

ment and, when completed, will constitute a selected permanent record of the original research in this field performed by the Manhattan District. The unclassified portion of this series, which is being printed and sold by the McGraw-Hill Book Company, will number some 40 volumes; of these, 21 volumes have been published to date.

Both *The Effects of Atomic Weapons* and the *Fermi Lecture Series in Nuclear Physics*, printed and sold by the Government Printing Office, have enjoyed relatively large sales. The former, prepared jointly by scientists in the Department of Defense and in the Commission's Los Alamos Scientific Laboratory, has sold over 100,000 copies; the latter, a highly technical AEC publication, has had a sale of more than 18,000 copies. The most recent AEC-sponsored book is the *Sourcebook on Atomic Energy* by Samuel Glasstone; this comprehensive volume of more than 500 pages was published by the D. Van Nostrand Company and to date has sold almost 20,000 volumes.

The generally available media mentioned thus far—published papers, abstract journal, reports offered for sale, and books—encompass a considerable fraction of the unclassified scientific information coming out of the research and development programs supported by the Atomic Energy Commission. There remain, however, an appreciable number of technical reports which, although unclassified and therefore open to general use as far as security is concerned, contain information that has not been incorporated into one of the forms of publication described above. To make this material also generally available, the AEC Technical Information Service about a year ago organized a system of depository libraries where essentially complete collections of AEC unclassified and declassified reports are maintained. These collections are located in 40 major university and research libraries which were selected with the assistance of the American Library Association to effect optimum nation-wide coverage. Each such institution is supplied with an AEC card catalog and has agreed to provide its geographical area with adequate library service on these documents, including the supplying of microfilm and photostat copies. In addition, over 150 college and public libraries receive the AEC sale documents mentioned previously.

More detailed information on AEC nonclassified information is given in a pamphlet titled "The Availability of AEC Research and Development Reports" which may be obtained upon request from the Technical Information Service, Atomic Energy Commission, P.O. Box 62, Oak Ridge, Tennessee.

In summary, it may be said that the Atomic Energy Commission is making every effort to take full advantage of all possible channels of dissemination in carrying out the policy expressed in the Atomic Energy Act with respect to nonclassified scientific information. In so doing, it is playing a major part in maintaining that atmosphere of free interchange of knowledge which is essential to healthy scientific development and hence to the preservation of a vigorous and secure nation.

News and views

German Science

Reconstruction in the West

The last war had a disastrous effect upon the intellectual life of most European nations, and research in the natural sciences suffered crippling blows in spite of the temporary stimulus of military-sponsored research and development. In Germany, the loss of large numbers of outstanding scientists who either died during the Nazi regime or emigrated had especially damaging consequences, particularly since these individuals were never successfully replaced. Another factor working against any very immediate postwar recovery in Germany, moreover, was the virtual isolation of German scientists during the blockade, a period marked by the full mobilization of science for the war effort. International communication, the life-blood of scientific progress, was made all but impossible, and the violence of the Allied air bombardment was felt by many German research laboratories. The final and somewhat anticlimactic blow was delivered at the end of the war when research laboratories in the East were systematically stripped of their equipment and trained personnel by the Russians. The nation was partitioned into zones governed by the several victorious powers, and in the West the Allied High Commission established a rigid list of rules and prohibitions determining the regions of research in which German scientists were permitted to work.

Against this background it is of interest to note two survey reports issued during the past year by the European Affairs Division of the U. S. Library of Congress. The first of these, *A Statistical Postwar Survey on the Natural Sciences and German Universities*, was prepared by Kurt Ueberreiter, associate professor at the Technical University of Berlin and head of the department of physical chemistry at the Kaiser Wilhelm Institute. Professor Ueberreiter's survey of German science and education is mainly a statistical inventory of the postwar conditions of teaching and study in institutions of higher learning, including both the universities and the natural science research institutes. The outstanding feature of the report is the remarkable number of students now enrolled in universities compared with enrollments during the period immediately preceding the war. In 1950, five years after the end of World War II, the number of students had reached a total of 150,000, which is about 170 percent higher than the corresponding figures for 1939. Prewar enrollment

figures, Professor Ueberreiter emphasizes, were lower than normal, largely as a result of "the anti-intellectual policy of the early Hitler era followed by improved professional chances in the army and the Nazi party, by the swelling of the administration, and by the comprehensive economic projects of that time," a fact that is given weight in considering the statistical comparison between the two periods. Although a moderate increase in the number of faculty members is noted, this increase is by no means commensurate with the larger enrollment, and the number of students per lecturer in the universities and technical institutes is roughly twice as high as it was before the war. The larger total of lecturers is explained by the immigration of teachers from Eastern Germany.

Because the money shortage in Germany has discouraged research requiring expensive scientific equipment, the survey suggests, work at the technical institutes has been concentrated mainly on the education of students. Institutes united in the Max Planck-Gesellschaft (formerly the Kaiser Wilhelm-Gesellschaft) are on the average said to be reasonably well financed. A mass westward exodus of the institutes took place during the war when the Allied bombardment of Berlin gained in intensity, and by 1944 the administration of the society had been transferred from Berlin to Göttingen ahead of the advancing Russian armies. After the end of the war the institutes of the Kaiser Wilhelm-Gesellschaft were unable to maintain contact with one another and the activities of the society were brought to a virtual standstill. An unusual concentration of prominent scientists occurred during this period at Göttingen, in the British Zone, where those who had been concerned with atomic research had been brought and ordered to remain, and the society was shortly reestablished in Göttingen as the Max Planck-Gesellschaft, with Otto Hahn as its president, and with Dr. Telschow, who had been head of the administration of the Kaiser Wilhelm-Gesellschaft, as its director. Of the present list of more than fifty German scientific institutes, most are associated with the society.

"An entirely separate development," writes Professor Ueberreiter, "took place in the institutes which remained in Berlin when the Russians conquered the city. The whole Kaiser Wilhelm Institute for Physical and Electrochemistry, with its director Professor Thiessen, was in Berlin, where also there were working the sections of the Kaiser Wilhelm-Gesellschaft for physics and cell physiology, silicate research, and brain research. The Russian troops started a complete dismantling of the institutes when they took the city. Professor Thiessen, Dr. Bewilogua, and colleagues agreed to work in Russia, and named a list of others who would be valuable to the Russians. Among these were a great many who wanted to stay and work in Berlin. They succeeded in remaining in Berlin only due to the arrival of the Western powers, earlier than expected, before the speedy Russian work of dismantling was finished. Thiessen and Bewilogua and many others were transported by the Russian planes to work in institutes close to the

Black Sea, and are now working on the Russian atomic project."

Most of the Kaiser Wilhelm-Gesellschaft institutes in Berlin are located in the American sector and are among the best equipped in Germany, according to Professor Ueberreiter. Following the currency reform, he reports, the institutes joined to form the "Deutsche Forschungshochschule" under the sponsorship of the Western German states, and a wide variety of research activities are now under way.

The second report dealing with the present condition of German science to be issued by the Library of Congress European Affairs Division is a nine-part survey appearing under the title, *The Natural Sciences in Western Germany*. Prepared under Professor Ueberreiter's direction, the various sections were written by individual specialists of his choice and deal in turn with physics, several categories of chemistry, biology, and geography. The section on physics was prepared by Heinz Niehrs, at present a staff member of the Kaiser Wilhelm-Institute for Physical and Electrochemistry in Berlin. His report consists mainly of a comparative listing of a sizeable group of research papers in physics which were published between October 1949 and November 1950 by German scientists working in the western sectors of Berlin.

A subject breakdown of the list suggests a large degree of interest in the electronic structure of crystals and in gaseous, fluid, and solid state physics. These categories account for about thirty-seven percent of the papers under consideration. Approximately one-third of the papers deal with subjects falling under the headings of optics, electronics, and electromagnetic waves and fields with emphasis being respectively on diffraction phenomena, electron optics, and microwave research. The remaining thirty percent concern mechanics, nuclear physics, the "general foundations of physics" (including quantum theory and relativity), atomic and molecular structure, and thermodynamics. In the nuclear physics category, the papers listed deal with the structure of nuclei, the mass and nuclear moments of isotopes, the kinetics of separating isotopes by diffusion, and with e, n and p, n reactions. Some work on the development and operation of counter tubes is also reported.

It should be noted in this connection that nuclear physics research in Germany has been permitted only on a limited basis by the Allied High Commission. In May of this year, however, it was reported that the Commission's policy with regard to atomic energy research in Western Germany had been somewhat relaxed under a new law redefining the restrictions. The action resulted from studies made by the Allied Military Security Board in Coblenz in line with the High Commission's previous policy "to reduce controls in the security field wherever possible so as not to impede German technological progress directed to peaceful purposes". Most research falling within the category of applied nuclear physics still remains on the prohibited list, although the small scale separation of

uranium isotopes for research purposes is permitted under license.

Another survey of Western German scientific research resources is now under way at the request of the Bonn Government to determine whether a need exists for the establishment of applied research institutes to serve small and medium-sized manufacturers and processors in West Germany. The survey is being conducted under the sponsorship of the Economic Cooperation Administration by a group including representatives from the Southwest Research Institute, the Stanford Research Institute, Battelle Institute, and the Armour Foundation. It was indicated that similar surveys might be undertaken elsewhere in Europe at the request of several other governments.

Infrared Absorption Spectra

New NRC Committee Established

The National Research Council has announced the formation of a new Committee on Infrared Absorption Spectra which is intended to take over the work of the Punch Card Committee of the Symposium on Molecular Structure and Spectroscopy of Ohio State University. The latter committee has been actively keeping track of papers on spectroscopic subjects in the published literature. The new committee is under the chairmanship of Wallace R. Brode, associate director of the National Bureau of Standards. Other members are E. Carroll Creitz, National Bureau of Standards, secretary; R. Robert Brattain, Shell Development Company; Bryce L. Crawford, University of Minnesota; Robert R. Hampton, U. S. Rubber Company; Lester E. Kuntzel, Wyandotte Chemicals Corporation; and James D. Stroupe, Rohm and Haas Company. Arrangements have been made for the committee to work in close collaboration with the National Bureau of Standards. Attempts are being made to solicit a rotating fund for use in reproducing infrared spectral and bibliography cards.

The expressed function of the committee will be to study and develop arrangements for collecting and distributing spectral absorption data on organic and inorganic compounds. More specifically the work of the committee will involve: (a) design of a punch card system for presenting and distributing infrared absorption data in both graphical and tabular forms; (b) devising and implementing methods of collecting the desired spectral data; (c) directing and supervising evaluation of the collected spectral data, appraising their quality and devising means for checking the reported observations and the making of new measurements when the available data are unsatisfactory or conflicting; (d) preparation of a bibliography; and (e) supervision of the printing of punch cards and other forms of record. The accomplishments of both the old and new committees include the preparation of a bibliography on infrared and related subjects of about 8000 papers with arrangements through ASTM Committee E-13 for abstracting 28 current publications so that the bibliography may be kept up-to-date, the collection of about

450 spectra and processing of them in preparation for printing, and the building of a file of chemical compounds covered in the literature.

Communications concerning the committee's activities should be addressed to the Secretary, E. Carroll Creitz, National Bureau of Standards, Washington 25, D. C.

New RDB Policy Group

To Encourage Use of Scientific Talent

The Department of Defense has announced the formation of a policy group within the Research and Development Board which will work closely with RDB chairman Walter G. Whitman in formulating and executing policy, with special emphasis on utilizing the talents of the many scientists and engineers from industry and the universities who stand ready to assist the Board in its work. The internal policy group will include James A. Perkins, executive associate of the Carnegie Corporation, Robert C. Gunness, manager of the research activities of the Standard Oil Company of Indiana, and Edwin A. Speakman, former Naval Research Laboratory physicist, who has been on the RDB staff since 1949 as executive director of the Committee on Electronics.

Radioisotopes

Two Firms to Study Commercial Production

The Atomic Energy Commission has accepted two proposals for private firms to study, at their own expense, the commercial feasibility of manufacturing, processing and selling radioisotopes. Contracts have been signed with Bendix Aviation Corporation of Detroit and Tracerlab, Incorporated, of Boston. The long-range goal of the two projects is wider commercial use of radioisotopes. The first step will be to study the AEC's isotope processing program and to investigate the possibilities of building and operating reactors to produce radioisotopes. After full security requirements have been met, reactor data in this field will be made available to small groups of scientists and technicians from Tracerlab and Bendix. Experts of the AEC and its contractors will assist them in carrying out their studies. Both firms are to make their reports and evaluations directly to the AEC within a year. These contracts are in line with the Commission's policy to encourage privately-financed groups to study the possibilities of taking over some segments of the atomic energy industry for commercial development. However, due to the urgency of the AEC expansion program, the Commission is not able at this time to consider additional proposals for this type of investigation.

Plutonium Production

GE-AEC Contract Extended 5 Years

A five-year extension of the General Electric Company's contract with the Atomic Energy Commission for operation of the plutonium-producing Hanford