moved, 15-gallon polyethylene drums, with steel outerpack, will be filled for return to Woods Hole, Mass., by freighter from the *Crawford's* ports of call. The small vessel cannot stand the additional deckload of 88 filled drums. These samples will later be analyzed for many radioactive elements, such as strontium-90, antimony-125, cerium-144, promethium-147, possibly cesium-137, and the naturally occurring tritium. Some analyses for stable rare earths will also be made. An idea of the size and importance of this program may be obtained from the list of organizations cooperating in this study. The National Science Foundation and the Office of Naval Research have aided with financial grants, while samples will be analyzed at Woods Hole, at Yale University, the Swedish radioactive dating laboratory at Stockholm, and at Clark University.

Although the physical and chemical observations are the main object of the cruise, the *Crawford* is making a continuous trace of the ocean bottom on the Woods Hole precision echo-sounding recorder. This instrument measures the depth of the ocean with an accuracy of one part in 10,000. In addition, biological observations are being carried out, particularly of whales and porpoises, and sea and land birds are identified and recorded. Further, lines are being towed for pelagic fishes such as tuna, wahoo, and so forth.

The ship is also continuing the usual shark-catching program. Much has been learned during recent years about the activities and natural history of the white-tipped shark, the most common open-sea shark in the North Atlantic and in the Caribbean Sea. At night, an underwater light is hung just below the surface which usually attracts a glittering array of small sea-life, particularly larvae and young stages of fishes and the many deep-sea fishes that come to the surface at night.

Fulbright and Smith-Mundt Awards

The application deadline is *25 Apr.* for 1958–59 awards under the Fulbright Act for university lecturing and advanced research in Argentina, Australia, Burma, Chile, Colombia, Ecuador, India, New Zealand, Pakistan, Peru, the Philippines, Thailand, Argentina, Israel, and Turkey.

Programs for Austria, Belgium and Luxembourg, Denmark, Finland, France, Germany, Greece, Israel, Italy, Japan, the Netherlands, Norway, Turkey, and the United Kingdom and Colonial Dependencies will be announced in June, although applications will be accepted from 1 May through the closing date, *1 Oct. 1957.*

Grants for lecturing abroad under the Smith-Mundt Act will be available in approximately 40 countries which do not participate in the program under the Fulbright Act. These countries are in Latin America, the Near East and Africa, the Far East, and Europe. Application forms and additional information may be obtained from the Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Ave., NW, Washington 25, D.C.

Markle Scholars

The John and Mary R. Markle Foundation has announced the appointment of 25 scholars in medical science, all faculty members of medical schools in the United States and Canada. The sum of $750,000 was appropriated toward their support to the schools where they will teach and carry on research.

With these appointments the fund completes 10 years of a program to aid young medical-school faculty members seeking careers in teaching and research. In the decade, 206 doctors in 74 medical schools in the United States and Canada have received help from appropriations totaling $6,070,000. For each scholar appointed, the fund has allocated $30,000 granted at the rate of $6000 annually for 5 years to their medical schools.

The program will continue as a major interest of the foundation. Of those appointed in the 10 years, two have become heads of departments, one directs an important cancer research institute, and two head research divisions in Government laboratories. Twenty-five are full professors and 51 associate professors.

This year's Markle scholars are Richard H. Adler, associate, University of Buffalo School of Medicine, thoracic surgery; Aurele Beaulnes, assistant professor, University of Montreal Faculty of Medicine, pharmacology; Robert E. Carter, instructor, University of Chicago Division of the Biological Sciences, general pediatrics; Sanford I. Cohen, instructor, Duke University School of Medicine, psychiatry (at present medical officer, U.S. Air Force, Wright Patterson Air Force Base); John E. Connolly, instructor, Stanford University School of Medicine, surgery; Frank Falkner, assistant professor, University of Louisville School of Medicine, pediatrics; Lawrence R. Freedman, instructor, Yale University School of Medicine, internal medicine; Thomas R. Hendrix, instructor, after 1 July, Johns Hopkins University School of Medicine, internal medicine (at present research fellow, Evans Memorial–Massachusetts Memorial Hospitals and assistant in medicine, Boston University); David S. Howell, assistant professor, University of Miami School of Medicine, internal medicine; T. R. Johns, assistant professor, University of Virginia School of Medicine, neurology; Kermit E. Krantz, assistant professor, University of Arkansas School of Medicine, obstetrics and gynecology; Lloyd D. MacLean, instructor, University of Minnesota Medical School, surgery; James A. Merrill, instructor, University of California School of Medicine (San Francisco), obstetrics and gynecology; Robert O. Morgen, demonstrator, McGill University Faculty of Medicine, internal medicine; George C. Morris, Jr., instructor, Baylor University College of Medicine, surgery; Arno G. Motulsky, assistant professor, University of Washington School of Medicine (Seattle), internal medicine; Russell M. Nelson, assistant professor, University of Utah College of Medicine, surgery; George Nichols, Jr., associate, Harvard Medical School, internal medicine; Donald E. Pickering, assistant professor, University of Oregon Medical School, pediatrics; Arthur H. Schmale, Jr., instructor, University of Rochester School of Medicine and Dentistry, internal medicine and psychiatry; John D. Thompson, instructor, Louisiana State University School of Medicine, obstetrics and gynecology; Henry O. Wheeler, instructor, Columbia University College of Physicians and Surgeons, internal medicine; Joseph R. Wilder, assistant professor, New York Medical College, general and cardiovascular surgery; T. Franklin Williams, instructor, University of North Carolina School of Medicine, internal and preventive medicine; William J. Williams, assistant professor, University of Pennsylvania School of Medicine, internal medicine.

AEC Reactor Explodes

A critical assembly, known as the "Godiva," which has been in operation at the Los Alamos Scientific Laboratory since August 1951, was severely damaged during an experiment on 12 Feb. Since the experiment was remotely controlled, no one was exposed to radiation. No physical damage was done to the building in which the experiment was being conducted, and radiation contamination has been removed by standard clean-up methods with no appreciable loss of uranium. Damage to the assembly was such that it is considered impractical to repair it.

The Godiva was one of several simple critical assemblies at Los Alamos that are used for developing information on fast-neutron systems and as a source of large quantities of neutrons for instantaneous irradiations, called "prompt bursts." It consisted of an unshielded spherical mass

of uranium-235 about 6¾ inches in diameter. The sphere was made up of three sections which were assembled remotely to produce chain reactions in the performance of experiments.

At the time of the accident the assembly was being used as a source of neutrons for the instantaneous irradiation of uranium-loaded graphite. The purpose of the experiment was to determine the behavior of this material after exposure to a sudden wave of neutrons.

The thermal shock which resulted in the damage was caused by a nuclear power surge considerably higher than the expected power level. One of the characteristics of the assembly was that its power operating levels were self-limiting in that the thermal expansion of the assembly resulting from power surges would cause the chain reaction to stop. In the 12 Feb. experiment the power surged to such a level that the thermal expansion exceeded the strength of the uranium metal.

The uranium-loaded graphite which was being irradiated was enveloped in layers of polyethylene. It is believed that in the course of the remote operations, a malfunction of special test equipment for the temporary experiment shifted the polyethylene-encased graphite closer to the critical assembly than was intended. The shift in position caused the polyethylene to reflect neutrons back into the critical assembly. The reflected neutrons increased the chain reaction, resulting in a sudden increase in heat which produced the thermal shock in the uranium.

Because the Godiva was not especially designed for the heavy demands for prompt-burst service irradiations which have been made on it, another unshielded assembly had already been designed which will accommodate either delayed or prompt critical experiments. The new assembly will have a wider range and additional protective features desirable for repeated prompt-burst operations.

Lederle Medical Student Fellowships

The Lederle Laboratories Division of the American Cyanamid Company has anounced that it is making available to medical schools throughout the United States and Canada Lederle medical student research fellowships for the year 1957. These fellowships, in amounts not exceeding $600 per year for any one person, are intended to relieve in part the financial burden of students who desire to devote their summer vacations to research in the basic (preclinical) medical sciences.

Students who apply for the fellowships must be of good scholastic standing and must have the consent of the faculty member under whose supervision their research is to be conducted. The selection of students to receive such awards will be made by the dean of the medical school, or by the regularly constituted committee of the faculty charged with such selections. By special permission of the dean or the fellowship committee of the school, the student may carry on his research in another medical school, provided that satisfactory arrangements are previously made with the faculty member of the school and the department in which the work is to be done.

Resistance of Cells to Viruses

A new substance that may shed light on the susceptibility and resistance of cells to viruses has been isolated and identified by Guy T. Barry and Walther F. Goebel of the Rockefeller Institute for Medical Research, New York, who have reported their work in a recent issue of *Nature*. The chemical, colominic acid, was found in a strain of colon bacillus. This is the first time that an acid of this type has been discovered in bacterial cells.

Colominic acid is a new type of acidic carbohydrate. It is quite unlike any carbohydrate previously obtained from bacterial sources in that it is very rich in a substance resembling sialic acid, which has been of special interest in recent years. When combined in its native state with protein and other sugars, the sialic acid-containing complex interferes with the adherence of certain viruses, such as the influenza virus, to living cells.

Merit Scholarship Corporation

The first annual report of the National Merit Scholarship Corporation has just been released, covering the year ending 30 June 1956. The NMSC is, in the words of the report:

"An independent nonprofit organization, combining the largest independently supported scholarship program ever undertaken, together with a mechanism designed to assist business enterprises which are contemplating aid to education.

"The Ford Foundation and the Carnegie Corporation of New York have undertaken to finance the activity for a ten-year period by grants totaling $2,500,000 for its administrative expenses. For a basic continuing scholarship program the Ford Foundation has appropriated $10,000,000, payable at the rate of $1,000,000 a year for ten years, and is prepared to finance additional scholarships up to a total of $8,000,000 to match scholarships which may be contributed from industry.

"The major underlying purposes of these grants are twofold: to discover throughout the country the ablest youth and to make it possible for these talented young people to get a college education regardless of their financial situation; and to make it easier for business enterprises and other organizations to contribute effectively to the support of higher education by the scholarship route.

"A further purpose is to provide, in one organization, a single national talent search and an open-ended flexible scholarship program that will reduce wasteful duplication of operation, and will, at the same time, meet the interests and purposes of the donors."

In the first year of operation 58,158 students took the examination. They were selected by school principals from the top 5 percent of their class. In addition to this method of selection, in 1957 any high-school senior may take the scholarship examination by paying a nominal fee of $1. Some 5078 finalists were selected from the 58,158. Although "every one of these finalists would have been granted a Merit Scholarship had funds been available (they were among the top two percent of the nation's finest high school students)," 556 winners were selected by a special committee.

Merit scholarships are for 4-year programs, available to seniors in all secondary schools, made on a competitive basis, state by state proportionately to the senior-high-school population. The recipient of the award may attend any accredited institution of his choice, and the stipends vary from $100 up to the full amount of tuition and expenses, depending on the individual's need. In addition, a certificate of merit was awarded to more than 4000 finalists, and a booklet listing their names was sent to all colleges and universities and to scholarship-granting agencies. "In many instances, these certificates of merit winners received offers of scholarships from one or more institutions and have written to say that, in their opinion, these offers were largely due to our award of a certificate of merit."

Funds (up to $8 million) are available to match, dollar for dollar, any merit scholarship provided from other sources. All the sponsor's investment goes directly to scholarships, and, further, this investment releases a matching sum. The program expenses are borne by NMSC. "The sponsor is relieved of any embarrassments growing out of the selection of students and the selection of institutions, although the sponsor may, if he wishes, select his Merit Scholar from the large group of highly qualified finalists." In addition the sponsors may specify characteristics in which they are inter-