that in bacteria each of the thousands of genes in the cell's chromosome has a specific and unique function to perform — usually the production of an enzyme that causes a specific biochemical activity to occur.

Techniques developed by him have made possible a highly detailed mapping of each gene's precise location in the bacteria's chromosome.

ALUMNI ACTIVITIES

December 8
Alumni dinner–Earnest C. Watson Caltech Lecture. Cocktails, 6 p.m., dinner, 6:30 p.m., the Athenaeum. Lecture, 8 p.m., Beckman Auditorium. Speaker, Bruce Murray, director, the Jet Propulsion Laboratory: "Are We Going to Rule, or Be Ruled, by Our Own Technology?"

January 1
Rose Parade Special. 7:30-9:30 a.m.—Continental breakfast in the Athenaeum. 9-11:15 a.m.—Walk to Colorado Boulevard to watch the 88th Annual Tournament of Roses from reserved grandstand seats. 12 noon—Buffet lunch in the Athenaeum. For those with tickets to the game, a box lunch and bus transportation to the Rose Bowl will be provided.

PERSONALS

1924
EUGENE W. SMITH, president emeritus of Cogswell Polytechnic College in San Francisco, received the James H. McGraw Award from the American Society of Engineering Education in recognition of his outstanding service in engineering technology education.

1927
FRANK S. HALE is retired. He and his wife, Helen, are living in Green Valley, Arizona.

1928
K. H. ROBINSON, MS '29, writes that since retiring from the Naval Weapons Center in 1971, he has continued to act as a consultant for them, as well as helping organize the dedication of NWC's Low Energy Laser Laboratory in honor of Dr. Charles Lauritsen. He is active in Rotary, and plays bass in the local Dixieland band.

1931
ARTHUR C. BROOKS retired in 1972 after 35 years of prep school teaching. He writes that he's keeping busy on his two acres in the woods.

WALTER L. DICKEY retired after 50 years as consulting structural engineer of the Masonry Institute of America. He will continue to do limited consultation at home.

JAMES M. GERSCHLER retired in 1964 from Lockheed in Burbank, California, after 36 years in engineering and research.

1932
JOHN L. COX writes that he is proud to announce that his daughter, Margaret, entered Caltech's freshman class this fall as a math major.

JAMES L. HOARD, PhD, is the winner of the American Chemical Society's $2,000 award for distinguished service in the advancement of inorganic chemistry. He is professor emeritus at Cornell University, author of over 100 scientific papers, and a world leader in X-ray diffraction techniques.

MERVIN A. SCHUHART retired from the California State Division of Highways in 1973. He writes that he and his wife are now "enjoying all the activities and advantages offered by Leisure World in Laguna Hills, California."

1943
DAVID R. ARNOLD writes that his son, PHILLIP J. ARNOLD, BS '74, received his MBA degree from Stanford University in 1976 and has joined his father at L. M. Scofield Company as manager of corporate development.

1944
THOMAS L. GILBERT, MS '49, was promoted last February to senior scientist at the Argonne National Laboratory.

ALFRED G. KNUDSON, JR., PhD '56, has been named director of the Institute for Cancer Research in Philadelphia, as of January 3, 1977. Currently, Knudson is dean and professor of medical genetics for the University of Texas graduate school of biomedical sciences in Houston, professor of pediatrics at the medical school, and professor of biology and pediatrics at the M. D. Anderson Hospital and Tumor Institute.

RUBEN F. METTLER, MS '47, PhD '49, president of TRW, has been elected to succeed Horace A. Shepard as chairman and chief executive of the company when Shepard retires in late 1977.

JOHN B. NELSON has been transferred to England by Standard Oil of California to be supervising engineer for module fabrication and commission for offshore crude oil production platforms in the Ninian field, northeast of the Shetland Islands in the North Sea.

1945
DUANE T. McRUER, MS '48, president of Systems Technology, Inc., was given the Alexander C. Williams, Jr., Award by the Human Factors Society for his original work in manual and automatic control systems affecting the design of more than 30 missile and aircraft systems.

1946
JOHN A. ANDERSON writes, "Still working for a living at Rockwell International. Ran and was elected to the city council of Rolling Hills Estates, California, and am currently serving as mayor of that city."

HOWARD W. MORGAN, JR., has been promoted to captain after over 30 years in the Naval Reserve. He is an attorney in Cincinnati, Ohio.

JEROME W. SCHNEIDER has retired after 25 years of private practice in civil engineering and surveying. He is raising Arabian horses in Jasper, Indiana.

1948
THOMAS VREBALOVICH, MS '49, PhD '54, has left his position as manager for research in the office of research and advanced development at JPL to join the Department of State as counselor for scientific and technological affairs at the American Embassy in New Delhi, India.

RICHARD S. WHITE III, Eng., a retired captain in the U.S. Army, is living in Falls Church, Virginia.

ROBERT L. WINCHESTER was made a fellow of IEEE in January. He is manager of excitation systems engineering for General Electric in Schenectady, New York.

1954
JOSEF ROM, MS, PhD '57, dean of the department of aeronautical engineering and occupant of the Lady Davis Chair in Applied Aerodynamics at Technion, Israel Institute of Technology, was awarded the 1976 Israel Prize in technology and engineering for his work in the development of high-speed wind tunnels.

1955
GEORGE E. MADSEN, MS '58, is senior vice president of Woodside-Kubota & Associates, Inc., in Santa Ana, California.

EDWIN B. SEIDMAN has completed his first of four years as village trustee in Deerfield, Illinois. Seidman is a senior divisional analyst with Abbott Laboratories in Chicago.

1957
STANLEY G. TAYLOR received his JD degree from Loyola Law School in June.

1958
GEORGE D. LEAL, MS, was named manager of Dames & Moore's geographic management division. His new assignment will involve organizing and coordinating the activities of the firm's 43 offices all over the world.

HALLAN C. NOLTIMIER, research associate at Ohio State University, has received an ACS-PRF grant to continue paleomagnetic research on coal and coal-bearing sediments.

1959
LOUIS N. BATHISH, MS, is working with Abbott Laboratories in Rocky Mount, North Carolina.

RICHARD F. LONG, MS '60, is president of Discosound Associates, Inc., which designs and installs discotheque sound systems; and a partner in the LZS Corporation which has interests in video projection and discotheque ownership, and franchising.

JAMES S. PETTY, MS '60, PhD '63, is working in the turbine engine division of the Air Force Aero Propulsion Laboratory. He lives in Dayton, Ohio.

1960
NORMAN S. FARHA, MS, is executive vice president and treasurer of F & E Wholesale Grocery, Inc., in Wichita, Kansas.

THEODORE A. JACOBS, PhD, has been appointed superintendent of the optical sciences division of the Naval Research Laboratory in Washington, DC. Formerly, Jacobs was senior scientist and director of high energy laser technology at TRW defense and space systems group in Redondo Beach, California.

MEREDITH B. MITCHELL, a psychologist in private practice, is teaching a psychology course at UCLA Extension on "Fairy Tales: Keys to the Psyche."

DAVID A. RESNIK is with the firm of Hamilton/Avnet in Culver City, California, as a microprocessor corporate technical manager.

DONALD H. VOET, associate professor of chemistry at the University of Pennsylvania, leaves for Oxford on sabbatical this fall.

HOWARD L. WEISBERG is a physicist at Brookhaven National Laboratory.

1961
OLIVER SEELY, JR., is an associate professor of chemistry at California State College, Dominguez Hills, and (he says) "clarinetist extraordinaire of the Dominguez Hills Chamber Symphony."

CLYDE S. ZAIDINS, MS '63, PhD '67, was promoted to professor of physics at the University of Colorado at Denver.

1973
DAVID M. GORDON, PhD, is an associate physicist in the department of applied science at Brookhaven National Laboratory.

JOHN R. LEWIS is a development engineer for Hewlett-Packard in the Boise Data Systems Division. He writes that he has "acquired a wife, Connie, and two children, Sam, who is five, and three-month-old Sarah."

CHRISTOPHER PLATT received his JD degree from the Loyola University School of Law in June.

1974
LISA M. ANDERSON received her MS degree in civil engineering from Stanford University and spent the summer doing research at the Marine Biological Laboratory at Woods Hole, Massachusetts.

STEPHEN A. BITONDO received an MBA degree from UCLA and is working for Hewlett-Packard in Palo Alto, California, as a programmer-analyst.

EDWARD B. PONTIUS is a first-year student at the School of Medical Sciences at the University of Nevada in Reno.

OBITUARIES

1915
HAROLD A. BLACK on June 26. Black had worked with the engineering department of the city of El Cajon, California. Prior to that he was an industrial arts instructor for 30 years. He is survived by his wife, two sons, and a daughter.

1920
CECIL L. McCONNELL on June 16. He was retired.

1922
W. BARTON JONES, retired chairman and president of Barton Instruments Corporation, on April 29. He is survived by his wife, Gladys, a son, and a daughter.

1923
DOUGLAS A. STROMSOE on August 9. After his retirement as head of the Southern Pipe & Casing Division of U.S. Industries in 1962, he purchased and developed an avocado and macadamia nut ranch in Fallbrook, California. Surviving are his wife, Margaret, and a son.

1924
DAVID R. YOUNG on May 11. He was retired.

1929
WILLARD A. FINDLAY, MS '32, PhD '40, on December 25, 1975. He had been a self-employed oil resources consultant in San Diego, California.

1930
ROSCOE P. DOWNS on August 21. He was a construction consultant in Sherman Oaks, California.

LAWRENCE G. FENNER in August. Fenner retired from the J. D. Crevier Company of Burbank, California, in 1974. Surviving are his wife, Ruth, two daughters, and six grandchildren.

JOHN L. HALL, on April 26, after a long illness. He is survived by his wife, Mildred.

1931
EDWIN F. GREEN, MS '32, of cancer, on June 23. He retired from North American Rockwell in 1974 where he had been a metallurgist for 17 years. Surviving are his wife, Frances, and a son and daughter.

1935
EUGENE GRAHAM, JR., in September 1975. He was president of Graham Drilling Company, Inc., of Los Angeles.

WILLIAM B. McLEAN, MS '37, PhD '39, of cancer, on August 26. His wife survives him.

1936
ROBERT H. MARSH on November 18, 1975. He was a project engineer with Hughes Aircraft Company of Denver.

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 .....

.....

CALTECH NEWS

Vol. 10 No. 8 November 1976

Issued nine times a year (Sept., Oct., Nov., Dec., Feb., Mar., Apr., June, and July) and published by the California Institute of Technology and the Alumni Association, Pasadena, California 91125.

Second-class postage paid at Pasadena, California.

EDITORIAL STAFF

Executive editor: Winifred Veronda.
Staff associates: Joy Hays, Rosalind Silver, and Kay Walker.
Photographer: Floyd Clark.

The lighter side of physics is revealed to new students at Freshman Camp on Catalina Island through an informal talk by Nobel Laureate Richard P. Feynman, Richard Chace Tolman Professor of Theoretical Physics.