

THE PRESIDENT'S REPORT

Highlights from Dr. DuBridge's report on research and activities at the Institute in 1955-56

THE ROLE OF CALTECH in strengthening the scientific and technological resources of the nation is always under review. In order to understand it we must first clearly recognize that in any intellectual field—and especially in creative fields—shortages cannot be fully expressed in numbers. One could conceivably double the number of annual graduates bearing the label “engineer”—but if the new recruits were improperly selected and inadequately trained, they would change only the statistics of shortage without in the least speeding up the solution of the nation's engineering problems.

We are dealing, in other words, with a shortage of brains rather than only of bodies. Our problem is not to man an engineering production line in which there must be one drawing board every three feet. Our problem is to foster creative science and technology, to discover more about nature, to create new ideas and to develop them into practical form. One fertile and well-trained mind can do more of such creative work than a hundred mediocre ones.

An especially critical need at present is for more engineers and other applied scientists who have pursued their studies to the doctoral level. It is a paradox that physicists trained in pure science are in great demand in industrial laboratories where engineers would be preferred if men with the research experience represented by the PhD degree were available. Actually, industry may inadvertently profit by bringing in the point of view of the pure scientist; but industry should also help encourage more research training for engineers. It is, of course, tempting for the young BS in engineering to accept one of the dozen or so attractive jobs offered

him. But he himself will be well rewarded in the long run if he takes more advanced work, provided he is qualified for it.

In this connection it should be stated that Caltech is not engaging in the so-called “cooperative” programs whereby a student has an industrial job for 30 or 40 hours a week and tries to pursue graduate studies on the side. Research is a *way of life*—not a series of lectures. Training for research means *living* the research life—all the time. We shall continue to accept, in both graduate and undergraduate divisions, only full-time students. We urge industry not to destroy the essential quality of graduate education by encouraging the notion that it can be done after hours while carrying on a full-time job.

The campus

The Institute was able to make three important moves in its program of “completing the campus” this year. In June 1956 ground was broken for the Eudora Hull Spalding Laboratory of Engineering. This large \$1,500,000 structure will provide desperately needed additional space for chemical and electrical engineering. It enlarges but does not complete our engineering science plant. The financing has been made possible by the oil royalty income from the Sespe Ranch, a part of the estate left by Mrs. Spalding.

A second advance was the receipt of a gift from Mrs. Archibald B. Young to finance the building of a new Student Health Center, to be named in honor of her late husband. The Center will be located on the vacant lot at 1239 Arden Road and will provide expanded and

permanent facilities for medical examination and treatment, and an infirmary of ten beds for light illness or emergency. The Caltech Service League is generously assisting in equipping and furnishing the Center. The location, though just across the street from the main campus, is in a residential area and the Center will conform architecturally to a residential style.

The sudden rise in the fraction of undergraduate students who live outside the commuting area has led to a crisis in dormitory accommodations. We welcome this broadened geographic base, even though it faces us with the sudden necessity of finding funds for at least one, preferably two, more Student Houses. They will cost nearly a half-million dollars each.

Unfortunately, if new Student Houses are constructed on the site now being reserved north of the present Houses, the temporary buildings in which are located certain engineering laboratories, the YMCA, the AFROTC offices and the maintenance shops will have to be removed, thereby necessitating the construction of other new buildings to house these activities. Thus a coherent plan of campus development is required. It is now being worked on. The needs for student housing thus add urgency to our whole program of campus completion, the funding of which will be one of the major tasks in Caltech's history.

Admissions and scholarships

The competition among colleges for the nation's top students is even more earnest, though more restrained, than the struggle for the best athletes.

Caltech is peculiarly fortunate in this respect. We could not ask for a better student body, for by every known test we have one of the very top ones in the country. There were dark days back in the 1930's when it must have been tempting to lower academic standards to increase enrollment. But the standards were maintained; and high standards are bound eventually to attract and challenge the best students. These students are applying in ever larger numbers for admission to Caltech; nearly 1400 applied in 1956 for a freshman class of 180. (Over 300 were actually granted admission to make up for expected withdrawals; other schools wanted them too!) Hence the quality of the Class of 1960 will be a notch higher than any other previous class.

A development of very great importance to the country—and one which had unexpectedly large repercussions on Caltech—was the establishment of the National Merit Scholarships. Some 550 of these scholarships, supported by private funds from foundations and corporations, were awarded on a competitive basis from among 60,000 contestants. The winners may go to any college of their choice with a monetary award based on actual need and costs. Caltech might have expected to be selected by $\frac{1}{2}$ to 1 percent of the winners (we enroll $\frac{1}{30}$ th of 1 percent of the nation's 1956 freshmen). Actually, 20 Merit Scholars have registered here

—which is $3\frac{1}{2}$ percent of all the winners and 5 percent of the men.

By coincidence, the California State Scholarships were inaugurated also this year and 18 of our freshmen and 11 upper classmen have received those awards. We also welcome 5 of the new General Motors Scholars.

All of this has two important consequences. The first is the obvious one that our student body this year will be far better taken care of financially than ever before. Our own funds can be used for needy cases we could not otherwise assist.

A second unforeseen result is that more freshmen than ever before are coming from beyond the Los Angeles commuting area. These new scholarship funds have helped wipe out the economic barrier which previously prevented many residents of distant states from coming here. We are delighted that 40 percent of the members of the entering class in 1956 will be from east of the Rockies, 60 percent from outside California. But we apologize to the scores of students for whom we do not have space in the Student Houses. We shall remedy this defect as soon as funds are available, but even at best we can hardly hope to have new housing ready before early in 1958. By vote of the House residents themselves, 90 of the 370 spaces have been reserved for freshmen, even though many upperclassmen are thus left out.

Industrial Associates

The rising tide of corporation support of higher education is one of the important phenomena of the past decade, and will be a decisive future influence in the financing of American colleges and universities.

Corporate support is not a new thing at Caltech. Ever since the Southern California Edison Company started financing high-voltage research here in 1924, the Institute has received continued support of its research activities from business and industry. The American Petroleum Institute has supported chemical engineering research for 27 years; the aircraft industry has supported aerodynamics research since 1928; the entire program of the Industrial Relations Section has always been supported by corporate contributions.

Industry has supported Caltech because the benefits of doing so have been obvious and relatively immediate.

The new development has been that corporate money no longer requires the direct benefit to the company to be either obvious or immediate. Rather, one might say that the long-run benefits of a program like ours have become so obvious that corporate support has greatly increased.

The chief instrument for encouraging general support of Caltech has been the Industrial Associates program. Thirty-eight companies now subscribe at least \$10,000 a year each for membership in this group. They receive in return the opportunity to keep up to date on our research programs and to participate in important conferences on scientific and engineering subjects.