

velopment. On the basis of this survey, and other studies now under way, we must revise upward to more than \$5 billion the total cost of research and development performed by private industry, educational institutions, Government agencies, and all other types of organizations. Private industry performs roughly two-thirds of all research and development in the natural sciences and engineering. Over one-third of this amount is done for the Federal Government chiefly on contracts with the Department of Defense and the Atomic Energy Commission. However, the survey indicates that only 4 percent—nearly \$150 million—of the total cost of research and development conducted by private industry in 1953 went into basic research.”

Electrical equipment and aircraft industries, the survey showed, far exceed all others in the size of their research and development programs. Together, these industries accounted for \$1.5 billion of the 1953 research and development cost.

The chemical industry far surpassed all others in dollars spent for basic research. Nearly as high, however, was the proportion of basic research allocated, out of total research and development expenditures, by the stone, clay, and glass industry group because of the emphasis placed on basic research by many glass companies.

Of the 554,000 scientists and engineers employed by the surveyed industries in January 1954, the largest groups included 409,000 engineers, 60,000 chemists, 11,000 metallurgists, 10,000 life scientists, 10,000 earth scientists, 8000 physicists, and 6000 mathematicians. Included, as well, were about 34,000 scientists and engineers classified by their companies as administrators. Of this total, about 157,000 scientists and engineers—nearly 30 percent—were engaged in research and development, including approximately 105,000 engineers, 27,000 chemists, and much smaller numbers in other fields of science.

The survey found that more than 15,000 companies contributed to the nation's research and development effort. Of these, about 13,000, or 85 percent, employed less than 500 persons. Cost figures show, however, that this large group of small companies performed only about one-tenth of all industrial research and development, whereas the 375 largest companies (with 5000 or more employees) performed about 70 percent. These data are exclusive of enterprises employing less than 8 persons and of individuals working alone, as well as of scientific and engineering consulting firms and a few other types of organizations. Copies of the preliminary report may be obtained from the Superintendent of Documents, Washington 25, D.C., for 30 cents each.

UNESCO Technical Aid Budget

■ UNESCO's technical assistance program will be expanded in 1956. In December, the U.N. General Assembly voted to increase UNESCO's share of the U.N. technical assistance budget from \$3,937,653 to \$4,940,933. A large part of the increase is in the form of national contributions that have in the past proved difficult to utilize because of currency restrictions.

UNESCO plans to have 300 technical assistance experts in the field in 51 nations in 1956. At present, 162 experts are working in 43 countries.

The U.N. finances its technical assistance program by voluntary contributions from member states. The General Assembly this year determined the percentage of the budget that each of the specialized agencies would receive, and UNESCO was allotted 16.6 percent of the total.

Soviet Visitors

Four Soviet medical scientists have arrived in the United States for a 4-week tour to study methods of treatment of poliomyelitis and the preparation of the Salk vaccine. All four of the visitors are from the Academy of Medical Sciences of the U.S.S.R. Members of the group are Mikhail P. Chumakov, director of the Poliomyelitis Research Institute; Marina K. Voroshilova, senior research worker of the Poliomyelitis Institute; Anatolii A. Smorodintsev, director of the department of virology of the Institute of Experimental Medicine; and Lev I. Lukin, scientist of the academy. Arrangements for the tour were made by the U.S. Public Health Service at the request of the Department of State.

The scientists will go to seven cities, including Pittsburgh, where they are scheduled to visit the Municipal Hospital and meet with Jonas Salk. In addition to Washington, D.C., other stops on the schedule include Children's Hospital in Boston, Mass.; Yale University Medical School; the University of Minnesota Medical School; Children's Hospital Research Foundation in Cincinnati, Ohio; Johns Hopkins University; and the National Institutes of Health. The group will be accompanied by Alexis I. Shelokov, virologist for the National Institutes of Health.

New Affiliate of AAAS

The National Society of Professional Engineers was founded in 1934 with a membership of approximately 2500. The four founding state societies—New York, New Jersey, Connecticut, and Pennsyl-

vania—have since then been joined by 35 other state groups, and the national society today includes more than 36,000 members in the United States and its territories.

The membership is limited to engineers who have met the requirements for professional registration as set forth by the laws of a state, territory, or possession of the United States. Organized on a three-level structure—local chapter, state, and national—NSPE gives the individual engineer an opportunity to participate in professional activity and to develop his professional attitudes in terms of service to the community, the state, and the nation.

The society endeavors to raise the standards of the profession in the eyes of the general public, of industrial management, and of engineers themselves. In pursuit of its objectives, the society carries out a broad program of public relations designed to portray the professional engineer's many and important contributions to the American way of life. An important phase of this program is the sponsorship of National Engineers' Week each year, during the week of George Washington's birthday. The events of this week, observed throughout the country, have been highlighted by a congratulatory letter from the President of the United States. During the week, emphasis is focused on engineering activity through the press, radio, television, appearance of engineers before civic organizations, sponsorship of career conferences, and guided industrial tours for students and parents, and similar activities.

The society, in cooperation with the Professional Engineers Conference Board for Industry, carries on a continuing research activity in various phases of engineering-management relationships. A series of Executive Research Surveys has furnished industrial executives with a comprehensive body of material designed to stimulate better use of existing engineering talent. Through its Committee on Engineers in Industry, the society has published a comprehensive volume on engineering-management relationships, focusing attention on existing laws as they affect these relationships and on a number of problems that may be resolved through engineering-management cooperation.

Operating through its national-level committees and implementing activities through similar state and local committees, the society is active in such fields as ethical practices; national defense; vocational guidance; work with young engineers; and the promoting of interest in mathematics and physical sciences in high schools. The society has been active in promoting and improving state registration laws for professional engineers

and has sponsored the publication of a compendium of state engineering laws for all 48 states, the territories of Alaska, Hawaii, Puerto Rico, and the District of Columbia.

The national society publishes a monthly newsletter, a legislative bulletin, and a magazine, the *American Engineer*. In addition, a number of booklets and other printed materials related to society policy statements and engineering information are developed from time to time. The affiliated state societies and local chapters also issue various publications containing items of engineering interest in their areas of activity.

The society has recently built its own headquarters building at 2029 K St., NW, in Washington, financed by the purchase of interest-bearing building bonds by the membership.

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News Briefs

■ The Atomic Energy Commission announced on 12 Jan. that preparations are underway for a series of nuclear tests to begin in the spring at the Eniwetok Proving Grounds. One of the purposes of this series will be the further development of methods of defense against nuclear attack.

Air and sea traffic will be notified through normal channels of the details of the control area well in advance of the commencement of operations. Operations will be conducted by Joint Task Force 7, commanded by Rear Admiral B. Hall Hanlon, USN. Alvin C. Graves, Los Alamos Scientific Laboratory, is deputy commander for scientific matters.

The forthcoming series of tests will involve weapons generally smaller in yield than those tested during the 1954 test series. It is anticipated that the energy release of the largest test will be substantially below that of the maximum 1954 test.

■ In a release on 9 Dec. from the United States Mission to the United Nations, it was announced that the U.S. had appointed Shields Warren, director of the Cancer Research Institute at New England Deaconess Hospital in Boston as its representative on the new scientific committee on radiation effects. Ambassador Lodge at the same time notified Secretary General Hammarskjöld that the alternate U.S. representatives on the committee would be Austin M. Brues, director of the biology and medical research division of Argonne National Laboratory, and Merril Eisenbud, director of the Health and Safety Laboratory and manager of the New York Op-

erations office of the U.S. Atomic Energy Commission. The new committee was authorized by the U.N. General Assembly on 3 Dec. when it unanimously approved a resolution setting up a Scientific Committee on the Effects of Atomic Radiation.

Warren was the first director of the AEC Division of Biology and Medicine and is now president of the American Board of Pathology. Brues was a member in 1946 of the Brues-Henshaw Investigating Team sent to study casualties at Hiroshima and Nagasaki; he is president of the Radiation Research Society and past president of the American Association for Cancer Research. Eisenbud, who has been associated with the AEC since 1947, has done work on fallout evaluation, radiological hygiene hazards, and beryllium and uranium poisoning. The laboratory he directs is the headquarters for the AEC's National Monitoring System for analysis and evaluation of fallout resulting from nuclear detonations, and he has also undertaken studies of radiological hazards in the civilian atomic energy industry. Both Brues and Eisenbud were listed among the 183 U.S. technical advisers for the Geneva "atoms-for-peace" conference last August.

The U.N. Scientific Committee will be composed of one scientific representative from each of 15 nations, and it is understood that the first meeting will take place in March of this year. The scientific appointees from other nations are not known at this time.

Scientists in the News

JOHANNES IVERSEN, distinguished Danish ecologist, arrived in the United States in December and will remain until June under a grant from the Rockefeller Foundation to encourage the development of pollen analysis here. He is working at the pollen laboratories in the new Willard Gibbs Research Center at Yale University, and is available there for conferences with visitors.

In addition to his profound knowledge of the European Pleistocene, his skill in the critical identification of pollen with modern optical equipment is generously at the service of American palynologists. He is particularly interested in the long Wisconsin and interglacial cores now under study at Yale and at Oberlin, and he expects to attend the pollen conference that is tentatively set for May at the latter institution.

Iversen's plans include an excursion in mid-March to Florida and Texas, and a field trip to the San Augustin Plains in western New Mexico. He has with him films of unusual interest to anthropologists and archeologists that deal with his

research on forest clearance by stone axes and fire for Neolithic agriculture. His mailing address during his visit will be in care of the Yale Conservation Program, New Haven, Conn.—P.B.S.

LEON J. KAMIN, at present a research psychologist at Queen's University, Kingston, Ontario, has been acquitted of a contempt of Congress charge by Federal Judge Bailey Aldrich in proceedings that took place in Boston, Mass. Kamin, who had testified freely about his former affiliation with the Communist Party, was a research assistant at Harvard University until 1 June 1954. His indictment resulted from his refusal to tell a subcommittee of the Senate Committee on Government Operations about former Communist associates "on grounds of conscience."

Judge Aldrich's 24-page decision emphasized that the court failed to accept any of the defendant's contentions that the subcommittee's questioning violated his constitutional rights. The acquittal decision was based on the technicality that the Senate committee had exceeded its authority in its line of investigation.

The judge found that a 1946 legislative reorganization act gave the committee the duty of "studying the operation of Government activities at all levels with a view to determining its economy and efficiency." Aldrich emphasized that Government operation means "the operation of Government departments, not private industry, even though under Government contract." He pointed out that, as established by the Government's own witnesses, the Boston investigation was of "subversion and espionage affecting privately operated defense plants, and this was not within the authority Congress had given the committee."

This decision will undoubtedly have some influence upon the course of the Government's similar contempt proceedings against Wendell H. Furry, associate professor of physics at Harvard University [*Science* 121, 232 (18 Feb. 1955)].

RAYMUND L. ZWEMER, former chief of the Science Division at the Library of Congress, has been appointed head of UNESCO's Division of International Cooperation for Scientific Research, Natural Sciences Department, Paris. He will be responsible for UNESCO's relations with international scientific unions and other organizations concerned with scientific research on an international scale. The appointment was effective on 30 Dec. 1955.

DAVID A. KEYS, one of the two vice presidents of the National Research Council of Canada (scientific) and the scientific adviser to the president of Atomic Energy of Canada Limited, re-