

The Month at Caltech

Coming Up— A New Behavioral Biology Building

The hole in the ground was already sizeable (approximately 300 feet long, 100 feet wide, and 20 feet deep), and some of the reinforcing steel had begun to rise. So, it was indeed too late to call the May 8 ceremony in behalf of Caltech's new behavioral biology building a "ground-breaking." It was even stretching a point to consider it as marking the beginning of construction, though that is what the function was called officially.

President Harold Brown presided for the gathering of trustees, faculty members, students, and other guests. Speakers included Arnold Beckman, chairman of the board of trustees, alumnus, and chief donor with Mrs. Beckman of funds to construct the new building; Nobel laureate George Beadle, trustee and former chairman of the division of biology; and the current chairman of the biology division, Robert Sinsheimer, who spoke of the hopes and plans for activities in the new building. "We will seek to couple the mind to natural science: behavior to currents, thoughts to circuits, emotions to molecules. We will seek to explain perception and memory, logical analysis and emotional impulse, the roots of motivation and the springs of action. In good time we may even learn to ask intelligent questions as to how the brain turns currents into will, as to how noiseless currents can become sound, and invisible impulses become sight and color."

Sinsheimer also presented Beckman and three of Caltech's pioneers in behavioral biology—C. A. G. Wiersma, professor of biology; Anthonie van Harrevel, professor of physiology; and Roger Sperry, Hixon Professor of Psychology—with souvenirs of the occasion. These were plastic replicas of the human brain elegantly mounted in polished



Arnold Beckman, chairman of the board of trustees, was honored at special ceremonies marking the beginning of construction of the behavioral biology building. He received a plastic reproduction of the human brain.

wood boxes—gifts that elicited the quick quip from Brown that everyone present had, of course, an original version.

President Brown closed the ceremonies by presenting the Beckmans with a watercolor by Hunt Lewis of the Court of Man as it will look when it is completed, with Beckman Auditorium on the north, the Donald E. Baxter, M.D., Hall of Humanities and Social Sciences on the east, and the behavioral biology building—a virtual mirror image of Baxter—along the west side of Beckman Mall.

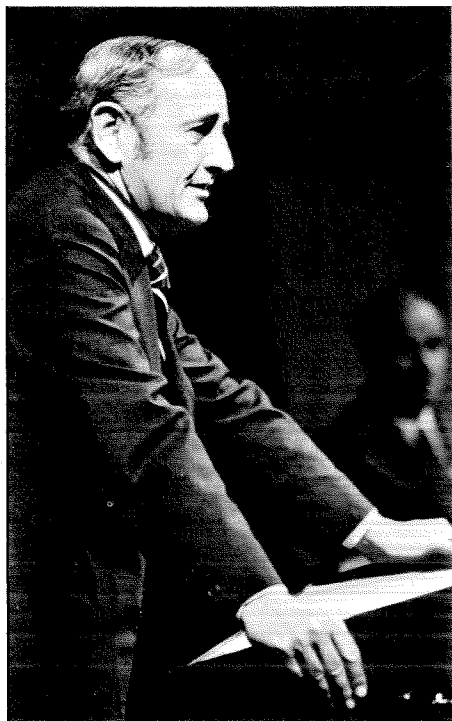
The new building, designed by architect Robert Alexander and scheduled for completion in the summer of 1973, will have three floors above ground and one below. It will provide offices, laboratories, and other facilities for 9 professors, 30 postdoctoral fellows, 30 graduate students, and several technicians. There will also be an instrument room, animal quarters, stockroom, and an electron microscope facility.

The Month at Caltech . . . *continued*

Public Lobbying Conference

John Gardner was the keynote speaker on May 6 for the "Design for Public Lobbying" conference held at Beckman Auditorium, a conference jointly sponsored by the Caltech Y and the Planning and Conservation League (a California-wide lobbying organization for environmental protection).

Gardner is a familiar and much appreciated speaker for special occasions at Caltech. In 1966, when he was secretary of the Department of Health, Education and Welfare, Gardner was convocation speaker for Caltech's 75th Anniversary celebration; in 1968 he was the first recipient of the Institute's Robert Andrews Millikan Award, which is presented to outstanding citizens who have made great contributions to human welfare. Since 1970 he has been chairman of Common Cause, an organization that attempts to link the tradition of citizen



John Gardner

action in this country with the skills of professional lobbying.

The theme of Gardner's recent address was that as a nation, as a species, and as inhabitants of this planet we are dealing with a series of interlocking revolutions—in transportation, communications, sources of energy, computers, and biology, for example—and they have put an almost unbearable strain on our social institutions. Yet those institutions resist change, or disintegrate rather than change, or change only under the impact of violence.

"I am not one of those who lust after institutional change for its own sake," Gardner said, "but I am interested in it to the extent that it will help us in solving the problems that history has handed us. Anyone who shares that interest must give primary attention to our political and governmental institutions."

The panel discussions during the rest of the conference featured state legislators and environmentalists analyzing prospects for legislation to protect the California coastline, the wild rivers of northern California, the Santa Monica Mountains as open space, and air quality.

MCA Award

Harry B. Gray, professor of chemistry, has been named one of four notable college chemistry teachers in the United States. The award, given by the Manufacturing Chemists Association, carries an honorarium of \$1,000 and is considered one of the most important citations in the field of chemistry.

Gray is widely known as an educational innovator. At Caltech he has made major contributions to restructuring the chemistry curriculum, and his own teaching activities range from instructing freshmen to working with PhD candidates in his research area—the study of metalloproteins. He is the author of 135 papers and has written or collaborated in writing eight chemistry textbooks.

Two years ago Gray won the prestigious American Chemical Society Award in Pure Chemistry, and he recently received a Guggenheim Fellowship Award for 1972.



Rodman Paul

Harkness Professorship

Rodman W. Paul has been appointed Edward S. Harkness Professor of History. Paul is an alumnus of Harvard University, and taught both at Harvard and at Yale before coming to Caltech as an associate professor of history in 1947.

A native of Philadelphia who was raised near Boston, he has nevertheless turned out to be someone who takes the West and its history seriously. His research covers the Far West and the Great Plains in the period between the Civil War and World War I, with particular emphasis on the sociological importance of mining. His books include *California Gold*, *Mining Frontiers of the Far West*, and *The California Gold Discovery*.

Paul is the third Caltech historian to be named to the Harkness professorship. William Bennett Munro held the chair from 1940 until 1945, and J. E. Wallace Sterling from 1945 to 1948.

Hammond Appointed Vice Chancellor at UC Santa Cruz

George Hammond, Arthur Amos Noyes Professor of Chemistry and chairman of the division of chemistry and chemical engineering, is leaving Caltech on July 1 to become vice chancellor of natural sciences at UC Santa Cruz. In his new job, Hammond will oversee the operation of one of the three main areas of the UCSC program—the other two being humanities and social sciences.

The natural sciences division at Santa Cruz is responsible for undergraduate major programs in biology, chemistry, earth sciences, information and computer sciences, mathematics, and physics. It provides PhD programs in astronomy and astrophysics, biology, chemistry, earth sciences, mathematics, and physics. In addition, the facilities and support for the advanced research conducted by the science faculty are administered by the division. The vice chancellors at Santa Cruz play a key role in working out the unusual relationships that arise as a consequence of the dual organization of the faculty who are both fellows of the individual colleges and members of the university boards of study.

Hammond's notable scientific achievements and growing interest and participation in the educational process give him impeccable credentials for just such a job and just such an opportunity. He has made distinguished contributions to scientific knowledge through his research in photochemistry. His work on the transfer of electronic excitation energy from one molecule to another, where light is absorbed by one species and the chemistry is done by another, has led to his being called the "father of modern photochemistry." In 1968 he received the American Chemical Society's James Flack Norris Award in Physical Organic Chemistry for his research on the mechanisms of photochemical reactions.

Through public lectures, writing, and restructuring of both individual courses and entire undergraduate curricula, he has made a considerable impact on the education of thousands of students in the United States and abroad. Last fall the Danforth Foundation awarded him the 1971-72 E. Harris Harbison Award for Gifted Teaching.

A consultant to textbook publishers and on the editorial boards of several scientific publications, Hammond is also



George Hammond

author or co-author of five books and more than 200 articles, talks, and papers. He writes and speaks not only about the educational process but also about the problems of "future shock" in science, where acceleration in the rate of growth of knowledge creates a demand for painfully rapid change in styles and goals for scientific research.

Among the abilities that are likely to stand him in good stead at UCSC are his talent for looking in new ways at old problems and for communicating with his students both personally and professionally. On May 3 he demonstrated these skills to more than 200 high school science teachers and students at Baxter Lecture Hall. He concluded his talk—"A Scientist's Thoughts About Science"—by saying: "In summary, I find science intensely interesting, and the core of it is what goes on in the minds of people as they think about the way the world behaves. They construct mental models and study their behavior, either in their minds or with the aid of mathematical analysis. They do experiments—both wisely and unwisely chosen and,

ordinarily, biased—and they exert judgment about the results. Their interpretations are not final but personal—and that's what science is.

"Now, I think that some people feel that if you level with students and tell them that this is what science is all about and this is how it works, they'll reject it. I don't think this is true at all; the students I know are usually relieved to learn about the very deep human element that goes into all of the scientific operation.

"It seems to me that this is a very thrilling and exciting thing about science: to realize that in scientific practice there is—as a regular part of the routine—a very personal and very human kind of activity. Of course there are uncertainties in the operation every step of the way. So, why not face them and enjoy the fact that science goes on in the minds of men? That concept should put to rest the creeping image of science in our society that makes science sound like a monster mechanical intellect in which people are simply cogs making technical contributions."



Brown on SALT

As president of Caltech since 1969, Harold Brown has had an exacting enough job even without the one he has also been carrying for most of that time as chief technical adviser of the U.S. delegation to the Strategic Arms Limitation Talks (SALT). But all that commuting between Pasadena and Helsinki and Vienna paid off handsomely when the signing of a nuclear arms limitation pact was announced in Moscow on May 26. Brown met with the news media at Caltech the next day and commented on the pact as a very important first step in the stabilization of the "balance of terrors" between the

two nuclear powers. The agreement places a qualitative limit on the numbers of offensive and defensive missiles each side can have. "By doing this," he said, "and by enhancing communications between the American and Soviet governments, President Nixon and the Russian leaders have reduced the risk of turning this planet into a thermo-nuclear inferno. I consider this agreement to be one of the most rewarding things I have ever been involved in."

Awards to Sperry

Roger Sperry, Hixon Professor of Psychobiology, has spent a pleasant part of May and June receiving awards for his notable scientific achievements. In May he received the California Scientist of the Year Award from the California Museum of Science and Industry. He was cited for "his research into the functional organization of the mammalian brain where cerebral surgery, accident, or congenital conditions have eliminated communication between the left and right hemispheres. He has shown that each of the surgically separated hemispheres has a distinct mind of its own, and in man, each its own specialized mode of thinking and perceiving. His findings have advanced our understanding of the relationship of conscious awareness to brain activity."

Sperry, the sixth Caltech faculty member to receive this award in the 15 years since it was established, is a graduate of Oberlin College. He received his PhD from the University of Chicago in 1941, and held positions at Harvard, the Yerkes Laboratory of Primate Biology, the University of Chicago, and the National Institutes of Health before coming to Caltech in 1954.

Early this month Sperry received an honorary degree of Doctor of Science *honoris causa* from Cambridge University in England.

The National Paraplegia Foundation is also honoring Sperry this month. He is co-winner (with William F. Windle, professor of biology at Denison University) of the first William Thomson Wakeman Basic Research Award for work that may contribute toward an eventual successful treatment for paraplegia. Of particular interest in this context is Sperry's research on factors responsible for functional regeneration in the central nervous system and his development of concepts of chemical selectivity in nerve growth and connection.



John Roberts

A Second Institute Professor

John D. Roberts, professor of organic chemistry, has been singled out for distinction twice recently, and in each case he was the second member of the Caltech faculty to be so honored. Last month he was appointed the second Institute Professor. (Physicist William A. Fowler became the first Institute Professor in 1970.) In March Roberts received the William H. Nichols Medal of the American Chemical Society—32 years after Linus Pauling, professor emeritus of chemistry, received it.

Roberts is known for his study of reaction mechanisms, that part of chemical dynamics devoted to understanding the ways the atoms in molecules reorganize during chemical change. He has been a pioneer in the use of nuclear magnetic resonance to determine the structures of complex molecules and very fast molecular reactions. Although he is primarily an experimentalist, he has been active in bringing theory within the reach of chemists through a series of small books dealing with molecular quantum mechanics and theories of nuclear resonance. He also is the principal co-author of a widely used textbook of organic chemistry, and has published more than 300 technical papers.

A member of the National Academy of Sciences, the American Chemical Society, and the American Academy of Arts and Sciences, Roberts received the ACS Award in Pure Chemistry in 1954 and the 1967 Roger Adams Medal and Award in Organic Chemistry. He came to Caltech from MIT in 1953, and served as chairman of the Institute's division of chemistry and chemical engineering from 1963 to 1967.

Haagen-Smit Reaps Rewards

A. J. Haagen-Smit, professor of bio-organic chemistry emeritus, continues to receive awards even in retirement. A recent one is the first Frederick Gardner Cottrell Award for Environmental Quality. The Cottrell Award—a cash prize of \$5,000—was presented to Haagen-Smit in April at the annual meeting of the National Academy of Sciences in recognition of his “highly innovative studies on the formation of smog and . . . untiring efforts to shape the air pollution control policies of the nation.”

The Cottrell Award was recently established in the National Academy of Sciences by Research Corporation—a foundation for the advancement of

science. Frederick Gardner Cottrell was the inventor of the first practical electrostatic gas-cleaning process and founder of Research Corporation. The award will be presented annually.

Another recent award to Haagen-Smit was the Honor Scroll of the American Institute of Chemists, given for his work on plant hormones, essential oils of plants, and atmospheric chemistry. And on June 24, he was named “Man of the Year” by the Achievement Rewards for College Scientists group.



Morale Builders

David Smith, Caltech's master of student houses, has been diverting the undergraduates this year by importing occasional live entertainers to perform on the Olive Walk. The last offering of the year, during finals week, consisted of fifteen belly dancers who drew a large and joyous crowd. A record number of seniors graduated with honors.