affiliating oceanographic research institutions with university faculties, by developing new oceanographic centers at universities with adequate existing faculties, and by creating long-term fellowships tenable at more than one university. The Government would be asked to aid in the financing of the recommended faculty increases to the amount of $500,000 a year for salaries and other costs associated with the positions. The scientific community would be asked to undertake more active recruiting of prospective oceanographers among undergraduate students of physics, chemistry, biology, and geology.

Need for Money

To meet the cost of its recommended ten-year program the committee has suggested a funding arrangement based on the relative importance of the program to the various federal agencies. The committee's recommendations are as follows: The Navy and the National Science Foundation should each finance about 50 percent of the new basic research activity, except for ship construction. The Navy should finance 50 percent of the new research-ship construction, with the Maritime Administration and the National Science Foundation sharing the remainder. The Navy, through the Hydrographic Office, should finance 50 percent of the deep-ocean surveys, while the Coast and Geodetic Survey should finance the balance. The Navy should sponsor completely all military research and development operations. The Bureau of Commercial Fisheries should finance the greater part of the recommended ocean resources program. The Atomic Energy Commission should finance the major part of the research dealing with the problems of radioactive contamination of the oceans. The National Science Foundation and the Office of Education should sponsor jointly the proposed program for increasing scientific and technical manpower in the marine sciences. Efforts aimed at fostering international cooperation in the marine sciences should be sponsored by the Department of State, the International Cooperation Administration, and the National Science Foundation. Other agencies should take responsibility for certain aspects of the proposed program, particularly the Public Health Service, the Geological Survey, and the Bureau of Mines. Although the bulk of oceanographic research and survey work must of necessity be financed by the Federal Government, the importance of state and private funds cannot be overestimated. Such funds are especially helpful for supporting initial exploratory basic research and for starting new laboratories.

Committee Membership and Support

The committee on oceanography is supported by the U.S. Atomic Energy Commission, Bureau of Commercial Fisheries, National Science Foundation, and Office of Naval Research, and is comprised of the following members, representing varied fields of interest: Harrison Brown, professor of geochemistry, California Institute of Technology (chairman); Maurice Ewing, director, Lamont Geological Observatory, Columbia University; Columbus O'D. Iselin, retired director, Woods Hole Oceanographic Institution; Fritz Koczy, professor at the Marine Laboratories, University of Miami; Sumner Pike, Lubec, Maine, formerly commissioner, U.S. Atomic Energy Commission; Colin Pittendrigh, professor of biology, Princeton University; Roger Revelle, director, Scripps Institution of Oceanography; Gordon Riley, professor at the Bingham Oceanographic Laboratory, Yale University; Milner B. Schaefer, director, Inter-American Tropical Tuna Commission; and Athelstan Spilhaus, dean of the Institute of Technology, University of Minnesota.

Other Events in Oceanography

In September of this year a major conference will be held on oceanography. This is the International Oceanographic Congress, sponsored by the American Association for the Advancement of Science. To be held at the United Nations building in New York, this congress will study all of the marine sciences during a 13-day meeting. In another development, the Scripps Institution of the University of California has begun a major survey of the Gulf of California. Two institution vessels, the *Horizon* and the *Spencer F. Baird,* are participating in the cruise, tentatively designated as the Vermilion Sea Expedition. The study will extend through May.

The Great Challenge

The CBS Television Network has announced that the 1959 "Great Challenge" series of 1-hour symposium-discussions is again directed towards appraisal of democratic institutions in a time of great scientific and technological advance. All programs are broadcast on Sunday afternoons from 2:30 to 3:30 EST. Eric Sevareid of CBS News is the moderator. The first program, which was shown on 22 February, was called "Where Is Science Taking Us?" and included J. Robert Oppenheimer, Detlev W. Bronk, and Jerome B. Wiesner. Other subjects and a partial list of participants follow:

1 March, "Is America Anti-Intellectual?" with Robert M. Hutchins, president of the Fund for the Republic and former president of the University of Chicago; J. Kenneth Galbraith, professor of economics, Harvard University, and McGeorge Bundy, dean, Faculty of Arts and Sciences, Harvard University.

22 March, "Can Democracy Meet the Space Age Challenge?" with Senator John F. Kennedy; Arthur Larson, former presidential adviser and director of the Rule of Law Center, Duke University; and Clinton Rossiter, professor of history, Cornell University.

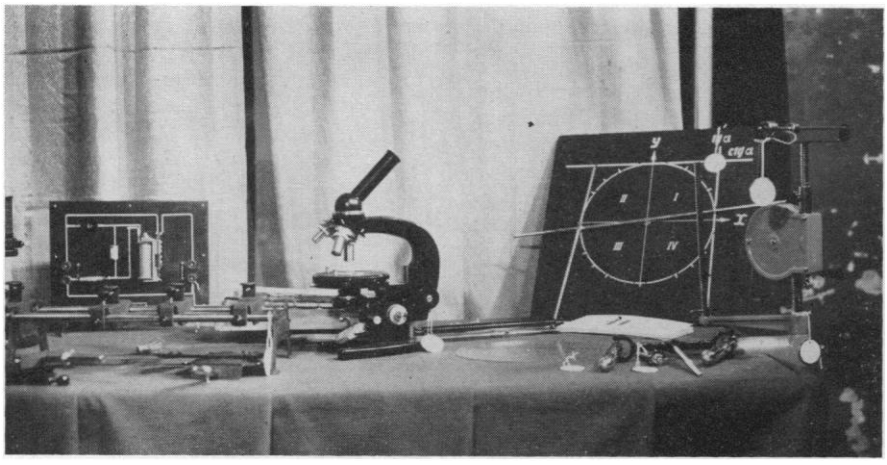
29 March, "Is American Journalism Meeting Its Responsibilities?" with Barbara Ward Jackson, a former editor of *The Economist* of London; J. Russell Wiggins, executive editor of the *Washington Post and Times Herald,* and former chairman of the Freedom of Information Committee of the American Society of Newspaper Editors; and John Fischer, editor in chief, *Harper's Magazine.*

5 April, "Is the American Public Getting the Information It Needs?" with James Reston, chief Washington correspondent, *New York Times;* Arthur B. Schlesinger, Jr., professor of history, Harvard University; Robert D. Swezey, executive vice president, WDSU Broadcasting Corporation, New Orleans, and chairman of the Freedom of Information Committee of the National Association of Broadcasters.

Soviet Teaching Equipment

Soviet equipment for science teachers has gone on sale in the United States; this is causing quite a stir, for American manufacturers are being substantially undersold. The equipment is being imported by the Ealing Corporation of Cambridge, Mass. (an affiliate of Baird Atomics, Inc.), which had an exhibit at the recent joint meeting in New York of the American Physical Society and the American Association of Physics Teachers. Ealing has selected 24 items out of a Soviet catalog of 96.

According to observers, the equipment, which is mass produced, is unusually well adapted to meet the special needs and problems of secondary-school teaching. On this subject, Sanborn C. Brown of Massachusetts Institute told the *Christian Science Monitor* that there has not been a really new item of high-school teaching equipment in American catalogs since World War II. He also said that many current items in this country date in design to the 19th century. Brown has made a thorough study of this subject, for he is chairman of the AAPT Committee on Apparatus for Educational Institutions. At the time of the



Soviet science teaching equipment

New York meeting, Brown made the following statement for the committee.

"American manufacturers of equipment for teaching physics in schools and colleges are moving to meet the challenge of Russian-produced equipment, but much remains to be done if the United States is to gain world leadership in this field. Not only a greater industrial effort is needed, but public support for physics laboratories should be increased as a part of the general strengthening of American education.

"Russian-built equipment for teaching physics in secondary schools is being exhibited by a commercial importer at the current meetings of the American Association of Physics Teachers and the American Physical Society. The Russian equipment is inferior in quality to the best equipment produced here, but it is better than much of the equipment in our smaller high schools. There is evidence that the Russians are prepared to sell such equipment at low cost in the tens of thousands of items for trade and propaganda purposes all over the world.

"The Committee on Apparatus of the American Association of Physics Teachers has encouraged American manufacturers of teaching equipment to produce high-quality physics apparatus. The committee made a market study two years ago, pin-pointing the items of equipment most needed by physics teachers. The results were made freely available to the apparatus industry. Expert consultants are available to the industry upon request. At the AAPT meeting this year, an apparatus contest with cash prizes has been arranged by the Committee to bring new forms of apparatus to the attention of teachers and manufacturers.

"American manufacturers are starting to respond to the demand for new and better apparatus. At the meeting now going on, approximately seven pieces of physics equipment not hitherto available commercially from U.S. companies are being exhibited. Several other pieces of equipment are being worked on and should soon be available. Although this indication of progress is encouraging and should be commended, much remains to be done. American physics teachers must be able to purchase top-quality lecture and laboratory apparatus if our physics students are to receive the best scientific education in the world. The Committee on Apparatus urges the apparatus industry to continue working toward this objective."

Manufacture of science teaching aids in this country is limited to a relatively small group of companies and protected by a steep tariff, the same tariff that is imposed on industrial apparatus. At one time equipment for educational purposes was exempt; but, partly through lobbying in Washington, the tariff was extended. The tariff has helped keep some reportedly excellent European equipment out of American schools.

Research Participation for Teacher Training

The National Science Foundation has announced the award of 56 grants totaling approximately $800,000 to 54 educational institutions for the purpose of conducting programs in research participation for teacher training in the summer of 1959. These programs will provide research experience for about 550 teachers of science and mathematics. About 400 of these will come from secondary schools; the remaining 150 will come from junior colleges and small colleges without appropriate research facilities. The foundation is supporting these experimental programs to provide further opportunities for teachers during the summer, in addition to the summer institutes for high-school and college teachers which has been so successful for several years and which will be continued this year.

Teachers will participate directly in scientific research in the laboratories of universities and colleges, or in field research programs, alongside experienced scientific investigators. This research experience will be supplemented by seminars and lectures on research methods and advances. Participating teachers will receive stipends of up to $75 per week plus allowances for travel and dependents. The programs will vary in length from 6 to 12 weeks.

Teachers will be chosen by the individual universities and colleges. Inquiries and applications should be addressed to the directors of the programs in the following list. Early inquiry is advised, for many teachers will be appointed in the latter part of March.

Biology, chemistry, mathematics, and physics, for high-school teachers: A. B. Weaver, Department of Physics, University of Arizona, Tucson.

Engineering and physics, for high-school teachers: Earl R. Parker, Institute of Engineering Research, University of California, Berkeley.

Marine biology, for high-school and college teachers: Joel W. Hedgpeth, Pacific Marine Station, Dillon Beach, Calif.

Chemistry, for teachers in junior colleges: C. Freeman Allen, Department of Chemistry, Pomona College, Claremont, Calif.

Biochemistry, for high-school teachers: Robert H. Maybury, Department of Chemistry, University of Redlands, Redlands, Calif.

Chemistry and physics, for high-school and college teachers: Norman Kharasch, Department of Chemistry, University of Southern California, Los Angeles.

Chemistry and physics, for high-school and college teachers: Bert M. Tolbert, Department of Chemistry, University of Colorado, Boulder.

Astronomy, for college teachers: Donald E. Billings, High Altitude Observatory, University of Colorado, Boulder.

Biology, chemistry, mathematics, and physics, for high-school and junior college teachers: Merle G. Payne, Department of Chemistry, Colorado State University, Fort Collins.

Chemistry and physics, for high-school and college teachers: Clarence M. Knudson, College of Engineering, University of Denver, Denver, Colo.

Biology, chemistry, and physics, for high-school teachers: J. C. Kakavas, School of Graduate Studies, University of Delaware, Newark.

Biology, chemistry, and physics, for high-school teachers: Lloyd N. Ferguson, Department of Chemistry, Howard University, Washington, D.C.

Biology, chemistry, geology, psychology, meteorology, and physics, for high-school and college teachers: Leland