Mines and Technical Surveys, will take 5 years to complete. When in operation, it will have a staff of some 300 oceanographers, hydrographers, submarine geologists, and other scientific personnel, plus supporting staff, and an operating fleet of ten oceanographic vessels. A multi-million-dollar ship-building program is already under way to provide the fleet of vessels; it is expected that the first of these, the $7-million *C.G.S. Hudson,* will be commissioned in 1961.

The establishment of the institute, which is to be known as the Bedford Institute of Oceanography, was announced on 5 August by Paul Comtois, Minister of Mines and Technical Surveys. He reported that the Bedford facility will study the physical characteristics of the waters and underlying sea bed of Canada's Atlantic and subarctic coasts. The resultant data are needed for anti-submarine defenses and to ascertain the resource potential of the continental shelf in these regions.

The new organization will also permit the expansion of the Atlantic and subarctic sections of the Canadian Hydrographic Service. These sections will be moved from Ottawa to Bedford Basin, a reorganization that will greatly facilitate hydrographic operations in eastern and northern areas, where most of the coastline is uncharted. In addition, the institute will house the regional office of the Geological Survey of Canada.

Comtois pointed out that the project will mean the building up, near Dartmouth, of a strong center of marine science. There will be liaison with the Fisheries Research Board, the Atlantic Oceanographic Group (to be housed in the new institute), and with Dalhousie University, which is setting up—with the help of the National Research Council grant—an Institute of Oceanography for the training of scientists, many of whom will be employed by the new federal institute. The center will also be the headquarters of the polar group of oceanographers, hydrographers, geologists, and other scientists working in the icebound sections of the remote arctic. They will carry out a broad program of oceanographic research on the rim of the Arctic Basin.

Canada possesses little knowledge of the oceans which surround it. Except for a specialized program in oceanography by the Fishieries Research Board, conducted over the years, oceanography in Canada has been a neglected science, mainly because of the size and great expense of the job to be done.

Project Teepee Monitors Missile Shots and Upper Air Explosions

An electronic surveillance system, capable of detecting missile firings and explosions of nuclear weapons in the upper atmosphere, has been monitoring Soviet space activities for the past several months. The system, which is operated from bases within the continental U.S., can pick up such firings regardless of their point of origin. Missile launchings in this country and Russia have been successfully monitored by the new system, as well as some of the atomic weapon tests that were conducted in the Pacific before the suspension last October.

The Teepee system was developed by members of the Office of Naval Research working under W. J. Thaler. It is able to detect targets beyond the horizon by bouncing signals in a zig-zag pattern between the earth and the ionosphere. At each point of bounce there is some reflection of the signal back to its point of origin. This return, called backscatter, has certain characteristics as it appears on receiving screens at the transmitting-receiving station. If the radio signals encounter large volumes of hot gases, such as those created by rocket firings or atomic weapon tests in the upper atmosphere, the characteristics of the backscatter are significantly different. By analysis of these characteristics, operators at Teepee stations can identify the source of the gases. The new system is said be capable of distinguishing between large and small missiles and between successful and unsuccessful firings. It is also said to be able to discriminate between natural phenomena, such as lightning and aurora, and man-made disturbances.

The Teepee system, which Thaler believes can be much improved, complements other missile and test detection systems which are now in use, or planned, such as the Ballistic Missile Early Warning System, certain powerful radar sets in Turkey which can scan much of the Soviet Union, and a proposed satellite system which would use infrared sensors to detect launchings and blasts.

These systems, supported by the new Teepee technique, which is said to be able to detect more than 95 percent of all atmospheric weapons tests and rocket launchings, are believed by many observers to give the United States fairly thorough and current knowledge of Soviet progress in missile and weapons development.

Mueller Is Commerce Secretary

Frederick H. Mueller, who served as acting Secretary of Commerce following the resignation of Lewis L. Strauss after his long and unsuccessful confirmation fight, was given the oath of office for the top Commerce position on 10 August. He had been nominated to the cabinet post 21 July and was confirmed for the job in early August.

Mueller, who has been with the department since November 1955, has held the posts of Assistant Secretary for Domestic Affairs and Under Secretary. He was born in Grand Rapids, Mich., and was educated in the state, receiving his bachelor of science degree from Michigan State University in 1914.

As Secretary of Commerce, Mueller will have responsibility for many units of the department which carry on scientific work. Among these are the National Bureau of Standards, the Weather Bureau, and the U.S. Coast and Geodetic Survey.

Dismissed Arkansas Professors Receive Aid from Fellow Teachers

Four University of Arkansas professors, dismissed for refusing to file affidavits under a new Arkansas law, will receive the full support of the American Association of University Professors in finding posts elsewhere. William P. Fidler, AAUP General Secretary, has also announced that the professors will get significant financial assistance from the association's Academic Freedom Fund.

Act 10 of the Arkansas Statutes, passed at a special 1958 session, requires all publicly employed teachers to list the organizations to which they have belonged or to which they have contributed during the past 5 years. The act is generally regarded as an anti-NAACP measure, but the language covers churches, political parties, social clubs, and professional societies. A test case has been started, but a final legal verdict, especially if it involves constitutional questions pertaining to civil liberties, may be delayed.

Max Carr, Frederick G. Friedmann, John L. McKenney, and Thelma W. Taylor (whose fields are philosophy and music) base their refusal on principle. One of the teachers quotes Jefferson: "to suffer the civil magistrate to intrude his powers into the field of opinion and to restrain the profession or propagation of principles, on the supposition of their

ill tendency, is a dangerous fallacy, which at once destroys all religious liberty. . . ." The teacher then goes on to speak for himself: "I have taught the writings of Thomas Jefferson year after year in my courses. . . . I cannot refuse to heed his words in my own life."

The AAUP has sent out 1000 letters urging its 42,000 members to explore job possibilities for the four professors. In making its action a matter of public record, the association hopes to enlist the interest of the millions of Americans who, as alumni of colleges, respect the academic profession.

As to interim financial aid, Fidler stated: "The resources of our recently established Academic Freedom Fund are limited, and we regret that we cannot give financial assistance to every college teacher who loses his post for improper reasons. However, the teachers in Arkansas are victims of a law which strikes at the heart of academic freedom by restraining them from joining organizations of their choice. The AAUP stands ready to give every assistance within its power to the courageous teachers who sacrificed their positions rather than submit to Act 10."

Soviet Technical Journals

A listing of abstracted Russian technical journals currently available by subscription from the Office of Technical Services, U.S. Department of Commerce, has just been published. The listing shows some 100 Soviet technical periodicals abstracted regularly by U.S. government agencies and released to the public through OTS as part of its program of collecting and disseminating translated technical literature.

The periodicals cover such fields of research as areonautics, astronomy and mathematics, chemistry and chemical engineering, civil and electrical engineering, fuel and power, geography and geology, mechanical engineering, mining and metallurgy, physics, and general science and technology. Included are the physics, chemistry, and biology series of *Referativnyy Zhurnal,* the U.S.S.R.'s central abstracting journal.

The new listing supersedes one published in August 1958 at the outset of the OTS translation program. Certain periodicals have been added to the collection during the past year, and others have been dropped because of limited usefulness or for other reasons.

The listing, *English Abstracts of Russian Technical Journals,* is available without charge from OTS, U.S. Department of Commerce, Washington 25, D.C.

Britain Uses New Reactor Crane

An unusual two-shafted crane, known as "Goliath," has been designed especially for nuclear reactor construction tasks. It is in use at Hinkley Point, Somerset, England, where the largest atomic power station so far announced by any country is being built.

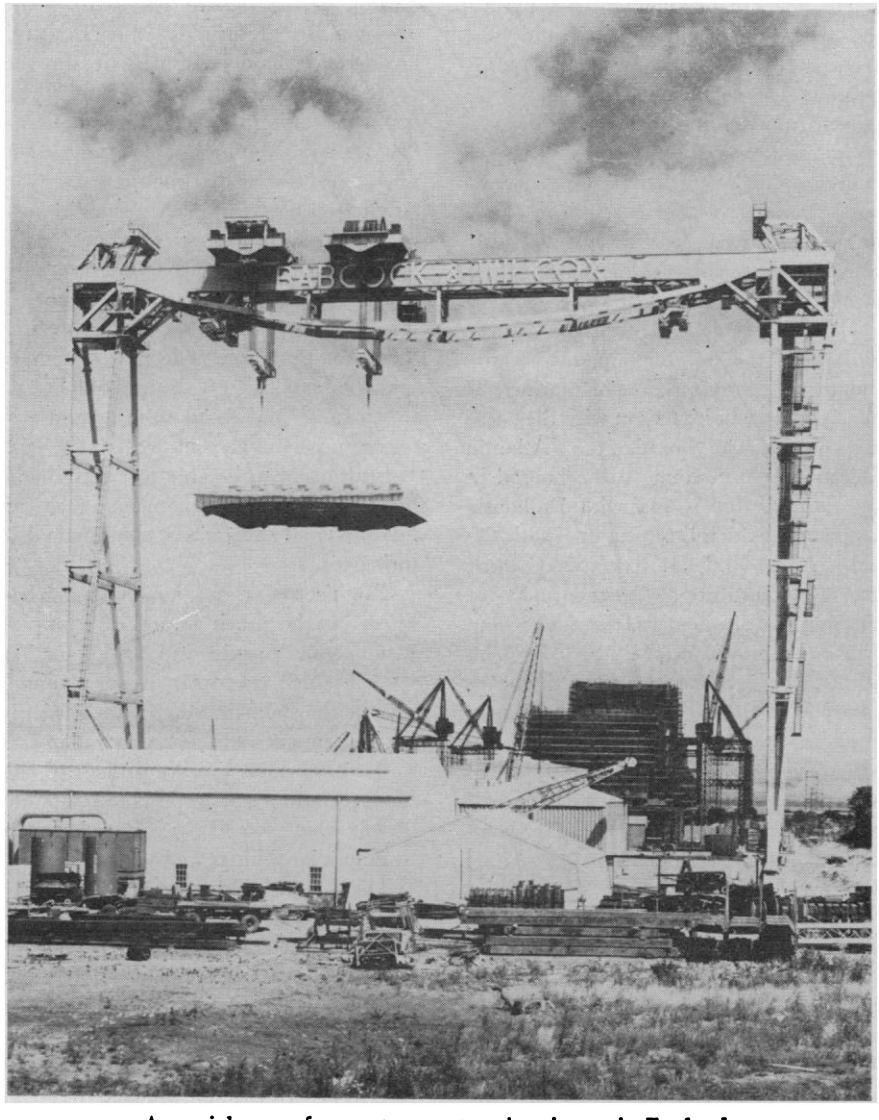
The new facility, which will cost $128 million, is located on a 140-acre site. It is expected to be in operation in 1962 with an output of 500 milliwatts.

The picture shows Goliath raising a temporary weather roof for one of Hinkley Point's two reactors. The new lifting equipment has a capacity of 400 long tons.

AEC Gives Views on Radioactive Waste Disposal at Sea

Following are excerpts from testimony by A. R. Luedecke, general manager of the Atomic Energy Commission, on the National Academy of Sciences–National Research Council report titled "Radioactive Waste Disposal Into Atlantic and Gulf Coastal Waters." The testimony was given on 29 July before the Special Subcommittee on Radiation of the Joint Congressional Committee on Atomic Energy.

The [National Academy of Sciences–National Research Council] report was requested and sponsored by the Bureau of Commercial Fisheries, Office of Naval Research, and the Atomic Energy Commission. The nature of the request was to examine the feasibility of disposing of the low-level wastes closer to shore than the 1000 fathom disposal sites used by AEC. Feasibility was considered primar-



A special crane for reactor construction, in use in England.