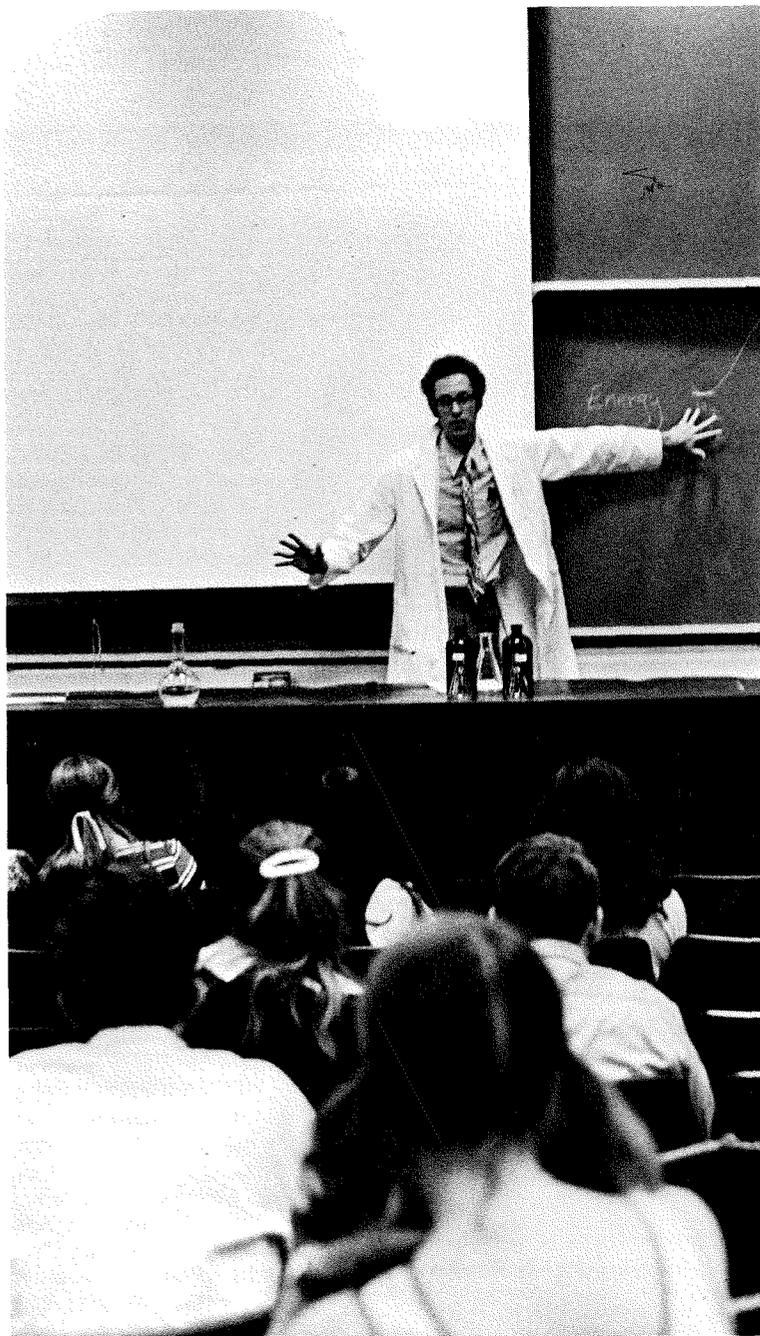


CALTECH IS NOT JUST A BIG BLACK BOX—

and graduate students
like Bill Beranek are
one of the reasons why



A Saturday morning science seminar at Caltech brings Bill Beranek front and center to speak to Huntington High School students. These seminars are part of the secondary schools science program that Bill helped start two years ago.

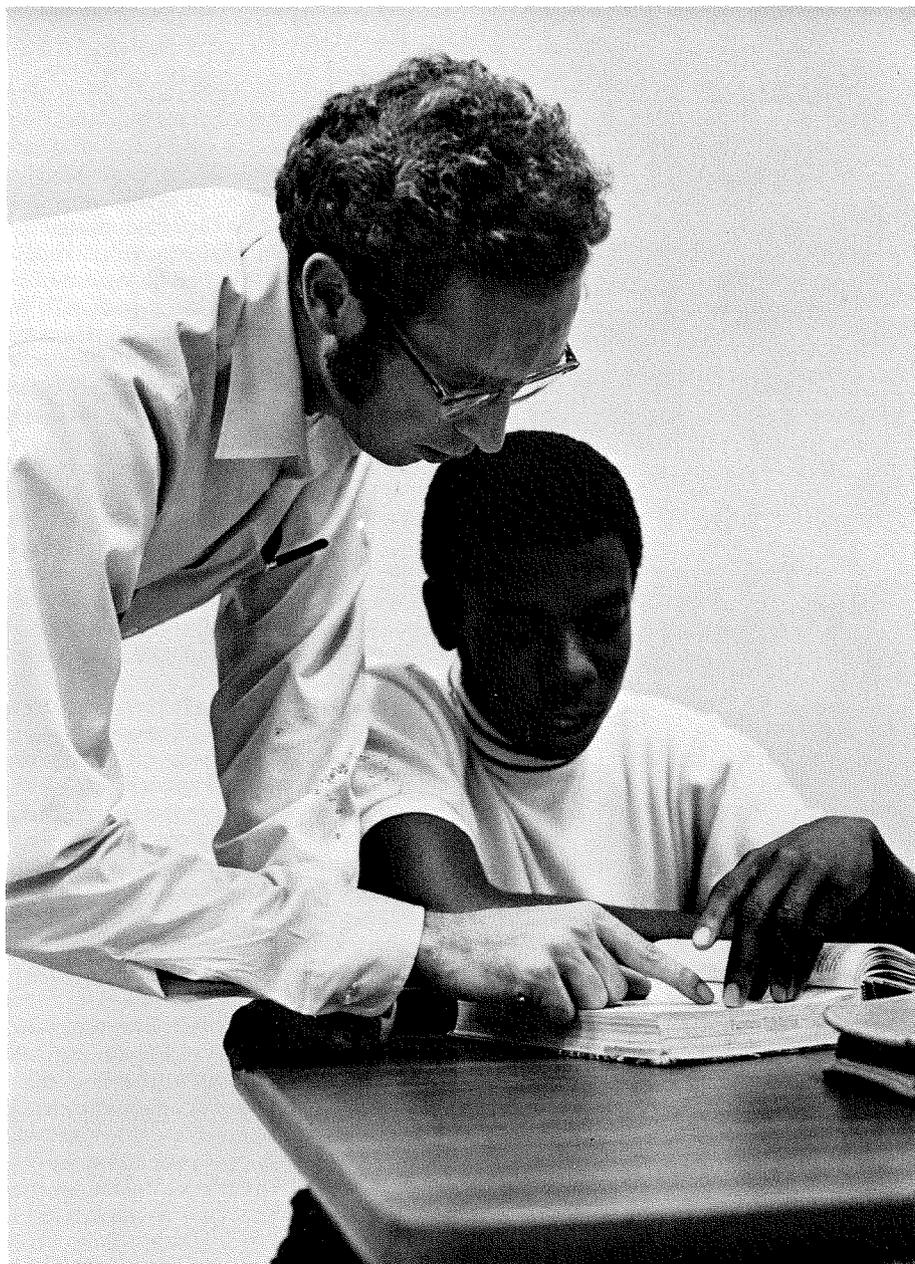
Bill Beranek is one of a new breed of graduate students. As a PhD candidate doing research on the enzymes that catalyze chemical reactions in living systems, he is a dedicated student of science. As the resident associate of one of Caltech's undergraduate student houses, organizer of a stimulating new series of seminars in Caltech's chemistry division, tutor and lecturer at local high schools, a member of the Caltech Environmental Action Council (to mention just a few of his activities), he is a concerned member of society—which is a fancy way of saying he cares a lot about other people.

These days, Bill spends a lot of time combining these enterprises by trying to bring science and people closer together.

"Society is paying for scientists to do their thing," he says. "It must get something in return—whether it's knowledge for its own sake or knowledge for economic benefit. Since non-scientists are not coming to us, we have to try to communicate with them."

One way Beranek has put this conviction into action has been to generate a series of weekly seminars at Caltech on "Chemistry and Society" which offer four broad and challenging areas for discussion: the effect of chemistry on society, the structure of chemistry, the responsibility of the chemist, and the future of chemistry as a discipline.

The seminars started in January. So far they have featured James Morgan, professor of environmental engineering science, speaking on trace metals in the environment; A. J. Haagen-Smit, professor of bio-organic chemistry, on air pollution; Norman Brooks, professor of environmental science, on strategies for solving environmental problems; Daniel Kevles, associate professor of history, on the moral dilemmas of the American chemist; and George Hammond, chairman of the division of chemistry and chemical engineering, on his philosophy of chemistry. Most recently, M. R. Barusch of the Chevron Research Company spoke on the history of the



Bill started tutoring Charlie Armstrong back in the summer of 1969 when Charlie was enrolled in Caltech's first junior high school science program. Now, Charlie is helping Bill. He designs the color slides and posters that Bill uses to illustrate his high school science lectures.

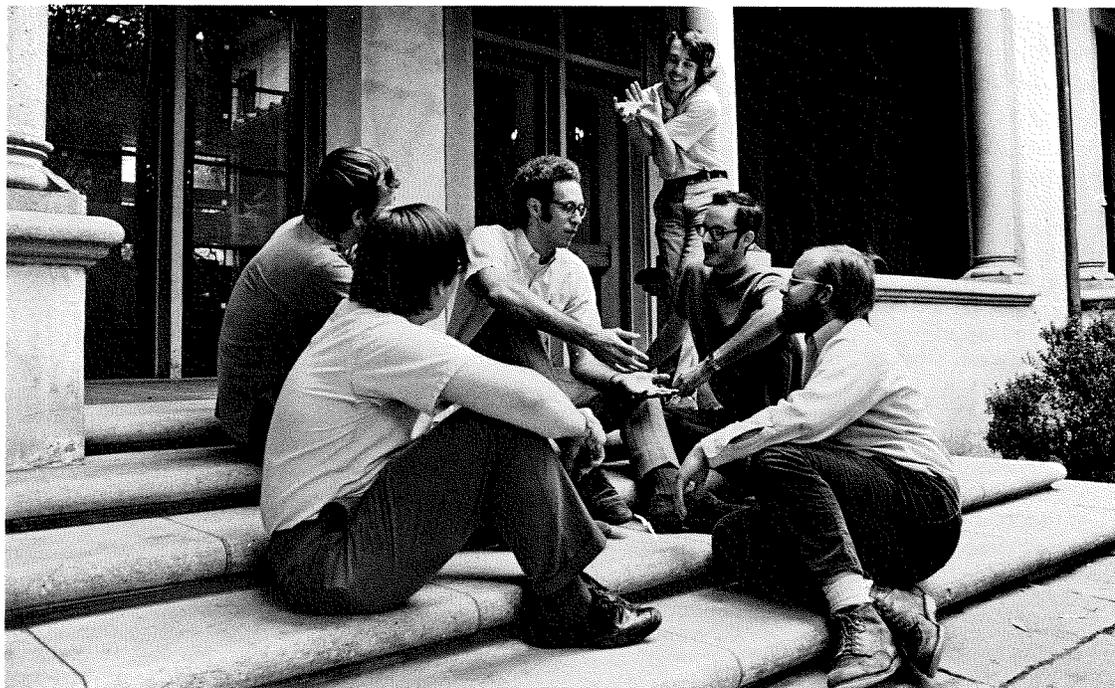
development of F-310; and Morton Z. Fainman, petroleum consultant, on the problem of lead in gasoline.

In organizing the seminars, Bill's primary aim was "to stimulate introspection among graduate students and the faculty in chemistry," but he has also arranged to have the talks videotaped for distribution to local schools, and he is now editing manuscripts for publication of the talks in a book. If the seminars are run again next year, he thinks that quiz sections and research assignments may be added so that undergraduates can "take" the seminars as a course for credit.

In addition to the chemistry seminars, Bill is arranging a series of panel discussions between faculty and students of Caltech and Occidental College. These discussions will take a philosophical look at the questions of how science has affected man's concept of himself. A preliminary session—a discussion of medical ethics, led by Dr. Joseph Fletcher of the University of Virginia Medical School—was held on February 14.

Along with these heady projects, Bill continues to work on the high school science program he started two summers ago in collaboration with Jerry Pine, professor of physics, to get junior high school students interested in science. The project is now headed by Lee Browne, Caltech's director of secondary school relations. The program runs throughout the academic year and offers lab work, tutorial assistance, monthly science lectures by Caltech faculty members, and science lectures at high schools in the Los Angeles area. As one of the lecturers this term, Bill is visiting high schools in Glendale, Gardena, San Fernando, and Watts. His topics range from enzymes to metal pollution ("High school students are especially interested in subjects like drugs, pesticides, DNA, and contraception—and they ought to be explained in layman's language"), but his main objectives are to excite students about learning in general and to show them—by means of dramatic and creative demonstrations—that "Caltech is not just a big black box where the mysteries of science are performed."

But Bill Beranek is more than a graduate student, chemist, and tutor. To many Caltech undergraduates he is also "Uncle Bill"—the resident associate



Uncle Bill is surrounded by a (mostly) respectful group of nephews on the steps of Fleming House. Not all his activities as resident associate are so sedentary.

of Fleming House. In this role, he is particularly enthusiastic about getting the students interested in activities outside their classes. With sports, of course, it's easy. He plays basketball and softball with them, and Fleming managed to win most of its intramural games this year. But with plays, opera, or concerts it's a little tougher. "Some of the guys are embarrassed to sign up at dinner for tickets. So I've learned to buy the tickets in advance, and I tell them to see me *after* dinner. I may lose a couple of bucks, but this year a number of students have gone with me to see things like *Faust*, *Abelard and Héloïse*, and *Hamlet*."

For his doctoral research at Caltech, Bill is studying lysozyme, an enzyme found in human tears and in the whites of birds' eggs. By catalyzing the hydrolysis of the polysaccharide chain—the backbone of bacterial cell walls—lysozyme kills bacteria and thus protects the egg yolk and the eye.

"Lysozyme is interesting medically," Bill explains, "because it is found in large quantities in certain leukemia patients. We study it because it's easily obtainable—there are plenty of chicken eggs around, and we also cry a lot—and because it's one of the few enzymes whose three-dimensional structure is well known. A lot of the principles of enzyme catalysis that we learn from lysozyme will probably apply to other enzyme systems that are much more difficult to isolate."

A 1967 graduate in theoretical chem-

istry from the University of Wisconsin, Bill became interested in biochemistry while he was doing summer research at a hospital in Madison. "I took the job because I'd been working in physical chemistry and I wanted to know what the 'other half'—biochemistry—was about," he says.

At the same time, he was working as a youth counselor for the Lutheran Church. His work for the church—both as a counselor and as a member of the choir—added to his liking for people and taught him a lot about working with them. When he came to Pasadena in the fall of 1967, he worked as a science tutor in Watts, then as a volunteer for the Headstart Program, and, later, he taught English to 40 Cuban refugees.

"When I came to Caltech, I wanted to be a top scientist," he says, "and I've always wanted to be a professor—because my dad's a professor, I guess. I enjoy the academic environment and doing research for its own sake, but I have a real problem because whatever I do I always want to be the best. I used to play chess and bridge until I got so competitive that I found myself reading a lot of books on how to play. So I gave up chess and bridge, but I can't give up people. Inevitably I'll have to choose between orienting my life around science or around people—if I can't synthesize the two. I guess I have so many goals that I don't really know where I'm going. Actually, right now I enjoy just being a plain graduate student."