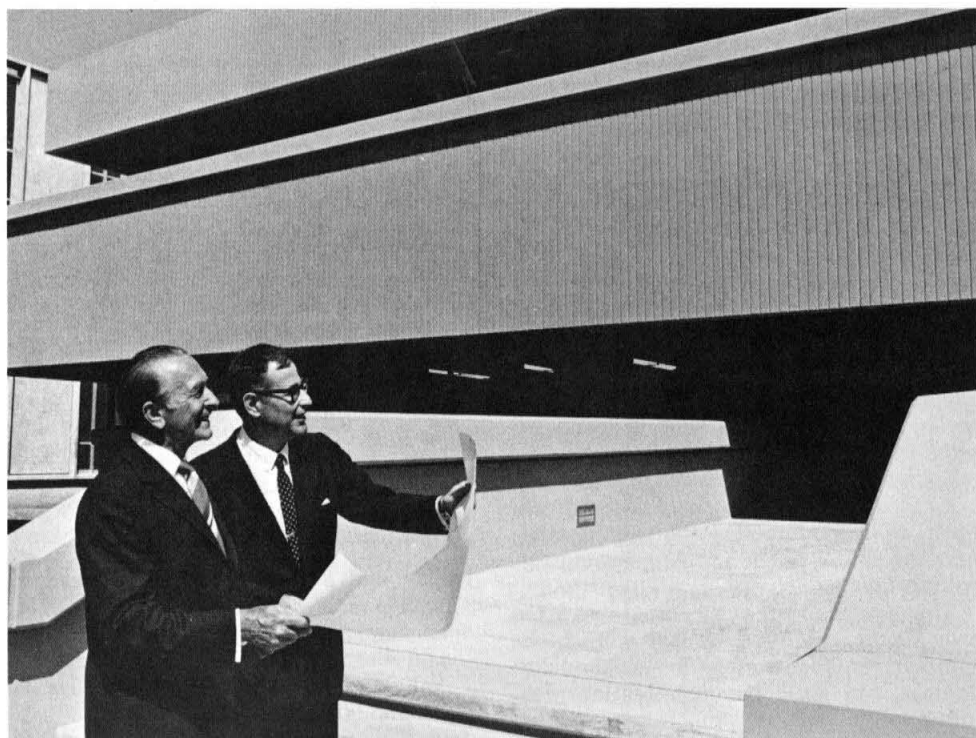


CALTECH NEWS

PUBLISHED FOR ALUMNI AND FRIENDS OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY

VOLUME 5, NUMBER 7 • OCTOBER 1971



Caltech trustee Earle M. Jorgensen (left) and president Harold Brown inspect new Jorgensen Lab.

Jorgensen lab will provide problem-solving resources

The new Earle M. Jorgensen Laboratory of Information Science at the California Institute of Technology was described at its dedication as a new resource "whose potentials are enormous" in the solution of social as well as technological problems.

"In the use of computers (major tools of information science) toward desirable social ends, we have a wide open field," declared Dr. John R. Pierce, distinguished pioneer in communication satellites who recently joined the faculty as professor of engineering.

"The hardware and the knowledge necessary to use computers in new ways and for new tasks are advancing rapidly," added the former director of research for communications at Bell Laboratories. "Our world challenges engineering and science to overcome economic, social, and environmental problems. . . . The problem is to find what knowledge and skill can really accomplish—and then do it."

Dr. Pierce said that the new \$1.6 million three-story building "shows that good things are do-able" even in times of national economic stress. Turning to Mr. and Mrs. Earle M. Jorgensen, who made a major commitment to assure construction of the new laboratory, Dr. Pierce said, "It is heartening that Mr. and Mrs. Jorgensen saw a challenge, and that engineering and science have risen to meet it."

Mr. Jorgensen, for whom the new laboratory is named, has been a Caltech

trustee for 13 years. He is chairman of the board and chief executive officer of the Earle M. Jorgensen Company, one of the country's leading steel distributors.

Additional funds for construction of the new computer laboratory were provided by the Booth-Ferris Foundation and other donors, including Bethlehem Steel Corporation, Mr. and Mrs. Donald Bren, Dart Industries Inc., the Irvine Foundation, Kaiser Steel Corporation, Mr. and Mrs. William Martin, Mr. and Mrs. Kenneth Norris, Republic Steel Corporation, and Mr. and Mrs. Henry Salvatori.

Also speaking at the dedication ceremony were Dr. Harold Brown, president of Caltech; Dr. Francis H. Clauser, chairman of the division of engineering and applied science; Mr. Jorgensen, and Dr. Gilbert D. McCann, professor of applied science.

With 30,000 square feet of floor area, the Jorgensen Laboratory more than doubles Caltech's space for computer processing and provides space and facilities for the rapidly increasing number of faculty members and students who make use of computers in their research and education.

The new building will house Caltech's man-machine interactions laboratory, which will make possible intensive study of the ways computer systems can extend man's capabilities. Experiments will be carried out in the laboratory on management information systems, on social interaction under stress, and on the most effective means of integrating computers and research teams.

The Jorgensen Laboratory also contains a flexible, electronically instrumented classroom for experiments that will extend the Institute's efforts to improve its own educational techniques and facilities.

Located on San Pasqual Street, the Jorgensen Laboratory is connected to the Willis H. Booth Computing Center, which was built in 1963 with funds provided by the Booth-Ferris Foundation.

The lowest floor contains laboratories for research in information science and biosystems and includes a laboratory for computer work in the social science program.

On the second floor are keypunching facilities for computers, a keypunch service, space for card-deck storage, customer cubicles, and conference rooms.

The top floor contains additional office space. The floors in all the computer rooms have removable panels for maximum flexibility in wiring circuits.

Architects for the Jorgensen Laboratory were Jones and Emmons of Santa Monica, and the contractors were Samuelson Brothers of Los Angeles.

Hal Musselman made special contribution

Harold Z. Musselman, who served Caltech as coach, athletic director—and friend—died of a heart attack on August 29. He was 75.

As a tribute to the special contribution Hal Musselman made to five decades of Caltech students, he was given a testimonial dinner and made an honorary member of the Alumni Association when he retired in 1966. On that occasion, he told a sports writer:

"A lot of the boys I had coached came up to me and said the one thing they remembered most about Caltech was that they'd been able to compete in athletics—that if they'd gone to another school they probably never would have had the opportunity."

And explaining the unique philosophy he helped to promote at Caltech, Musselman said, "We never drop a man from the squad as long as he keeps coming out for practice. No one has ever been cut. And we try to play them all, if possible."

"There's a lot of enjoyment in taking a boy who has never competed and seeing him develop. And you have to admire a fellow who comes out day after day when the chances of his team's winning are rather remote. A man has to have a special desire to do that."

Asked why Caltech even bothered to compete with other schools, Musselman replied, "Because the boys want to. As long as the boys want to turn out, we'll have an intercollegiate athletic program."

The campus Musselman left on his retirement was far different from the one he saw the first time when he arrived from Illinois in 1921.



Harold Z. Musselman

Getting off the jitney car that ran up East California Blvd. 50 years ago, Musselman found Throop Hall, with some wooden army shacks behind it, and Bridge Laboratory. That was Caltech.

When the new athletic coach asked a faculty member to direct him to the gym, he was told, "Why I'm afraid you won't find it—yet. But it's planned along with a lot more buildings."

Other facilities in the planning stage were the swimming pool, athletic field, tennis courts, and student center.

It was hardly an encouraging picture for the graduate of Cornell College, who had played for the U.S. baseball team in the 1919 Inter Allied Games in Paris.

In 10 years, Musselman built an active

intercollegiate sports program at Caltech, but his teams were still known as "Nobody's Babies." They played tennis and football in Tournament Park—when they could get permission from the city park department. They swam—also when they could—at the Pasadena Athletic Club. They played basketball at Alhambra, if they were first with their application. Sometimes they got in a little practice at the junior college or at a nearby church.

Despite the lack of facilities, not to speak of the lack of athletes, Musselman continued to field teams in all intercollegiate sports in which students wanted to participate.

Some of the high marks of these early years were Caltech's 1931 and 1932 football championships in the Southern California Intercollegiate Athletic Conference and the selection of pole vaulter Glen Graham to the 1924 U.S. Olympic track team.

Musselman never stopped working to make the plans for modern athletic facilities at Caltech become a reality. That moment finally came in 1956 with the dedication of the Scott Brown Gymnasium, the heart of a new athletic center that included the Alumni Swimming Pool, tennis courts, and athletic fields in Tournament Park, purchased from the city of Pasadena.

Caltech's basketball team gave Musselman a present on the night of the dedication by defeating Long Beach State College, 63-60, in double overtime. It was the first intercollegiate basketball game played on the Caltech campus.

Musselman was a respected figure throughout the sports world. He served as president and secretary of the SCIAA Coaches and Managers Association on several occasions, was a member of nine committees of the Tournament of Roses, and also managed the Olympic Games cycling races at the Rose Bowl in 1932.

For all Hal Musselman's accomplishments in building Caltech's athletic program, alumni who knew him remember him most as a friend, someone who opened his home and his heart to students, someone who made life a little pleasanter for all who came to him.

And probably no man enjoyed his work at Caltech more than Hal. When asked if he had ever considered trying for a job at a school with a big-time athletic program, he said, "I never thought about a more competitive situation. I've been very, very happy right here."

Musselman leaves his wife, Besse Tallman Musselman; a daughter, Betty Musselman Finney, of Phoenix, Ariz.; and a grandson.

A memorial service was held at the Pasadena First United Methodist Church on September 1. Speaking at the service were Lee A. DuBridge, president emeritus, who attended Cornell College with Musselman; William H. Corcoran, vice president and professor of chemical engineering, who played for Musselman as an undergraduate at Caltech; and Lance Martin, assistant pastor of the church.

The Harold Z. Musselman Memorial Fund has been established in Hal's memory, and contributions may be made in care of Caltech.

E & S magazine receives public affairs award

Caltech's *Engineering and Science* was rated among the top ten alumni magazines in the country and won four other awards at the annual convention of the American Alumni Council in Washington, D.C., in July.

Its editor, Edward Hutchings Jr., director of publications at the Institute, brought home from the meeting two photography awards and the first prize in the category of Continuing Education. The magazine also won the *Newsweek* Award for excellence in presenting public affairs. The Caltech entry in this category was the January 1971 special issue on the environment.

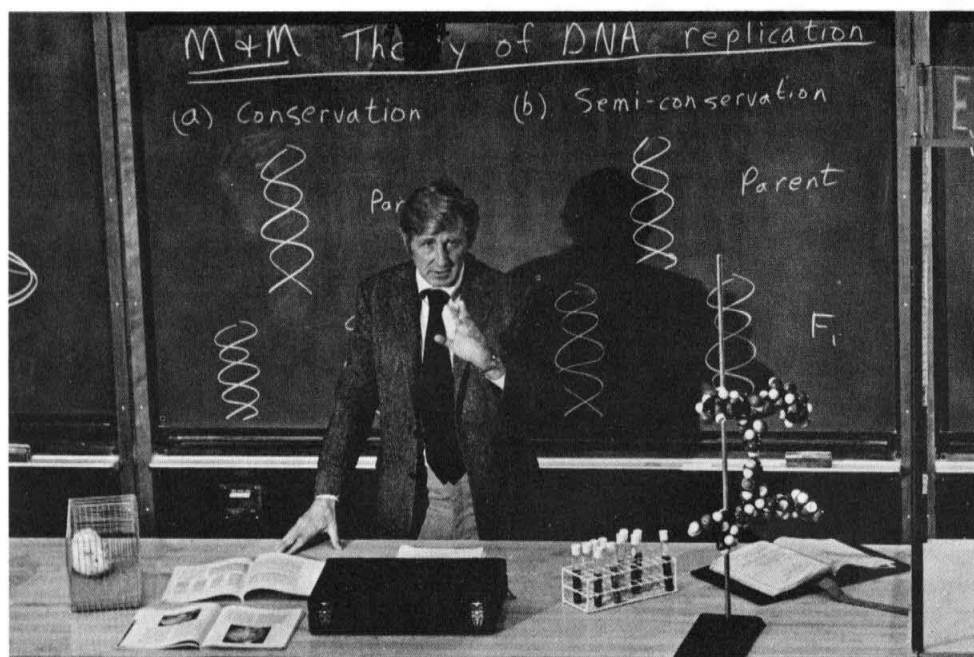
During the same week, the American Council of Public Relations Associations, also meeting in Washington, announced that Caltech had won prizes for its 1969 financial report, for the brochure, "Gifts that Pay Dividends," and for the general excellence of *Engineering and Science*.

Ten new faculty appointed

Ten new men have joined the Caltech faculty since June, bringing the total number of the faculty to 259. New professors this fall are: John R. Pierce, engineering, from Bell Laboratories; Charles R. Plott, economics, from Purdue University; James P. Quirk, economics, from the University of Kansas; and Jean-Paul Revel, biology, from Harvard University.

David M. Grether, from Yale Univer-

sity, is now associate professor of economics. New assistant professors on the faculty this fall are: Alexander Firestone, physics, from the Lawrence Radiation Laboratory in Berkeley; John Ferejohn, political science, from Stanford University; Thomas C. McGill, applied physics, from Princeton; William D. Montgomery, economics, from Harvard; and William H. Weinberg, chemical engineering, from Cambridge.



Lloyd Bridges gives "lecture" in 153 Noyes during scene from "The Deadly Dream," on ABC.

Hollywood comes to Caltech

If certain scenes in movies and TV dramas look familiar to you these days, chances are you may be looking at one of the productions filmed at Caltech in the past few months.

On the movie circuit, scenes showing labs at Caltech and JPL appear in the *Andromeda Strain*, and the inside of Booth Computing Center is shown in the *Hellstrom Chronicle*.

If you catch one of the early programs in the Mannix series on CBS this fall, you will see Joe Mannix (Mike Connors) holding a gun on a disreputable pair in front of the Athenaeum, and later shooting it

out with a bad guy on the patio.

And if you watch *The Deadly Dream* on ABC's Movie of the Week, you will see Lloyd Bridges giving a lecture on DNA in 153 Noyes and then dictating a letter in Professor Ned Munger's library in Baxter Hall.

One of the first programs in the NBC series, *Colombo*, also shows Peter Falk questioning a murder suspect in 153 Noyes.

The movie companies pay Caltech a fee for filming and provide students and faculty with the opportunity to see Hollywood in action.



Joe Mannix (Mike Connors) holds gun on pair of crooks in scene filmed outside the Athenaeum.

Graduate student dies in Yukon avalanche

Caltech students and faculty were stunned this summer by the news that John Hall, 27, a graduate student in geology and resident associate in Ricketts House, had lost his life on a mountain climbing expedition. Hall, the son of Dr. and Mrs. Orton Hall of Portland, Oregon, was buried in an avalanche of snow and ice with three companions while attempting to scale 18,500-foot Mt. Elias in the Canadian Yukon territory.

"He was a brilliant, uniquely trained individual with a terribly bright future," said Professor Samuel Epstein, who was guiding Hall's doctoral research on stable isotope analysis.

A graduate of Reed College in Oregon, Hall came to Caltech in 1967 after two years at Harvard Medical School. He received an M.S. degree here in 1970.

Hall was a resident associate for three years, first at Blacker House and then at Ricketts. He took a great interest in what he called "bridging the generation gap" and spent much of his free time helping undergraduates with their personal problems and leading groups of them on skiing and climbing trips.

"He was like a father to us," is the way one member of Ricketts summed up Hall's relationship with the students in his house.

"Johnny was more mature than most grad students," said Professor Robert Sharp, who selected Hall as a teaching assistant for his introductory course in geology. "He was a quiet, confident man with a sense of responsibility and a deep concern for people. He was someone you could always rely on."

Sharp, a veteran mountain climber,

added, "If I were going into an isolated area and you asked me what guys I would like with me, Hall would have been one of the first four on my list."

Hall seemed to be attracted by the physical challenge of nature, particularly high mountains. He spent one summer in Peru climbing the Andes, another in an ice field climbing surrounding peaks near Juneau, Alaska.

In 1970, Hall was the leader of a team of four "chambers" who were sealed in a simulated space lab for 90 days to test the regenerative systems and provide other information for Skylab 1, which NASA plans to launch in 1973.

Dr. Karl Houghton, chief of advance technology engineering at McDonnell-Douglas Astronautics Co., who directed the 90-day test, said of Hall, "He demonstrated outstanding competence and strong leadership. His substantial contributions added to the successful accomplishment of the test mission."

Hall was also the leader of the climbing party that successfully scaled 19,500-foot Mt. Logan and had begun the first stage of ascent up nearby Mt. Elias when tons of snow and ice suddenly swept down the mountain on August 1. The avalanche buried Hall and his companions, Stanley and Lucille Adamson, of Eugene, Oregon, and Susan Deery, of Longview, Washington.

It was two days before Leslie Wheeler, of San Francisco, lone survivor of the avalanche, was able to struggle through high winds to reach the party's base camp where he radioed the Arctic Institute of North America for help.

The place where the accident occurred

Bring your whole family to Homecoming, Oct. 23

A record number of alumni are expected for Caltech's Fourth Annual Homecoming, Saturday, October 23, in Tournament Park. This year's event will be a family affair with a full schedule of activities for both alumni and their children.

Festivities begin at 10 a.m., with a soc-

cer game between the Caltech varsity and Whittier's booters.

Alumni swimmers are invited to join in the alumni-varsity water polo meet at 10:30 a.m.

Caltech's band will play a concert at 12:30 p.m. and the Tech gridders will kick off at 1:30 p.m. against U.C. Riverside.

Soft drinks and beer will be furnished all day for thirsty alumni and their families. There will also be entertainment for children in the afternoon, including a clown and plenty of balloons.

Gymnasium facilities and the pool will be available to alumni, and a softball game will also be organized.

Box lunches will be available by advance reservation for \$2.50.

All alumni should send their reservations to the Caltech Alumni Office.

Engineers report on Feb. 9 quake

The destructive San Fernando earthquake of last February 9 provided a unique opportunity to learn about the effects of strong earthquakes and how to build to resist them. At the same time it gave another warning of the disaster potential of a great earthquake on the San Andreas Fault, or a moderately large earthquake near the center of the Los Angeles metropolitan area.

These points were emphasized in a 500-page report published by Caltech which summarizes observations of earthquake damage and gives recommendations for minimizing damage in future earthquakes.

Edited by Paul C. Jennings, professor of earthquake engineering, the report includes contributions from nine members of the Caltech division of engineering and applied science: professors George W. Housner, Donald E. Hudson, Wilfred D. Iwan, Paul C. Jennings, and Ronald F. Scott; Drs. A. Gerald Brady, Gerald A. Frazier, and Mihailo D. Trifunac; and graduate student John H. Wood from New Zealand who is studying earthquake engineering. Their research was supported by the National Science Foundation and by the Earthquake Research Affiliates of Caltech.

The illustrated report deals with the general features of the earthquake, the recordings of the strong motion, the damage to buildings, utilities and freeway structures, and the earthquake's effects on soils and earth dams. The document, which closes with a section of recommendations for improving the safety of structures during severe earthquakes, will be distributed to people studying earthquakes, to engineers concerned with quake-resistant structural problems, and to officials responsible for the public's safety during and after quakes.

CALENDAR

Friday and Saturday, October 8 and 9, 8:30 p.m. Beckman. *HEAVY ORGAN*, an extravaganza in mood, color, design, and Bach, featuring virtuoso organist VIRGIL FOX with PABLO LIGHTS. \$6.50-5.50-4.50.

Friday, October 15, 8:30 p.m. Beckman DR. LOUIS S. B. LEAKEY, world's foremost anthropologist in an illustrated slide lecture on *THE LATEST EVIDENCE ON THE ANTIQUITY OF MAN*. First in a series of four Leakey Foundation Lectures. Series: \$9.50; Students, \$7.50 — Leakey lecture: \$3; Students, \$2.50.

Saturday, October 16, 8:30 p.m. Beckman *SABICAS*, Flamenco guitarist. \$5.50-4.50-3.50-2.50.

Tuesday, October 19, 8 p.m. Beckman *TUESDAY NIGHT AT THE SILENT MOVIES*. "Broken Blossoms" with Lillian Gish, Richard Barthelmess, and Donald Crisp, directed by D. W. Griffith; and "Beloved Rogue" with John Barrymore. First in fall series. Series: \$8; students \$7. Single: \$2.50; students, \$2.

Saturday, October 23, 8:30 p.m. Beckman *AMEDEE*, drama, in French, by Eugene Ionesco, directed by Jean Marie Serreau. \$5.50-4.50-3.50-2.50.

Monday, October 25, 8:30 p.m. Beckman *IDEAS OF ORDER: MUSIC, MATHEMATICS, AND MEDIEVAL ARCHITECTURE*, by John Benton, Caltech professor of history. Caltech lecture series. Free.

Saturday, October 30, 2:30 and 8:30 p.m. Beckman. *TYROLERFEST*: Yodellers, singers, dancers from Kitzbuhel, Austria. Matinee: \$6-5-4-3; Evening: \$6.50-5.50-4.50-3.50.

Sunday, October 31, 3:30 p.m. Beckman *COLEMAN CHAMBER MUSIC* concerts. First in a new series: *CONCENTUS MUSICUS* in an all Bach program. Series (6 concerts): \$25-20-15-12; Single: \$5; students, \$3.

Tuesday, November 2, 8 p.m. Beckman *TUESDAY NIGHT AT THE SILENT MOVIES*. An evening of comedy shorts with Chaplin, Langdon, Mack Sennett, Charlie Chase, Laurel and Hardy. \$2.50; students \$2.

Friday, November 5, 8:30 p.m. Ramo *ENCOUNTERS* series of avant garde music, *PREMIERE OF COMMISSIONED WORK FOR ENCOUNTERS*: Lou Harrison's puppet opera, *Young Caesar*. \$5; students \$3.50; Caltech students \$1.

Monday, November 8, 8:30 p.m. Beckman *DESIGN IN NATURE*, by Robert L. Sinsheimer, Caltech professor of biophysics and chairman of the division of biology. Caltech lecture series. Free.

CALTECH NEWS

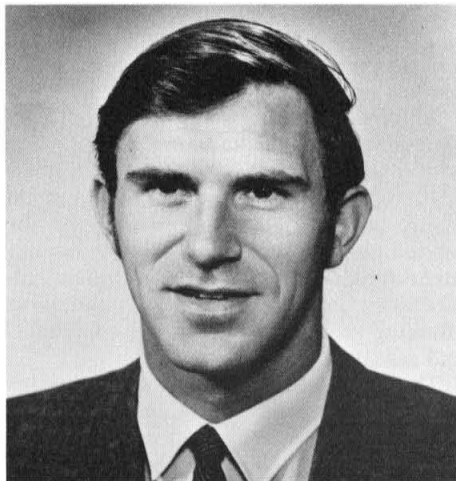
Vol. 5, No. 7 October 1971

Issued nine times a year (Oct., Nov., Dec., Feb., Mar., Apr., May, June and July) and published by the California Institute of Technology and the Alumni Association, 1201 East California Blvd., Pasadena, California 91109.

Second class postage paid at Pasadena, California.

EDITORIAL STAFF

Executive editor: William K. Cassell
Managing editor: Laurie Spaulding
Photographer: Floyd Clark



John Hall

was a desolate area that Professor Sharp knows well. "It is a difficult challenge for a climber," he said, "because the mountains are covered with snow and ice. Avalanches are a constant danger. An accident like that could happen to anyone at any time."

Some might wonder why a young man with such a sense of responsibility and interest in science would risk his life climbing mountains. Sharp may have the answer.

"Johnny believed in extending himself," he said. "The 90 days in a chamber was compatible with mountain climbing. It was the uniqueness of the experience that attracted him. That's why people climb. It is something no one can take away from you. It is a feeling of remoteness: a feeling you aren't even in the world."

Student views

What do Caltech girls think about first year on campus?

By Nick Smith '73

Female undergrads have been a part of the Caltech scene for a year now, and as yet there have been few signs of male disapproval. But what do the girls think of Caltech?

Laurie Schalit and Pat Tressel, who spent their summer working on campus, may be typical of the 31 female Techers (Techettes) in the class of 1974. Their general opinion of Caltech is favorable, but with reservations.

"Caltech is a great school for a science major," said Miss Schalit "but I don't know about a non-science major. Right now I'm a non-science major."

Explaining why she decided to switch from biology to English, Miss Schalit said, "I put myself in different positions. Would I be able to spend 16 years working on a project in biology? No. Would I be able to work for 16 years on a project

in English? Yes."

Miss Tressel, a physics major, seemed to think that Caltech is better than her preconception, pointing out that "from the catalogue, I would have expected a lot of people running around with slide rules, hunched over their books, never looking up . . . Nothing like 'Ride'—playing and showering. . . It's a very open campus."

House life on campus is undergoing changes, now that all of the houses contain girls. In addition to the obvious changes (i.e., coed house activities), Miss Schalit pointed out another change: "Girls lend their own special culture to the houses. They add blatant emotionalism. As opposed to guys getting uptight and locking themselves in their rooms, girls get uptight and go raving through the house."

Both Miss Schalit and Miss Tressel pointed out that most of the girls become attached to fellow Techers during their first year (in fact, a few engagements seem to exist). They thought this may be largely due to the fact that the girls have intelligence and interests similar to those of the male Techers. It may also be because the girls could have their choice of males, under the circumstances.

In any case, the girls are being assimilated quite well (in one way or another), and are becoming real Techers. Proof of this is found in Miss Schalit's statement, a statement only a true Techer could possibly utter: "Everything here," she said, "seems reduced, in the final analysis, to physics."

What hath Feynman wrought?

Engineering division appoints new officers

Four Caltech faculty members have been appointed academic and executive officers for the division of engineering and applied science.

Norman Brooks, professor of environmental science and civil engineering, is now academic officer for environmental engineering science; James Knowles, professor of applied mechanics, has been named academic officer for applied mechanics; Bradford Sturtevant, professor of aeronautics, is the new executive officer for aeronautics; and Charles Wilts, professor of electrical engineering, is executive officer for electrical engineering.

Sturtevant succeeds Ernest Sechler, professor of aeronautics, and executive officer for the Caltech Graduate Aeronautical Laboratories since 1966. The other three positions are new.

Academic and executive officers have administrative responsibilities for instructional programs, faculty-student relations, research activities, planning and liaison with industry and with other laboratories and universities. Executive officers also have fiscal duties.

Bell research director joins Caltech faculty

John R. Pierce, alumnus and executive research director of Bell Laboratory's communications sciences division, electronics engineer, inventor, and author, has joined the Caltech faculty as professor of engineering.

Pierce received his BS, MS, and PhD degrees in electrical engineering from the Institute, then went right to Bell Labs in 1936. A significant contributor to the field of electronic communications, he has done research on vacuum tubes, wave guides, amplifiers, and was the guiding intelligence behind the Echo I, Telstar, and Relay communications satellites. Pierce has recently been involved with electronic music and has worked on the development of an artificial speech device.

Holder of 87 patents, he is the author of a dozen books and many technical papers on science and technology and has written many science fiction stories.

A member of the National Academy of Science and the National Academy of Engineering, Pierce received the National Medal of Science in 1963 and was among the first recipients of the Distinguished Alumni Service award in 1967.

Guggenheim fellowship

In the June issue, *Caltech News* reported that four alumni had won Guggenheim fellowships for research in 1971-72. Since then we have learned that David O. Caldwell, '47, professor of physics at the University of California at Santa Barbara, also received a Guggenheim to do research in experimental elementary particle physics at CERN in Geneva, Switzerland.



Mrs. Lois Spalding (center) looks at photo album with President and Mrs. Harold Brown.

Business services building named for Keith Spalding

Caltech's business services building has officially been named the Keith Spalding Building of Business Services in honor of Keith Spalding, a long-time friend of the Institute who was an Associate and a trustee until his death in 1961.

To mark the christening, Dr. and Mrs. Harold Brown gave a dinner party for Keith Spalding's wife, Mrs. Lois Spalding. Fifteen close friends of the Spalding family, including Lee DuBridge, attended the small affair which took place in the third-floor penthouse of the building.

After dinner, Mrs. Spalding heard reminiscences of her late husband, then received a replica of the building's name plaque and an album of photographs taken during the building's construction and upon its completion in 1969.

Other guests present at the dedication were Arnold and Mabel Beckman, the W. Herbert Allens, Herbert Hahn, the Preston Hotchkises and Stuart O'Melvenys, Mrs. William Munro and Betty Christensen, Keith Spalding's secretary who now assists Mrs. Spalding.

ADDRESS UNKNOWN

The Institute has no record of the addresses of these alumni. If you know the current addresses of any of these people, please contact the Alumni Office.

1906 Norton, Frank E.	1907 Miller, James C.	1911 Lewis, Stanley M.	1916 Allen, Robert N.	1921 Arnold, Jesse	1922 Cox, Edwin P. Miller, Frederic A.	1923 Neil, W. Harvey	1924 Gridley, Horace V. Tracy, Willard H.	1925 Hamilton, James H. Waller, Conrad	1926 Chang, Hung-Yuan Huang, Y. H. Yang, Kai-Jin	1927 Moore, Bernard N. Peterson, Frank F. Thompson, Donald R.	1928 Chou, Pei-Yuan Martin, Francis C.	1929 Briggs, Thomas H., Jr. Kibort, Leon Lau, Kam Hu Nelson, Julius Robinson, True W. Uyterhoeven, Willem	1930 Chao, Chung-Yao Moyers, Frank N. Reynard, Willard G. White, Dudley	1931 Hergenrother, Rudolf C. Ho, Tseng-Loh Saygol, Charles C. West, William T. Woo, Shu-Chow Yoshioka, Carl K.	1932 Bleakney, William M.	1933 Burk, Thomas C. Downie, Arthur Koch, A. Arthur Larsen, William A.	1934 Harshberger, John D. Liu, Yun-Fu	1935 Antz, Hans M. Bertram, Edward A. Evans, M. Harrison Huang, Fun-Chang McNeal, Don Rivas, Dagoberto Snow, Neil W.	1936 Chu, Dien-Yuen Dunn, Clarence L. Meng, Chao-Ying Tan, Chia-chen Van Riper, Dale H. Young, Larry L.	1937 Burnight, Thomas R. Cheng, Ju-Yung Easton, Anthony Ellison, William J., Jr. Fan, Hsu Tsi Jones, Paul F. Lotzkar, Harry Maginnis, Jack Servet, Abraham Shaw, Thomas N. Shuler, Ellis W. Yin, Hung C.	1938 Goodman, Hyman D. Gross, Arthur G. Gutierrez, Arnulfo G. Lentz, John J. Li, Yuan-Chen Lowe, Frank C. Tsao, Chi-Cheng Wang, Tsun-Kuei Watson, James W. Woodbury, William W.	1939 Burns, Martin C. Jones, Winthrop G. Liang, Carr C. C. Oakley, Spencer W. Wilson, Harry D.	1940 Brettell, George A., Jr. Compton, Arthur M. Gentner, William E. Gibson, Arville C. Green, William J. Hsu, Chang-Pen Karubian, Ruhollah Y. King, James L. Lovoff, Adolph Menis, Luigi Tao, Shih-Chen Wang, Tsung-Su
--------------------------	--------------------------	---------------------------	--------------------------	-----------------------	--	-------------------------	---	--	---	--	--	---	---	--	------------------------------	--	---	---	---	--	---	---	---

1941 Clark, Morris R. Easley, Samuel J. Geitz, Robert C. Harvey, Donald L. Kuo, I. Cheng Reimers, George I. Robinson, Frederick G. Standridge, Clyde T. Trindle, Joseph W. Weaver, Robert L. Yui, En-Ying Zola, Colman	1942 Emre, Orhan M. Go, Chong-Hu Ip, Ching-U Levin, Daniel Martinez, Victor H. Widenmann, John A.	1943 Bryant, Eschol A. Daleon, Benjamin A. Eaton, Warren V., Jr. Hamilton, William M. Johnsen, Edwin G. Kane, Richard F. King, Edward G. Koch, Robert H. LaForge, Gene R. Leeds, William L. Ling, Shih-Sang Lundquist, Roland E. Mampell, Klaus Meuschwander, Leo Z. O'Brien, Robert E. Patterson, Charles M. Rivers, Nairn E. Rupert, James W., Jr. Scholz, Dan R. Shannon, Leslie A. Stirling, C. W. Sweeney, William E. Tindle, Albert W., Jr. Vicente, Ernesto Washburn, Courtland L. Weis, William T.	1944 Alpan, Rasit H. Amster, Warren H. Barriga, Francisco D. Bell, William E. Benjamin, Donald G. Birlik, Ertugrul Burke, William G. Cebeci, Ahmed Cooke, Charles M. DeMedeiros, Carlos A. Fu, Ch'eng Yi Goehring, E. J. Harrison, Charles P. Hu, Ning Johnson, William M. Labanauskas, Paul J. Marshall, John W. McBreen, Kenneth L. Onstad, Merrill E. Ours, Statton R. Pi, Te-Hsien Preston, Floyd W. Ridleyhuber, Jim M. Shults, Mayo G. Silgado, Enrique F. Stanford, Harry W. Stein, Roberto L. Sunalp, Halit Swanson, Don R. Tanvildiz, R. S. Trimble, William M. Unavral, Nustafa A. Wadsworth, Joseph F., Jr. Wight, D. Roger Wolf, Paul L.	1945 Ari, Victor A. Clementson, Gerhardt C. Gibson, Charles E. Ho, Chung Pen Leech, John L. Loo, Shih-Wei Rice, Jonathan F. Turkbas, Necat	1946 Allison, Charles W., Jr. Austin, Benjamin Behroon, Khosrow Bowen, Mark E. Brinkhaus, Harvey Burger, Glenn W. Chen, KeYuan Dyson, Jerome P. Esner, David R. Fateh, Hassan A. Freire, Luis E. Halvorson, George G. Hoffman, Charles C. Ingram, Wilbur A. Lewis, Frederick J. Maxwell, Frederick W. Prasad, K. V. Krishna Salbach, Carl K. Shepard, Elmer R. Sledge, Edward C. Smith, Harvey F. Srinivasan, Nateson Tung, Yu-Sin Webb, Milton G.	1947 Asher, Rolland S. Atencio, Adolfo J. Chung, Ta-San Clarke, Fredric B. Clements, Robert E. Collins, Hugh Dagnall, Brian D. Giamboni, Louis A. Hsu, Chi Nan Huang, Ea-Qua Leo, Fiorello R. Linton, William M. Manoukian, John Molloy, Michael K. Moorehead, Basil E. A. Olson, Raymond L. Sappington, Merrill H. Thompson, Russell A., Jr. Torgerson, Warren S. Vanden Heuvel, George R. Wan, Pao K. Wellman, Alonzo H., Jr. Wimberly, Clifford M. Winters, Edward B., Jr. Ying, Lai-Chao	1948 Au, Yin Ching Bunce, James A. Chu, Tao-Hung Chuang, Feng-Kan Clark, Albert R. Collins, Burgess F. Crawford, William D. Holm, John D. Hsiao, Chien Hsieh, Chia Lin Krasin, Fred E. Latson, Harvey H., Jr. Mason, Herman A. Oliver, Edward D. Slusher, John T. Swain, John S. Tang, Yu-Wei Voelker, William H. White, Richard S.
--	---	--	---	--	--	---	--

1949 Allen, Thomas E. Andrews, Laurence I. Brown, John R. Bryan, Wharton W. Cheng, Che-Min Cooper, Harold D. Dodge, John A. Foster, Francis C. Hardy, Donald J. Heiman, Jarvin R. Hylton, Frank G. Krauss, Max Leroux, Pierre J. Lowrey, Richard O. McEligott, Richard H. Mitchell, Max O. Petty, Charles C. Parker, Dan M. Ringness, William M. Shibata, Harry H. Solomon, Salim Wilkening, John W.	1950 Bryan, William C. Forrester, Herbert A. Li, Chung Hsien McLellan, Albert E. Nelson, Donald J. Pao, Wen Kew Paulson, Robert W. Picciotto, Roger A. Schmidt, Howard R. Schneider, William P. Tang, You-Chi Welte, Robert S. Whitehill, Norris D.	1951 Arosemena, Ricardo M. Davison, Walter F. Goodell, Howard C. Lafdian, Jacob P. Li, Cheng-Wu Lo, Shih-Chun Fadgett, Joseph E. Summers, Allan J.	1952 Arbo, Paul E. Arcoulis, Elias G. Bucy, Smith V. Lang, Frank C. Lunday, Adrian C. Luo, Peilin Robison, William C. Roy, Nikhilesh Sutton, Donald E. Waters, Richard H. Woods, Joseph F. Wilson, Howard E.	1953 Dirickson, Luiz H. Lennox, Stuart G. Peters, Alphonse P. Takahashi, Nobuyoshi	1954 Biles, Shelton B., Jr. Guebert, Wesley R. Henry, Irvin G. Jimenez, Herberto Scott, Francis F.	1955 Bjornrud, Egil K. Huber, William E.	1956 Bradford, Robert E.	1957 Edsforth, John F. Taylor, Stanley G. White, Ray H.	1958 Braham, Harold S. Stenberg, Gunnar E.	1959 Baekelandt, Victor Baez-Duarte, Luis Byun, Chai B. Cheng, Hung Giulmet, Michel P. Hamel, Armando Hemmingway, Richard E. Jewett, Robert I. Moerjono, Harry Morane, Didier Rieunier, Jacques M. Roth, Stanley	1960 Cauley, Joseph M. Lagarde, Jean B. Widess, Paul R.	1961 Allen, Charles A. Dowty, Earl L. Kitten, Roland Ruegg, Heinz W. Schweitzer, Glenn E. Wilkinson, John F.	1962 Cousin, Michel M. d'Arbaumont, Michel Dorlhac, Jean-Pierre Ingber, Lester O'Riordan, Padriac D. Pines, Barry N. Takahashi, Masaaki	1963 Facon, Pierre J. Lau, Jarck C. Samuelson, Lee W. Wu, John Y.	1964 Atkin, Curtis L. Chang, Tzu-Ching Hogewstein, Robert J. Ts'ao, Hsueh-sheng Waits, Harold	1965 Aimelet, Bernard A. Solheliac, Bernard C. Stephens, Melvin M.	1966 Angel, James R. P. Eris, Altan K. Feroz, Shaikat H. M. Serafin, Robert E. Street, Donald R.	1967 Blondy, Philippe J. M. Boyd, James R. Scavennec, Michel A.	1968 Fowler, William G.
--	--	--	--	--	---	--	-----------------------------	--	--	--	--	--	--	---	--	---	---	--	----------------------------

Class of '46

Don't forget 25th reunion October 22

PERSONALS

1927
WILLIAM W. AULTMAN, chairman of the board of directors of James M. Montgomery, Consulting Engineers, Inc., in Pasadena, has been awarded the Medal for Outstanding Service to the American Water Works Association.

1937
DANIEL G. SCHUMAN, employed with Bausch & Lomb since 1959, is the company's new chairman of the board. Prior to his election, Schuman was executive vice president for finance and administration.

GEORGE T. RUDKIN, PhD '42, an associate member of the Institute for Cancer Research in Philadelphia, is on leave in 1971-72 to work in the department of cell biology at the University of Nijmegen in the Netherlands.

1944
FRANK W. LEHAN, former president of Space General Corporation, is now director of System Development Corporation (SDC) in Santa Monica. Lehan, who has done extensive research in missile guidance and telecommunications, served as assistant secretary for research and technology in the Department of Transportation under Presidents Johnson and Nixon between 1967 and 1969.

1945
IVAN W. KEITH is the new manager of engineering for Teledyne Inet, a division of Teledyne, Inc., in Gardena. He was previously section head of engineering in the missile systems division at Hughes Aircraft.

1946
JAMES L. MCCARTHY is back in the U.S. after a four-year stay in Libya as manager of oil field development for Occidental Petroleum and resident manager in charge of all Bechtel Corporation's operations in Libya. Formerly with the Arabian American Oil Company, McCarthy is now located at Bechtel's headquarters in San Francisco as assistant to the vice president for oil field development and marine construction projects.

1949
C. HARRIS ADAMS has been appointed Bishop of the Culver City ward of the Church of Jesus Christ of Latter Day Saints. He continues as president of Adams-Maxwell, Inc., in Culver City.

ARMIN J. HILL, MS, PhD '50, dean of the college of physical and engineering sciences at Brigham Young University, was elected in June to the board of directors of the American Society for Engineering Education on which he serves as chairman of the engineering council.

can Society for Engineering Education on which he serves as chairman of the engineering council.

1952
RICHARD R. DICKINSON has moved from his position as coordinator of strategic planning to assistant general manager of the international division for supply and distribution at Texaco Inc. in New York.

1953
EDWARD H. DAW, formerly marketing manager for Hewlett-Packard, has taken the same position with Electromagnetic Systems Laboratories in Sunnyvale, Calif.

1955
GORDON W. WHITAKER, MS, previously with General Aniline & Film Corporation of Binghamton, N.Y., as a process engineering manager, has joined Pharmetrics, Inc., in Palo Alto as senior engineer. He will be engaged in process development for the Ocusert therapeutic system.

1956
KEITH A. BOOMAN, a chemist with Rohn and Haas Company since 1956, has joined the Soap and Detergent Association in New York as technical director. Booman's experience includes surfactant research, analytical chemistry, and chemical formulation and registration problems.



Dixon '57



Booman '56

1957
FRANKLIN P. DIXON, MS, PhD '60, has been named vice president of product management systems for the Singer Company's Friden division in San Leandro, Calif. Dixon was formerly with ITT Europe, Inc., based in Brussels, Belgium, where he was responsible for communications systems, space technology, and multi-product programs in the military electronics and space division.

JACK J. STIFFLER, principal engineer at Raytheon Company's equipment development laboratories in Sudbury, Mass., has written a book, *Theory of Synchronous Communications*, published by Prentice-Hall, Inc. The book treats communications systems in which a time reference common to both the transmitter and receiver is necessary for operation.

1960
ROBERT CALAWAY is now director of U.S. marketing at Applied Technology (ATI), a division of Itek Corporation. Calaway, who has been manager of field marketing at ATI's Washington, D.C., office since 1969, has moved to the company's Palo Alto facility.

1963
DONALD E. KNUTH, professor of computer science at Stanford University, is the first winner of the new Grace Murray Hopper award for distinguished achievement in computer sciences. Knuth was associate professor of mathematics at Caltech until 1966, then worked as a staff mathematician for the Institute of Defense Analysis in Princeton, N. J.

1964
MELBOURNE F. GIBERSON, MS, PhD '67, who recently joined Turbo Research, Inc., of Philadelphia as a consulting engineer, presented a paper in July at the Limits of Lubrication Conference at Imperial College in London. The title of his paper was "Comparison of Experimental and Analytical Analyses of Large Journal Bearings Operating with Turbulent Flow Films."

ROBERT LIEBERMANN is now a research fellow in the department of geophysics and geochemistry at the Australian National University in Canberra. Bob, who was previously at Lamont Geological Observatory at Columbia University, will remain in Australia with his wife and their 21-month-old daughter for another two years.

1965
VERNON L. BLISS, captain in the U.S. Air Force stationed at Tan Son Nhut airbase in

South Vietnam, has helped his unit, the First Weather Wing, win the Professional Results in Daily Efforts (PRIDE) award. Bliss and his unit were cited for outstanding efforts to reduce operational costs and increase unit efficiency and combat readiness.

JAMES R. KERCHER and his wife, Marilyn, announce the birth of Dana Marie Kercher, born on July 1 in Ithaca, N.Y. Jim is a graduate student in physics at Cornell University.

1966
EDWARD L. ROBERTSON III has left the University of Wisconsin computer sciences department for the 1971-72 school year to teach at the University of Ghana while his wife does research in African history there.

1967
JOHN LAM, PhD, has left the National Research Council of Canada to join the Max-Planck Institut in Munich, Germany.

TOM RICHARD MILLER received his PhD in nuclear physics from Stanford University in July and is a recipient of a Fulbright fellowship with which he will continue his physics research at the Tata Institute of Fundamental Research in Bombay, India. In June 1972, Tom will become a research associate in medical physics at the University of Missouri.

PING SHENG has received his PhD in physics from Princeton University.

1969
JOSEPH RHODES, junior fellow in history at Harvard University and former member of the Scranton Commission to investigate campus unrest, took part in a multi-racial international symposium in South Africa last July. He and Edwin S. Mnuger, Caltech professor of political geography, were among 20 Americans attending the conference which was set up by the U.S.-South African Leader Exchange to initiate a black-white dialogue on race relations and economics.

Obituaries

1918
STANLEY C. CARNAHAN, on June 26. A graduate in engineering economics, he had been an accountant with Neale Advertising Associates in Los Angeles before retiring in 1968.

1922
EDWARD A. HATHAWAY, on July 16. A resident of Betterton, Md., and Ft. Lauderdale, Fla., he was a patent attorney with the Philadelphia firm, Baldwin, Lima, Hamilton Corporation until his retirement in 1968. Hathaway graduated from the Institute in mechanical engineering, was an expert in his hobby of hand-wrought silversmithing, and was extremely interested in the administration and welfare of educational and community organizations. He leaves a widow, Florence.

1923
LYLE DILLON, on July 6. Dillon, a former member of the Catech track, tennis, and swimming teams and a graduate in mechanical engineering, worked for Fulwider, Patton, Riebar, Lee & Utrecht, patent attorneys, from 1961 to 1968. He is survived by his wife, Mary.

1928
ELLWOOD H. ROSS, on July 31, in Victorville, Calif. A native of Watertown, N.Y., Ross retired as a lieutenant colonel in the U.S. Army in 1965. Until that year he had served as a guided missile engineer with the Army Rocket and Guided Missile Agency in Los Angeles.

1936
ROBERT M. NICHOLS. He was a member of the American Institute of Electrical Engineers and had been working as a land surveyor in Glendale, Calif., since 1959.

DONALD W. WEBB, PhD, on June 1. He was professor of mathematics at the University of Arizona in Tucson where he received his BS and MS degrees and had taught since 1954.

1937
VINCENT K. JONES JR., of a heart attack, on July 10 in Denver, Colo. Jones, who had also attended the Colorado School of Mines, was president of the Jones & Hezlep Construction Company of Denver, with whom he had been employed since 1954. He is survived by his wife, the former Nancy Lemont; a son, a daughter, his mother, two sisters and a grandson.

ALUMNI ASSOCIATION OFFICERS AND DIRECTORS

PRESIDENT Reuben B. Moulton '57	SECRETARY Raymond L. Heacock '52
VICE PRESIDENT Arthur O. Spaulding '49	TREASURER George E. Solomon '50
Clifford C. Burton '40 Stuart M. Butler '48 Spicer V. Conant '64 William A. Freed '50 Earl C. Hefner '51 William C. House '40 Douglas Josephson '65	Wayne MacRostie '42 Wayne T. McMurray '45 Mike O'Haver '29 Cornelius J. Pings '51 Warren G. Schlinger '44 Stanley T. Wolfberg '38
Secretary Emeritus: Donald S. Clark '29	Treasurer Emeritus: John R. Fee '51

EXECUTIVE DIRECTOR
James B. Black

ALUMNI CHAPTER OFFICERS

BOSTON CHAPTER President Duane Marshall '53 9 Hadley Road, Lexington, Mass. 02173	CHICAGO CHAPTER President W. E. "Wally" Swanson '36 1415 Fairway Dr., Lake Forest, Ill. 60045
Vice President Howard E. Jessen '46 225 Ridge Ave., Winnetka, Ill. 60093	NEW YORK CHAPTER President Rodman Jenkins '50 400 East 57th Street New York, New York 10022
Vice President Kaytaro G. Sugahara '61 111 Cobb Lane Tarrytown, New York 10591	Secretary-Treasurer Harry J. Moore Jr. '48 IBM Corp. Route 22, Armonk, New York 10504

SACRAMENTO CHAPTER President William D. Pyle '49 3920 Dunster Way, Sacramento, Calif. 95825	Vice President Dudley E. Bennett '47 4124 Zephyr Way, Sacramento, Calif. 95821
Secretary-Treasurer Harris K. Mauzy '30 2551 Carson Way, Sacramento, Calif. 95821	

Meetings: University Club, 1319 "K" St. Luncheon first Friday of each month at noon. Visiting alumni cordially invited—no reservation.

SAN DIEGO CHAPTER President David B. Wilford '48 6581 Avenida Wilfredo, La Jolla, Calif. 92037

SAN FRANCISCO CHAPTER President Charles E. Auerbach '47 82 Lagoon Rd., Belvedere, Calif. 94920	Vice President Thomas M. Menzies '65 801 Cotton, Menlo Park, Calif. 94025
Secretary-Treasurer Robert T. Jenkins '65 1191 Yorkshire Ct., Cupertino, Calif. 95014	

Meetings: Engineers' Club, 16th floor, Hong Kong Bank Bldg., San Francisco. Informal luncheons every Thursday at 11:45 A.M. Contact Mr. Sigworth, 894-2918, on Thursday morning for reservations.

SAN JOAQUIN-MOJAVE CHAPTER President Bruce Robinson Jr. '50 3307 Purdue Drive, Bakersfield, Calif. 93306	Secretary-Treasurer William F. Edmondson '52 1831 Truxton, Bakersfield, Calif. 93306
---	---

WASHINGTON, D.C., CHAPTER President Willard M. Hanger '43 4720 Sedgwick St., N.W., Washington, D.C. 20016	Vice President Bernard B. Watson '35 Research Analysis Corporation, McLean, Va. 22101
Secretary-Treasurer John T. Cookson Jr. '66 1225 Noyes Drive, Silver Spring, Md. 20910	

1942
EARLE A. CARR, of cancer, in December 1970. Formerly a lieutenant commander in the U.S. Navy, Carr joined Hughes Aircraft Company in 1958 and was a member of the technical staff of the research department in the nucleonics division of ground systems group at the time of his death.

1948
WILLIAM S. WUNCH, AE, on July 3. Wunch had worked with Lockheed Aircraft Corporation and the AiResearch Manufacturing Corporation before joining the mathematics faculty at Arizona State University in 1959. He received his BS and MS degrees from the University of Michigan and his PhD from Stanford University before coming to Caltech.

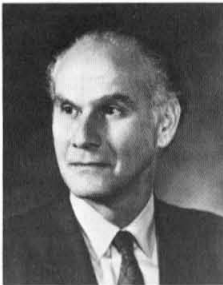
1951
JEAN P. NITSCH, PhD, on July 29, in France. He had been scientific director of the Laboratoire de Physiologie Pluricellulaire at the Centre National de Recherche Scientifique at Gif-sur-Yvette, France, since 1968. Nitsch attended the University of Grenoble and the Institut National Agronomique prior to doing graduate work in biology at Caltech.

1959
ROBERT V. SHULL, MS. A former geologist with the Standard Oil Company of California, Shull became a secondary school mathematics teacher at the Edcouch-Elsa Indian School in Edcouch, Texas, in 1968. He is survived by his wife.

1965
HANA ROSENTHAL, on June 28, of injuries sustained in an auto accident near Nairobi, Kenya. Rosenthal, 28, born in Tel Aviv, Israel, graduated from the Institute in physics. He took his PhD in atomic physics from Columbia University in 1970, and was an instructor of physics at Yale University at the time of his death. He is survived by his parents, Mr. and Mrs. Alfred Rosenthal of Forest Hills, N.Y., and a sister whom he was visiting in Africa.



Dickinson '52



Schuman '37

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 91109

Please send me: (Check one)

☐ An application for placement assistance

☐ A form indicating a desire to keep watch of opportunities although I am not contemplating a change.

Name

Degree(s) Year(s)

Address

.....