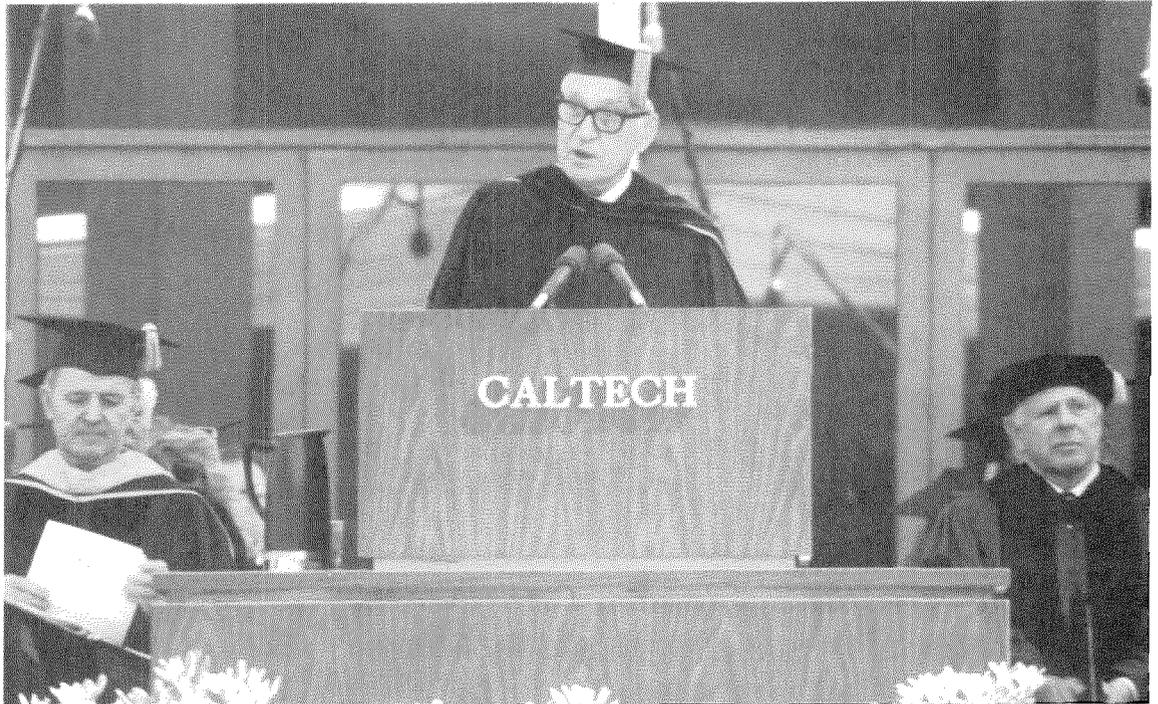


Flanked by Ruben F. Mettler, chairman of the Board of Trustees (left) and President Marvin L. Goldberger, Arnold Beckman speaks to the Class of 1986.



Commencement 1986

Arnold Beckman

Arnold O. Beckman delivered the address at Caltech's 92nd commencement on June 13, 1986. Excerpts from that talk are presented on the following pages.

Beckman did more than just speak. At the end of the ceremonies President Marvin L. Goldberger announced a \$50 million gift from the Arnold and Mabel Beckman Foundation, the largest single gift ever made by that foundation. It will be used to create the Beckman Institute at Caltech, which will be devoted to interdisciplinary research in biology and chemistry. It has since been announced that Harry B. Gray, who is the Arnold O. Beckman Professor of Chemistry, will be the director of the new institute.

The initial \$40 million is contingent on Caltech raising \$10 million in capital funds from private sources. The Beckman Foundation will provide the other \$10 million if the Institute can raise an equal amount from members of the Board of Trustees for the general endowment.

IT HAS BEEN MY GOOD FORTUNE TO have had a long and rewarding association with Caltech. This fact underlies my remarks today. Rather than state my views on some subject of national or international significance, as is often done by commencement speakers, I shall speak to you in a rather personal vein. We are all members of the Caltech family even though a wide generation gap separates us.

To emphasize the breadth of the generation gap, let me remind you that when I enrolled as a graduate student at Caltech in 1923, none of you had yet been born, nor probably had your parents. My remarks, therefore, will span two generations.

Your role at Caltech has been that of student. I have been a student also, but over the past six decades I have played additional roles: a member of the faculty and a member of the Board of Trustees, culminating in my present position as chairman emeritus. I am a life member of the Alumni Association and of The Caltech Associates. Also, I have grown much older. All of these facts comprise the background for my comments.

. . .

Over the years students have often asked me how they should select the field for their professional careers. My answer has been: "If there is one overriding criterion, it is enthusiasm. If you are enthusiastic, the field in which you work is probably a good one for you. If you are not enthusiastic, perhaps you should look for another field."

Don't worry about whether you have chosen the best professional field for your career; you can always change. Some of the most exciting scientific and technological developments have arisen from interdisciplinary cooperation — electrical engineers becoming biologists, for example, and from persons who have changed their professional fields in mid-life. I started out as a chemical engineer, switched to photochemistry, and ended up an instrument maker!

. . .

On the matter of pride over your accomplishments, may I delicately suggest that you

ask yourself: "Did I achieve my success solely on my own, or did others help me?" I think you will find that you have received a great deal of help from many sources, . . . [including] your parents and your professors.

There is another category of Caltech people whom you might well thank — the trustees. . . . It would be a pity for you to graduate without knowing something about trustees, so I'll give you a brief description of them and their duties. . . .

The Board of Trustees is the top level of authority at Caltech. It owns all of Caltech's assets and has overall responsibility for Caltech's well-being. If you have lived on the campus, the Board of Trustees has been your landlord. The trustees must see to it that the Institute has adequate funds for operations and for capital expenditures. They are responsible for the budget, for approving salaries, for wisely investing nearly \$400 million of endowment funds. The trustees indeed carry a heavy load of responsibilities, a fact of which you should be fully aware and appreciative.

Who are the trustees? They are 45 distinguished men and women, selected nationwide for their accomplishments and competence. They bring to Caltech an invaluable wealth of experience and expertise. They are dedicated to making Caltech the leading institution of its kind in the world. To this end, each contributes his or her time, energy, expertise, and resources.

. . .

Your years at Caltech have been costly. There is no such thing as a free education. Someone has to pay. Who paid for your education?

Most of you probably have borrowed money from one source or another. Now the painful period of repayment begins. I have full confidence that all Caltech students will pay off their financial obligations in an honorable manner. It is indeed a comfort to learn from the business office that almost no Caltech loans are in default. Caltech's record is one of the best in the nation. I am saddened when I read that nationally over 30 percent of government student loans are in

default. Abuses of the student loan programs appear to be flagrant. . . . One may well question the value of higher education for those who have failed to learn the elementary lessons of honor and integrity. . . .

Many students are subsidized by scholarships funded from private sector contributions or from public sector revenues. Have you given much thought to the source of your scholarships, or have you taken them for granted, as something to which you obviously are entitled because you are bright? . . .

If your scholarships derived from public funds, federal or state, has your elation over getting the awards ever been tempered by an awareness that so-called public funds are taxpayers' money? Does it bother you that part of your education was paid for with funds that otherwise could have been used to feed the hungry or provide health care for the poor? . . .

Society does indeed have an obligation to care for the indigent. It also has an obligation, however, to see that the oncoming generations are educated so that there will be an adequate supply of competent and skilled persons to carry on the great multiplicity of human activities essential for the continuing well-being of the nation. To this end government agencies invest taxpayers' money in support of education, with the hope and expectation that society will ultimately receive significant benefits from the investment. Whether or not its investment in your education will prove to be a sound investment remains to be seen. It is up to you to see that it is.

The point I wish to make is that, in addition to whatever legal and financial obligations you may have incurred to fund your education, you also have a *moral* obligation to put back into society at least as much as society has given to you, preferably more.

When I enrolled as a student at Caltech, it never occurred to me to wonder: "How does it happen that right at the time I am ready for higher education, Caltech is ready for me? It exists, with excellent laboratories, classrooms, and a superb faculty. How did that happen?"

When I became older, I realized that it was not happenstance that Caltech was in existence, ready for me. Caltech was the product of the vision, dedication, and generosity of many persons. . . .

You, members of the Class of 1986, have benefited, as did I, from the foresight and generosity of many predecessors who paved

the way for your education at Caltech. I respectfully suggest that you consider what obligation you have to take your turn in paving the way for your successors — to help Caltech meet its needs for the training of future generations.

. . .

Your continuing education will include not only ever-expanding comprehension of existing knowledge, but also — and this is probably more important — an awareness and understanding of *new* knowledge that no one has today, a body of knowledge to which you, the Class of 1986, unquestionably will make significant contributions. . . .

I speak confidently on this point because of my own personal experience. In June 1928 I received my coveted PhD degree a few hundred feet from here, on the steps of the Gates Chemistry Laboratory. As you are today, I was then, very proud and happy. I faced the future with joyful anticipation.

Fortunately, I was not then aware that the time-honored adage "ignorance is bliss" applied to my happiness. I was blissfully unaware of the extent of my ignorance. For example, despite three degrees in chemistry, I had never heard of such things as the antibiotics that have revolutionized medicine, of DNA, or of electronics, or computers.

Without wishing to diminish in any way your pride on this happy, eventful day, let me suggest politely that there are some things about which you are ignorant today, but which will become realities within your lifetimes. What are they? Let your imagination run wild. Judging from what actually happened in my lifetime, your wildest fantasies will fall far short of what will become realities in your lifetimes. Discoveries of the next half-century probably will be more numerous and at least as astounding as those made during my lifetime.

. . .

If I have induced any of you to look at your Caltech experiences in a new light, or if I have added to your feeling of excitement, hope, and anticipation over what the future holds for you, I've accomplished my goal. You are indeed fortunate to have had the privilege of studying at Caltech, a fact that will become more meaningful to you as time goes on. □