

GENERAL SCIENCE

A Centennial of Science

The National Academy of Sciences founded in 1863 will celebrate its centennial with pomp, praise and presidential approbation. Scientists from all the world will bring greetings.

► THE NATIONAL ACADEMY OF SCIENCES will celebrate the centennial of its founding with a program of ceremonies and special scientific sessions in Washington Oct. 21-24.

More than 750 members of the Academy and their guests, foreign associates, and delegates from foreign academies, international scientific organizations, and scientific and technical societies of the United States will be in attendance for the occasion, commemorating the establishment of the Academy in 1863.

The President of the United States, John F. Kennedy, will address the centennial convocation on Tuesday afternoon, the ceremony opening with a formal procession of Academy members, delegates and foreign associates in academic costumes, some of which will bear the colors of institutions founded before the discovery of America.

There will be four scientific sessions, three of which will deal with areas of science in which there have been major advances during the century of the Academy. A fourth will inquire into the conduct and application of human needs and aspirations.

History of NAS

The National Academy of Sciences was founded by an Act of Congress, passed unanimously by both houses and signed by President Lincoln on March 3, 1863.

Although the Act of Incorporation established the Academy as a private and independent learned society of self-perpetuating membership, it also called upon the Academy to serve as an official adviser to the Federal Government, bringing the scientific strength of the nation to aid in the determination of national policy. Organized in the midst of a bloody civil war, the Academy was nevertheless dedicated from the outset to the furtherance of science for the benefit of all.

Significance of Founding

Joseph Henry expressed the significance of the founding of the Academy in his report as its president in 1867: "The organization of the Academy may be hailed as marking an epoch in the history of philosophical opinions in our country. It is the first recognition by our government of the importance of abstract science as an essential element of mental and material progress."

How this recognition has grown through the years is attested by the multiplication of governmental scientific agencies and by the development of mechanisms by which scientific and technological factors in domestic

and foreign affairs are considered at the highest levels of Government.

In this growth the Academy has played a creative and influential role; it stands today as the senior body through which the knowledge, wisdom, and leadership of the nation's scientists and engineers are brought to bear on issues of primary national importance.

Prominent Role in Science

From the beginning the Academy has played a prominent role in the scientific issues that have confronted the Government.

Early services included recommendations on the adoption of the decimal system, on the protection of iron ships from corrosion, on the protection of coal mines from explosions, on plans for surveying and mapping the territories of the United States, on the preservation of the Declaration of Independence, on the definitions of the ampere and the volt, on the inauguration of a rational forest policy for the United States, on the scientific exploration of the Philippine Islands and on the prevention of landslides that blocked the Panama Canal.

Recommendations of the Academy led to the establishment of the U.S. Geological Survey, the National Bureau of Standards and the Forest Service, and to the reorganization and relocation of the Old Coast Survey, the Weather Bureau and the Patent Office.

National Research Council

Established by the Academy in 1916, and operating as a part of its structure, the National Research Council was responsible for the mobilization of science in support of the Government in World War I, and afterwards for the administration of the remarkable and extensive program of NRC Fellowships, financed by the Rockefeller Foundation, which not only gave post-doctoral research training to a notable percentage of the leaders of American science, but also set the pattern for succeeding programs sponsored by other private and public institutions.

World War II found the Academy and the Research Council active in the mobilization of scientific effort under the governmental leadership of the Office of Scientific Research and Development.

Committees in the medical sciences played a leading role in the development of the new field of aviation medicine, the clinical evaluation and large-scale production of penicillin, the development of quinine substitutes, recommendations for the battlefield use of sulfa drugs and the use of human blood plasma for emergency transfusions.



NAS EMBLEM

In the physical sciences, the Academy made early recommendations to the Government on the prosecution of an unprecedented research effort to translate the phenomenon of nuclear fission into military weaponry.

Current Responsibilities

Recent and current responsibilities of the Academy for major national and international scientific undertakings have included United States participation in the International Geophysical Year, extensive studies of the biological effects of atomic radiation, investigation of the long-term medical effects of the atomic bombings at Hiroshima and Nagasaki; the National Road Test in Illinois to develop quantitative engineering information on the construction of highways for the heavy traffic loads of today and tomorrow; the development of long-range national research programs in oceanography and in the atmospheric sciences; the examination for the President of the entire problem of research on natural resources in this country; the pioneering experiments in drilling on the floor of the deep ocean as a prelude to the effort to drill to the Mohorovicic Discontinuity, where the earth's crust and mantle meet; studies of the major problems of the Navy in undersea warfare and in the programming of shipbuilding and ship replacement; similar studies of the scientific and technological future of the Air Force for the next ten to twenty-five years; continuing advice to the National Aeronautics and Space Administration on the scientific content of the national space program; representation of the scientists of the United States in the major international organizations of science; responsibility for United States participation with Argentina in a joint effort to solve the problem of foot-and-mouth disease in Argentine cattle; advice on the problem of protein malnutrition in meat-poor countries, and many more.

Undertakings which are now nearing completion include a broad study of the critical matter of utilization of scientific and technical manpower in the United States; a major planning study of the future place of high-speed electronic computers in every field of science; and the development

of a research program for the National Park Service.

The members of the Academy, who bear legal responsibility for its actions, now number about 650 of the most distinguished scientists and engineers of the United States.

The efforts of some 3,500 additional leading scientists and engineers of the country are joined with those of the members of the Academy in its two great purposes of furthering science and of serving the Government.

Its undertakings reach into every field of the natural sciences. They are concerned with the entire spectrum of science from its most basic to its most applied aspects. Its leadership, through its duly elected officers, is derived from the great body of U.S. scientists and engineers.

Its ties with the Federal Government are intimate and effective; yet its independence is complete.

The Academy receives financial support from both private and public sectors—from individuals, foundations, and private industry as well as the Federal Government.

These features, in combination, are unique among the organizations of science in the United States; taken together, they have enabled the Academy to complete a century of service to science, the nation, and the world of man, to embark hopefully upon a second century bright with promise.

• Science News Letter, 84:243 Oct. 19, 1963

GENERAL SCIENCE

Chemical Man Exhibit Tells Life Story

See Front Cover

➤ A NEW TYPE of exhibit designed to clarify for the layman the chemical activity that creates and sustains human life has been produced by Abbott Laboratories, North Chicago, Ill.

Unveiled in Chicago's Museum of Science and Industry, the first-of-its-kind production will be shown in the 1964 New York World's Fair Hall of Science.

The exhibit tells its story through a combination of three-dimensional models, photomicrography and animated sound motion pictures all taking place in a giant egg-shaped plastic shell 42 feet in diameter with a 70-person capacity.

The chemical man story starts with man as a recognizable being, then explores step-by-step cellular and subcellular levels of development.

The unit of life—the cell that performs the processes of a living organism—is seen magnified many thousands of times in the three-dimensional model shown on this week's front cover, a part of the chemical man exhibit. The large spherical body in the center is the nucleus in which can be seen spiral-like chromosomes that contain heredity-transmitting mechanisms. Other structures shown include the endoplasmic reticulum, which probably segregates and transports material within the cell; mitochondria, the "power plants" of the cell, and lysosomes, which contain enzymes that

break down large molecules into smaller ones.

"Chemical man is an educational exhibit, designed to bring viewers to an understanding of the miracle of life," George R. Cain, president and board chairman of Abbott, said.

"We hope it will stimulate talented younger people to have a greater interest in scientific careers—especially in life sciences which could lead us to new ways to control and cure disease."

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GENERAL SCIENCE

Government-Supported Research Defended

➤ TWO TOP U.S. SCIENTISTS defended Government-supported research projects against a Congressman's charge that the projects seem to be "coming out of our ears."

They told a House appropriations subcommittee that much of the apparent overlapping in the projects cannot be avoided if we are to have scientific progress.

The scientists, whose testimony was recently made public, are Dr. Detlev W. Bronk, chairman of the National Science Board and president of the Rockefeller Institute, and Dr. Alan T. Waterman, retired first director of the National Science Foundation.

Rep. Harold C. Ostertag (R-N.Y.) told the two that he is disturbed by the possibility of duplication in research efforts.

Dr. Waterman said that research projects cannot be judged from their titles alone. He said two different scientists often have different approaches and interests in the same subject.

"Then also it is important that more than one individual investigate a certain problem in order to be sure that the results are consistent with the facts so that you have a test," Dr. Bronk said. "This evaluation is continually going on and this is a very essential part of the conduct and spirit of testing."

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CONSERVATION

Ford Grants \$7 Million To Resource Study Group

➤ CONSTANTLY INCREASING problems concerning the use and abuse of our natural resources will be tackled with a \$7 million grant from the Ford Foundation.

The grant, made to Resources for the Future, Inc., Washington, D. C., will be used to support research and education programs in the fields of conservation and utilization of resources.

These programs include land-use studies, fellowships, and surveys on pollution control and on the probable effects of future changes in our pattern of living and our technology. Education for conservation and development, both here and in underdeveloped countries, is also being emphasized. Foundation grants to Resources for the Future since its beginnings in 1952 total almost \$17 million.

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Questions

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