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THE ROCKEFELLER UNIVERSITY

news and notes

FEBRUARY 1976 VOLUME 7 NUMBER 6



On Making Quiet Revolutions

In the Report of the President 1974-75, published last month, President Seitz states: "The first 75 years of this century have seen remarkably rapid strides made in a number of fields and the relatively swift opening up of vast territories of new knowledge that has resulted in great human benefit. But at the start of any of these cycles . . . most applications derived from science that are now taken for granted or are becoming apparent were not evident at all. Much less could they have been used to justify the basic research

then getting under way. Only in retrospect are we able to detect that a quiet revolution has been going on under our noses."

As an example of "one of the most significant of these revolutions," he cites the "birth and coming of age" of the science of modern cell biology, and he quotes Professor Christian de Duve's description of this institution as having been "the cradle." A major event of the year under report was the public recognition of this fact that came with the awarding of the Nobel

Prize in Physiology or Medicine to three pioneers of cell biology: Albert Claude, a Rockefeller scientist from 1929 to 1949, who has been called the founding father; George Palade, who served here for 27 years; and Dr. de Duve, a member of the University's faculty since 1962. "It is of particular

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The historical photographs in this issue have been taken from exhibits in the Cafeteria and Library and from others soon to go up in other areas on campus.

Founder's Hall in 1906 with first power house (far left) and animal house. Right: campus from the river in 1937.



DNA Recombinant Research Raises Issues

The question of a scientist's responsibility for the consequences of his research is at least as old as Faust's dilemma and, for today's scientist, infinitely more complex. One problem which has recently received widespread attention concerns what is popularly called genetic engineering.

In July 1974, a group of prominent molecular biologists published a letter which appeared simultaneously in *Science*, the publication of the American Association for the Advancement of Science, and the British journal, *Nature*. In it, they called upon their colleagues throughout the world to join in a voluntary deferment of certain kinds of potentially dangerous genetic experiments. They also called for "an international meeting of involved scientists . . . to review scientific progress in this area and to deal with the potential biohazards of recombinant DNA molecules." (DNA is the chemical substance of genes. A technique using newly discovered enzymes has now made it possible, in the test tube, to join DNA molecules from different organisms in combinations, called recombinants, not found in nature.)

The 11 signers of the letter were members of the Committee on Recombinant DNA Molecules, Assembly of Life Sciences, which was set up by the National Research Council of the National Academy of Sciences following recommendations made at the 1973 Gordon Research Conference on Nucleic Acids. Among the members of the committee, chaired by Professor Paul Berg of Stanford University, were Nobel laureate James D. Watson, co-discoverer of the double helix structure of DNA, Rockefeller University Professor Norton D. Zinder, whose work on bacteria and bacteriophages (viruses that attack bacteria) has provided important information on the mechanisms of heredity, and MIT Professor David Baltimore, a Rockefeller alumnus and 1975 Nobel Prize recipient.

In their letter they stated: "Recent advances in techniques for the isolation and joining of segments of DNA now permit construction of biologically active recombinant DNA molecules in vitro. . . . Several groups of scientists are now planning to use this technology to create recombinant DNAs from a variety of . . . viral, animal, and bacterial sources. Although such experiments are likely to facilitate the solution of important theoretical and practical biological problems, they would also result in the creation of novel types of

infectious DNA elements whose biological properties cannot be completely predicted in advance.

"There is serious concern that some of these artificial recombinant DNA molecules could prove biologically hazardous. One potential hazard in current experiments derives from the need to use a bacterium like *E. coli* to clone the recombinant DNA molecules and to amplify their number. Strains of *E. coli* commonly reside in the human intestinal tract, and they are capable of exchanging genetic information with other types of bacteria, some of which are pathogenic to man. Thus, new DNA elements introduced into *E. coli* might possibly become widely disseminated among human, bacterial, plant, or animal populations with unpredictable effects."

The Asilomar (California) Conference on Recombinant DNA Molecules, held a year ago this month in response to the letter, brought together over 140 scientists from most of the major countries of the world, including Japan, Australia, and the Soviet Union. A report was issued from the conference which recommended a ban on the most dangerous experiments and made suggestions for upgrading laboratory safeguards on continuing experiments. The report also expressed the need for stepped-up efforts toward the development of techniques for using other experimental microorganisms in place of *E. coli*.

Last month, a committee of the National Institutes of Health, under the chairmanship of NIH Deputy Director DeWitt Stetten, Jr., issued a detailed set of specific guidelines. Rockefeller Professor James E. Darnell, Jr., served as a member of that committee.

The NIH guidelines have generated considerable controversy among scientists which has been reflected in reports carried in the public press. Some researchers have called them unnecessarily restrictive while others have criticized them as not strong enough. Dr. Zinder positions himself in the middle—"the hardest line to follow." He acknowledges that they are "stringent." He feels, however, that if future findings prove them to be excessive, "it is easier to step down than up." He is planning to introduce a resolution urging their endorsement by the National Academy of Sciences. A point on which all concerned agree is the desirability of avoiding governmental restraints, which are, in Dr. Zinder's opinion, unnecessary, "virtually un-



Founders: John D. Rockefeller,
John D. Rockefeller, Jr.

enforceable," and could lead to time- and energy-consuming bureaucratic tangles. "The major currency in science is peer opinion. We must show we are capable of self-regulation."

Although Dr. Darnell agrees that the guidelines are tough, he states that the intention of the NIH committee was to assure that the important work in recombinant experimentation would continue without impediment. (Work with fruitflies and yeasts was essentially unaffected. Recent laboratory reports indicate that progress is being made toward a less potentially infectious working strain of *E. coli*.)

Molecular research may, in time, lead to better treatment for genetically caused diseases. At the present moment, however, the greatest benefits expected of the new techniques are primarily at the basic information level, helping scientists to learn about the vastly complicated workings of genetic regulation within animal and human cells. The new restrictions may necessitate more careful planning of experiments, greater costs in lab equipment, and the curtailing of some lines of inquiry. They ought not, in the opinion of the Rockefeller scientists most closely involved with this issue, impede progress toward their goals.

Multiple Sclerosis Studied

The University has received a grant of \$259,584 from the National Multiple Sclerosis Society, effective January 1, in support of the work of Professor John B. Zabriskie, bringing to \$462,882 the total amount provided to Dr. Zabriskie by the society since 1972.

Dr. Zabriskie and his associates are working to confirm and clarify findings which appear to indicate that multiple sclerosis is caused by an unusual response to measles virus. In normal individuals, according to Dr. Zabriskie, these viruses are flushed out of the system following infection, and future infection is prevented by the acquired "recognition" of measles by the immune system. In some individuals,

however, probably owing to some as yet unknown genetic factor, normal immunity fails to develop. These viruses remain permanently in the cells in a latent state until triggered into action, possibly by an injury or other trauma. Dr. Zabriskie is currently testing the use of "transfer factor," a substance derived from the blood of people with normal reactivity to measles, to determine its effectiveness in treating multiple sclerosis. He is also conducting research to determine what mechanisms are responsible for cell-mediated immunity to measles in normal subjects and what factors might be missing in the response of multiple sclerosis patients.

ON MAKING QUIET REVOLUTIONS *continued from page 1*

relevance to this report," Dr. Seitz continues, "that we are today on the threshold of realizing direct benefits from this revolution . . . in such areas as hereditary diseases, aging, arteriosclerosis, and cancer."

The Nobel Prizes were the most conspicuous of the many honors which accrued to the University during the year. Six faculty members were elected to the prestigious National academy of Sciences, bringing the number of University scientists in the Academy to 47, "an indicator of excellence unmatched by any other institution." Professor James A. Shannon was named a recipient of the National Medal of Science, the eighth from Rockefeller to be so honored. The University was cited by the New York State Education Department for the excellence of its Ph.D. program in physics.

The number of government grants awarded to Rockefeller scientists re-

mains high but, reiterating what he has said in previous years, Dr. Seitz is "troubled by some of the implications of our reliance on public funding for more than half of our scientific and educational resources: the administrative burdens that cut into the productive hours of scientists, the increasing emphasis on 'practical results' and short-term projects, and the loss of flexibility. . . ." The answer, according to a consensus of those concerned with the University's future, is a balance between public and private funding. In offering his thanks to the many on campus who have helped "in telling the University's story to prospective donors," Dr. Seitz reasserts the importance of the scientific community's continuing responsibility to help "deepen public understanding and appreciation of the importance of basic research and the role of institutions like this University."

PERSONALS

Born, November 23, to **Diogenes España**, a member of the mail room staff, and his wife, Hilda, manager of patients' accounts at Payne-Whitney, a daughter, Jessica, their second child.

Born, November 24, to **Louise Ferraro**, bookkeeping clerk, and her husband, Joseph, a son, Joseph Daniel, their sixth child.

Born, December 24, to Professor **David J. Micco**, Physiological Psychology, and his wife, Nancy Ellen, a daughter, Nicole, their first child.

DEATH

Edward J. Hactor, 70, on December 30. Mr. Hactor was with the University Power House from 1962 until his retirement in 1974, serving as watch engineer from 1969.

Science Writer's Seminar

As part of the University's 75th anniversary celebration and of its continuing effort to help broaden public understanding of the role and direction of scientific research, some 30 leading science and medical writers attended a special half-day seminar on New Projects and Perspectives in Cell Biology, held at the University on January 27.

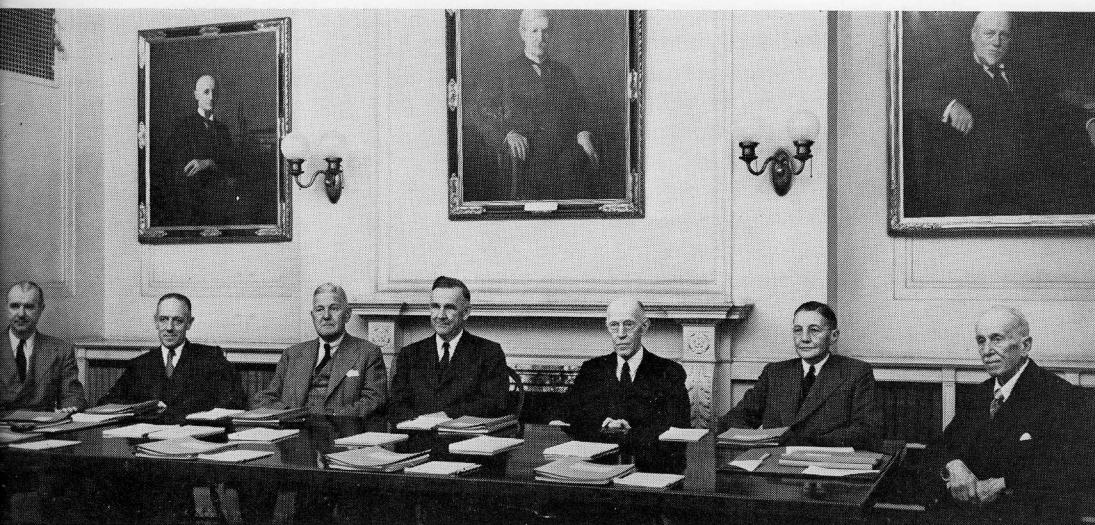
After a welcome by President Seitz, the group was addressed by Christian de Duve, Andrew W. Mellon Professor and 1974 Nobel laureate, who spoke on Exploring Living Cells. Dr. de Duve, who chaired the seminar, was followed by Professor David J. L. Luck who spoke on How Growing Cells Make Mitochondria; Professor Zanvil A. Cohn, on Phagocytic Cells: Biology and Role in Disease; Professor James E. Darnell, Jr., on The Difference in Mechanics of Gene Expression in Bacterial and Mammalian Cells; and Professor Norton D. Zinder, on A Geneticist's View of Cell Biology.

APPOINTMENTS

Hui-Chong Chiu, Biochemistry, as research associate, effective January 15.

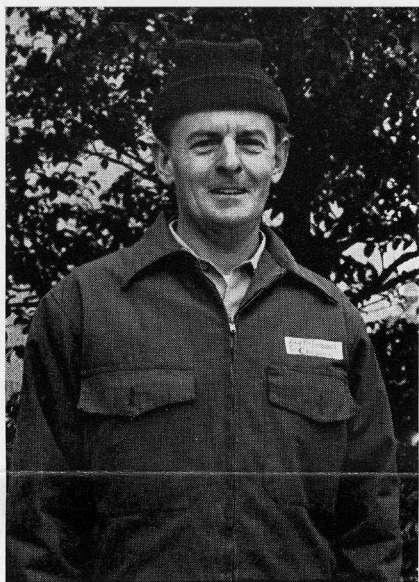
Thomas Chapin, Experimental Physics, as research associate, effective February 1.

John McLaughlin, Biochemical Cytology, as assistant professor, effective February 1.



Scientific Directors, 1951. Left to right, Vincent du Vigneaud, Detlev W. Bronk, Alphonse R. Dochez, George H. Whipple, Ross G. Harrison, Herbert S. Gasser, Warfield T. Longcope. (Portraits are of Simon Flexner, Frederick T. Gates, and William H. Welch.)

Considine Appointed Head Gardener



John Considine was appointed head gardener on January 1 succeeding James F. Beckley who left the University to accept a post outside of the city. Mr. Considine has been with the University since 1961 as an assistant gardener. Harry Oettinger, who has helped on the grounds during the past seven summers, has been appointed an assistant gardener.

AZZU PROMOTED

Majid Azzu, a member of the Buildings and Grounds staff since 1972, has been promoted to assistant superintendent. Mr. Azzu holds a B.S. in physics and electronics from Fordham University and has done graduate work in electrical engineering at CUNY and Rensselaer Polytechnic Institute.

IN PRINT

"Human Behavior in Mathematical Perspective," an article by Professor **William K. Estes**, Mathematical Psychology, appears in the November-December issue of *American Scientist*. Dr. Estes states: "The role of mathematics is apt to be of special importance in the extension of psychological principles and methods to the problems arising in the economy or in political or social institutions. . . . The main harvest of psychological research has been a vast collection of facts and local principles that are largely specific to particular types of people in particular situations. Hope of contact between this mass of material and the construc-

BRIEFS

Professor **Paul A. Weiss**, Developmental Biology, gave a series of invited lectures during the summer and fall at the academies of science in Amsterdam; in Halle, East Germany; and in Budapest, Szeged, and Tihany, Hungary; at the Medical University of Hanover; at the Max-Planck Institutes in Göttingen and in Munich; at the University of Vienna; and at a joint meeting of the Austrian College and the Club of Rome. He spoke on neuroplasmic flow, the history of experimental neurobiology, the mechanisms of cell locomotion and its relation to cancer, systems thinking as the foundation of science, and biomedical education.

Professor **Stanford Moore**, Biochemistry, delivered the Gaetano Quagliariello Lecture at the annual meeting of the Societa Italiana di Biologia Sperimentale in Catanzaro in September and the Nieuwland Lectures in Chemistry at the University of Notre Dame in January.

Professor **Gerald M. Edelman**, Developmental and Molecular Biology, received the Buchman Memorial Award and delivered the Buchman Memorial Lecture at the California Institute of Technology on October 20. Dr. Edelman has been named an honorary member of the Japanese Biochemical Society, which celebrated its 50th anniversary in November.

Professor **Philip Siekevitz**, Cell Biology, was named president of the New York Academy of Sciences for 1975 at the academy's 158th meeting, held on December 3. He served as president-elect during 1975. A longtime

tion of social science theory depends on our ability to abstract from the mass of fact and local theory a characterization of properties of human behavior that is general enough to have wide applicability and can be presented in a form that will interface with the models of economics, government, and other social sciences." In the article, Dr. Estes takes a look at the "picture of the behaving human individual that emerges from current work in mathematical psychology," specifically considering "some of the problems and questions that arise when a human being takes on the role of a link in a man-machine system—for example, a communication network—or in a multiperson interaction, as occurs in economics or population dynamics."

academy member and member of its governing board, Dr. Siekevitz was one of the founders of the section on Science and Public Policy and section chairman from 1972 to 1974.

Professors **Christian de Duve**, **Gerald M. Edelman**, and **Fritz Lipmann** joined other Nobel laureates from all over the world for a celebration of the 75th anniversary of the Nobel Foundation held in Stockholm on December 10 in conjunction with the bestowing of this year's awards. The Rockefeller participants had the added pleasure of seeing one of this year's prizes awarded to alumnus **David Baltimore**, currently a visiting professor at the University.

Professor **René J. Dubos**, Environmental Biomedicine, was the opening speaker, on January 7, for the World Health in Human Perspective series of Bicentennial Lectures by Distinguished Scholars, presented by the College of Physicians of Philadelphia.

Vice President **Rodney W. Nichols** addressed a special meeting of the Council on Foreign Relations on January 7. He spoke on Looking Toward the Special U.N. Session in 1979 on Science and Technology.

Professor **Bruce Merrifield**, Biochemistry, has been appointed to the Board of Scientific Consultants of Sloan-Kettering Institute. Professor **Henry G. Kunkel**, Immunology, serves as vice chairman of the board.

FILM SCHEDULE

The following films will be shown in Caspary Auditorium at 8:30 P.M. and are open to Rockefeller personnel and their guests without charge. *Last Year at Marienbad* (Resnais) on February 13; *The Mouse That Roared* with Peter Sellers, on February 22; *Notorious* (Hitchcock) with Cary Grant and Ingrid Bergman, on April 2; *Les Bonnes Femmes* (Chabrol) on April 11; *The Sergeant* with Rod Steiger, on April 30; *The Red Desert* (Antonioni), on May 9; *Klute* with Jane Fonda, on May 28.

PAINTING PURCHASED

One of the large nonobjective works by British painter Bruce Tippet recently exhibited in Caspary Gallery has been purchased for the University through the David Rockefeller Art Fund. Titled "Item 33, 1964, Spiral III," it now hangs on the west wall of the Abby Aldrich Rockefeller Dining Room.