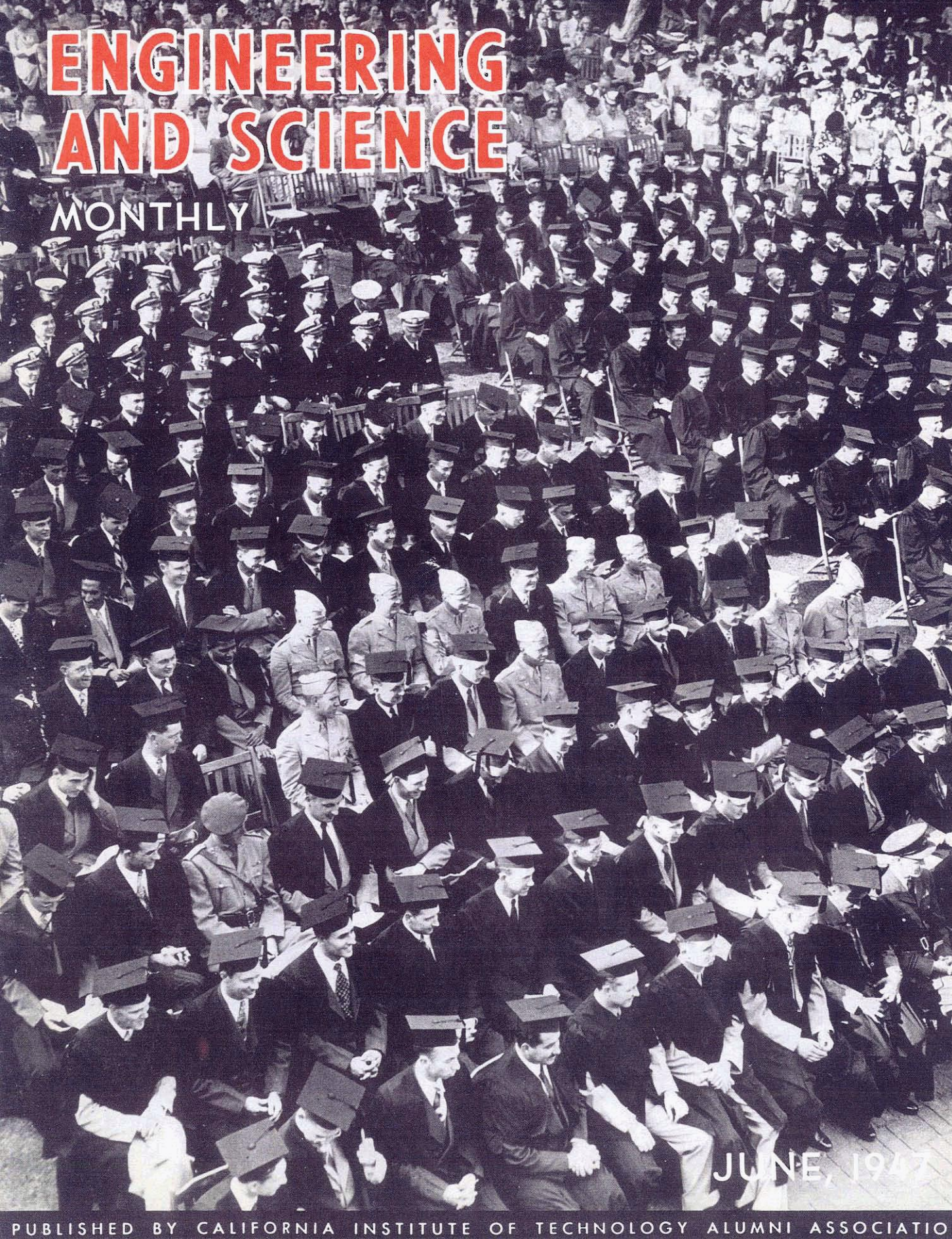


# ENGINEERING AND SCIENCE

MONTHLY



JUNE, 1947

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# BY-LINES

LEE A. DUBRIDGE

Dr. Lee A. DuBridge, president of California Institute of Technology, graduated from Cornell College, Iowa, in 1922, and continued his studies in physics at the University of Wisconsin, where



he received his Ph.D. degree in 1926. From 1926 to 1928 he did physics research at C.I.T. as a Fellow of the National Research Council. In 1928 he went to Washington University in St. Louis as assistant professor of physics, later becoming associate professor. In 1934 Dr. DuBridge was called to the University of Rochester as Harris Professor of Physics and chairman of that department. Chosen in 1940 to head the Radiation Laboratory then being established by the N.D.R.C. at M.I.T., Dr. DuBridge served as director of this Laboratory until his return to Rochester in February 1946. In April 1946, Dr. DuBridge was called to the presidency of the California Institute.

Howard Lewis, whose picture is on page 3, entered C.I.T. in 1928. In 1923 he received the B.S. from Tech, although he was already working for his M.E. degree at Cornell, which he received in 1924. After a year of teaching physics at Riverside High School, he spent six years with Howard Hughes as an experimental engineer, manager of the Hughes Development Company, and general manager and assistant to the president of Multicolor, Ltd., a film processing laboratory. Later Mr. Lewis, with Glen M. Larson, formed the Lewis-Larson Company. Situated in Los Angeles, their building contains offices, laboratories, and experimental shops. The Lewis-Larson Company is specializing in high grade engineering services for smaller businesses which are unable to maintain their own research departments.

## COVER CAPTION

Graduation exercises June 13 at the Institute. See page 8.

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# ENGINEERING AND SCIENCE

Monthly



The Truth Shall Make You Free

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## ENGINEERING AND SCIENCE MONTHLY

Published at the California Institute of Technology

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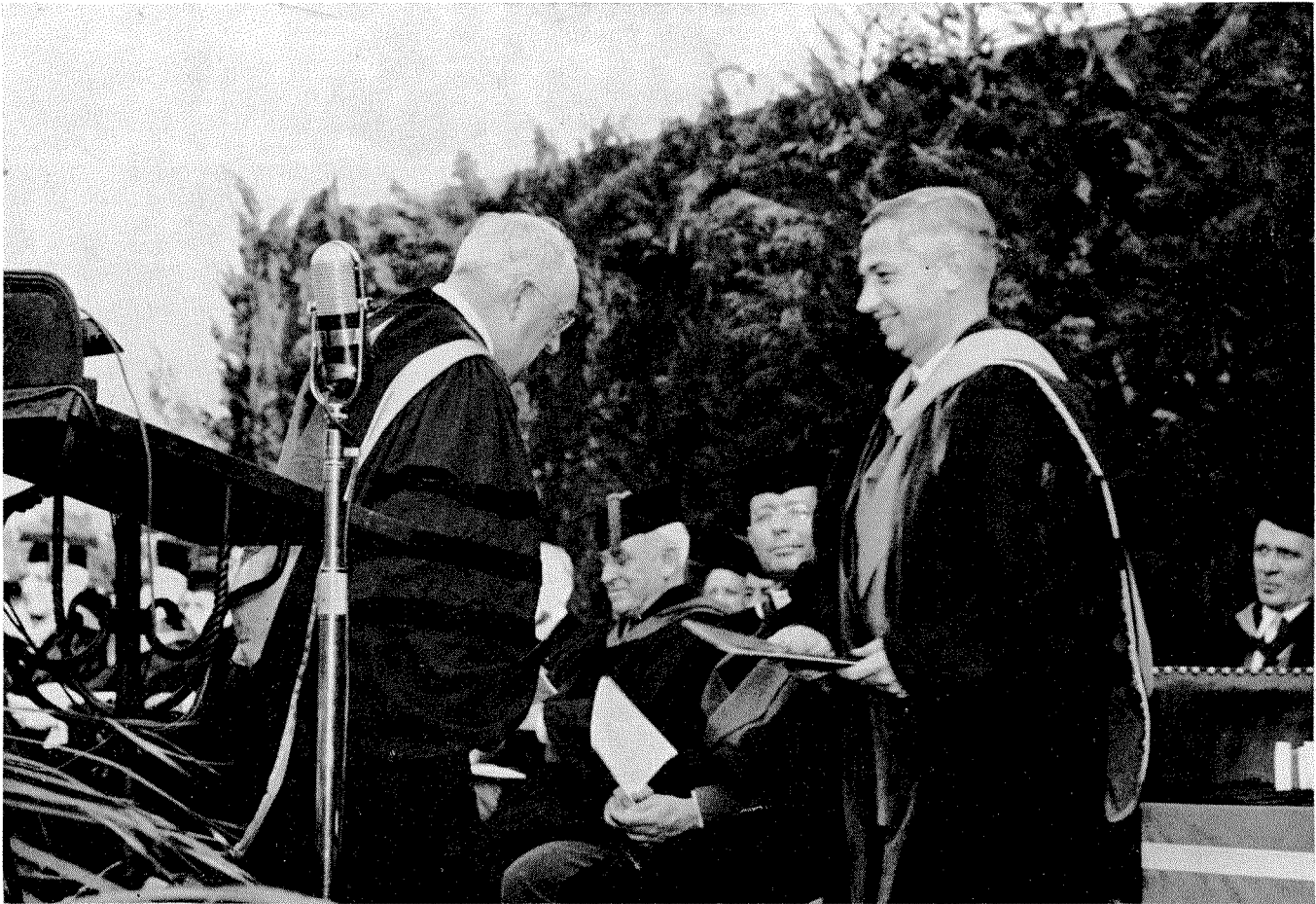
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# The Institute and the Alumni

By Lee A. DuBridge



President DuBridge shown with Executive Committee Chairman James R. Page, at graduation ceremonies.

**T**HE CALIFORNIA Institute of Technology is no stronger than its alumni. It deserves to exist only if its alumni are serving the community and the nation in an important way—and if it is also clear that what the alumni gained while students at the Institute made an important contribution to their careers.

Conversely, while the Alumni are reflecting credit on the Institute, the growing prestige and effectiveness of the Institute is of direct benefit to each alumnus. Hence, nothing but benefit to both sides can possibly result from a full and understanding collaboration between the Institute and its alumni body.

There are many forms which such collaborations may take. The Institute attempts through the Placement Office, the Alumni Seminars and other activities to render a service to the alumni. The Administration would welcome suggestions as to how these services may be extended and improved.

A number of alumni groups have recently arranged to render a very valuable assistance to the Institute's Director of Admissions in handling the problems relating to examination and selection of entering students. The enormity of this problem and the terrible responsibility involved are seen in the fact that this spring about 1100 students completed applications for admission to CalTech next fall. Seven hundred-ninety were allowed to take entrance exams, about 400 did well enough to warrant an interview—and 180 were admitted. Are we sure we selected the best

180? Can we improve our system of administering examinations, gathering all relevant information about each student? The need for alumni help is obvious!

This problem is but one illustration of the way in which the Institute is entering a new era in its development. Its prestige is world-wide, the demands on its educational and research facilities are far greater than can be met. Science and engineering are facing new and greater opportunities in the world, in the nation, and especially in Southern California. The Institute can do no less than attempt to meet some, at least, of these needs. It can not meet them all quantitatively. (We can hardly contemplate an undergraduate body of 3000 even if it were desirable!) But it can attempt to do the finest possible job, qualitatively. To do this, its facilities and staff must be kept at the highest level. A new, and substantially higher, faculty-salary scale now going into effect will insure our ability to attract and retain the best men. But our physical plant is not yet complete, our income for education and research is still inadequate.

It would be natural at this time to turn to our rapidly growing alumni body for aid. We would probably have done so—if the Alumni Association had not beat us to it! The Alumni Fund is **your** idea. It is a great one, and will be warmly welcomed by alumni, students, faculty, trustees and administration. It can help make CIT a finer place. Toward that end we shall work together.

# ENGINEERING AND SCIENCE

*Monthly*



Vol. X, No. 6

June, 1947

## OUR ALUMNI FUND

By H. B. Lewis

THE OFFICERS and directors of the Alumni Association of the California Institute of Technology feel that the association has "come of age" in announcing the inauguration of the alumni fund program. Like a man reaching his twenty-first birthday who obviously is not fully matured or at the peak of his personal usefulness but who has reached that point in life at which he is able and anxious to undertake a man's work and responsibility, the association has grown to a point where it can and should undertake to assist the Institute in really tangible ways. Only through serious work and the assumption of responsibility can the young man grow to a realization of his capacity for service and the full enjoyment of the rewards for service. Only through recognition of the responsibilities of alumni and their Alma Mater and through acceptance of the demands those responsibilities impose upon the organized alumni can an alumni association justify its existence.

The California Institute of Technology Alumni Association has grown rapidly for several years past; it has become a strong and effective body which has gradually developed the placement service, the annual seminar, and the monthly magazine. Each of these ventures has increased the usefulness of the Association to its members and helped to give the organization purpose, continuity, and prestige. The Association now has nearly 2000 members, bound together by ties of common interest and memories of the days spent at the Institute.

A still greater opportunity for service lies ahead. The Association is now large enough and strong enough to undertake to assist the Institute in its educational program. From an association concerned primarily with its own growth and assistance to its own members, it can become a real factor in the Institute community.

That we, as alumni, should and do want to render such assistance is almost a foregone conclusion. We appreciate the value of the type of education offered



by the Institute. We have personally profited by that education. We realize that two-thirds of the funds for operating expenses of the Institute and all of the funds for permanent facilities are derived from gifts to the Institute; in effect, each of us has been the recipient of a gift from the Institute, and indirectly from the donors to the Institute, of many hundreds or several thousands of dollars. We cannot repay those who gave to us, but we can and should do all we can to assure the same or greater opportunities to succeeding generations of CalTech men.

Our assistance to the Institute can, and should, take several forms. We can assist materially in disseminating factual information about the Institute to the general public, to student advisers and administrators in the high schools, and to potential supporters of the Institute. We can assist in the selection of candidates for admission to the Institute, particularly in areas relatively remote from Pasadena. We can participate directly in seminars or student technical society meetings to the great advantage of ourselves, the students, and the Institute. We can, to a limited extent, guide and counsel the students who are following us.

All of these activities require time, thought, and effort of individual alumni who are willing to help for the satisfaction of helping. The alumni are participating now in these efforts and they will doubtless continue to do so on an increasing scale.

We can also assist the Institute with direct gifts of funds for general or specific purposes. No general appeal for such assistance from the alumni has ever been made by either the Association or the Institute, but many alumni have expressed a desire to help and have asked why no effort was made to acquaint them with needs and why no provision was made for soliciting such gifts.

A committee was appointed about a year ago by Charles Varney, then president of the Alumni Association, to study the situation and to develop a plan of operation for a CalTech Alumni Fund. The oper-

ating plans used and the results obtained by several other schools were studied by this committee. These plans vary greatly, both in operation and in results. In some cases every alumnus is considered to be a member of the Alumni Association and all news and appeals for gifts are sent to all alumni. In some the alumni secretary is an employee of the college or university and his principal function is to conduct a high-pressure, direct mail campaign for gifts. In some cases dues, magazine subscriptions, and gifts for various purposes are segregated or even solicited by separate groups. In many cases operating and solicitation expenses are drawn from the gifts received for support of the institution and may amount to 20 or 30 per cent of receipts.

It was felt that none of the plans studied exactly fitted our requirements. We have our Alumni Association well established on a dues-paying basis with practically all of the Association's income and efforts devoted to the interests of the active members and the Institute. Our monthly magazine absorbs the bulk of the income from dues now and we could not hope to send it to all alumni without increased income or a substantial cut in size and quality of the magazine. It was also felt that a high-pressure campaign for gifts would not be favorably received by our alumni, nor would they like to have their gifts, even in part, used to support such a campaign.

The plan finally developed is extremely simple. It has been tailor-made to suit what its authors consider to be the needs of the Institute and the requirements of its alumni. The principal features of the plan are as follows:

- 1) An Alumni Fund is created with the Institute holding title to the fund. This assures donors to the fund of full deductibility of their gifts for income tax purposes.
- 2) The Alumni Association agrees to undertake to solicit gifts to the fund from all alumni.
- 3) Fund money can be spent only with the approval of both the Institute Board of Trustees and the Association Board of Directors. This is to assure the use of money for Institute purposes only, yet to permit the donors some control of the uses to which their contributions are put.
- 4) All expense of solicitation will be borne by the Association and its dues-paying members. This assures donors that 100 per cent of their gifts will be used for Institute purposes, not 80 per cent or 70 per cent, as with some funds, the remainder going into high-pressure campaigns for contributions. It remains to be seen whether or not they will contribute without pressure.
- 5) The Association will depend upon assistance from as many of its members as are willing and able to volunteer to help with the solicitation in order to keep its costs to a minimum.

The minimum of publicity and solicitation required merely to keep the alumni, members, and non-members aware of the existence of the fund will place an additional load on the already overloaded association budget. Our Association lists as active members approximately 47 per cent of the alumni. This is a somewhat better than average record, but Tech men are not usually satisfied with performance somewhat better than average. We should double our association membership and thus increase our association income. Certainly the overwhelming majority of Tech men appreciate what Tech means and what

it has done for them. They need only be told of the Association's activities to realize that they should be supporting it. If each member of the Association will find one alumnus who is not a member and explain to him how the Association is helping its members and the Institute, we would soon have the largest active membership, percentage-wise, of any alumni association in the country.

The Board of Directors of the Association had the power to create an Alumni Fund under its general powers, but it was felt that a by-law specifically defining the purposes and method of operation of the Fund should be written. This has been done (along with a general revision of the By-Laws for clarity and to meet changed conditions); the by-law has been adopted, and becomes effective July 1st of this year.

The committee, through analysis of the results of fund campaigns of other alumni groups, tried to estimate the amount of money the alumni as a group might be expected to contribute, but was forced to conclude that no estimate worthy of the name could be made. Several alumni as individuals have made substantial contributions and have been elected Institute Associates. A number of others have indicated their intentions of making gifts or pledges which would qualify them for that honor. These larger gifts, if made through the Alumni Fund, will be doubly recognized; they will be credited to the Alumni Fund and will also qualify the donor for election to the Associates.

Inevitably the majority of alumni will be able to give only a few dollars a year per man. However, one thousand ten-dollar gifts are of far more value than five one-thousand-dollar gifts. If each alumnus gives generously within his means, he will be doing his full share, whether his gift is \$1.00 or \$10,000. Each will then be entitled to a new pride in our Alma Mater and in our part in its support, and the Alumni Fund will be a great success.

In order that the Association might not go to the Institute empty handed, the officers, directors, and committee members have themselves contributed approximately \$1500 to start the fund, so that as of the closing date of this issue of **Engineering and Science** the fund is a going concern. The officers and directors sincerely hope that a considerable number of alumni, reading this article, will be moved to send in their checks without further solicitation. They also hope that many will volunteer to help with time and effort in the various Association activities.

No specific allocation of funds has as yet been made. All of the alumni so far consulted hope to see the Fund instrumental in providing or helping to provide a gymnasium and other recreational facilities for the use of students, faculty, and alumni. With the acquisition of Tournament Park assured, plans for such facilities are being developed. When those plans are completed and when we as alumni have indicated the extent to which we are willing and able to contribute to their fulfillment, it will be possible to determine what specific part of the plan the alumni will undertake.

CalTech alumni have watched the phenomenal growth of the Institute with pride; many have regretted their inability to assist significantly in that growth. They have recognized the peculiar position held by CalTech as an outstanding exponent of the need for training highly selected young men in the

(Continued on page 7)

# Alumni Helps the Admissions Committee

By George H. Hall\*

**C**COORDINATION OF an Alumni-Institute program designed to carry information on CalTech and its objective directly to more high school principals, teachers and students was a goal toward which there was definite progress during the past year. Instigated as a means of getting more applicants of the type the school desires, the program is one in which both the Admissions Committee, representing the Institute, and Alumni chapters had important roles this year and will have even more vital ones in the future.

In many instances, alumni can do a better job of contacting secondary school teachers and pupils than can Institute personnel. This is particularly true of distant areas and it is in such areas that alumni can be of great help. Some work of this type has been done in the past, but it is the belief of both alumni and the Institute that much more can and should be done. The Institute is prepared to cooperate in every manner possible in advising alumni of the kind of assistance needed and seeing to it that the necessary information is given them to do the job.

An excellent example of what has, and can be done, by both the alumni and the Institute was a meeting held this spring with Los Angeles High School Principals. The meeting was arranged by Howard Lewis '23, and attended by him, President Lee A. DuBridge and Professor L. Winchester Jones, Registrar and Director of Admissions. Both Dr. DuBridge and Professor Jones addressed the group with the latter outlining in some detail the type of well-rounded student in which the Institute is most interested. The Institute's policy of screening applicants for initiative and personality as well as scholastic accomplishments was explained. It was pointed out that the student with the highest grades is not necessarily the student we want. A student with a lower scholastic standing but with other qualities which the Institute feels are necessary for good engineering and scientific leadership, may well be the more desirable prospect.

As a result of this meeting the Institute received a number of requests from individual schools for similar talks. Every effort was made to comply with each request by sending as a speaker a member of the Admissions Committee or some other qualified member of the faculty.

While this sort of direct contact work can often be done by the Institute itself in cooperation with the alumni in the Los Angeles area, it seldom can in distant sections of the country, and here alumni are the only ones qualified to do the job.

A swing across country this spring by Professor Jones for the purpose of interviewing prospective students, and another trip through northern California, Oregon and Washington by Professor Foster Strong, associate dean for freshmen and a member of the Admissions Committee, enabled them to present such a program to several alumni chapters. They both reported an enthusiastic reception.



L. W. Jones

Professor Jones met with alumni chapters in Chicago, New York, Boston, Schenectady, Philadelphia and Pittsburgh. To each he explained, as he did to the Los Angeles principals, the type of student CalTech desires. He also outlined ways in which alumni chapters could be of assistance in securing such students or helping the Admissions Committee in screening them. He asked for alumni assistance in furnishing a location for interviewing applicants by

members of the Admissions Committee in April or early May; for their assistance in supervision of freshmen entrance exams each March and, as previously explained, for their assistance in making contacts with high schools so as to get the best possible applicants.

His report on alumni offers for assistance in this program was most enthusiastic. "At all meetings there was expressed a sincere desire to be of help in these matters," Jones said. He also added that alumni express a very definite desire for more news of CalTech, its faculty and alumni. This is a request on which alumni can expect specific Institute action during the coming year.

In connection with these meetings, E. T. Groat '22, handled arrangements for the Chicago meeting. Arrangements at Schenectady were handled by Robert Moore '42; at Boston by Frank Jewett, Jr. '38; at New York by Evan Johnson '38, chapter president, and R. K. Pond '39, secretary; at Philadelphia by A. J. Larrecq '29. George Clapp '26 arranged for interviewing quarters for Professor Jones at Philadelphia. While an official meeting was not held at Pittsburgh, Professor Jones was met by three alumni who took him to dinner and, as he puts it, were "most hospitable." He also reported that he wishes to express his regret at not getting a chance to see R. H. Lockett '44, J. D. Corbine '34 and D. R. Lockett at Schenectady, who left a note saying that they had attempted to contact him.

Professor Strong's only alumni meeting this year on his interviewing trip to the Pacific Northwest was with the San Francisco chapter. His report of that meeting is equally enthusiastic. After first discussing with alumni Institute expansion plans, particularly as concerned with development of Tournament Park as a students' activities and athletic center and additional expansion plans for the campus proper, he, too, presented the Admission Committee's policy of seeking well rounded students as previously stated by Professor Jones.

His report brought immediate action. With Mau-

(Continued on page 8)

\*Director of Public Relations, C.I.T.

# C. I. T. NEWS

## NUMEROUS ENDOWMENTS NOTED

INCOME FROM \$4,777,000 in endowment gifts to the California Institute of Technology which have been made, or have matured, this past year will enable the Institute to keep its deficit for current operations for this year to a manageable size, Dr. Lee A. DuBridge announced at Commencement exercises. Dr. DuBridge said that in addition to this amount the Institute had also received gifts earmarked for current operating expenses, specific research projects, scholarships and fellowships totaling \$295,712. These gifts were separate from those for endowment.

Endowment gifts were as follows:

Bequest of John H. Eagle who left four-fifths of his residuary estate to the Institute, settlement of which is nearly completed, and which will yield approximately \$3,500,000.

Bequest of Henry M. Robinson of an endowment fund for work in Astrophysics amounting to \$488,000.

Bequest of Mrs. Louise E. Kerckhoff for a William G. and Louise E. Kerckhoff Endowment Fund for work in biology, \$400,000.

Bequest of Mrs. David Lindley Murray to found an educational and scholarship fund in honor of her husband, \$310,000.

Gift of Frederick Roeser to establish a loan scholarship and research fund, \$59,000.

Gift by Industrial Relations Counsellors of a fund collected from various industries to establish a Clarence J. Hicks Memorial Fellowship Fund in Industrial Relations, \$20,000.

Gifts for other than endowment were as follows:

A national Foundation for Infantile Paralysis grant of \$300,000 to be paid at the rate of \$60,000 annually for five years for research in fields of biology and biochemistry.

A Rockefeller Foundation grant for work in chemistry and biology, \$50,000.

Additional miscellaneous gifts for work in biology, \$45,362.

Gifts and grants from 13 different industrial corporations for fellowships and research projects totaling \$50,350.

Subscriptions by a number of industrial corporations and some labor unions for support of teaching and research in industrial relations, \$20,000.

Other gifts during the year, \$70,000.

In addition to these gifts, \$250,000 in additional money was given by the Rockefeller Foundation for completion of the Palomar Mountain 200-inch telescope.

## GEOLOGISTS CHECK ACTIVE FAULT

AN ACTIVE FAULT, discovered in 1913 by Dr. J. P. Buwalda, Chairman of the California Institute of Technology division of Geology, broke the ground on the Mojave Desert when the whole of Southern California was shaken by an earthquake on April 10. The break, the edges of which moved about three inches, has been traced for a total distance of three miles along the face of bluffs and westward over the desert, the Institute seismologists said.

This is in loose material and the motion of the underlying rocks may have been much greater.

The fault, which Dr. Buwalda described in his first published paper while a graduate student at the University of California, is about 30 miles east of Barstow and less than two miles south of the Union Pacific lines and Highway 91. It follows a line of steep bluffs which face south to the Mojave River.

The nearest houses to the fault are at Manix and Field stations, and were seriously damaged by the earthquake. No one was injured, however. Further west near the river two adobe ranch houses were cracked, the exploring party reported.

Investigation of the quake has been under the direction of Dr. C. F. Richter, professor of seismology at the CalTech Seismological Laboratory. The first of three expeditions to the quake center was dispatched by J. M. Nordquist of the Laboratory who first determined the source of the quake during the temporary absence of Dr. Richter.

From records at the Seismological Laboratory and auxiliary stations, it was indicated that the earthquake had originated in this fault, Dr. Richter said. A group of CalTech students, S. T. Martner, M.E. Denson, and B. F. Howell, investigated and found the effects exactly where they were expected. Two later expeditions have been sent out and Dr. Buwalda has also been over the ground and is preparing a report on his findings.

Special scientific credit goes to F. E. Lehner and Ralph Gilman of the Seismological Laboratory, Dr. Richter said, for setting up and operating temporary seismological stations and participating in other field work during the investigation.

## NO STUDENT TOURS THIS SUMMER

STUDENT GUIDED tours at the California Institute will be discontinued for the summer vacation period. It is expected that the service will be available again on October 3. The Optical Shop in which the mirror for the 200" Palomar Mountain telescope is being polished will continue to be open to the public between 9 a.m. and 4 p.m. Monday through Friday.

## STOCK TO HEAD GEOLOGY

DR. JOHN P. BUWALDA, professor of geology, will retire as chairman of the division of geology at the Institute July 1, and Dr. Chester Stock, professor of paleontology, will assume the duties of head of that division. Dr. Buwalda asked to be allowed to retire in order to complete a number of research projects in structural geology upon which he has been working for some time. He will continue in his capacity as professor of geology.

President DuBridge in announcing Dr. Buwalda's retirement said, "The California Institute owes a great debt of gratitude to Professor Buwalda for his long years of important service with the Institute. He is primarily responsible for building the Division of Geological Sciences from nothing up to one of the finest geological centers in the country. For twenty-one years he has been leader of this division, and though the Institute will sorely miss him in this post, we feel that he deserves a respite from administrative duties in order that he may give more time to the completion of several important research studies."





Dr. Linus Pauling, chairman of the Division of Chemistry, received a Doctor of Science degree from Cambridge University, Cambridge, England, June 12. Dr. Pauling, shown above enroute to England with his wife, is attending a number of scientific meetings while in Europe. Before returning to this country late in July, the Paulings will visit Norway and Sweden.

### ASSOCIATES HEAR ATOMIC ENERGY TALKS

THREE DINNER meetings in May presented to Institute Associates a symposium on atomic energy. Held in the Athenaeum, these meetings gave members of the California Institute Associates, an organization which has as its object the aid and advancement of the welfare of CalTech, an opportunity to hear first-hand information from six men who can be considered authoritative in this field.

The first meeting featured "Nuclear Physics, the Basis of Atomic Energy." Dr. W. A. Fowler, professor of physics, and Dr. R. F. Christie, associate professor of theoretical physics discussed this theoretical phase of the problem.

"The Control of Atomic Energy: United States' Problem" was presented at the second meeting by President Lee A. DuBridge and Dr. J. Robert Oppenheimer, professor of theoretical physics. Dr. DuBridge, who directed the Government's huge Radiation Laboratory project at M.I.T. during the war, is a member of the General Advisory Committee of the United States Atomic Energy Committee. Dr. Oppenheimer was director of the Laboratory at Los Alamos, New Mexico, where the atomic bomb was developed, was a member of the Lilienthal Committee which prepared the Acheson Report, and is now chairman of the committee appointed by the President to advise the United States Atomic Energy Commission.

Dr. R. C. Tolman, CalTech professor of physical chemistry and mathematical physics, and Dr. H. S. Kramers, Nobel Laureate and professor of physics at the University of Leiden, Holland, spoke on the problems of atomic energy control from an international standpoint at the third meeting for Associates. Dr. Tolman is scientific advisor to Bernard Baruch, United States representative on the United Nations Atomic Energy Commission, and Dr. Kramers was the Dutch representative on the Commission and its first representative.

### WATSON NAMED DIVISION CHAIRMAN

E. C. WATSON, professor of physics, was appointed Chairman of the Division of Physics, Mathematics, and Electrical Engineering at the California Institute in May. Professor Watson, who joined the physics faculty in 1919, has been acting chairman of the division which he will now head permanently, since the resignation of Dr. William V. Houston, now president of Rice Institute, Houston, Texas.

Professor Watson served as administrative head of the CalTech rocket project during the war which included not only the design and development of most of the major rockets used by the U. S. armed forces, but also production of over a million rounds of rockets. He was a member of Division 3, National Development and Research Committee from 1941 to 1945.

He is chairman of the Faculty Board and Dean of the Faculty, and a member of numerous campus committees. He is also a member of Phi Beta Kappa, Sigma Xi, and Tau Beta Pi, a fellow of the American Physical Society, American Association for the Advancement of Science, and a member of the American Association of Physics Teachers and History of Science Society.

Professor Watson was an assistant in physics at the University of Chicago before coming to the Institute, and during the first World War did research at the U. S. Submarine Base, New London, Connecticut.

For many years he has supervised the Friday Evening Demonstration Lectures and Teachers Institute Lectures at CalTech.

### Our Alumni Fund

(Continued from page 4)

basic sciences and the humanities to fit them for leadership in the complex world of today and tomorrow. Tech alumni recognize the great advantages of small classes, intimate association with outstanding faculty men, and the academic freedom possibly only in a small school independent of government support and political pressures.

Such schools as CalTech can exist only if those who recognize their worth support them generously. Alumni who support the California Institute of Technology Alumni Association Fund by assisting in the solicitation of funds and by giving what time, effort, and money they themselves can afford to give will benefit the Institute and the social order it serves, the Alumni Association, which will grow in stature as it serves its Alma Mater, and themselves as they become more closely identified with a great and growing institution and a great and growing body of alumni.

## DUBRIDGE SPEAKS AT TECH COMMENCEMENT

THE LARGEST NUMBER of students ever to receive degrees from the California Institute of Technology were graduated at commencement exercises on the CalTech campus Friday, June 13. More than 450 undergraduate and graduate students received degrees.

The commencement address was given by Dr. Lee A. DuBridge, CalTech president, who spoke on "The Responsibility of the Scientist."

As a part of commencement week activities a garden party honoring members of the class of 1947 was held Thursday afternoon from 4 to 6 p.m. at the Athenaeum with the president and board of trustees as hosts. Attending the reception in addition to graduating seniors, their families and friends, were associates of the institute, faculty members and special guests.

## M.E.'S CLARK REPORTS TESTING PROGRAM

DR. D. S. CLARK, associate professor of mechanical engineering, spoke at a meeting of the American Society for Testing Materials at Atlantic City, N. J. He presented a paper on "An Experimental Study of the Propagation of Plastic Deformation Under Conditions of Longitudinal Impact" of which he and Dr. P. E. Duwez of the Jet Propulsion Laboratory were co-authors.

The papers presented the results of a portion of the work done at CalTech in the field of impact studies during the war under governmental research contracts.

## ACADEMY OF SCIENCE PICKS DR. WENT

DR. FRITS W. WENT, professor of plant physiology at the California Institute of Technology, was elected to membership in the National Academy of Sciences, it was announced in May. Election to the National Academy of Sciences, in which membership is limited to outstanding men in that field, is one of the highest honors a scientist can attain.

Dr. Went is particularly well known for his work on plant growth hormones and he is accredited with being the first to advance that phase of plant physiology to the place where it could be dealt with experimentally. His discoveries in the use of plant hormones for rooting of cuttings and in inducing fruit to set have led to wide use by growers. More recently he has been doing extensive work with plants under controlled conditions in CalTech's unique air-conditioned greenhouse in which temperatures, humidity, and light can be accurately regulated.

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## Alumni Help the Admissions Committee

(Continued from page 5)



Foster Strong

rice T. Jones '26 presiding, the chapter agreed to organize an informal speakers' bureau to provide speakers to address high school students and instructors on CalTech. The chapter also voted to set up machinery to take over supervision of freshmen entrance examinations to replace the present system of having such examinations given by high school instructors.

"I enjoyed the visit immensely," Professor Strong reported. "I found the San Francisco alumni most interested in CalTech and actively ready to do things with and for the school. They were very eager to find out ways in which they could help C.I.T. develop. I would strongly recommend that more staff members going north stop in on the San Francisco alumni. The alumni will appreciate the contact and the staff members will gain in their own enthusiasm and pride in CalTech from the contact."

These are examples of projects that are now underway or will be started during the coming year. It should also be pointed out that during the past six months more than 400 students from 14 different secondary schools visited CalTech and were taken for a tour of the campus and its facilities.

Special attention was given to such visiting groups and every effort was made not only to show them as much of the campus, its laboratories and other facilities as possible, but when possible they were addressed by some member of the Admissions Committee or other faculty member as well. Dates for visits were arranged as far in advance as possible and, when requested, it was also arranged for such groups to obtain meals at the cafeteria.

These are examples of what has been done during the past year. Both alumni and the Institute have initiated them. They have all been instrumental in getting the "CalTech story" to prospective students and their instructors. It is a good beginning and close cooperation between the school and alumni can well result in an outstanding job being done in the future.

## ARMY STUDENTS TAKE REFRESHER THIS SUMMER

A GROUP of 15 U. S. Army Corps of Engineers officers will take special refresher and graduate courses in Civil Engineering at the California Institute of Technology this summer. Study will include work in mathematics, mechanics, and hydraulics.

At the present time Army and Navy personnel totalling 81 officers are taking both undergraduate and graduate work in civil, mechanical, and aeronautical engineering at CalTech.

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# ALUMNI NEWS

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5800 Buena Vista Ave., Oakland 11, California	
Standard Oil Refinery, Richmond, California	

The San Francisco Chapter meets weekly for lunch at the Fraternity Club, 345 Bush Street, on Mondays.

## MORT JACOBS '28 NEW ALUMNI PRESIDENT

AT THE ANNUAL banquet of the Association held at the University Club June 13, retiring president Allen Laws '26 handed the gavel to Mort Jacobs '28 and was inducted into the "Exhausted Order of Past Presidents."

Institute President DuBridge spoke briefly on some of the recent developments at CalTech. A student infirmary was described in the operation of which mothers of Tech students are taking an active part. He also told of the plan of the Institute to build, as the result of an undergraduate suggestion, an amphitheater on the ground adjacent to the astrophysics optical laboratory on the north. This resulted from the students' desire for a place where they might all assemble at one time. It is the intention of the Institute to complete this amphitheater this summer.

Dr. DuBridge also spoke of and thanked the alumni for the aid given in conducting interviews with and examinations of prospective students. The alumni have greatly aided the Institute staff in selecting men of the highest caliber. As an indication of the size of the task, Dr. DuBridge stated that 1100 stu-

dents had applied for admission, 790 were examined, and finally 180 were selected, this latter number representing expansion from the pre-war class size of 160.

Howard Lewis told of the Alumni Fund which is discussed elsewhere in this issue and handed Dr. DuBridge a check for over \$1500 as the initial payment.

Speaker of the evening, Dr. John K. Morley, was introduced by program chairman Fred Schell '27.

As an American correspondent in London, Paris, Rome, Moscow and Berlin, Dr. Morley witnessed the on-the-spot intrigues, murder and blackmail that swept Hitler, Mussolini and Laval to ruthless power and World War II. Enlisting as a private the day after "Pearl Harbor" he rose to the rank of colonel in charge of an intelligence and security unit and was later appointed director of a concentrated campaign against spies, saboteurs and careless-talking civilians.

Dr. Morley's speech is reported below.

President Jacobs keynoted the next year's Association activities with optimism and devotion to the tasks of making the Association more useful to alumni and to the Institute, emphasizing the job ahead of us in the form of the Alumni Fund.

## ALUMNI MEETING SPEAKER PESSIMISTIC

**S**PEAKING AT THE Annual Alumni Banquet at the University Club in Los Angeles on the evening of June 13, Dr. John Kenfield Morley cited several examples from history to substantiate his statement that wars cannot be prevented, because they are the result of selfishness, a characteristic of mankind. Recent aggressions by Russia in Europe and Asia, just as those by Germany in Europe at the beginning of World War II and by Japan at Pearl Harbor, are only the results of decisions made earlier because facts indicated to certain selfish men that the risks involved were not too great. Actually, the entry of the United States into World War II was not the result of a decision by Congress on December 8, 1941; our entry was the result of a decision made in Tokyo many months earlier.

The United States cannot stop wars, but by being sufficiently strong can discourage aggression against democratic countries.

The things that we, as intelligent Americans, must do to discourage any nation from aggression against the United States were summed up by Dr. Morley under five headings, as follows:

First: We must avoid any policy of appeasement toward any friendly or rival nation. Secretary Byrnes found that a firm, outspoken stand made much more progress than mild civility toward Molotov in the conference of foreign ministers at Luxembourg Palace. Russia is in no position to wage aggressive warfare, but is perpetrating an enormous bluff. This was shown by the adjournment of the Luxembourg conference at Russia's request just after Secretary Byrnes spoke out against Molotov's attitude. We must also insist that Britain act fairly and according to promise in Palestine and in India.

Second: Our State Department should be strengthened by the creation of a number of schools of statesmanship throughout the nation and the selection of suitable men to be trained in them. At present, many of the men who represent the United States in foreign nations are tyros at international politics and are woefully lacking in the training their responsibilities demand.

Third: Mr. Molotov once told Dr. Morley that the one thing which really made the United States great was the 1,850,000 boys and girls in the nation's colleges. There is considerable reason for agreement with Molotov's statement, and it is time that the democracies seriously try to defend their schools against undermining influences. Because of low pay, thousands of teachers have quit the important educational work for which they prepared and have taken up much less exacting jobs in industry and other fields, with consequent weakening of the schools which make democracies great.

Fourth: The United States must close its door partially to foreign agents who now are allowed to enter so freely. At the time of the United Nations Conference at San Francisco, Russia asked for 750 visas for representatives and aides. The visas were sent by special delivery and were received within a few days. Permanent residents were removed from many San Francisco hotels to make room for foreign delegates and staffs. Today, over 600 of those 750 Russians are still in the United States on extended visas.

By contrast, when the United States asked for 135 visas for representatives and staffs for the Moscow Conference, these had not been received many weeks later when it was nearly time for Secretary Marshall to leave for Moscow. Finally, after being delayed by all devices possible, 37 visas were received, with apologies based on the statement that hotel accommodations were already in use.

Finally: We must make democracy work in the United States. We must achieve racial and religious equality. We must insist always on free press and free speech. Dr. Morley declared that although Henry A. Wallace is wrong and much of what he has been saying recently clearly shows signs of his never having recovered from the disappointment suffered at the Chicago Democratic Convention in 1944, he should be allowed to talk whenever and wherever he wishes until he brings on himself the discredit he deserves.

Labor monopoly should be limited just as industrial monopoly is curbed by the Sherman Anti-Trust Act. The Taft-Hartley bill should be made law. Politics and lack of clear understanding have caused some men in high places to advocate veto of the labor bill.

In concluding, Dr. Morley pointed out a tendency of persons who are so sympathetic toward communism that they injure our democracy. If he is a communist, a supporter of Russia, or a stooge of Russia, a man will nearly always take the contrary side in a discussion in which the free enterprise system of America is being defended. In Dr. Morley's experience in the U. S. Intelligence Service, this test was used to aid in identifying persons who should be watched for subversive activities. The test can be used by all when it becomes necessary to identify friends and foes of America.

Tech alumni heartily agreed with many of Dr. Morley's points, as shown by spontaneous applause during the talk. Many alumni stayed after the meeting to talk further with Dr. Morley.

## CLASS OF '27 ENTERTAINED ON ANNIVERSARY

**D**R. AND MRS. Ward Foster and Mr. and Mrs. Forrest Lilly entertained members of the class of '27, their wives and friends at the home of Mr. and Mrs. Foster in Eagle Rock, Sunday afternoon, June 8.

Present were: Dr. and Mrs. Carl D. Anderson, Mr. and Mrs. Henry P. Anderson, Mr. and Mrs. John G. Case, Mr. and Mrs. Raymond E. Cox, Mr. and Mrs. Richard M. Dodge, Mr. and Mrs. Harry K. Farrar, Mr. and Mrs. Frank S. Hale, Mr. and Mrs. Ray I. Hall, Mr. and Mrs. Clarence L. Haserot, Mr. and Mrs. William H. Krelle, Mr. and Mrs. Benjamin R. Loxley, Mr. and Mrs. Robert M. Moore, Mr. and Mrs. Carrol O. Nordquist, Mr. and Mrs. H. Fred Peterson, Mr. and Mrs. Lee W. Ralston, Mr. and Mrs. Engle F. Randolph, Mr. V. Wayne Rodgers, Mr. and Mrs. F. T. Schell, Mr. and Mrs. John L. Weisel, Mr. and Mrs. Frank H. Weigand, all of the class of '27, and Mr. and Mrs. Morton Jacobs '28, Mr. and Mrs. Clarence Kiech '26, Mr. and Mrs. Robert W. Fulwider '25, Mr. and Mrs. Conrad Scullin '28, and Dr. Russell Otis '20.

## SAN FRANCISCO CHAPTER ATTENDS BARBECUE

**O**N MAY 24, the San Francisco Chapter was invited to a barbecue at the Peninsula home of Don and Ann Nichols. About 30 alumni with their wives and girl friends began arriving at 2 p. m. for an afternoon of badminton, ping pong, cards or chatting over a cool drink. By 6 p. m. the party was pretty well gathered around the barbecue pit and the air was filled with odors of sizzling steaks, hot coffee and other food.

After supper, M. M. Barnes and D. W. Keech with guitar and banjo led a lively session of community singing. By 10 o'clock most guests were on their way home after a fine party.

The San Francisco Chapter extends its sincere thanks to Mr. and Mrs. D. S. Nichols for providing another happy and memorable chapter party.

Among those present were: R. E. Alderman '23, M. A. Baldwin '27, M. M. Barnes '21, K. R. Birge, R. B. Bowman '26, Leo Brewer '40, Louis Davy, M. Dazey, M. Edwards '26, L. H. Erb '22, R. G. Folsom '28, G. P. Foster '40, J. Garland '45, J. J. Halloran '35, J. C. Harper '40, H. P. Henderson '26, L. P. Henderson '25, K. W. Johnson '43, M. T. Jones '26, R. P. Jones '35, D. W. Keech '26, C. G. McGee, J. F. Mayer '40, J. Otis '43, M. T. Partch, F. B. Stitt '36, T. Vermeulen '36, C. Wagner, W. A. Wickett '37, J. N. Wilson '39.

## FELLOWSHIP WINNER

**F**RED ADLER, University of California graduate in electrical engineering and currently with the General Electric Company, has been awarded a Charles A. Coffin foundation fellowship for study beginning next fall at the California Institute of Technology.

A native of Czechoslovakia, Adler attended high school in Switzerland. A naturalized citizen of this country, he attended the University of California at Los Angeles in 1942 and 1943, and was graduated from the University of California at Berkeley in 1945, going from there to the General Electric Company.

## PERSONALS

1915

RAYMOND O. CATLAND is now with the Union Twist Drill Company, Athol, Massachusetts, working on the development of new carbide tools and as an engineer on special assignments. From January 1944 to December 1946, Mr. Catland was in charge of the W.P.B. project for the study of carbide milling at M.I.T. Approximately \$350,000 was spent by the project to determine the fundamental factors involved in milling steel and dural with carbide tipped tools. Previous to that, he was with the Engineering Department of Lockheed and Vega Aircraft Companies, where he was responsible for much of the early development of carbide milling.

1917

The class of '17 was represented at the annual banquet by three members, A. KENSEY, J. P. YOUTZ, and R. T. RICHARDS on the occasion of the thirtieth reunion of the class.

1922

Members of the class of '22 celebrating their twenty-fifth reunion at the annual banquet walked off with the honors for percentage representation. Thirty-three members of this class attended. Of a class of 68, seven of whom are deceased, 33 represents a fine record. Those who came the farthest to attend the meeting were: ED GROAT, Chicago; HAROLD OGDEN, Erie, Pa.; W. F. WILSON, Houston; H. G. VESPER and L. H. ERB, San Francisco.

JAY J. DE VOE was appointed Chief Fire Engineer of the Founders Fire & Marine Insurance Co. For many years he was with the Board of Fire Underwriters of the Pacific and served with the U. S. Army Signal Corps during the war.

1923

ROBERT J. SCHONBORN was married recently to Miss Helen Simpson in Berkeley, Calif.

1924

HOWARD MERLIN WINEGARDEN, who received his B.S. in chemistry in 1924, is now vice-president for manufacturing and research of the Cutter Laboratories in Oakland. He started work with the Laboratories in November, 1923, as a research chemist. In 1929 he became director of research and held that position continuously until January 1, 1946, when he assumed his present position. Two leaves of absence were granted during this period, at which time he returned to the Institute for graduate work. His final degree was the Ph.D. in biochemistry. During the war period Cutter Laboratories expanded several-fold to take care of critical medical supplies which they were in a position to produce. The Research Department was assigned almost 100 per cent to the production of new medical military supplies such as penicillin and human blood products, and was heavily involved in the actual production as well as the development of these. In this manner, Dr. Winegarden became involved in production and took over his present duties. Dr. Winegarden and his wife have two sons, Howard M., twenty, and Winston J., eighteen.

1925

W. S. KINGSBURY has accepted the position of Manager in the Reinforcing Division of the new Los Angeles branch office of Ryerson Certified Steels.

1927

The class of '27 was represented by 16 members: TED COMBS, having come from Portland for the reunion, had the honors for having traveled farthest for the reunion.

1928

EDWIN M. MC MILLAN was elected to the National Academy of Sciences for the work he did on the atomic bomb.

1929

WILLIAM H. MOHR is the proud father of a young daughter, Joan Marie, who was born in Los Angeles on May 15, 1947.

JOHN B. STURGESS was married to Miss Mary Jane Campbell on June 7, 1947 at St. Luke's Church of the Mountains, in La Crescenta, California.

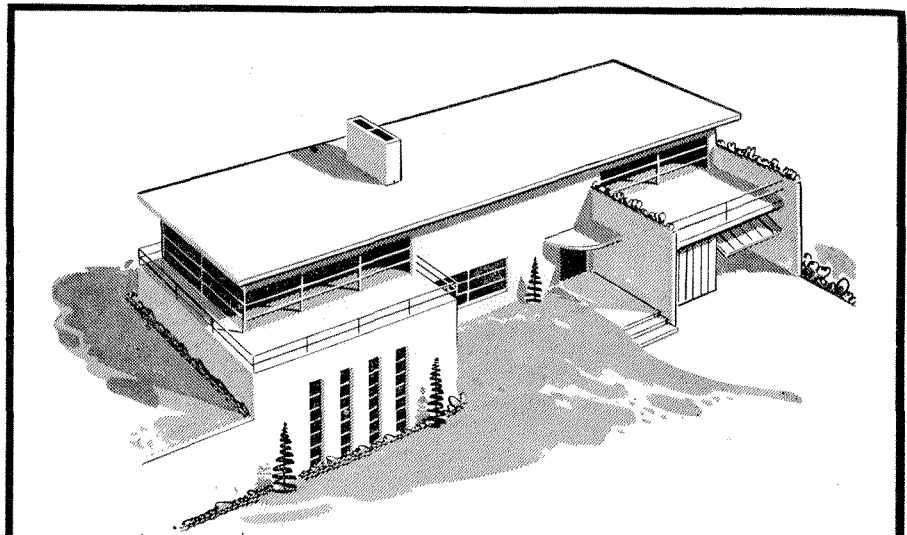
1931

CHARLES K. LEWIS, M.S. '32, is with the Morrison-Knudsen Co., serving as Office Engineer in the construction of a fourteen mile section of the large Friant-Kern Canal. Previously, he had been with the Glenn Martin Co. plant at Omaha, in an executive capacity.

1932

JAMES BONNER, Ph.D. '34, is Professor of Biology at CalTech. He was married in 1939 to Dr. Harriet Rees.

THOMAS D. OULTON is with the Filtrrol Corporation in Los Angeles as a research chemist. His present work consists of fundamental research on catalyst activity, surface area, pore size, and distribution and other absorption problems. The general problem is that



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of gathering data on cracking catalysts for petroleum. Tom is married and has one daughter, Hilary Lorraine, going on four. He plans to do graduate work at U.S.C. in the near future for a Ph.D. in Physical Chemistry.

ROBERT V. CAREY has taken a position with the Eng-Skell Company of Los Angeles doing design and sales of food-handling machinery and store equipment.

NINETEEN members of the class of '32 attended the annual banquet on June 13 on the occasion of the fifteenth annual reunion.

#### 1934

MARSTON C. SARGENT is assistant professor of oceanography at the Scripps Institute of Oceanography at La Jolla, Calif. He was released from the Navy in November, 1946, with the rank of Lt. commander. His last duty was taking part in an oceanographic survey of the Northern Marshall Islands in connection with Operation Crossroads. At present he is engaged in a study of ecology of nearby shallow water areas.

CHARLES L. SCHNEIDER is at present in Kumamoto, Kyusho, Japan, as an army surgeon. He plans, on his return, to continue research on a placental toxin, possibly related to Toxemia of Pregnancy in connection with a residency in Obstetrics and Gynecology. Before going overseas with the Army, Charles was assistant resident in Surgery at the Henry Ford Hospital in Detroit.

#### 1935

HORACE W. DAVENPORT, Ph.D. '39, is now professor and head of the Department of Physiology at the University of Utah School of Medicine in Salt Lake City. Previously he was instructor in physiology at the Harvard Medical School.

DR. ARTHUR E. ENGELDER is a member of the Physicians and Surgeons Staff at Morenci Hospital, Phelps Dodge Corp., Morenci, Arizona. After release from the Army Medical Corps as a Major, Art did postgraduate work in pathology at Duke University Hospital, Durham, North Carolina. His M.D. degree is from Johns Hopkins. Morenci, Arizona, is the site of one of the largest open pit copper mines in this country. Phelps Dodge has the pit, concentrator, and smelter in a town of about 16,000. Among his other activities, Art has worked on four research projects related to medicine, all for patent purposes.

DR. LAURENCE J. STUPPY has been practicing in internal medicine and cardiology with Dr. Henry H. Lissner in Los Angeles since his release from active duty as a major in the Army Medical Corps late in 1945. Larry was married in 1941 to Miss Mary Lissner. The Stuppy's have three children, Henry L., five, Laurence J. II, two-and-a-half, and Mary Laurie, four months.

ROBERT C. WARNER is assistant professor of chemistry at New York University, College of Medicine. Formerly he was with the U. S. Department of Agriculture at the Eastern Regional Laboratory in Philadelphia, as a chemist. Bob has been married since 1936, and has two children, Peter and Caroline, five and two.

#### 1936

WILLIAM D. HUMASON is supervisor of soap processing for Proctor and Gamble Co. in Long Beach. Bill was married in 1938 to the former Ruth Petty, and has a daughter, Ann, born in 1942.

WILLIAM L. MCRARY, M.S. '38, Ph.D. '40, who, during the war was an associate physiologist for the U. S. Department of Agriculture working on the Guayule Research Project at Salinas, Calif., has been recently appointed assistant professor of chemistry at the University of California, Santa Barbara. Bill was recently the recipient of a research grant for investigations of the dehydrogenase systems in the malaria parasite. He was married in 1940 to Miss Lauretta Smith of Los Angeles and has one daughter, Linda Lee, five.

BRADLEY T. SCHEER is now assistant professor of biochemistry at U.S.C. Prior to 1945 he was an instructor in biology at the Institute. During 1945-46 he was in charge of a nutrition research project sponsored by the Army Quartermaster Department. More recently he has returned to his major interest in comparative biochemistry. Brad has in progress work on the biochemistry of fertilization and the carotenoid pigments of echinoderms. He plans to extend the latter to include an investigation of vitamin A and related substances in invertebrates. He has recently completed a textbook, *Comparative Physiology*, which will be published by John Wiley and Sons some time this year. Brad was married in 1936 to Miss Marlin Ann Ray, who has collaborated with him in the preparation of several publications in the field of his interest.

#### 1937

THE CLASS of '37 was represented at its tenth reunion at the annual banquet by only six members. These men, however, were unchallenged when they claimed the record number of children with an average of three per member.

EDWARD A. LASHER, 1936-37 graduate student, former research chemist at the California Flaxseed Products Co., is now research head and technical director of the Specialty Resins Co. of Lynwood, California. Married in 1938 to Miss Alma Galenson, Ed has a son, Robert Samuel, almost eight, and a daughter, Lenore Marie, four. He is taking work at U.C.L.A. toward a Ph.D. in Chemistry.

#### 1938

JOHN C. LILLY received his M.D. at the University of Pennsylvania in 1942. During the war he worked on high altitude problems in aviation medicine and physiology, instrument development for use in respiratory function analysis at high altitude with oxygen equipment, and explosive decompression of pressurized aircraft which included the physiology and pathology of personnel and the rate of pressure changes. Since July 1946, Jack has "reconverted" to neurophysiology, electrical signs of mammalian cortical activity, and analysis of function on "pattern" basis. He is with the E. R. Johnson Foundation at the Hospital of the University of Pennsylvania in Philadelphia, as an associate in biophysics.

#### 1939

FREDERICK T. ADDICOTT, Ph.D., is assistant professor of botany at U.C.L.A. He was formerly acting in a similar capacity at Santa Barbara College. Fred, who was recently elected a fellow in the A.A.A.S., has had four children since he was married in 1935: Donald, seven; Jean, five; John, three; and David, one.

NORMAN H. HOROWITZ, Ph.D., is working with *Neurospora* in the field of chemical genetics. He was recently appointed associate professor of biology at the Institute.

OLE LILLELAND, M.S. '39, teaches chemistry at Pasadena Junior College. He is a member of the Board of Directors for the Southern Section of California Teachers' Association for 1946-47, and has been elected to the State Council of the Association for 1947-49. Ole and his wife have one son, Eric Thomas, four and a half.

#### 1940

DAVID M. BONNER, Ph.D., has recently accepted the position of research associate (assistant professor) in microbiology at the Osborn Botanical Laboratory, Yale University. Dr. Bonner was married in 1941 to Miss Miriam Thatcher, shortly before becoming a research associate at Stanford.

SIDNEY W. FOX, Ph.D., is associate professor in the Department of Chemistry, and research associate professor at the Agricultural Station, at Iowa State College. His research program includes chemical studies of the biological manifestations of protein. Work is under way on the following problems: structure of proteinaceous antibiotics, the biological mechanism of protein synthesis in bacteria and in antibodies, analysis of corn protein, chemical structure of hereditary material, and the formation and inhibition of plant tumors. Sid is also beginning a study of biosynthesis of nitrogen compounds in corn and bacteria. Chemical studies in his group include synthesis of tryptophan and lysine (for supplementation of corn), synthesis of penicillin, a new general method for peptides, and simple antibacterial d-amino acid derivatives.

This work is supported by Corn Industries Research Foundation, Iowa State College Industrial Research Foundation, and funds for Iowa Agricultural Experimentation. A \$4500 fellowship from the Upjohn Co. for fundamental research began this year, and Dr. Shi-Wei Loo '45, research associate, and Dr. Fox have recently received news of a grant of \$7800 for the first year of work in chemistry of plant tumors, from the National Cancer Institute. This grant is in part for application of d-amino acid derivatives to tumors. Dr. Loo has already opened this latter study into new biological and chemical areas.

Dr. Fox married the former Raia Joffe in 1937. There are now three little Foxes: Jack Lawrence, six; Ronald Forrest, four; and Thomas Oren, one and one-half.

HARLAN K. PRATT, special graduate student in 1940-41, is instructor in truck crops and junior plant physiologist in the Experiment Station of the University of California Agricultural School at Davis. Harlan is teaching vegetable physiology: the physiological principles involved in the production, transportation, and storage of vegetables; and doing research in the storage and transit of vegetables, especially with regard to respiration and the production of volatile substances other than carbon dioxide. He was married to the former Anna Marie Martin in 1939. The Pratts have a one-year-old son, Robert Martin.

JOHN L. WEBB, Ph.D., is assistant professor of pharmacology at the U.S.C. Medical School. John was married in 1939 to Miss Julin M. Stucky.

1941

HAROLD K. FINK, M.S. '41, practices as a psychotherapist in New York. His wife, Charlotte, a Smith Graduate with an M.A. from Teachers' College, Columbia, is a consulting psychologist and Rorschach examiner. She works with him and will do so for a year or so before starting on her Ph.D. In addition to his consulting practices, Dr. Fink is teaching 18 hours a week at Pace Institute, giving a course in Principles of Psychology and Applied Psychology for Business Men and Women. Since his discharge from the Naval Reserve as an ensign in the hospital Corps (Neuropsychiatric Service), Harold has been doing post-doctoral work at the William Alanson White Institute of Psychiatry in New York. Last February he was recommended and voted a life member of the New York Academy of Sciences.

1942

HARLAN R. BARBER, graduate student from 1940 to 1942, is now Chemist for the Brogdex Company in Pomona, California. A former junior chemist in the Bureau of Chemistry at the California State Department of Agriculture, Harlan was married in September 1942 to Miss Rose Nolte. They now have two boys, Wayne Stanley, three, and Larry Edward, one and one-half. While in Oakland, Harlan was Cubmaster of Pack 124. His recent interests include membership in the American Chemical Society and activities on the educational committee of the Valley Consumers, Inc., local co-op.

1943

JOHN E. CUSHING, JR., Ph.D., has been an instructor in biology at Johns Hopkins University since leaving CalTech. His research at present is the continuation of work started at the Institute on genetic changes associated with the adaptation of *Neurospora* to sulfonamides, as well as work on the chemical production of mutations. Married to Miss Lucille Benner in 1943, John has a daughter, Polly, 19 months.

1944

BARBARIN ARREGUIN-LOZANO, Ph.D. '46, is now doing Guayule research at the Kerckhoff Laboratories. He was technical assistant in Mexico for a year, at which time he delivered several lectures at the University of Guanajuato in Guanajuato State.

GRANT L. BENSON, JR., has been attending U.S.C. Medical School since March 1944. After graduation this June, Grant will intern at the Los Angeles County General Hospital.

1945

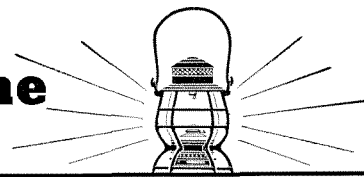
WALTER B. DANGLIKER, Ph.D., is doing research on the components of human erythrocytes in the Chemistry Department of the University of California. Walt was formerly a research associate at C.I.T. He has been married since December 1943 to the former Beverly Ann Bullock of San Francisco.

SHI-WEI LOO, Ph.D., is working with SIDNEY W. FOX '40, as a research associate in the Chemistry Department at Iowa State College, Ames, Iowa.

1946

HAROLD L. ENGEL, ex '46, has been attending U.S.C. Medical School since his discharge from the Army as an infantry sergeant.

# The Main Line



JUNE, 1947

A number of people have asked us how it looks this summer for train reservations, hotel accommodations, etc. This is the situation as nearly as we can size it up:

The best-known hotels and resorts will probably be filled to capacity, especially during school vacation season. Reservations at smaller resorts will be easier to get, and the smaller hotels in big cities can generally come through with rooms.

If you can take your vacation in the fall after schools re-open, accommodations will be much more plentiful then. In many places (San Francisco, for instance) Indian Summer brings the best weather of the year.

In all cases, it's best to make reservations well in advance.

Travel in standard Pullmans will be heavy this summer.

Space in tourist Pullmans should be more plentiful. These are not as fancy as standard Pullmans, but they're clean, comfortable and air-conditioned, with regulation berths and porter service. There's a considerable saving in money, too.

We have tourist Pullman service between many cities on the Coast, and as far east as Chicago, St. Louis and New Orleans.

You might want to consider traveling in chair cars. (Some of our nicest people do). Many of our fastest trains carry chair cars: the Streamliner *City of San Francisco* and *San Francisco Overland* from San Francisco to Chicago, the *Golden State* and *Imperial* from Los Angeles to Chicago, *Sunset Limited* from Los Angeles to New Orleans, the *Daylights* between San Francisco and Los Angeles and the *Beaver* between Portland and San Francisco. Seats may be reserved in advance on many of these trains.

Some people, we find, travel by chair car in the daytime, stop over and spend the night in a hotel, then resume their chair car trip next day.

## Children free

One advantage of the train that's often overlooked is the saving when you travel with children. Children

under 5 ride free; from 5 to and including 11, half fare. Each child gets a seat, too, even when riding free. Children must, of course, be accompanied by an adult.

## Shasta Dam Tour

If your trip takes you between San Francisco and Portland on our Shasta Route, stop off at Redding and see Shasta Dam. Gray Line tours daily from now until September 30th.

Morning tour leaves Redding 8:45 a.m., includes three-hour cruise around Shasta Lake, trip to top of Shasta Dam (second highest in the world). You get back to Redding at 1:25 p.m.

Cost is only \$6.04 including transportation tax. Half fare for children under 12.

## Carlsbad Caverns Tour

If your train trip takes you by way of El Paso, we advise you to stop over for a day and see Carlsbad Caverns National Park. You will never forget your visit to this underground fairyland.

The tour leaves El Paso at 8:30 a.m., includes walk down into the caverns where you see Giant Dome, Rock of Ages, etc. You come up by elevator. Motor coach returns you to El Paso at 7:30 p.m.

All-expense tour (motor coach transportation to Caverns and back, Government entrance fee, lunch in Caverns) costs \$10.63 for adults, including transportation tax; \$9.63 for children from 12 to 17; \$4.82 for children 5 to 12.

## Redwood Empire Tour

Ever seen the Redwoods? If you're making a roundtrip by train between San Francisco-Portland, you can include the Redwood Empire Tour one way for only \$2.65 extra.

This tour takes you between San Francisco and Eureka by overnight Northwestern Pacific train, Eureka to Grants Pass by motor coach through miles of Redwood groves, Grants Pass to Portland by overnight train. Takes less than a day longer than the all-train journey.

—H. K. REYNOLDS

# S·P

The friendly Southern Pacific

Thomas P. Strong  
1791 East Mendocino St.,  
Altadena, Calif.

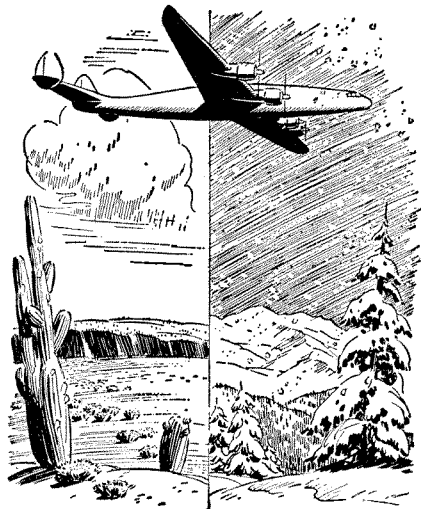
# What's the hardest thing to lubricate?



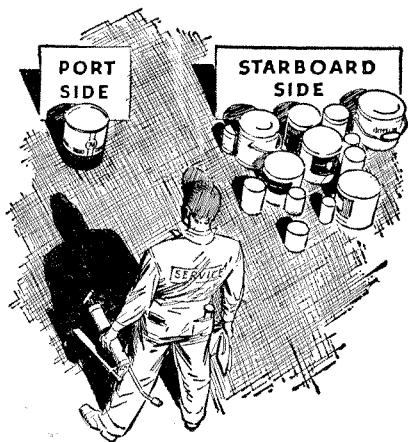
**1. The worst enemies** of grease are heat, cold, water and vibration. Consequently, one of the hardest things to lubricate is an airplane. Until recently, the only answer was to use a number of different greases—heat-resistant, cold-resistant, water-resistant, etc.—and lubricate the plane frequently.



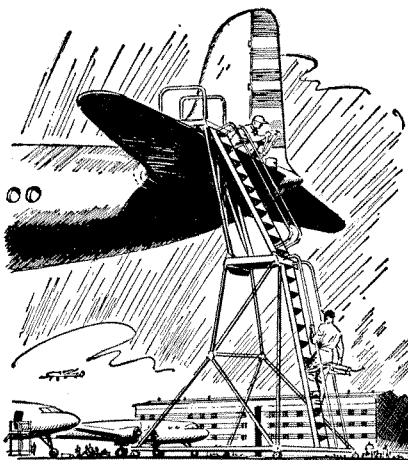
**2. Even then,** airlines had a high replacement-parts problem due to lubrication failure. Knowing this, our Union Oil engineers realized there'd be an excellent market for a grease that would lick the problem. And since we were in *competition*, and wanted business, they set out to find one.



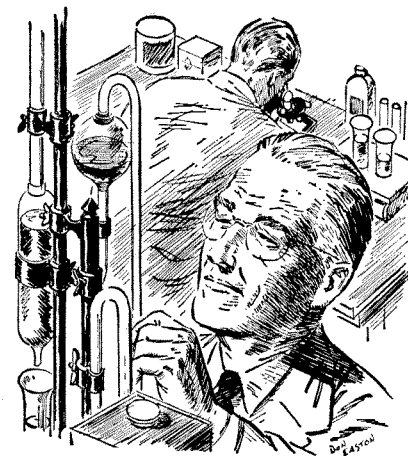
**3. The result** was a strontium base grease we named *Strona*. *Strona* proved to be absolutely insoluble in water. In its two grades it gave maximum protection at any temperature from 300° F. to -40° F. And it would lubricate 90% of the parts on a transport plane—a job which formerly took 8 to 12 different greases.



**4. In the first service test** made with *Strona*, a leading airline lubricated each of its ships on one side with *Strona* and on the other side with regular greases. During the 10-month test, the *Strona*-lubricated sides of their ships went 7 times as long between grease changes as the other sides.



**5. Furthermore,** not one part lubricated with *Strona* showed any sign of breakdown during the entire 10 months—the first time in the line's history that this had happened. As a result, that airline and several others are now using *Strona* almost exclusively.



**6. Naturally we're happy** about this new product. But more important, we believe, are the *economic conditions* that inspired its development. Under anything but the American system of free, *competitive* enterprise we would never have had the *incentive* to put the time and effort we did behind *Strona* or behind the other product research we're continuing to do today.

## UNION OIL COMPANY OF CALIFORNIA

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*This series, sponsored by the people of Union Oil Company, is dedicated to a discussion of how and why American business functions. We hope you'll feel free to send in any suggestions or criticisms you have to offer. Write: The President, Union Oil Company, Union Oil Bldg., Los Angeles 14, Calif.*

AMERICA'S FIFTH FREEDOM IS FREE ENTERPRISE