

The Month at Caltech



Seymour Benzer

The Albert Lasker Award in Basic Medical Research

Seymour Benzer, professor of biology, is one of three distinguished biologists to share the 1971 Albert Lasker Award for Basic Medical Research. The other recipients are Sydney Brenner of the University of Cambridge in England, and Charles Yanofsky of Stanford University. The award, which includes an honorarium of \$10,000, is for their individual studies on genes in viruses and bacteria—studies that are generally credited with establishing the foundations of the field of fine-structure genetics. These experiments demonstrated that a single functional gene was not the indivisible unit of classical theory, but was capable of being split into hundreds of recombining elements that arranged themselves in linear fashion as predicted in the Watson-Crick DNA model.

Splitting and mapping the gene has helped shed new light on the genetic process as a continuous, uninterrupted chain. This knowledge contributes substantially to our understanding of both normal and abnormal cellular events and provides insight into the molecular bases of many diseases. The findings are applicable in research into the causes of such genetic diseases as hemophilia and sickle cell anemia, and the work has led to improvement in the clinical basis for treating these and related diseases.

Benzer received his BA in 1942 from Brooklyn College, and his MS in 1943 and PhD in 1947 in physics from Purdue University. After a year as an assistant professor at Purdue, he went to the Oak Ridge National Laboratories as a biophysicist. In 1949 he came to Caltech and worked for two years as a research fellow in biophysics with Max Delbrück. Benzer then spent a year at the Pasteur Institute in Paris as a Fulbright scholar, and returned to Purdue in 1952. He was a member of the faculty there until he came to Caltech in 1965.

Since 1965 Benzer has shifted his scientific sights from fine-structure genetics to more integrative studies of development and behavior in the fruit fly *Drosophila*. In 1968 Purdue awarded

him an honorary DSc degree. He is a member of the National Academy of Sciences and of the American Academy of Arts and Sciences.

The prestigious Lasker awards were established in 1946. In 1950 George Beadle, at that time chairman of the division of biology at Caltech, was the Institute's first faculty member to receive one of the awards. Other former faculty members who have received it are Renato Dulbecco and Harry Rubin. Twenty-two recipients of the Lasker award have later received Nobel Prizes in Medicine.

New Trustee

John G. McLean, president and chief executive officer of Continental Oil Company, has been elected to Caltech's board of trustees. McLean is a Caltech alumnus (BS '38), a recipient in 1970 of the highest honor the Institute bestows on an alumnus—the Distinguished Service Award—and a member of the Institute Associates.

McLean was on the faculty of the Harvard Business School for 14 years before he joined Continental in 1954, and he also served as a consultant to business organizations and government agencies. He is co-author of the book *Growth of Integrated Oil Companies*, is a contributing author to more than 15 other books, and has written numerous articles for business publications.

Phi Beta Kappa Visiting Scholar

Frederick B. Thompson, professor of applied science and philosophy, has been appointed a Phi Beta Kappa Visiting Scholar for 1971-72—one of ten men and women who will travel to approximately 83 colleges and universities during this academic year at the invitation of local Phi Beta Kappa chapters. The program, established in 1956, enables undergraduates to meet and talk with distinguished scholars in different disciplines.

Thompson's AB in mathematics—with highest honors—was granted by UCLA in 1946, and his MA in 1947; he got his PhD from UC Berkeley in 1952. Before coming to Caltech in 1965 he held positions as senior mathematician at the Rand Corporation, manager of operations analysis of the computer department at General Electric, and member of the technical staff of TEMPO at General Electric.

The Rapidly Extensible Language (REL) system for talking to computers in ordinary English, which was originated by Thompson, is an example of his special interest in investigating and working out solutions for the problems brought about by the advances in the technologies of communications and information processing.

Thompson will visit eight schools in the course of the Visiting Scholar program: the University of Idaho, and Colby, Hobart, Whitman, Marietta, Albion, Wells, and Macalester Colleges. During each two- to three-day visit he will meet with students and faculty in classroom discussions, seminars, and public lectures. His talks will be on topics such as whether the human brain is a computer, a quantitative and humanistic foundation for the social sciences, and syntax and semantics from the point of view of a computations linguist.

Sir Fred

Fred Hoyle, visiting associate in physics at Caltech and Plumian Professor of Astronomy and Experimental Philosophy of the University of Cambridge, was knighted by Queen Elizabeth II in the annual New Year's honors.

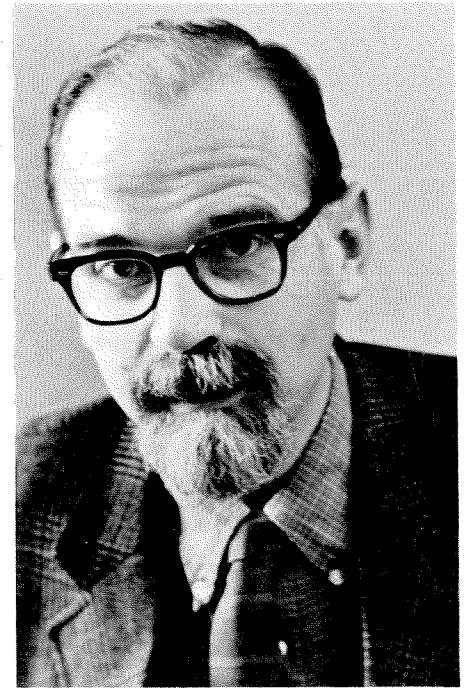
Minority Symposium

"Women and Minority Groups in American Science and Engineering" was the subject of a day-long symposium sponsored at Caltech last month by the Division of Humanities and Social Sciences. About 140 people attended the meeting, including representatives of the federal government, business, the academic world, and the Caltech and Los Angeles communities.

At the morning session Daniel J. Kevles, associate professor of history at Caltech, spoke on women, Jews, and Catholics in American science between the World Wars; Andrew Greeley, director of the Center of the Study of American Pluralism at the University of Chicago, discussed the contribution of religious and ethnic groups to science and engineering professions in recent years; and Harriet Zuckerman, a sociologist from Columbia University, described the contemporary situation of women and blacks in American science.

During the afternoon, C. J. Pings, vice provost of the Institute, moderated a panel discussion on the further social diversification of American science and engineering in the 1970's. In addition to the three morning speakers, the panel consisted of Lee F. Browne, director of secondary school relations at Caltech; Rose Brock, contract compliance officer in the Office of Civil Rights of the Department of Health, Education, and Welfare; and Alexis Balmy, manager of human resources development for the Xerox Corporation.

Though views varied on how to increase the participation of women and minority groups in the scientific professions, both the audience and the panelists generally agreed on two points: First, it is necessary—especially in the case of women—for the academic and industrial communities to equalize professional opportunities for the existing supply of PhD's in technical fields. Second, and perhaps more important, ways must be found to increase the supply of women and minority groups who aspire to careers in science and engineering in the first place.



John Benton

Social Studies

John Benton, professor of history, has received Fulbright and Continental Oil Company fellowships for a year at the University of Reims in France to study late medieval social conditions. Under sponsorship of the United States - United Kingdom Education Commission, he will also give lectures at three Scottish universities.

Division Chairman

Robert A. Huttenback, acting chairman of the division of humanities and social sciences for the past year, has been appointed chairman. Huttenback is professor of history and has also been serving as dean of students at Caltech since 1969. A member of the faculty since 1958, he was master of student houses from 1958 to 1969.

Number Please

A new color photograph of Beckman Auditorium may get the widest distribution of any Caltech picture ever taken. It's on the cover of Pacific Telephone's 1972 directory for L. A.'s Northeastern Area—and that adds up to about 310,000 volumes.

Dreyfus Foundation Teacher-Scholar Grant

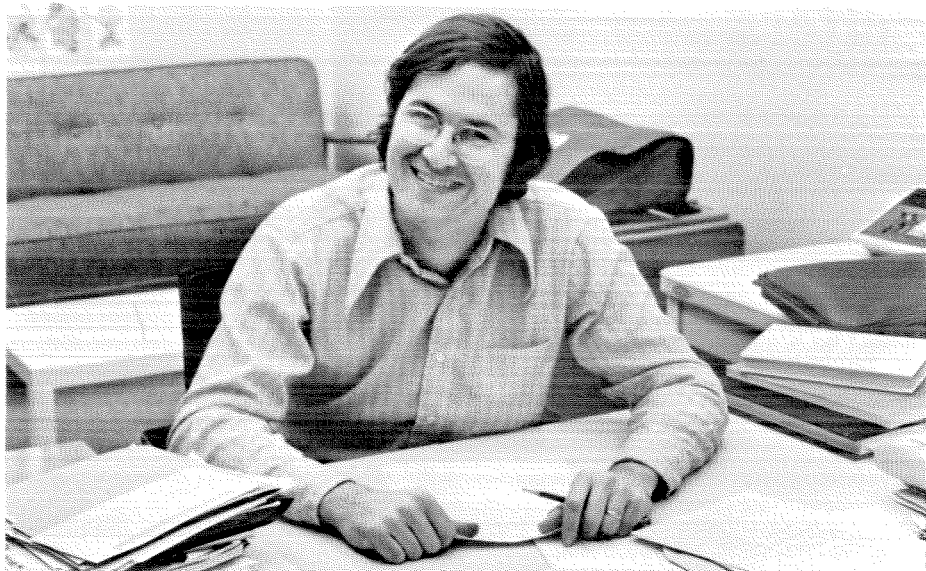
Jesse L. Beauchamp, associate professor of chemistry, is one of 16 young chemists in the United States to be awarded a Camille and Henry Dreyfus Teacher-Scholar Grant for 1971. The award of \$25,000 is intended to give its recipients maximum opportunity to develop their potentials as teachers and scholars at an early period in their careers.

Beauchamp, who is now 29, fills the prerequisites for the award nicely. He got his BS in chemistry at Caltech in 1964, and his PhD from Harvard in 1967. Coming to the Institute as an instructor in the fall of that year was, in many ways, a homecoming. From personal experience Beauchamp is aware of the problems faced by Caltech undergraduates, and to a certain extent feels that he understands their mentality. As a teacher he adds energy and enthusiasm to his understanding. The result has been that the half-dozen courses he has taught in the last four years have proved to be useful and appealing to the students. Students even admit—though sometimes not until they are engaged in graduate research and looking back—that his physical chemistry laboratory course (Ch 26) is one of the most useful courses in the curriculum.

Being aware that Caltech students—along with a lot of other scientists—tend to get enthralled with complicated instrumentation and want to do work that is basically just exercise for the equipment, Beauchamp tries to help his students realize that it's not the instruments but what you do with them that really counts. Thus, Ch 26 is structured to provide research-oriented experiments, and the outcome is that students who take the course often become deeply involved in really significant problems. Several of the undergraduates who have worked with Beauchamp have turned out publishable results. And for each of the last three years Caltech's George Green Memorial Prize for creative scholarship by a graduating senior has been shared by one of his students.

Beauchamp manages to get to know his students and their problems, both scholastic and personal. Even in what are officially lecture courses, he often presents material in the form of problems for discussion so he can increase student participation.

Though a productive career in science requires concentrating on research, he enjoys teaching and would like to have more time for it. "It's a learning experience for me," he says, "and I find



Jesse Beauchamp

it most rewarding when I'm challenged to teach something I don't completely understand. I get excited about learning something new, and that excitement is the most important thing I can communicate to students."

As a research scholar Beauchamp's main interest is in ion cyclotron resonance (ICR) spectroscopy, which is a tool for studying the chemistry of ions in the gas phase. From the results of these studies, which he began about five years ago, and with the aid of a number of what he calls "serendipitous" discoveries, Beauchamp and his research group are able to use ICR spectroscopy to examine many details of the interaction of ions with neutral molecules in the absence of any of the effects which complicate similar studies in solution. For example, says Beauchamp, cooking an egg is a complex process in which thousands of reactions occur. As is frequently the case in experimental chemical science, it is difficult to separate out and study a single reaction, but ICR spectroscopy offers a new approach that makes such studies feasible. By observing individual events in the interaction between an ion and a neutral, Beauchamp and his students are able to infer details of the chemical transformations that result from that interaction, including the motion of atoms and rearrangement of chemical bonds. The results of such studies, in conjunction with properties of neutrals

and ions also measured with ICR methods, are of general use in that they allow chemists to predict and control chemical reactions.

Beauchamp is first and foremost a chemist, but he is also a talented designer and builder of instruments to further his research. He plans to use a substantial part of the Dreyfus grant for some badly needed equipment for several new areas in which he and his research group are interested: the chemistry of inorganic ions in the gas phase, the photochemistry of ions, and the chemical transformations that are associated with the formation of an ion when a molecule swallows an energetic photon. This last program has involved Beauchamp in a joint Caltech-JPL project that is beginning to produce results that will be of value in understanding chemical reactions in planetary atmospheres and interstellar space.

Though the Dreyfus awards were established only a year ago, Beauchamp is neither the first member of the Institute faculty nor the first Caltech alumnus to receive one. Last year Robert Bergman, associate professor of chemistry, was among the first 14 young chemists to be given one of the grants. And one of this year's 16 is Peter C. Ford (BS'62), who is assistant professor of chemistry at the University of California at Santa Barbara. Ford teaches and conducts research in the areas of ligand field theory, kinetics, and the mechanism of inorganic reactions.