

Project East River

Report Criticizes Civil Defense

One-third of a 1000-page report to the federal government on civil defense was made public in January by Associated Universities, Inc., which operates the Atomic Energy Commission's Brookhaven National Laboratory. The remainder of the Associated Universities' report, containing a large number of specific recommendations for the reorganization of the national civil defense system, was classified top secret. Prepared following an eighteen-month study (known as "Project East River") by a group of eighty-eight scientists, educators, business men, and government experts, the report was submitted to the Department of Defense, the Federal Civil Defense Administration, and the National Security Resources Board, and called upon these agencies to institute a broad and revitalized program for defense against any possible atomic, biological, or chemical attack on the United States.

The portion of the report that was made public recommended that a national policy leading toward the decentralizing and replanning of cities and industrial areas be adopted in order to reduce the vulnerability of urban centers to attack. Criticizing public apathy and the lack of adequate coordination of civil defense with the over-all national defense program, the report declared that Congress, by its action in reducing appropriations for civil defense, had weakened public belief in the need for a vigorous program.

"Biological, chemical, and radiological warfare have been peculiarly veiled in secrecy," the report also stated, "and neither civil defense officials nor the public have been adequately informed as to the true nature of these threats, how they are related to the threat of atomic bombs and what civil defense planning and measures are deemed necessary to counter these threats. This deficiency needs to be corrected."

The nine members of Associated Universities, Inc., are Cornell, Columbia, Harvard, Johns Hopkins, Massachusetts Institute of Technology, Pennsylvania, Princeton, Rochester, and Yale. The survey was conducted under the direction of Otto L. Nelson, Jr., vice president of the New York Life Insurance Company.

The Deep Sea

ICSU Committee Urges Support for Research

Expressing the belief that fundamental research on the problem of the deep sea is not only promising, but very necessary in order to gain access to the full economic resources of the oceans, the Joint Commission on Oceanography of the International Council of Scientific Unions has urged that such research be given widespread support. Recent developments in electronics, physics, and chemistry, and in methods of detailed surveying and sampling of the deep-sea floor, the Joint Commission points out, have made possible "a new level of scientific understanding of the oceans which can be of the greatest importance to all fields of natural science".

The field of deep-sea research is one of the most favorable for international collaboration, according to the Joint Commission, which noted further that in view of the great expense of equipping and maintaining oceanographic vessels, it would be highly advisable that scientists of different nations participate in expeditions, wherever possible, both in planning the scientific program and in the work at sea, and in working up data and collections.

At its Second Meeting at the Institut Oceanographique and the International Hydrographic Bureau at Monaco, September 23-25, 1952, the Joint Commission adopted a resolution proposing that a permanent bureau be established under the name of the "International Deep-Sea Council", to act as a central organization to stimulate international collaboration in fundamental research problems of the deep-sea, to provide for the planning of expeditions, to serve as international clearing house for echogram and other data and for information concerning new methods and instruments, and to publish a journal of deep-sea research.

Applications of Science

V. Bush, on Basic and Applied Research

In reviewing some of the outstanding contributions to applied science made during the past fifty years as a result of the programs in basic research of the Carnegie Institution of Washington, Vannevar Bush, president of the Institution, had some things to say about the difference between fundamental and applied research in his annual report for 1952, released last December.

"It is a difference," he observed, "that lies not so much in methods and procedures as in motivation and objectives. Scientists conduct their investigations in much the same manner whether they are employed by a disinterested institution such as ours, by one of the agencies of the federal government, or by a large industrial corporation. They differ only in what they are trying to accomplish. The controlling purpose of fundamental research is to add piece by piece to our knowledge of the universe we live in and of ourselves. It is essentially, as the Greeks regarded it, a part of the larger field of knowledge and thought known as philosophy. It may and often does yield, or at least lay the foundations for, important practical applications, but these are incidental to its main purpose. Sometimes a more direct contribution to the practical application of fundamental research occurs when a scientist who has worked in a special field for years temporarily lends his talents to a program of development, as was done by many staff members of the Institution during the first and second World Wars. On the other hand, the purpose of applied science is more definite and immediate. Some of the larger corporations maintain impressive laboratories and able scientific staffs to whom they give great freedom of action. Their primary objective is to bring about the discovery of new processes or new products that will sooner or later—not too much later—yield a profit on the money invested. If the gain

redounds to others beside the corporations or to the whole of society, as it often does, this circumstance does not alter the fact that the reason of the corporations for maintaining research establishments is primarily to improve their products and performance, and thus render their undertakings more successful for their stockholders. The greater part of the research conducted under the immediate sponsorship of the government is similarly directed toward definitely anticipating practical ends—the protection of the government as a consumer, the development of more effective weapons of defense, the improvement of agricultural methods, the development of cheaper or more abundant sources of power, and so on. The developmental or applied research of both industry and government may and often does contribute significantly to our knowledge and understanding of the universe, but its contribution is incidental to its main purpose.” . . .

“From the point of view of the nation as a whole,” Dr. Bush continued, “the bridge from fundamental discovery to practical application is not always and everywhere effective. Much of the fundamental work is done by universities, research institutions such as our own, and government; and all these are lame in moving forward to applications when they try to do so. It takes the resourcefulness and drive of competitive industrial effort to vault the many hurdles that are always present when novel methods or devices are introduced into the current scene. To introduce a new method or device requires the expenditure of venture capital, which is not available in the ordinary sense to public or semi-public institutions. There is nothing wrong about a fundamental idea's flowing out of laboratories such as ours and later becoming a matter of vigorous industrial exploitation if it is all done within the framework of the law and with proper regard for the public interest. We believe in private enterprise in this country even though some of our citizens often give the contrary impression. But in our system of private enterprise it is not entirely clear where the burden of the initiative lies for bringing a promising idea to the point where it will be exploited. And consequently there is often a long wait before industry on its own initiative takes effective action. We have, in a word, no effective organization in the country as a whole for bringing the fruits of disinterested research to the point where they invite industrial development.”

Illinois Summer School

Semiconductors and Transistors

Detailed plans for the Summer School on Semiconductors and Transistor Electronics to be held at the University of Illinois (Urbana) are nearing completion, according to John Bardeen, professor of physics at the university, who is chairman of the arrangements committee. He is aided by six representatives of cooperating companies—B. H. Alexander of the Sylvania Electric Products Company, O. S. Duffendack of Philips Laboratories, M. H. Hebb of GE, J. A. Morton and

William Shockley of Bell Telephone Laboratories, and Albert Rose of RCA Laboratories—in addition to Professors Robert J. Maurer, John D. Ryder, and Frederick Seitz of the university departments of physics and electrical engineering. The university's division of extension is also collaborating.

In charge of the three courses making up the program of the Summer School are Dr. Maurer (Semiconductor Materials), Dr. Bardeen (Transistor Devices), and Dr. Gilbert H. Fett (Transistor Circuit Fundamentals). Lecturers include the course directors: Dr. Seitz; Dr. Shockley, R. M. Ryder, and R. L. Wallace, Jr. of the Bell Laboratories; R. N. Hall and J. S. Schaffner of GE; a Philips staff member yet to be chosen; Albert Rose and H. Johnson of RCA; E. Conwell of Sylvania; and Erwin K. Weise of the University of Illinois.

The school will be part of the summer session of the university, so that graduate-level academic credit can be given if desired. Inquiries should be addressed to the Department of Electrical Engineering, University of Illinois, Urbana, Illinois.

Miscellany

Division B (physics) of the American Association for the Advancement of Science is under the chairmanship this year of George R. Harrison, dean of science at the Massachusetts Institute of Technology. The post carries with it the title of vice president of the AAAS. Edward U. Condon, director of research at Corning Glass Works, has become president of the Association for 1953, and Warren Weaver, of the Rockefeller Foundation, has been named by the AAAS as president-elect. Dr. Weaver will take office in 1954.

Franklin L. Burr Awards were presented in December by the National Geographic Society to Harold E. Edgerton, professor of electrical engineering at the Massachusetts Institute of Technology, for his invention of the stroboscopic speed light for photography, and to George van Biesbroeck, professor emeritus of astronomy at the University of Chicago, “in recognition of his accomplishment in finding new proof of the bending of light from stars in support of the Einstein theory of relativity”. Dr. van Biesbroeck led an expedition, supported by the Society in cooperation with the U. S. Navy and Air Force, to the Anglo-Egyptian Sudan in order to obtain photographs of the star field behind the sun during the total eclipse of February 25, 1952. He returned to the spot on August 29 and obtained additional photographs of the identical star field at the moment it reached the same position it had occupied at the time of the eclipse. Comparisons of the two sets of photographs, according to the Society, gave evidence that the path of starlight indeed shifts in passing close to the sun.

A survey conducted by the Southern Association of Science and Industry, according to a story appearing in *The New York Times*, has shown that more than one hundred new laboratories or major research additions