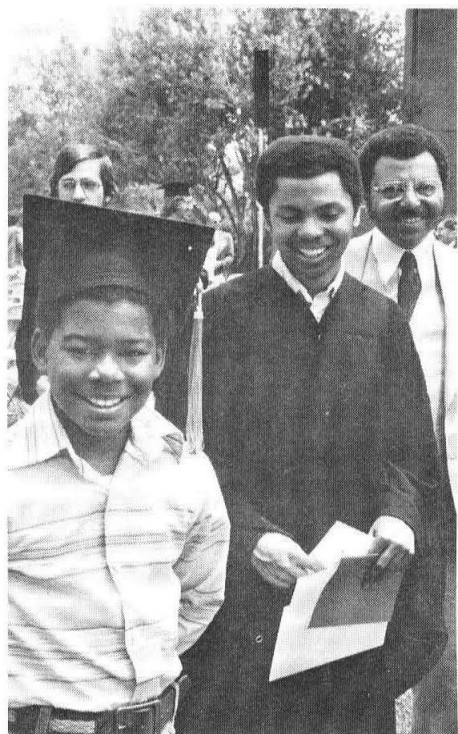


CALTECH NEWS

PUBLISHED FOR ALUMNI AND FRIENDS OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY



Gregory T. White, BS '77, center, shares his mortar board with his younger brother as their father, Alonzo W. White, proudly watches, above left. Above right: Caltech's President Emeritus, Lee A. DuBridge, delivers the address at the Institute's 83rd commencement.



Commencement 1977

"This commencement is in many ways a symbol of transition in the history of this institution and the country," Acting President Robert F. Christy said to the students receiving degrees at Caltech's 83rd commencement. Actually, Christy was quoting from an earlier commencement talk—Lee A. DuBridge's, at his first Caltech graduation ceremony 30 years ago.

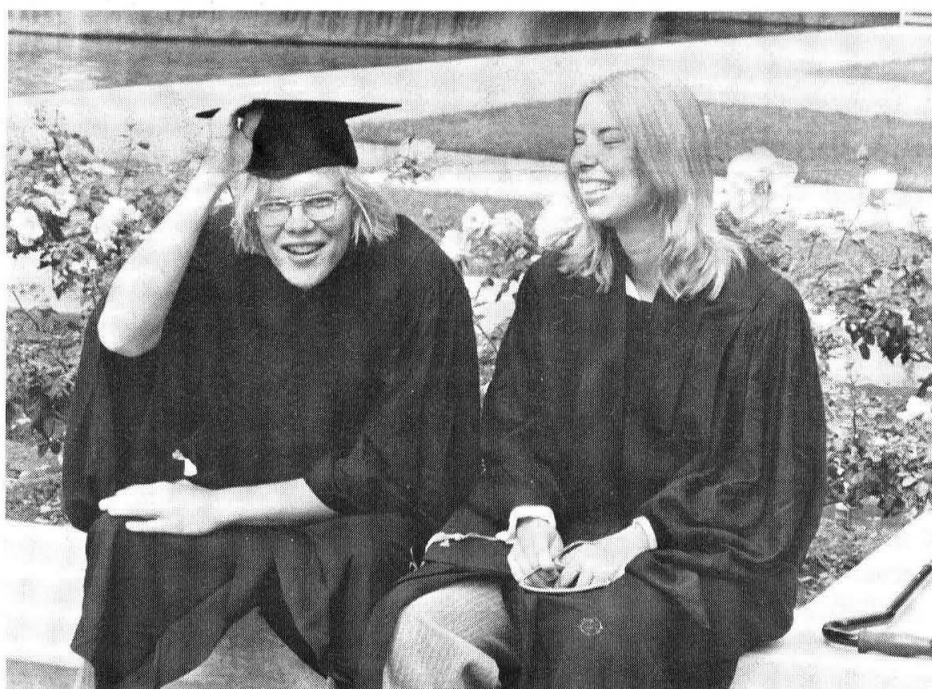
The quote was especially appropriate, not just because Caltech is once more in a period of presidential transition, but because DuBridge returned to commencement services after a nine-year absence to give the address. R. Stanton Avery, chairman of the Caltech Board of Trustees, presided.

Warmly received by students, faculty, and parents, DuBridge remarked, "I gave up my addiction to public speaking when I retired in the fall of 1970. I made an exception today for just one reason. Caltech doesn't have a president, and I know that those who are trying to carry on the chief executive's duties have more important things to do than search for a commencement speaker!"

As DuBridge went on to discuss "Some Dilemmas in Science," he told the graduates, "Life would be uninteresting without problems to solve and challenges to face. Young people, your lives should be *very* interesting!"

He said that some of these challenges will involve dividing the national research and development effort between basic and applied research and engineering, getting scientists and Congress to talk together intelligently, and educating the general public to understand the relationship between science and technology and social and political problems.

Continued on next page



"Whew! We made it!" James P. Seidel and Mary Carol Stevens succumb to the joy of graduating.

Stanton Avery: new honorary alumnus



For his contributions to the Caltech community, R. Stanton Avery, chairman of the Caltech Board of Trustees, was named an honorary member of the Alumni Association at the annual June meeting. Here he accepts the recognition from John D. Gee, 1976-77 Alumni Association president.

Steele Foundation endows chair in immunology

The Harry G. Steele Foundation will endow a new chair at Caltech. Robert F. Christy, acting president, said a gift of \$1 million will fund the Grace C. Steele Professorship of Immunology.

"We are most grateful to the Steele family and its foundation for this generous gift," Christy said. "The professorship will make it possible for us to accelerate work in our medical science program.

"The gift is a significant expression of the Steele family's long interest in Caltech. The foundation's many contributions have helped not only our research, but our educational and cultural activities as well."

The distinguished scientist named to the professorship will extend Caltech's capability in medically-related biological research. This work in immunology will contribute insight into the body's immune processes and help provide more effective means of attacking diseases such as cancer, diabetes, high blood pressure, and other cardiovascular illnesses.

The new professorship is part of a major program in biology and chemistry in which Caltech will expand its studies of living cells. This program will enable Caltech scientists to work more closely with medical colleagues at hospitals near Caltech and with the JPL staff.

Mrs. Steele, for whom the professorship is named, was involved in many cultural, philanthropic, and civic activities in Pasadena and southern California. She created the Harry G. Steele Foundation in her husband's memory after his death in 1942.

A gift from the Steele Foundation made possible Caltech's Harry G. Steele Laboratory of Electrical Sciences. The family home was given as a residence for Caltech's master of student houses. Another grant helped complete the endowment of the Lee A. DuBridge Professorship. Members of the Steele family have made many unrestricted gifts to Caltech and provided support for the Institute's Baxter Art Gallery as well as funds for astronomy fellowships and scholarships.

Grace C. Steele was a life member of The Associates, as was her late daughter, Virginia Steele Scott. Her son, Richard Steele, is a life member and serves on the board of directors.

Mrs. Steele was born in Bucyrus, Ohio, in 1882. She moved with her

Continued on next page



Harrison S. Brown, professor of geochemistry and science and government, with Jesse L. Greenstein, Lee A. DuBridge Professor of Astrophysics, before commencement.

DuBridge tells graduates

Social problems present scientists' greatest challenge

Continued from first page

A major challenge for scientists, he noted, is posed by governmental cutbacks in funding basic research. "Only the National Science Foundation now has basic research as a primary mission," DuBridge observed. "And in recent years, even many of its budget increases have been for applied work."

"Applied research — aimed at meeting the urgent needs of our society — is important. But we shall not succeed if we fail to produce the fundamental knowledge on which future applications depend, just as we shall not succeed if we don't seek to make that knowledge applicable to human needs."

Of all the crises confronting science, DuBridge said the greatest is that of a rising population and rising expectations, coupled with limited natural resources and fertile land. "Most of you will live to see the outcome of this dilemma — and to help make it more hopeful," he concluded.

Christy in his remarks noted that 100, or 51 percent, of the seniors were graduating with honors (B+ or better). He conferred a total of 429 degrees: 198 BS, 133 MS, 1 engineer, and 97 PhD degrees. Of these students, 58 had received previous degrees from the Institute.

Enthusiastic cheers from the audience greeted many of the graduates as their names were announced, but these were outclassed by the reception given Catherine Marshall, who received her BS degree in literature. Firecracker bursts accompanied the reading of her name, as a banner enscribed "Cathy, don't leave us!" was unfurled over the roof of Baxter

Hall, adjacent to the open air ceremony.

Of those receiving degrees, 42 were women, Christy pointed out. These included 24 BS, 15 MS, and 3 PhD degree recipients.

Among the undergraduates, 87 majored in engineering, 103 in science, 6 in the humanities, and 2 in independent studies. Of those receiving master's degrees, 81 were for options in engineering; 49, science; and 3, social science. Of the PhD candidates, 39 received degrees in engineering and 58 in science, Christy said. He added that the largest number of PhD degrees in the sciences were in chemistry and the second largest number in physics.

Seniors from California composed the largest geographical group — 92. In addition, 27 were from other western states, 61 from the rest of the United States, and 17 from foreign countries. One in the survey refused to commit himself to any hometown.

"My presence here is a symbol of a major transition at Caltech," Christy told the audience. But he added that it is only one of several changes under way, most of them involving new programs. One of these is in cell biology and chemistry, to be housed in the new Braun Building. Others are the computer science program involving integrated circuitry; earthquake prediction studies; quantitative social science studies that are important in interdisciplinary research; particle physics work; and an expanded radio astronomy facility in the Owens Valley.

"Your lifetime will span one of the most challenging periods in man's history," Christy told the graduates. "This period will be especially challenging for the people in science and technology. You don't have to be afraid of being unneeded! You have skills and ability; if you add to these the energy and the will to tackle these problems, then you'll be needed by the nation and the world, and your careers will bring you the rewards of doing important work, and doing it well."

Then George F. Regas, rector of All Saints Episcopal Church, Pasadena, delivered the benediction. Caltech's 83rd commencement — having given the Institute 371 new alumni — was at an end.

New Biology Division head: Norman Horowitz

Norman H. Horowitz, internationally known for his biological research, and a leader in the search for life on Mars via the Viking spacecraft, has been appointed chairman of Caltech's Division of Biology. On September 1, Horowitz, professor of biology, will succeed Robert L. Sinsheimer, who is resigning to become chancellor of UC Santa Cruz.

Acting President Robert Christy, in announcing the appointment, said, "We're fortunate to have a person of Dr. Horowitz's ability and experience to succeed Dr. Sinsheimer, and we're much indebted to Dr. Sinsheimer for his contributions to biology at Caltech."

Horowitz has been associated with Caltech for more than 30 years — first as a graduate student (PhD '39) and then as a faculty member and administrator. He has pioneered in modern genetics research and in the search for life elsewhere in the solar system. He was chief of the Bioscience Section at JPL from 1965 until his resignation from that position in 1970. During the past year he has headed a major biology experi-

ment aboard the Viking lander on Mars.

In addition to designing instruments for the detection of life on Mars and interpreting their findings, Horowitz has studied the biochemical genetics of the common mold, *Neurospora*. These studies were done in association with Dr. George W. Beadle, Nobel laureate, former Caltech biology division chairman, and a Life Trustee of the Institute. Horowitz recently has been studying *Neurospora*'s requirements in connection with his interest in organisms' abilities to survive in dry environments.

He brings to the position broad administrative experience in the biology division. He was its acting chairman in 1973, and its executive officer from 1971 to 1976.

He is a member of the National Academy of Sciences and a fellow of the National Academy of Arts and Sciences, and a former member of the Space Science Board of NAS. He belongs to several professional societies and is a consultant to NASA.

Steele Professorship strengthens Caltech's medical science work

Continued from first page

family to Pittsburgh, where she met and in 1904 married Harry G. Steele at the beginning of his distinguished business career. In 1921, he sold his interest in the Pittsburgh Transformer Company and the Steeles moved with their four children to Pasadena, where a fifth child was born.

After a year of retirement, Steele bought a major interest the small U.S. Electrical Manufacturing Company. In 1927, he became controlling stockholder and president of the company, which was to become U.S. Electrical Motors Inc. He continued

as president until his death in 1942. The firm merged with Emerson Electrical Manufacturing Company in 1962. After her husband's death, Mrs. Steele became a vice president of the company.

She traveled extensively throughout this country and Europe. After the family home in Pasadena was given to Caltech and until her death in 1974, she divided her time between her bay-front home in Newport Beach and the home she built at Smoke Tree Ranch in Palm Springs.

Her surviving children agree that Mrs. Steele would have been excited by the research that the new professorship will make possible.

TRW matching grant



Acting President Robert F. Christy, center, accepts TRW matching grant of almost \$11,000 from George E. Solomon, MS '50, PhD '53, left, and George J. Gleghorn, Jr., MS '48, PhD '55, right. The grant was the first made to Caltech under the provisions of the TRW Foundation "Matching Gifts to Education" program. It represented the corporate contributions that matched gifts during 1976 by 62 TRW employees who are Caltech alumni. Gleghorn is the Alumni Fund area chairman responsible for soliciting the 140 Caltech alumni with TRW in southern California.

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EDITORIAL STAFF

Executive editor: Winifred Veronda.

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

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Under Martin Poggi

For the Alumni Fund, it's another record year

It's another record year for Caltech's Alumni Fund. Under the leadership of Martin J. Poggi, BS '37, the fund has raised almost \$700,000 this year to boost it well over its \$600,000 goal. Last year the fund broke all previous records by raising more than \$577,200 from alumni.

By late June, the fund had received gifts from more than 4,200 contributors — this year's goal —

Poggi said. He added that last-minute participants will probably boost the donor total to almost 4,400 contributors. The fund officially closed its books on July 1. A complete report, including a list of donors, will appear in the September issue of *Caltech News*.

Poggi gave much of the credit for the fund's success to a steadily growing number of regular donors and to

a highly effective organization of dedicated workers. A series of mailings during the spring and a successful telephone program involving 135 alumni volunteers were important in attracting contributions, he said.

Next year, the fund will have another opportunity to set new records. Poggi said the Fund Council has tentatively accepted goals of \$675,000 from 4,400 contributors

with the understanding that either goal can be increased or decreased by up to 10 percent. "The final goals will be set as the figures for this year become official," he explained. He also pointed out that a goal of 750 workers has been established for next year — a 15 percent increase over the 650 alumni who volunteered for the fund in 1976-77. The fund was reactivated five years ago.

Ed Foss to head fund in 1977-78

"If you don't enjoy coming to work in the morning," Ed Foss advises people, "look for another job." Foss isn't worried about his own schedule for this year. As national chairman of the Alumni Fund for 1977-78 he has a lot of work ahead of him and he expects to enjoy it thoroughly.

Being chairman will be a challenging assignment, but then Foss relishes challenges. "Last year was an outstanding one for the fund," he says. "Poggi's act will be tough to follow."

Foss's own involvement with the fund began back in Dallas, where he was area chairman for three years. Then he retired in 1975 and moved to Rancho Santa Fe, California, a location that he and Mrs. Foss selected after a year of exploration. In San Diego County he worked for two years with Bruce E. Kirstein, PhD '72, and with Dee Brouillette, BS '55, MS '56, area chairman. Last year Foss was named to the Alumni Fund Council and Brouillette is joining him on the council this year.

To take on such an assignment after retiring to California to enjoy

the school, for what it did for them, and for what it's continuing to do for students. It isn't hard to sell them on the fund's importance. Give them a chance to contribute, and they'll usually respond — and quickly."



Delano Brouillette

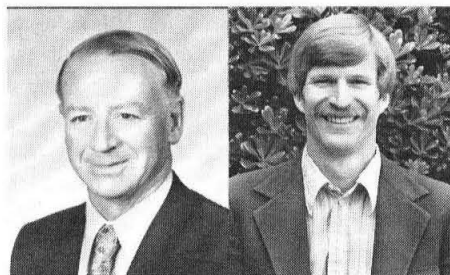
George Gleghorn

Foss's own experience as a Caltech student made vital contributions to his career, he says. A 1932 graduate, he majored in engineering. During the Great Depression, he got into the oil business and stuck with the industry throughout his career. Before he retired he was president of the North American Exploration and Production Company of Sun Oil. Throughout his life he has drawn on a problem-solving capacity that he acquired as a student.

"At Tech we learned to push beyond the superficialities to grapple with the basic principles in a situation," he says. "We acquired an inner discipline that lets us cut straight through to the base of any problem. This ability has been of tremendous help to me in all my work."

One aspect of Foss's new role is the recruitment of area chairmen. Selling them on the importance of their role is easy, he says, because Caltech is efficient and creative in its use of alumni gifts. "Money contributed to the Institute through the fund is well managed," he observes, "and it supports exciting work. Because most of it is unrestricted, it's seed money, used to launch important projects. It enables Caltech to hire a new professor, equip a new lab, or initiate a research program. Knowing you're helping with projects like these is a great thrill for an alumnus."

As national chairman, Foss feels he's inherited a sound, well-conceived organization, and he wants to maintain its basic structure. To strengthen it even more, he wants



Neville Long

Richard Nielsen

to recruit additional workers in order to increase personal contacts. These new volunteers will join a successful team whose hard work has brought the fund through a succession of record-breaking years.

Supporting Foss this year in his

efforts, as new members of the Alumni Fund Council effective July 1, are: Delano A. Brouillette, BS '55, MS '56, San Diego; George J. Gleghorn, MS '48, PhD '55, Rancho Palos Verdes, California; Neville S. Long, BS '44, MS '48, Orinda,



Ernest Sechler

Richard Smyth

California; Richard C. Nielsen, BS '66, MS '67, PhD '71, Whittier, California; Ernest E. Sechler, BS '28, MS '30, PhD '34, San Marino, California; and Richard K. Smyth, BS '51, Huntington Harbour, California. Also on the council will be Richard L. Van Kirk, BS '58, Arcadia, California, 1977-78 president of the Caltech Alumni Association.



Richard Van Kirk



Ed Foss

the sunshine might seem like defeating one's purpose, but not to Foss, who has always believed that "almost any kind of work is fun." Working for Caltech is especially enjoyable because he likes keeping in touch with other alumni.

For Foss, such an opportunity came recently when he invited San Diego area alumni from the classes of 1931, 1932, and 1933 to a reunion at his home. Twenty-four graduates responded. Such contacts, he believes, are vital to the fund's success.

"Enthusiastic alumni are essential to the fund — and most of our alumni are enthusiastic," Foss says. "They have deep, good feelings for



Weekend field trips are an integral part of Robert Sharp's Geology 136 class. This spring, for its final trip, the class traveled into the Sierra Nevada and students presented reports on the features they visited. At left, Sharp describes a formation. Right: Peter German, a senior majoring in geology, describes the structures around Convict Lake.

Stanton Avery honored by Alumni Association

Optimistically observing that "a depression is a good time to start a business," R. Stanton Avery, chairman of the Caltech Board of Trustees, launched Avery Products Corporation in 1935 with \$100 and 100 square feet of space in his garage.



Richard Van Kirk, left, presents outgoing president John Gee with a gavel encribed with his name at the Alumni Association annual dinner.

Spring sports review

Sophomore runner sets new Caltech record

Track

Sophomore Norman Murray led the 1977 Caltech track team this year, scoring a record 129½ points in dual meet competition, the highest individual total by a varsity track athlete in the history of track and field at the Institute. Senior Duane Boman followed close behind Murray with 107 points to rank fifth among Caltech's all-time point-getters.

Fifteen athletes earned varsity letters this year, the largest number in seven years. Encouraging for next season is the fact that only two of the lettermen are seniors and most of the rest are sophomores and freshmen.

Bright notes for the season include the 440 relay squad's improvement from 46.2 to 44.0 at the SCIAC finals; improvement in the relay team of Murray, freshman Greg Blaisdell, and sophomores John Hattick and Bryan Sutula — a unit that should become a competitive element in southern California small college ranks; and the mile relay team of Murray, Hattick, junior Duane Gray, and freshman Tom McCabe, with a season best of 3:38.5. Both relays attained the best Caltech times in four years.

Seniors Steve Kellogg (3-mile) and Duane Boman (long jump/hurdles) received special plaques as four-year-letter winners at a team banquet given by Mr. and Mrs. Don Van Steenwyk.



Freshman Greg Blaisdell soars over the bar in a meet with Ambassador College.

Today the firm is the leading manufacturer, worldwide, of adhesive labels.

So John D. Gee, BS '53, told guests at the Caltech Alumni Association annual dinner as he bestowed on Avery the association's highest

recognition — an honorary membership for his contributions to the Caltech community.

Then Richard L. Van Kirk, BS '58, was installed as president of the association. Van Kirk presented Gee, the outgoing president, with a gavel encribed with his name, and expressed appreciation for his outstanding leadership. Van Kirk, who lives in Arcadia, is director of management services for Arthur Young & Co., a CPA firm with headquarters in Beverly Hills. A member of the Alumni Association Board since 1974, he has been its vice president and treasurer and in 1974 he was general chairman of the Alumni Seminar Day committee.

Noting that the occasion stresses "respect and fellowship for honorary alumni," Van Kirk recognized others at the dinner who have been so honored: Robert F. Bacher, professor of physics, emeritus, and former Caltech vice president and provost;

James B. Black, executive director of the Alumni Association; Robert L. Daugherty, professor of mechanical and hydraulic engineering, emeritus; Horace N. Gilbert, professor of business economics, emeritus; Herbert Hahn, Pasadena attorney; Wesley L. Hershey, retired executive director of the Caltech Y; and Edward Hutchings Jr., editor of *Engineering and Science* magazine. Other new officers installed at the dinner include: vice president, Gee; secretary, William L. Martin III, BS '69, MS '70; treasurer, Caryl Otte, MS '50, PhD '54.

Directors elected for three-year terms were: Cydnor M. Biddison, BS '40; Gee; James King, Jr., MS '55, PhD '58; Louise Kirkbride, BS '75, MS '76; and Philip L. Reynolds, BS '58, MS '59.

During the evening, plaques were presented to outgoing board members William J. Carroll, BS '48, MS '49; Carole L. Hamilton, PhD '63; Le Val Lund, BS '47; Harry J. Moore, BS '48; and Raymond A. Saplis, BS '44.

Former presidents of the Alumni Association recognized at the dinner were Donald D. Davidson, BS '38; Craig Elliott, BS '58; Arthur O. Spaulding, BS '49, MS '58; and Stuart M. Butler, Jr., BS '48.

a superb game, shutting out the Poets in the final eight innings. Whittier scored its two runs as the result of an error in the first inning, followed by a home run. Sterling performances in the field by seniors Ed Rea and shortstop "Pat" Reardon helped Rountree's strong performance.

Sophomore Jim Jacobs led the team in hitting; he batted a healthy .283 in conference games. Rea and sophomore Fred Crimi led the team in runs batted in with 5 each. Rea hit Tech's only home run of the season — a grand slammer against Oxy. The team's composite batting average was .159; its fielding average, .878.

The Tech pitching staff suffered from a variety of untimely ailments. Its leading strike-out artist, Rea, underwent a knee operation in December, and then was stricken with mononucleosis. Rountree pulled a leg muscle, hobbling himself for the entire season. As a result, Rea's and Rountree's earned run averages skyrocketed from 3.24 and 3.56 to 9.06 and 10.74, respectively. Poor fielding by a depleted outfield added to pitching woes. Despite his injury, Rountree won the coveted Alumni Baseball Trophy this year.

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

.....

Golf

Due to its inability to field the required six members on a consistent basis, the golf team's 1977 won-loss record was poor. However, junior Robert Chess played several outstanding rounds, and with more seasoning, a solid team of underclassmen may surprise the top contenders in the conference next year. Chess finished high in the conference Medal Play Tournament at Redlands Country Club and was awarded the J. B. Earl Trophy for outstanding achievement in Caltech golf for 1977.

Senior Curtis Meissner, a two-year letterman, also provided some strong moments in conference play. Other team members were freshmen Alan Boyar, Nelson Goldikener, and Doug Jones; sophomore Charles Curatalo; and junior Francis Mukai. Several more good golfers, along with these fine players, could make Caltech a real contender for league honors next year.

Baseball

Although they battled hard to win several close games, the Beavers were unable this year to come up with a victory in conference competition; they finished the season with a 0-18 record.

Their most exciting contest ended in a 2-1 loss to Whittier. In this game, junior Doug Rountree pitched

Alumni Association airs achievements

Back in 1953 while he was ASCIT president, John Gee looked out the window of his room in Fleming House one evening to see several students with a 65-foot trailer, attempting to tow away the AFROTC's F-84 jet fighter.

"I talked them into going home," Gee said. "I figured that the government might get a little angry if we stole its airplane. The next morning I looked out my window again. The plane was gone. It had been towed to the front yard of the ROTC colonel's home in Altadena. This incident gave me some appreciation for the extent of my influence with the student body; it was nil."

Sobering though this experience may have been, it didn't deter Gee from making further attempts to give leadership to Techers, and alumni can be grateful that he did. As president of the Alumni Association this year, he has proved that his ability to lead graduates of the Institute is substantial.

Gee's term as Alumni Association president climaxes several years of work in various alumni activities. He was Seminar Day chairman in 1973 after membership on the Seminar Day Program Committee for three years. He had served a term on the association's Board of Directors in 1960 and he again joined the board in 1973. For several years he has been active on the Finance Committee.

Gee explains that he thoroughly enjoyed being a student at Caltech (where he was also ASCIT treasurer and active in football, basketball, and baseball) and that he relishes opportunities to continue this association.

Gee believes that many other alumni find the contacts with the Institute equally stimulating, and that their satisfaction forms the strength of the Alumni Association. These ties also help the Alumni Fund to grow stronger, for they create advocates who understand and value the Institute's programs.

Projects to encourage alumni loyalty have never been stronger, Gee says, as he summarizes activities of the year. In this context he mentions an innovation — the 50-year reunion for all alumni of the Division of Geological and Planetary Sciences, sponsored by the division and the association. Some 110 alumni attended the reunion; its theme was "The Earth and the Planets." Similar reunions may be held for other divisions.

Another popular event this year was a second visit to the Scripps Institution of Oceanography and the Nimitz Marine Facility. This field trip attracted 160 alumni.

New this year and equally well-liked were two programs at JPL where alumni met members of the Viking flight team and heard reports on data just arriving from the surface of Mars. A total of 500 members and their families attended the two programs where they viewed a duplicate of the Viking lander before a huge panoramic photo of the Martian landscape.

A continuing favorite of alumni, Seminar Day, broke all attendance records this year. More than 1,600 alumni and their guests came to the campus to hear 12 faculty research lectures and a general session talk by

Harrison H. Schmitt, BS '57, U. S. Senator from New Mexico and the first (and only) scientist to visit the moon. Well-attended as usual were the Rose Parade Special and two gourmet wine tastings — sellouts again — and alumni dinners combined with the chance to hear Watson lectures in Beckman Auditorium.

Alumni who couldn't come to the campus for programs had more opportunities than ever to attend chapter meetings in their own home towns — even if they lived in Paris! Forty Caltech alumni converged in September for the first meeting of the Paris alumni chapter; other meetings were held for the first time in North Carolina, New Mexico, and Pittsburgh. In all, 800 alumni attended chapter meetings in 15 locations.

Their pleasant memories of their own days at Caltech — and their insight into the life of students — make alumni especially effective as advisers to high school students applying to the Institute, Gee believes. For this reason, the association continues its involvement in a program for bright young people who may want to apply here.

This year, Gee notes, alumni in 20 cities contacted high school counselors and science and mathematics teachers, offering information about Caltech. These alumni also talked with students as they were applying for admission to the Institute and again after they were accepted. Howell N. Tyson, Jr., BS '50, was chairman of the association's Secondary School Committee with responsibility for this program.

The committee was especially active in San Francisco, San Diego, Chicago, New York, and Washington, D.C. In these cities, alumni were hosts at picnics and dinners for students in the fall before they left for Caltech.

"By talking with parents at these functions we met a real need," Gee says. "Parents asked a lot of practical questions that we could answer about the food service on campus, and about banking, shopping, and transportation in Pasadena. These get-togethers are important because they help students make easier transitions from high school to Caltech."

Through the Secondary School program, the Alumni Association and individual alumni can render Caltech an important service. The program has grown considerably in the last two years and eventually will be expanded to serve most areas from which Caltech receives applicants.

In other student-oriented projects, the association again contributed \$2,500 to help make it possible to hold Freshman Camp on Catalina Island. The association also helps to support ASCIT, the Graduate Student Council, the Caltech Glee Club, the ASCIT Musical, Interhouse Dance, Big T, and various projects in the student houses. Athletic awards and banquets for intercollegiate sports participants also receive some funding. This year, several alumni held dinners in their homes for seniors.

Besides support for many specific

activities, the association continued this year to provide undergraduate scholarships. James R. Davis, BS '48, MS '49, again headed a committee to ask for minimum gifts of \$500 from companies owned by alumni. These funds, with income from the association's scholarship endowment fund, made it possible to offer two partial and four full scholarships this year. The recipients were: James A. Gerdes, a sophomore majoring in astronomy; Paul Whitmore, a senior majoring in chemistry; David C. Crocker, a senior majoring in engineering; Scott H. Hochwald, a junior majoring in mathematics; Reed Copsey, a senior majoring in engineering; and John B. Howley, a freshman majoring in physics.

Donors to the fund included: Agbabian Associates (Mike Agbabian, MS '48, president); Converse Davis Dixon Associates (James R. Davis, BS '48, MS '49, president); Albert A. Erkel, BS '45, president of Erkel, Greenfield & Associates; Hillman, Biddison & Loevenguth (Ernest C. Hillman, Jr., BS '30, president), Johnson & Nielsen Associates (Carl B. Johnson, BS '37, MS '44, Eng '46,

president); James M. Montgomery, Consulting Engineers, Inc. (William J. Carroll, BS '48, MS '49, president), and Moore and Taber (Return F. Moore, BS '47, MS '48, president).

A bonus benefit for the students came at a dinner in the Athenaeum where they met the heads of the donor firms. Gee believes this experience was important because it gave the students the chance to learn what it's like to build one's own company.

Gee has built his career through a long association with the Bethlehem Steel Corporation. A mechanical engineer who received his degree in 1953, he has been with the company since that year, except for two years as an instructor with the Army Corps of Engineers. A Pasadena resident, he is the company's district manager of sales.

In this role, his selling efforts have been much more effective than in 1953 when he tried to persuade the students to abandon their plan to make off with an airplane. But then it's probably easier to sell oil to Arabs than to dissuade Techers who are primed for a prank.

Chemical engineering major receives Donald Clark award

Eric W. Kaler, a junior majoring in chemical engineering, has won the Donald S. Clark Memorial Award at Caltech. The \$500 prize is given annually to a student showing outstanding qualities in leadership and scholarship.

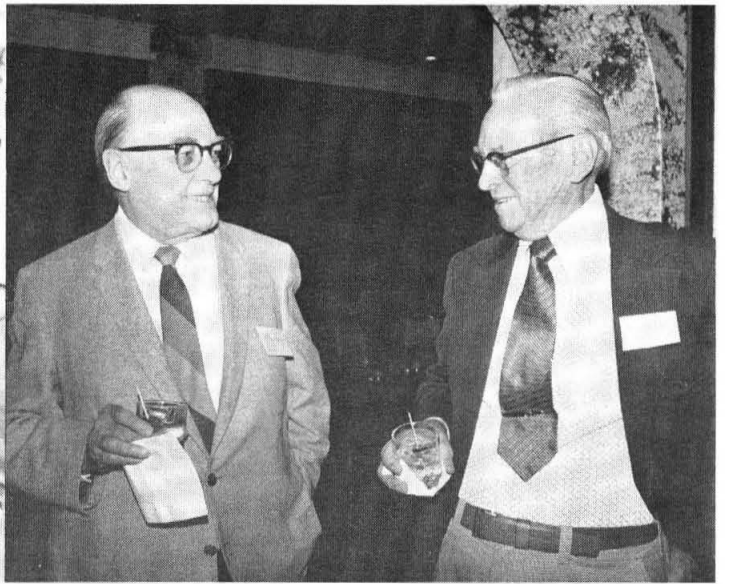
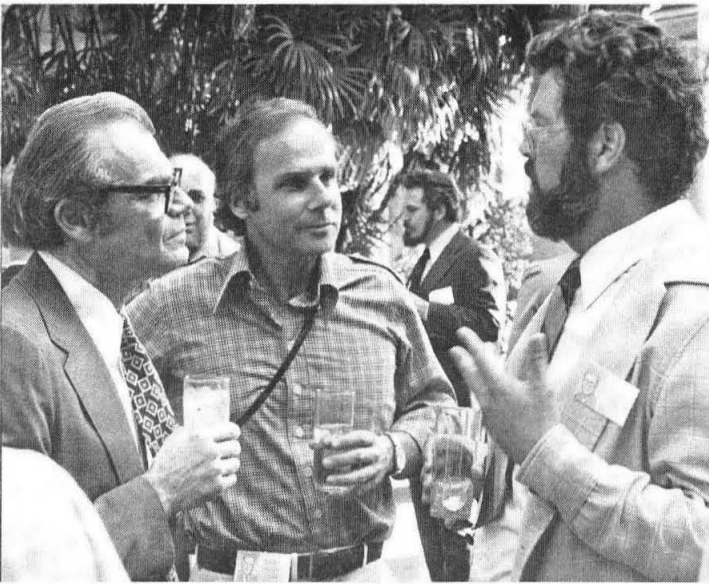
At Caltech Kaler has been the student body secretary and vice president and athletic manager of Rud-dock House, as well as chairman of

the student interhouse committee. In his field of chemical engineering, he is involved with research on oscillating chemical reactions, working with Fredrick Shair, professor of chemical engineering.

The Clark award honors the late Donald S. Clark, BS '29, MS '30, PhD '34, who was professor of physical metallurgy and secretary for 23 years of the Alumni Association.



Terrain simulating the rock-strewn Chryse Plain landing site of Viking is described by Donald Crouch, deputy team leader of the Viking Surface Sampling Team, at a visit to JPL for 500 alumni and guests in October. The alumni met members of the flight team and heard reports of the most recent data from the planet's surface.



William H. Pickering, BS '32, MS '33, PhD '36, professor of electrical engineering, with Ed Foss, BS '32, at their class reunion, above left. Center: Rolf Sabersky, BS '42, MS '43, PhD '49, professor of mechanical engineering, with Robert T. Gelber, BS '57, and C. Harold Dale, BS '57, MS '58. Right:

Nobel laureate Carl D. Anderson, BS '27, PhD '30, Board of Trustees Professor of Physics, Emeritus, with Ray Untereiner, professor of economics, Emeritus, at the Half Century Club luncheon. Anderson was inducted into membership this year.



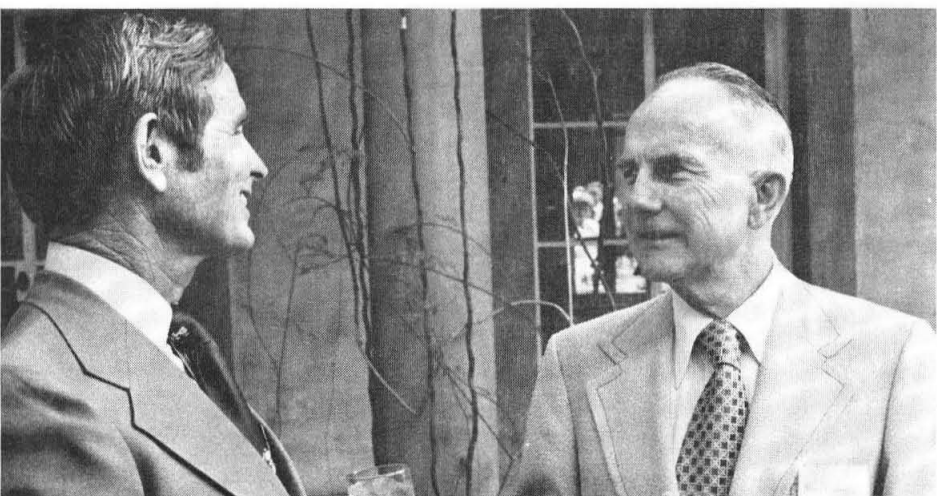
John D. Gee, 1976-77 president of the Caltech Alumni Association, talks with John G. Case, BS '27, at the Half Century Club luncheon. Right: Robert R. McDonald, BS '47, reminiscences via a photographic display at his class reunion.



Robert T. Gelber, BS '57, with Reuben B. Moulton, BS '57, left. Right: Craig T. Elliott, BS '58, a guest at the class of 1957 reunion, records the event on film.



Ray D. Owen, vice president for student affairs and dean of students, with Myron J. Mandell, BS '67, and Mrs. Mandell at the class of 1967 reunion.



Le Val Lund, Jr., BS '47, with Munson Dowd, BS '38, MS '46, at the reunion for the classes of 1937 and 1947.

Alumni hold five-year reunions Class of 1927 celebrates its 50th: "a good metric unit"

It was a very here and now affair. There was, of course, a lot of catching-up on the years between, and a little of the kind of reminiscing everybody indulges in at college reunions. (Master of ceremonies Reuben Moulton, BS '57, reminded his audience that 1927 was "the year that Coolidge decided not to run again.") But for the most part the talk was of the present and of the future.

It was the 50th reunion of the class of '27 of the California Institute of Technology. Against a background of crimson carpets and drapes and the crystal chandeliers of the Huntington Sheraton's Georgian Room, 177 guests greeted each other. The Caltech Alumni Association was playing host to those who were about to be inducted into the Half Century Club.

Fifty-three members of the class — out of 68 living — were on hand. Another 25 alumni from earlier classes were there as well. Most of the guests were accompanied by their wives and spoke of approaching or already-celebrated golden wedding anniversaries. Almost all had retired once, some twice, and a few were on the third go-round. There were, however, no signs of retreat from active participation in, and enjoyment of, life. It was the largest number ever to attend a Half Century Club luncheon.

"We were the last class to get into Caltech without an entrance exam. That's why there are so many of us here," explained John Case, reunion committee chairman.

Ellery Baxter came from North Carolina — his first Caltech reunion. Hallam Mendenhall and Robert Moore were there from New Jersey. J. Davis Shuster came from Massachusetts, and Ralph Watson came from Syracuse, New York. Bob Creveling was over from Albuquerque. (He missed his 25th reunion because he marked the wrong date on his calendar and didn't discover it until he got to the airport a day late.)

Garfield (Johnnie) Coffee brought his mobile home from Prescott, Arizona, and settled in the Athenaeum parking lot for the duration.

Hilmer Larson came from drought-ridden northern California to "enjoy a good bath."

Nobel Prizewinner Carl Anderson declared a half century "a good metric unit."

Many told of their ties with the space industry, nuclear power, research laboratories and education. At age 40 John Forster turned to high school teaching and sent many students (including Professor of Chemistry Fred Anson) to Caltech. C. Hewitt Dix began teaching math at Rice, spent 14 years with an oil company, and wound up as a geophysics professor at Caltech.

The spectrum of careers covered a wide range. Charles Gazin retired seven years ago from the Smithsonian Institution (but still works there). Regis Gubser got into the ice business. (He furnished the refrigerated sound stage for the old movie version of "Lost Horizon.")

Vernon Jaeger was a U.S. Army chaplain for 30 years, an executive minister for 10 years, and has now "gone from the pulpit to the back pew." Eugene Riggs retired as a colonel from the U.S. Air Force in 1963 and retired again in 1972, this time from the Metropolitan Water District. Arthur Warner had held, among other responsible posts, the position of technical director of Cape Canaveral. He regards his Caltech degree as "the door that opened all that to me."

Gardening, fishing, grandchildren, and golf were a few retirement pleasures sung out from the podium.

Also sung out, sweetly and strong, was a chorus of the Alma Mater, led by Frank Pine, BS '24.

And there was a "See you in another fifty" farewell.

Other classes held their reunions on June 3, 4, and 11 — except for the class of 1952, which met on Alumni Seminar Day. The reunions featured campus tours, social hours, and dinners in the Athenaeum.

Meeting on June 3 were members of the class of 1932, with arrangements by Robert E. Foss. Holding reunions on June 4 were the class of 1937, arrangements by Paul C. Schaffner; the class of 1947, Le Val Lund; and the class of 1957, Reuben B. Moulton. Reunions on June 11 were for the class of 1942, arrangements by Frederick H. Felberg; the class of 1962, Frank Ridolphi; and the class of 1967, Terry Hendrickson, Terry G. Allen, and Daniel E. Erickson.

The class of 1972 met on June 11 for a picnic at Tournament Park; Robert A. Bell was in charge.

Angus J. S. Fletcher: builder of bridges to brilliant minds

by Phyllis Brewster

When Angus John Stewart Fletcher comes to his office, it is the last he knows of privacy until he leaves.

Fletcher has only been at the Institute since January, yet his characteristic warmth and charm, his engaging patterns of thought, and above all, "his incredible sensitivity" (to quote one of his admirers) act like a magnet to students and colleagues.

Fletcher is the first Doris and Henry Dreyfuss Professor of English and Comparative Literature. He was chosen after a long search to find a person with the special combination of qualities that the Dreyfusses believed are vital for a humanities faculty to share with the science-centered Caltech students — "someone who by sheer brilliance of mind and attractiveness of personality will draw the students and faculty into constructive discussion of man's ambitions and values and achievements and failures."

This Fletcher is doing, through his personal qualities and by bringing his knowledge of humanities to the common ground of Caltech students — science.

"Humanists deal in subjective values, scientists in objective measurements," he says. "I've long been intrigued with the idea of bringing order and simplicity to the happy confusion of literature and philosophy. Could I do this with Caltech students?"

Evidently he can. Says one of his undergraduates, "His style is unique. He has a tremendous capacity for thinking about different ideas and concepts, and he has a most impressive knowledge in so many fields. He's read everything."

A specialist in Renaissance literature, general literary theory, and the theory of literary history, Fletcher says he is entranced by physics because it reduces the problems of the universe to fundamental theorems.

"Literature and philosophy open endless avenues," he says. "Physics tends to control this openness."

One of Fletcher's students last quarter — a physics major — says, "He's always making analogies, like comparing mathematical paradoxes to ambiguities in literature. Because he's not really a scientist, his analogies don't always work accurately. But they always get us to think about what he's saying."

In addition to his humanities specialties and his fascination with physics, Fletcher is also a musician. Trained in piano and music theory up through his mid-university years, he decided he didn't have enough talent to make music a career. Now he combines his love of music with scholarly work. Currently he is doing research on the use of myth and symbol in opera. He maintains close contact and friendships with composers, music directors, singers, and other musicians.

To present Angus Fletcher only as a scholar successfully engaging some of the brightest minds in the country ("In New York my graduate students knew more than I did, but I could

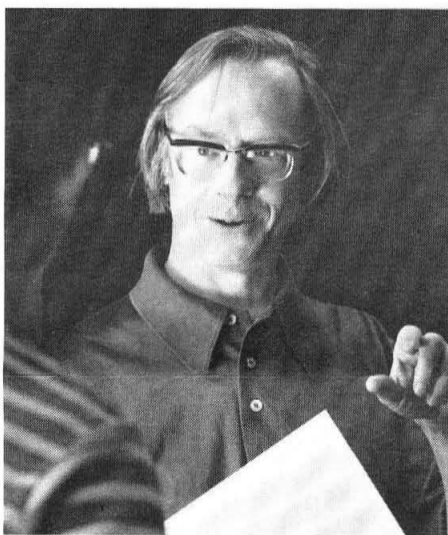
think better. Here it's the other way around.") would be to leave out the important dimension of "incredible sensitivity" that Fletcher's students prize.

"When you talk with him, you and your subject are the most important things in the world to him," a biology major says.

Obviously Angus Fletcher is not encountering much difficulty building bridges between science and the humanities, or switching from bright minds to brilliant minds, but there is one area in which he may be having transference problems.

East Coast born and raised, and with a teaching career confined almost entirely to New York state (Cornell, Columbia, the State University of New York at Buffalo, and City University of New York in Manhattan), Fletcher talks with a bit of apprehension about the matter of relating to the California climate.

"When you can go out on your



Angus Fletcher talks with a student.

patio wearing the same shirt that you have been wearing inside reading, you have to relate to your climate differently," he says.

Patios seem to create other problems for him, too.

"One gets so much more reading done in New York winters," he adds — but with only a touch of regret.

Hinrichs Award winner: student house leader

Edward Rea, BS 77, was the recipient this year of the coveted Frederic W. Hinrichs, Jr., Memorial Award for the greatest undergraduate contribution to the welfare of the student body, and for outstanding leadership and character. The award includes a certificate and \$500.

Rea was selected primarily because of his leadership and service in the student houses. A graduate in engineering, he was chairman for three terms of the Interhouse Committee. He also served on the Caltech Prize Scholarship Committee and the Committee on Student Housing. A co-captain on the baseball team, he was a pitcher, first baseman, and outfielder.



Glenn Bowlus examines the model of a Chinook salmon that he designed to help increase understanding of the way fish move through water.

How to keep occupied at 89: conduct research

At the age of 89, Glenn Bowlus was a little bored with his life at Leisure World and he needed a new project to occupy his energies — but not just any project, for Bowlus is a man of wide-ranging abilities and imagination. A conversation with Theodore Wu, Caltech professor of engineering science, solved his problem. George Yates, a graduate student of Wu's, could use some assistance with his doctoral program concerning fish propulsion. Soon Bowlus was spending four mornings a week at Caltech, helping Yates with his research.

Yates's project put Bowlus back in familiar territory, for he is a veteran in the field of fish propulsion. With the Navy after World War II, he conducted research on porpoise propulsion for the Sea Animal Locomotion (SAL) Project as an employee of the Naval Undersea Center — then located in Pasadena. He retired from the NUC in 1964.

Bowlus's assignment at Caltech was not his first at the Institute. He worked here more than 50 years ago — in 1920-22 — as an instructor in mechanical engineering. Then he left to manage his company, the Bowlus Oil Well Service, specializing in oilfield pumping problems.

But ever since his involvement in the Navy's SAL Program, he has retained a keen interest in fish propulsion. Engineers have been intrigued for many years by the efficiency with which a fish can propel itself through the water. For example, they know that a swimming fish uses only one tenth of the energy that would be used if it were pulled by a fish line. They believe that insight into the way fishes swim may help man to develop new and innovative propulsion methods.

Happily involved in the Caltech laboratory, Bowlus applied his knowledge of this field by building Yates a mechanical fish to use in his studies. He modeled the fish, a fiberglass creation 24 inches in length, after a Chinook salmon, and he constructed a carriage to pull it

through the 25-foot-long towing tank in the subbasement of Thomas Laboratory. The carriage enabled the fish to simulate the yawing and heaving motions of a swimming salmon while Yates analyzed the effects of water pressure and temperature on its speed and the amplitude of its motions.

Bowlus's 89 years have done little to slow him down. Says Yates, "He's enthusiastic and he's eager to find the answers we're seeking. He's never afraid to crawl around the top of the water tank, adjusting the equipment. He works harder than I."

Meanwhile, Wu says of Yates's laboratory colleague, "Fish propulsion is in his blood. He has a keen intuition that stretches far to give him insights into natural phenomena, and he's very inventive in the way he can reproduce, technologically, what he sees in nature."

"His age is no hindrance to him. He works full time, all on his own. His vigilance of mind, his purity of heart, and his spirit — these would be remarkable in any of us."

While working with Yates on the fish propulsion project, Bowlus also designed an ellipsoid, fishlike in its shape and dimensions, whose movements eventually will be tested using the carriage that he constructed. Meanwhile, the conclusion of his efforts with Yates is awaiting electrical equipment that will make it possible to measure the fish's pressure differentials more precisely.

In the interim, Bowlus has found other projects to occupy his substantial energies. One of these is a catamaran that he constructed with his son, Robert G. Bowlus, BS '41, in which he hopes to develop commercial interest.

Returning to earthly things, Bowlus is a lifelong railway hobbyist. An outdoor railway that he developed has an exclusive six-inch gauge which is inexpensive to build and easy to install. Says Bowlus, "The cars are sturdy enough for young adults, from 1 to 90, to ride with pleasure."

Thriving on the Caltech campus

by Winifred Veronda

David Dewey has applied the Institute's rigorous intellectual standards in what might seem an unusual way: he uses them to test and strengthen his Christian faith.

Dewey, who received his BS degree in engineering this year, isn't alone in this application of his Caltech experience. He's a member of a group that is one of the Institute's largest and most vigorous student organizations: the Caltech Christian Fellowship. And most of the other members will tell you they've used their analytical training for the same purpose.

CCF's strength on the campus is a relatively new phenomenon. Six years ago, one observer notes, the organization claimed five members, and two of those wouldn't admit they belonged. Now CCF Monday night fellowship meetings regularly attract 50 graduates and undergraduates, informal Bible study groups meet weekly in several houses, Thursday noon hymn singers generate gospel harmony around Millikan pond, retreats are held every winter, and CCF sponsors annual World Evangelization Conferences that draw several hundred students to Beckman Auditorium from throughout California.

CCF's mailing list includes some 150 graduates and undergraduates who take part in its activities — making it a competitor in size with the largest student organizations, the Caltech Y and the Glee Club. Wilfred D. Iwan, professor of applied mechanics, is the faculty sponsor.

CCF's growth at Caltech has been nurtured by a similarly increasing vigor in evangelical Christianity on college and university campuses all over the nation. On the campus it

has also drawn strength from its own growing momentum.

As one student acknowledged, "It was hard to admit you were a Christian when only five people belonged to CCF. It's a lot easier with 50 people active in CCF and several dozen more in organizations like Hillel and Newman Club. Together we form a sizable religious community at Caltech.

Easier but not always easy, members will confide. "We get some flak from people here because of our be-

faith that's a lot stronger than when they came. In my opinion, Caltech offers better training in God's way than a Christian college. There the students aren't challenged about their faith so they don't keep sharp the way we do."

Dewey's own inner examination lasted six months. "At Caltech I found a new style of Christianity that was consistent with science," he said. "I examined it carefully and accepted it. I like to have my beliefs questioned. I have a friend who ac-



A few members of the Caltech Christian Fellowship meet for a noon hymn sing.

liefs," one said. "Being a Christian in an atmosphere where everything is supposed to be rationally proven is still no bed of roses."

But it is for this very reason that David Dewey values Caltech as an environment for spiritual growth.

"A lot of people come to Caltech with backgrounds as nominal Christians," he said. "Their faith has never been challenged. Here they're forced to begin a rigorous reexamination of their beliefs. Not everyone brings his beliefs through the processes, but the ones who do have a

tually goes out and seeks challenges to his faith just to keep his thinking from getting flabby."

"The last thing we want our members to do is to accept their Christian faith uncritically," said CCF president Mark Swanson, who graduated in June with a degree in chemistry. "We urge them to work through the intellectual problems they encounter and to look at Christianity analytically. We're convinced that its substance is true so we believe people can use the analytical process to clarify their beliefs."

Marathon running

Techers discover new way to lose sleep

As if they weren't losing enough sleep cramming for finals, several inventive Techers this spring discovered a new and more strenuous way to stay up all night. Under the leadership of Caltech three-miler Steve Kellogg, they formed two 10-man teams to run 24-hour marathon relays.

Teams hoping to break the 24-hour marathon running record of 297 miles must field 10 athletes each to run one mile in the same order, in continuing cycles. Results of their efforts are printed in *Runner's World*, a magazine well known to running buffs.

The teams — Kellogg's Eighth Light Regiment on Foot (composed mainly of track team members) and the Caltech Cripples Without Crutches (made up of non-track athletes) began their ordeal at 9 a.m. on Saturday, May 21. Kellogg's Eighth held faint hopes of surpassing the 24-hour marathon record of 297 miles, but more realistically set a goal for themselves of 240 miles. They surpassed this mark by running 247 miles, 375 yards in the 24-hour span. The team, which aver-

aged 5:49.5 minutes per mile, consisted of Kellogg, Bob Bourret, Vic Manzella, Tom McCabe, Davis Finley, Bill Gould, Bill Newman, Arne Fliflet, Eugene Loh, and Bruce Bills.

The Caltech Cripples, meanwhile, collected 189 miles, 850 yards, averaging a little under 8 minutes per mile, to beat their own goal of 180 miles. Running for the Cripples were Tim Brown, Francis Mukai, Eric Goldreich, Jim Yamamoto, Werner Pyka, Edmond Lo, Hal Finney, Randy Okubo, Doug Brandt, and Ed

Soto. Most are undergraduates.

Off track action centered under a tent where runners' speeds were recorded and where helpers passed out gookinate, nuts, raisins, and honey. Sleeping bags containing apparently lifeless runners were strewn about the gym.

The *California Tech* reported, "Everyone was glad when the final gun sounded, and 20 minutes later there was almost no trace of the event, the runners having gone out to breakfast."

First Haagen-Smit prize awarded

Thomas J. McDonnell, a junior majoring in chemistry, has received the first Arie J. Haagen-Smit award of \$500 for high academic performance and extracurricular activities.

McDonnell, who has a grade point average of 3.9, recently won an undergraduate award in analytical chemistry. He is secretary of ASCIT and a member of ASCIT's public affairs council and educational policies and athletic committees. He was junior class vice president and will

be senior class secretary. He is also secretary of Tau Beta Pi, the engineering honor society, and a member of the faculty-student library committee and an undergraduate committee that is helping to evaluate a possible increase in the size of the student body.

The Haagen-Smit award was established in memory of Arie J. Haagen-Smit, internationally known for his efforts to control smog, who died last March.

Dewey feels that science and his faith are complementary. "Science is a part of God's creation, not a competitor," he said. "We at Caltech are lucky because we have the chance to learn more about this creation than the average person does."

One of the challenges that members most often face is whether they are using their religious faith as a "crutch to help them get through life." But Dewey feels this question is beside the point. "Of course my faith helps me deal with problems," he said, "and I don't apologize for that. But the important question is whether my beliefs are true. If they are, then I'm not embarrassed because they give my life more meaning." Dewey also appreciates the contributions that being at Caltech could make to a fulltime Christian career. "A Caltech education equips you to cope with anything," he said. "I can't think of better training for a missionary!"

Clarifying one's beliefs may be an important facet of CCF membership, but generally students are attracted to the group for non-intellectual reasons. Members are often drawn to it because they feel it is a community of those who care if someone is unhappy or alone.

"There are a lot of lonely students at Caltech," Swanson said. "They're around people all the time, in their houses and classes, but they're shy and it isn't easy for them to reach out. We feel a responsibility to them. Because we're introverted too, it isn't easy for us to make the effort to show someone we don't know that we care about him. But we try."

"A lot of people become involved with CCF because of these contacts with our members. They like what they find in the group and they want to be a part of it."

Good friends who care about each other are an important appeal of CCF for all its members. "We have a very special community here," Swanson said. "If we're in a tough spot and want to talk to somebody, we can always find another CCF member just a couple of minutes away. We don't ever have to be alone if we don't want to be."

For the student members, Monday night meetings are the heart of the CCF fellowship on the campus. At a recent meeting, members began by singing a few hymns, accompanied by a guitarist. Then Swanson led a discussion. He encouraged them to think about ways to spread Christian ideas, to help one another grow, to make life in the student houses more satisfying, and simply to enjoy being together.

Then he urged members to extend their friendship to Caltech's foreign students. "They're often the loneliest people on the campus," he said. "We can help them feel at home here. Don't hit them with the principles of your faith. Just make them feel cared for. We have an important role, and that's to make life around us more human."

For any group, in any setting, that's a worthwhile goal, and it may be one of the reasons for the success of CCF on the Caltech campus today.