

## From Dancing Bees to Urban Housing—A Diversified Summer

*Students and faculty attack some greater (and lesser) problems*

### **High School Science Students**

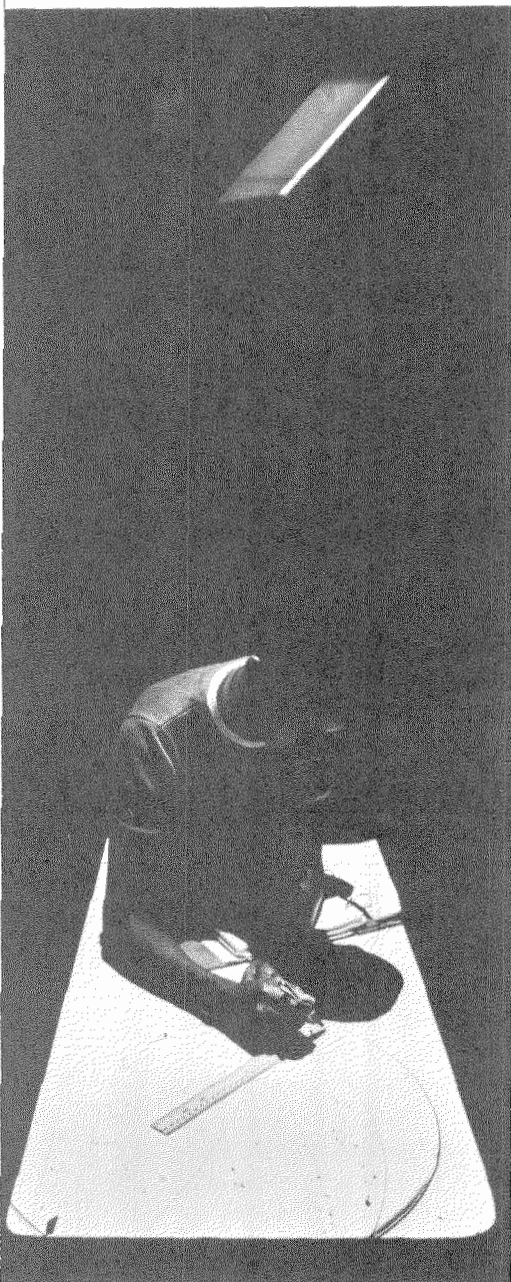
In one of seven special projects at Caltech this summer, ninth graders spent mornings helping in faculty labs, then worked in their own free labs in the afternoons. The program was aimed at identifying and interesting bright young minority students in science.

Summer used to be the quiet time at Caltech. A few dozen undergraduates got jobs in campus labs, but the other 700 took off for home while faculty and graduate students, free of classes for three months, busied themselves with research. But those lazy summer days may be over for good.

In 1968 the undergraduates discovered a new way to find summer jobs—they got a government grant to conduct their own research on campus. That year 60 students from Caltech and other colleges converged on Pasadena to study air pollution. This past summer there were seven separate student research projects on campus, involving more than 400 people, including about 50 Caltech undergraduates.

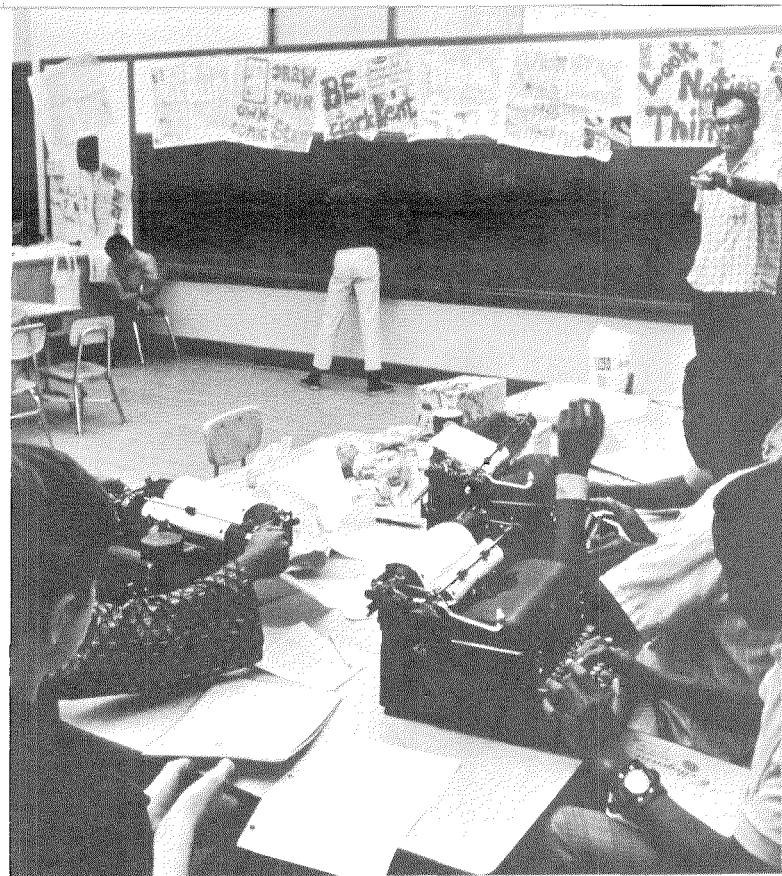
Five of the projects were initiated and managed by the students themselves through their ASCIT Research Center. One, Man and His Environment, was a continuation of the 1968 project, which this year grappled with problems of off-shore oil pollution, lead pollution, methods of public action against them, and hillside erosion. This group, with 45 people, was funded by the National Science Foundation and the Ford Foundation for about \$46,000.

Three small programs were funded directly by the Research Center, which limits its own grants to \$500. Six students camped out near Burns, Oregon, to “live with” and study a hive of bees. They hoped to make some



***High School  
Science Students***

24 boys lived on campus during the eight-week summer "science camp." Caltech faculty ran the successful project, which has now been extended into the fall.



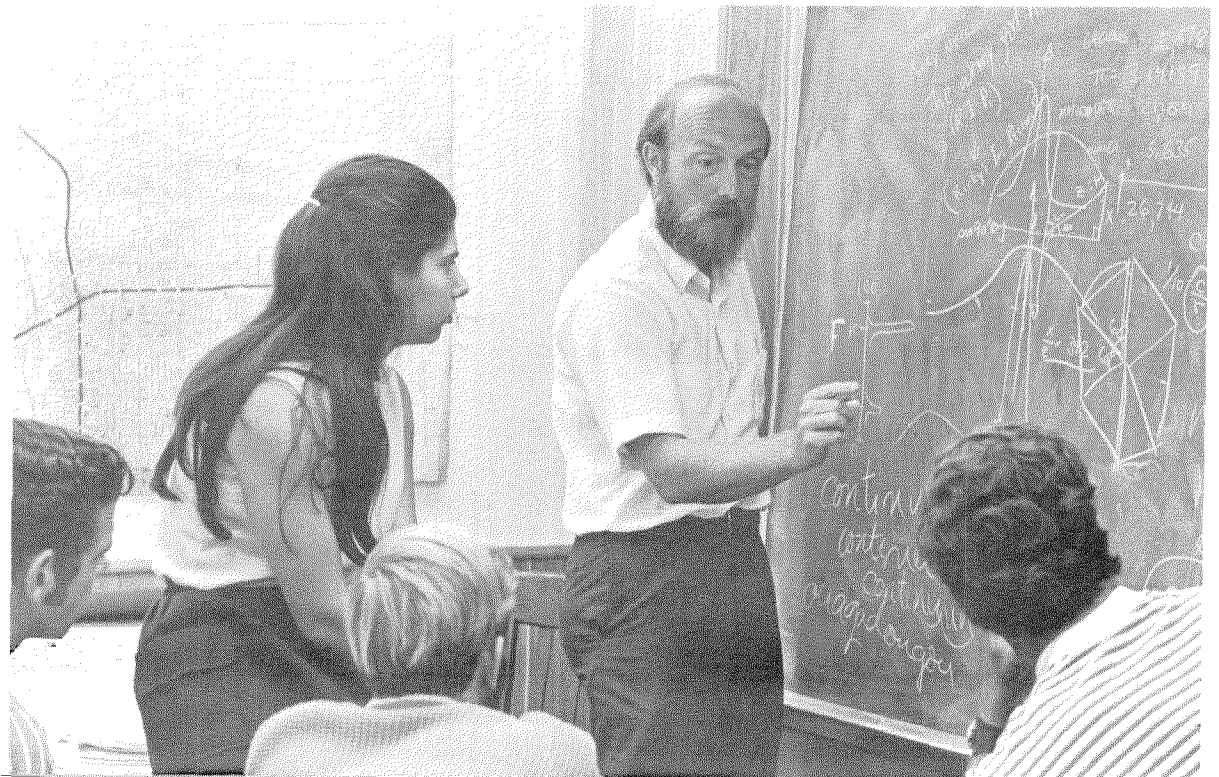
### *Institute for Educational Change*

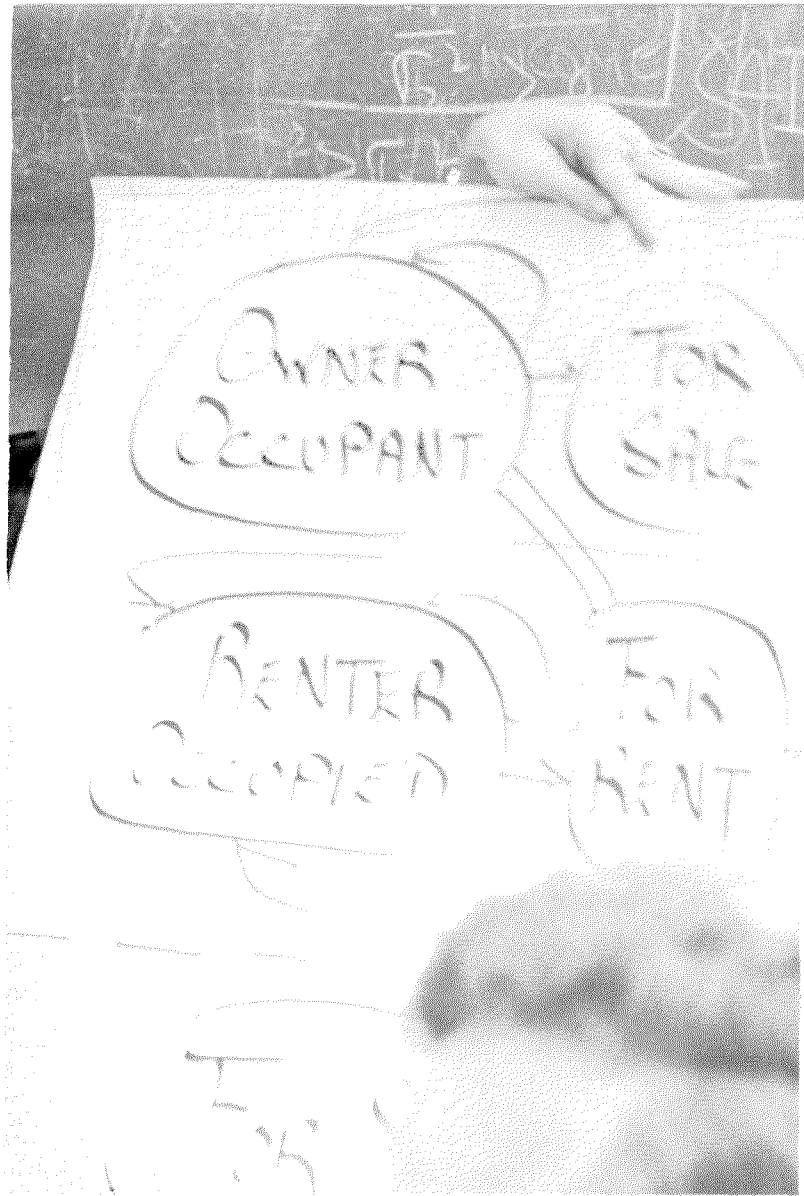
In the summer's biggest project, students working through the ASCIT Research Center brought together 200 schoolchildren and 100 teachers and older students for an experimental summer school. Most of the activity took place in a northwest Pasadena school and several empty houses near there.

sense out of the dances that bees do to direct other bees to food supplies near the hive. The Research Center also sponsored two local high school students in a study of the photochemistry of lead, and it helped finance a three-man investigation of a possible overseas study program for Caltech students.

The Research Center's Summer Institute for Educational Change seemed to attract most notice. Spurred by the work of Gregg Wright and others last spring [see page 18], 40 college students, 20 teachers, 30 high school and junior high students, and 200 grammar school students comprised an experimental summer school at Pasadena's Cleveland Elementary School.

For the two weeks before and after the five-week school session at Cleveland School, the 90 staff members met at Caltech for planning and evaluation. The junior high students, who were being paid by the Neighborhood Youth Corps to take part in the program, apparently had too little to do and, as a result, made their presence well known around campus. Complaints—mostly of noise and horseplay—came from diverse quarters, and tended to unduly influence non-participants' views of the program.





## Urban Studies

In a JPL program on campus, engineers and college students, using a systems analysis approach, tried to devise a dynamic model of urban housing to see how technology might be applied to social problems.

The 24, along with four counselors, lived in the student houses during the week and went home on weekends. Mornings they learned simple lab techniques and were paid a small stipend to work in various labs under the guidance of Caltech students. Afternoons they had their own free lab with a chemistry graduate student in charge. Off-hours were occupied with sports, games, hikes, movies, and short trips.

At the start of the summer the faculty leaders were prepared to continue the program into the school year if even a few of the 24 students were interested. At the end of the summer 23 students wanted to go on. It looks now as if the free lab will continue on Saturdays, and, to help the students improve their verbal skills too, informal evening seminars devoted to writing and readings in humanities will be held once or twice a week. The summer program, which cost about \$14,000, was financed about one-third from Institute funds and two-thirds from friends of Caltech.

The staff learned a few lessons—particularly that teenagers had better be kept busy, and that permissiveness has its limitations. The children benefited too, and learned some journalism, sewing, African history, simple auto mechanics, music, and even cinematography. The Summer Institute was funded by the Department of Health, Education, and Welfare, by the Rockefeller Foundation, and by private subscriptions. The total amount spent was about \$57,000.

The summer project that seemed to come closest to meeting the expectations of its planners was, not unexpectedly, organized and run by about ten Caltech faculty. Aimed at generating interest in science and engineering among minority students, this “summer school” took 24 ninth graders under its wing for eight weeks. A few of the students were high achievers from middle-class homes, but most came from culturally disadvantaged homes. All the students were bright, and most were black.

The seventh summer program was run and financed (almost \$100,000) by the Jet Propulsion Laboratory; it employed students from Caltech and nine other colleges. Twenty people, including several JPL engineers, tried to apply systems analysis to problems of housing, particularly in Pasadena. The group got cooperation from the local poverty agency, Pasadena business groups, the city’s planning department, and a few Caltech faculty experienced in urban affairs. One goal of this urban studies project was to explore new ways in which Caltech and JPL can use their skills to improve the community.

Although most of the summer’s programs were categorized as research, not much new information was added to the body of knowledge. It would be more realistic to rate the work according to how much the participants learned about the job of doing research or teaching. By that standard, most of the people involved—who admit their share of failures along with the successes—are satisfied that their time was well spent.