



# An Interview with Marvin Goldberger

*President Marvin Goldberger has been at Caltech for almost three years. What problems has he found here, and what changes has he promoted? What does the future hold for Caltech? What does being president of the Institute entail, and how does he like it? These are some of the questions Caltech faculty and students keep asking, so E&S invited a representative group to interview the president and get his answers.*

*The interviewers: Tim Brazy, president of ASCIT; Eric Davidson, professor of biology; Norman Davidson, professor of chemistry; David Goodstein, professor of physics and applied physics and chairman of the faculty; Dan Kevles, professor of history and executive officer for the humanities; Albert Lin, chairman of the Graduate Student Council; John List, professor of and executive officer for environmental engineering science; Bruce Sams, writer for The California Tech; Gerald Wasserburg, professor of geology and geophysics; and James Workman (BS '57, MS '58), president of the Alumni Association.*

DAVID GOODSTEIN: When Harold Brown was interviewed in a situation similar to this in 1972, he was asked what had been done since the beginning of his administration.

Some of the accomplishments that he listed sound a bit strange now. Just to take one example, one of his accomplishments — of many — was splitting Physics 2 into two pieces. One of our accomplishments recently has been repairing the split. In view of that, what has been accomplished during the time you have been here and how will those things look ten years from now?

MARVIN GOLDBERGER: It's hard for me to separate what I can legitimately claim to have accomplished from things that already had a certain momentum before I arrived — and would have happened whether I was here or someone else. Coeducation was a fact when I came here; a concern about the addition of women to the faculty existed; quality of teaching has always been a concern; quality of student life has been a concern; and the extent to which I have made contributions in any of those areas is hard for me to judge.

I'm pleased by the fact that there are now two tenured women faculty members, and five or six non-tenured women, and that offers have been made to many other women. I'm also pleased that the percentage of women in the freshman class for the past few years has risen to 17 percent, and this year applications from women are up

15 percent, whereas applications from men are up only 9 percent.

Another area that I've devoted a good deal of attention to is an effort to strengthen the humanities program, and I'm pleased that we have made one senior appointment of a Dreyfuss Professor in humanities and we have an offer out to another senior humanities professor. So I feel that we have made some significant progress in that area.

Martin Ridge, who is a senior historian at the Huntington Library, now has a joint appointment with Caltech, and that has served along with several other appointments to greatly strengthen the traditional bonds of friendship between Caltech and the Huntington Library.

I sense a renewed interest and attention to issues of undergraduate teaching. The conference that was held last year involving students, faculty, and alumni was a very positive event, one we should probably repeat sometime in the future to see whether the customers feel that there has been progress.

JOHN LIST: Since I came here 18 years ago, there are 13 new buildings on campus. The number of faculty in that period of time has grown a relatively minuscule amount, which means that the faculty has to bring in an ever-increasing amount of research money. Do you anticipate there are going to be another 13 new buildings in the next 18 years?

GOLDBERGER: For the immediate future, there are only a very small number of building projects that we are even beginning to talk about. I believe that we are now more careful than in the past to make sure that when buildings are built a suitable endowment is provided for their maintenance. Otherwise, new buildings — marvelous gifts though they may be — eat you alive.

As far as future building plans are concerned, there are three or four conceivable building operations that I can see on the horizon. The first, though not necessarily the first to be completed, is going to be an athletic facility. We are going to do something about the athletic facilities, somehow.

GERALD WASSERBURG: Why? Building athletic facilities hardly seems that important.

GOLDBERGER: I think it is very important. A growing number of students, faculty, and people in this community are extraordinarily interested in fitness, in physical well-being. At Caltech there is a severe shortage of facilities for women. Our swimming pool is so crowded that if you want to go swimming at noon, you have to wait 45 minutes to force your way into the pool. We need another swimming pool, and there isn't a single squash court on this campus.

Now another area of concern is a truly adequate student union facility to house a whole flock of activities that are now largely unavailable on this campus. The student unions at places like Illinois and Wisconsin, for example,

are a real focus for student life. In Pasadena, which is not really a college town, I think we have an obligation to provide better facilities for improving the quality of student life than those we currently have.

Another possible building project has to do with more housing for graduate students in the immediate area. These might conceivably be combined with housing for young faculty. Making it possible for faculty to have houses in the immediate neighborhood of Caltech is one of the most important things we can strive for. The atmosphere at a campus where people frequently walk over to their offices in the evening and have contact with their students is quite a different atmosphere from that of an urban campus, where by 5 o'clock in the afternoon everybody is gone. So I am eager for people to live as close as possible and for a genuine community.

We are also going to do our very best to renovate and modernize existing facilities, because that can be done at a cost which is about a half or a third of the current cost of building new structures.

WASSERBURG: The historical circumstances that led to Harold Brown's efforts to maintain some form of solvency within the Institute have resulted in a retrenchment in the staff of maintenance and technical personnel on campus. The effects have been next to disastrous — both in terms of number and variety of skilled people necessary to maintain the facilities and in the ability to pay them so they stay. Have you considered how to keep physical plant facilities staff at a level of adequate competence and dedication to maintain those buildings we have and those which some would have us have?

GOLDBERGER: The dramatic cuts in the size of the staff that Harold Brown had to institute as a result of financial stringency have stretched the staff practically to the breaking point and maybe a little bit beyond. In a number of areas the staff support is inadequate, and I would foresee a certain growth in the size of staff. A level of salaries that will compete successfully with local firms and keep the kind of dedicated people we now have is one of our highest priorities. Last year we got a variance from the Council on Wages and Prices so that we could give an anomalously large salary increase. Attracting and keeping a competent staff is something we take extremely seriously.

NORMAN DAVIDSON: How do you foresee the overall financial situation of the Institute and what opportunities for growth and improvement do we have?

GOLDBERGER: Right now is one of the most difficult times to project the financial situation for the future. One important factor is the continued vitality of JPL and the level of activity that can be expected there over the next few years. The fee from the operation of that laboratory feeds directly into our general funds and is a very important component of our income, but the outlook for the continued support of the deep space program — which is

the cornerstone of JPL activity — is certainly cloudy. The support for the lab's energy work is also quite uncertain at this time. Fortunately, we have over the years built up a "rainy day fund" to compensate for a catastrophic loss of JPL. That, of course, wouldn't happen overnight but over a period of years.

As you all know, there are certain areas, primarily in the behavioral and social sciences, that are now being seriously cut back, at least in the projections of the National Science Foundation budget. Those cuts are going to have an impact on us. The physical sciences budgets seem to be holding up fairly well. If there is a general cutback on direct federal support of research, all universities will suffer, but I think we may suffer a bit less than most of them. One development somewhat on the bright side is a renewed interest on the part of a number of industries to become seriously involved in the support of research at universities in general and at Caltech in particular. We're trying to be as receptive as we can to those approaches, recognizing that just as there have been fears and concerns about becoming too heavily involved with the federal government there are fears and concerns about becoming too beholden to industry in ways that might torque our research interests and our fundamental purposes.

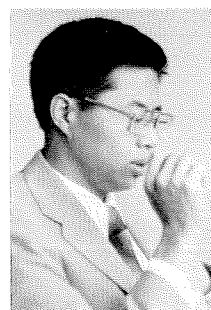
I'm very pleased by the fact that the trustees have become much more seriously involved and concerned about the financial state and outlook for the Institute and are throwing themselves into our development plans for the future.

**ERIC DAVIDSON:** Among the specific proposals of the administration in Washington is severe reduction of the funds to support graduate education. Our sources in the National Institutes of Health tell us that training grants are liable to be very adversely affected as well as postdoctoral fellowships, which provide support for many of the people doing research in biology and chemistry. The last time anything like this happened, during the Nixon era, the Caltech administration advised the divisions to find ways of paying for more student and postdocs on their already-stretched research grants. When push came to shove in our division, we just decided we weren't going to take as many graduate students and then things relaxed. I wonder whether you've given any thought to the possibility of helping with both the graduate education costs and postdoctoral support that would otherwise have come from funding agencies in Washington.

**GOLDBERGER:** I don't think we've really addressed the full magnitude of that problem yet. For a long time the number of graduate and postdoctoral fellowships associated with the NSF has been so negligible in the physical sciences that there's never been any source except research contracts. The situation in the biological sciences is certainly somewhat different. We're fortunate at the present time in having some new funds available from a very generous gift from Myron Bantrell for a program of post-



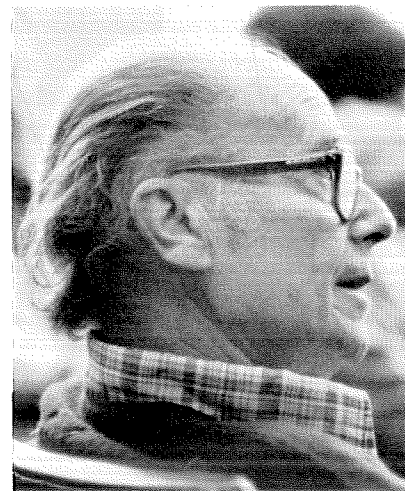
Gerald Wasserburg and Tim Brazzy



Albert Lin



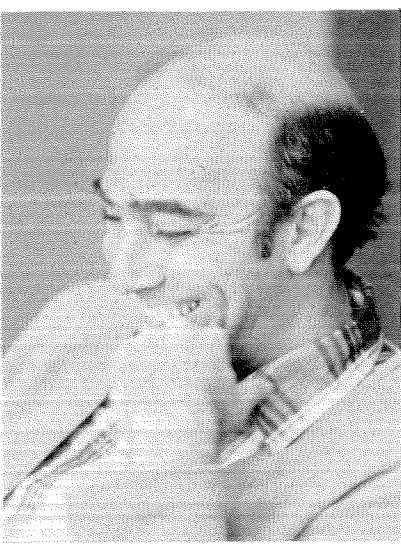
John List



Norman Davidson

doctoral fellowships. But we're going to have to scurry very hard to try to make up for the shortfall in the biological and life sciences if the worst happens. I don't know how we are going to do that because the amounts of money involved are rather horrendous.

There's a similar threat, of course, for undergraduates in the cutting off of the student loan program, and we're taking unilateral action to try to provide funds for a loan pool. We hope to be able to loan students money at a reasonable interest rate so that students, particularly from middle-income families, have a fighting chance of coming to Cal-



Dan Kevles



David Goodstein and James Workman



Eric Davidson and Bruce Sams

tech. But student aid, both undergraduate and graduate, poses an incredible problem to us. We face a loan shortage next fall for undergraduate students somewhere in the neighborhood of \$400,000, which is a lot of money.

ERIC DAVIDSON: Supposing the training grants really are more or less cut, would your recommendation to the various divisions be just to take the graduate students that they can afford from other sources, or would you expect that the central administration would be able to step in with aid?

GOLDBERGER: I hesitate to make a flat statement about it. The question of how many graduate students one should have is always a very difficult one. Any study that I have ever seen comes up with the same answer: The right number is exactly the number that you have at the moment. I would be very unhappy to see the size of the graduate body here shrink appreciably at this time. We do a good job with the size of the graduate body that we have, and conceivably if we had the funds it might be larger. But I would prefer not to shoot from the hip as to what we might have to do.

ERIC DAVIDSON: If the administration in Washington is successful in blocking funds for some of JPL's deep space explorations, energy research, and other applied research, it will be very hard on the technological machine that exists at the lab. What are your thoughts on alternative uses for that machine?

GOLDBERGER: Well, one could imagine JPL becoming a laboratory with a number of specialties that would attract the research interests of various industries. These industries might be able to capitalize on both JPL's talent and its facilities rather than setting up their own independent research operations. A program was designed to set up generic research facilities that would be of interest to a whole class of industries. I think this program is targeted for budgetary extinction, but it could rise again. And maybe we can re-invent it. You know, we have an example of such an activity here on the campus in the form of the Silicon Structures Project. And that idea may be cloneable. In fact, we're now considering trying to clone it in some other areas.

JAMES WORKMAN: Terms like "independent" and "private" institutions are used to describe Caltech, yet you rely very heavily on government funding for your annual operating budget. Are you terribly concerned about that and the influence the government may have because of the funding?

GOLDBERGER: I am terribly concerned about it, but not so much because I fear evil influence. One of the fears, of course, is the capriciousness of government funding, as we're witnessing particularly this year. The failure of government to support universities, in spite of all the evidence of the importance of continuity and commitment, the failure to recognize that you can't turn things on and off, disturbs me mightily. If you include our income from JPL, approximately 60 percent of our budget is dependent upon the federal government. It's not clear how we can reduce that significantly, but we can make some reductions, and I am very anxious that we do so because it makes us less subject to the vagaries of Washington budgets.

LIST: In that connection, I get the feeling that we don't spend a lot of money in raising money. Is that really the case?

*continued on page 28*