



The Library of Congress

The Library of Congress, with collections totaling some 29,000,000 volumes, manuscripts, maps, and other items, is the principal library of the U. S. Government, the largest library in the United States, and perhaps the largest library in the world. It offers more services, on a more democratic basis of use, than any comparable institution.

Founded by Act of Congress in 1800, the Library was housed in the U. S. Capitol until 1897. Its collection was destroyed in 1814, when the Capitol was burned during the British invasion of Washington, but was reconstituted in the following year when Congress purchased the private library of Thomas Jefferson, which became the nucleus around which the present collections of the Library of Congress were formed. The present main building of the Library was completed in 1897 and the annex in 1938. The two buildings together contain 1,563,189 square feet of floor space (35.88 acres) and 414 miles of steel shelving. There are 20 different reading rooms, in addition to 225 individual study rooms and 209 special study tables reserved for research workers.

The Library is organized into approximately 40 divisions and offices, which function within 6 departments. These are the Reference Department, Law Library, Legislative Reference Service, Processing and Administrative Departments, and the Copyright Office. The reading room facilities are open to any person over 16 years of age, and the Library extends many of its services to individuals and institutions outside Washington through reference correspondence, inter-library loans, photo- and phonoduplication services, the sale of printed catalog cards and publications. Regular public concerts in its Coolidge Auditorium and Whittall Pavilion, as well as radio broadcasts and extension concerts in other cities which the Library's music foundations help to finance, have made the Library the largest producer of chamber music in the world today. The Division for the Blind, under a special Act of Congress, provides books in braille and moon, as well as talking books and the special machines for their use, to blind persons throughout

the United States through 27 regional libraries and the State commissions for the blind.

Since 1870 the Library has been the sole depository for books copyrighted in this country, and its collections in American history and politics, bibliography and library science, publications of learned societies, public documents, American and foreign newspapers, and maps and atlases are unequaled. Its collection of books on aeronautics is the largest in the world, and its collections in technology and the sciences are outstanding. It possesses the largest collection of Chinese books outside of China and Japan and the largest collection of Russian books outside the Soviet Union.

The Manuscripts Division is the principal repository of nonarchival source material relating to American history, including, among other collections, the papers of most of the Presidents from George Washington to Calvin Coolidge. The Library is the custodian of the originals of the Declaration of Independence, the Articles of Confederation, and the Constitution of the United States.

A principal service rendered by the Library consists in making the results of its cataloguing, classification, and subject indexing of books available to other libraries through the medium of its printed catalog cards. A stock of 190,000,000 printed cards for some 2,000,000 titles is maintained by the Card Division, from which about 8,250 libraries, firms, and individuals are now purchasing copies at an annual revenue to the Government of about \$634,000. Copyright fees collected on 230,215 registrations made in fiscal 1947 totaled \$442,626, which the Library also turned over to the Treasury of the United States. The Library of Congress Trust Fund Board, established in 1925, administers gifts in the nature of endowments which now total \$2,150,000 and the income from which since its establishment has been about \$1,400,000. Since 1925 the Library has also received about \$2,900,000 in other gifts for immediate disbursement.

The National Union Catalog of books in American libraries, which is maintained as a division of the Library, contains over 14,000,000 cards for important holdings of over 700 American libraries and is ex-

tensively used for bibliographic research and inter-library loan work. At present, a Science and Technology Project, established in June 1947, is conducting research in bibliographic and allied problems on behalf of the Navy Department. Among its activities are the bringing together in one place of the many thousands of technical and scientific reports which are resulting from the Government's \$600,000,000 research and development program, and the indexing and abstracting of these reports for the use of naval contractors.

The Librarian of Congress is Luther H. Evans.

Those who plan to attend the Centennial Celebration will find much to interest them in both the library and its beautiful annex.

Symposium on the Interaction of Matter and Radiation

This symposium, to be held at 10:00 A.M. on September 15, will deal with the two divisions of elementary particle physics in which the greatest advances have been made in the last two years: (1) how an electron interacts with the electric and magnetic forces which surround it and (2) what the physical properties of the mesons, newest among the elementary particles, are.

Both are steps toward a solution of the central unsolved problem of elementary particle physics, the interrelations between 5 elementary particles (electrons, protons, neutrons, heavy mesons—mass 300, and light mesons—mass 200) and the 4 modes of transmission of energy between elementary particles (electromagnetic radiation, specific nuclear forces, neutrinos, and gravitational forces).

In contrast to the nuclear chain reaction of uranium, an application of the science of the rearrangement of nuclear particles, elementary particle physics is concerned with the transformations which produce one of these particles from another and with the forces between these particles.

The first paper on the program, "New Properties of the Electron," is by Willis Lamb, professor of physics at Columbia University. Dr. Lamb is a theoretical physicist whose wartime theoretic and experimental researches in the field of high-frequency radar devices gave him inspiration at the end of the war to apply microwave techniques to measurement of finer details of the energy levels of the hydrogen atom, not easily determined by other methods.

Dr. Lamb and others obtained remarkable results with this new technique of atomic exploration. The hydrogen atom is particularly suitable for study because its energy levels are determined by the interaction between only two particles, the proton and the

electron. But between these particles there acts not only an electrical attraction due to their equal and opposite electric charges but also magnetic forces due to the intrinsic magnetic moment associated with each particle.

The experiments to be reviewed by Dr. Lamb show that the intrinsic magnetic moment of the electron differs by a fraction of a per cent from the value which would be expected if this particle obeyed earlier simple theory.

The deviation is associated with an interaction between an electron and the electromagnetic field produced by that electron itself. In addition, Dr. Lamb has found that an effect of the same kind alters the position of all those energy levels of the hydrogen atom which describe orbits where the electron comes close to the nucleus. Although the newly observed change in energy levels might be supposed to be evidence for a new kind of interaction between the electron and the nucleus, Dr. Lamb shows that the source of the effect is again the interaction of the electron with its own electromagnetic field—an interaction which is particularly strong when this particle experiences high acceleration, as it does when near a nucleus.

Cesare M. G. Lattes, 24-year-old Brazilian scientist who already has remarkable discoveries to his credit from a previous two-year stay at Bristol, England, is, together with Eugene Gardner, of the University of California Radiation Laboratory, responsible for the striking discovery, early in 1948, that mesons are produced by the Berkeley cyclotron.

Jointly with Dr. Powell and Dr. Occhialini at the University of Bristol, Dr. Lattes discovered in the cosmic radiation at mountain elevations a new kind of meson additional to the normal meson which constitutes three-fourths of the natural cosmic radiation at sea level. The normal particle has a mass approximately 200 times as great as the electron's mass (or about $1/9$ the mass of the proton or hydrogen nucleus). In contrast, the new meson found by the Bristol workers weighs approximately 300 times as much as the electron. In the work in England it was also observed that this particle often undergoes a type of spontaneous disintegration into the normal lightweight meson, with the simultaneous emission of some kind of neutral radiation not yet identified.

Dr. Lattes' paper, "Observations on Slow Mesons," in addition to summarizing these observations, will review the results of recent experiments at Berkeley on the properties of the slow mesons of both light and heavy varieties produced by the cyclotron there.

John A. Wheeler, professor of physics at Princeton University, and author with Niels Bohr of the paper on the mechanism of nuclear fission which made it possible to predict that plutonium would be suitable

for atomic bombs before that element had been isolated for experimental study, will review, in his paper on "How Mesons Disappear," the theoretical considerations which have been put forward to describe the breakup of heavy mesons into light mesons and the disappearance of light mesons, sometimes by disintegration into an electron and one or more neutral radiations, and sometimes by reaction with an atomic nucleus.

Dr. Wheeler will analyze the factors which determine the energy of the electrons which come off from

the decay of 200-mass mesons. He will also show how this process is related to the alternative process in which a light-weight meson delivers up its charge to an atomic nucleus. In particular, he will show how this process is connected with the possibility of disruption or fission of this nucleus.

The chairman of the symposium will be I. I. Rabi, professor of physics at Columbia University, winner of the Nobel prize for his work on the interaction of short-wave radiations and magnetic fields with atomic and molecular systems.

NEWS and Notes

Peter J. W. Debye, winner of the 1936 Nobel Prize in chemistry for his work on the dielectric properties of matter and for electron diffraction of molecules, has been named to succeed **John Gamble Kirkwood** as Todd professor of chemistry at Cornell University. Dr. Debye first went to Cornell as a Baker lecturer in 1940 and has since served as chairman of the Department of Chemistry.

F. A. Miller, assistant professor of chemistry at the University of Illinois, has been appointed a fellow in the Department of Research in Chemical Physics at Mellon Institute. Dr. Miller is a specialist in molecular spectra and structure.

Raymond R. Edwards, a candidate for the Ph.D. degree in inorganic chemistry at Massachusetts Institute of Technology, will join the staff of the Institute of Science and Technology, University of Arkansas, in September. Mr. Edwards has been appointed research associate in nuclear chemistry and assistant professor of inorganic chemistry.

Carl T. Parsons, until recently assistant entomologist in the Connecticut Agricultural Experiment Station, has been appointed assistant professor of zoology and entomologist at the University of Vermont and State Agricultural College, Burlington.

Shien-Siu Shu, Chinese scientist who is known for his work in the

fields of applied mathematics and fluid mechanics, has been appointed associate professor of mathematics and research associate in mechanics at Illinois Institute of Technology. Dr. Shu came to this country in 1944 as a research associate at Brown University, from which he received the Ph.D. in 1947. He spent last year at the Institute for Advanced Study, Princeton, and this summer is working at Massachusetts Institute of Technology.

John G. Bald, who has been with the Council for Scientific and Industrial Research, Canberra, Australia, since 1928, specializing in studies on plant viruses and diseases, has joined the staff of the Division of Plant Pathology, University of California, Los Angeles, as associate professor and associate plant pathologist in the Experiment Station. His research there will be concerned with diseases of bulbous ornamental plants as part of the program of research in floricultural pathology on the Los Angeles campus.

Robert S. Pogrund, formerly of the Department of Zoology, State College of Washington, Pullman, has joined the staff of the Department of Aviation Medicine, University of Southern California School of Medicine, as assistant professor of physiology.

Daniel Robert Miller, clinical psychologist, who for the past year has held a Social Science Research Council postdoctoral fellowship, has been appointed assistant professor of psychology and chief of the Clinical Services Division, Bureau of Psychological Services, University of Michigan, for the academic year 1948-49.

Robert Chambers, of the Marine Biological Laboratory, Woods Hole, Massachusetts, and the Department of Biology, New York University, has been elected foreign correspondent of the Académie Nationale de Médecine, Paris.

Margaret W. Robinson, research assistant for the Research Foundation for Alcoholism in Seattle, Washington, has recently been appointed executive secretary of the Foundation.

R. J. Jessen, acting director of the Iowa State College statistical laboratory, flew to Greece last month to develop survey plans to be used in a series of studies of health, social, and economic problems in Crete. The studies are under the general direction of **L. G. Allbaugh**, of the Rockefeller Foundation, which is sponsoring the work. **J. C. Dodson** and **N. V. Strand**, of the statistical laboratory staff, who preceded Dr. Jessen to Crete, will assist in the sample surveys.

Grants and Awards

The Research Unit on Utilization of Animal Fats at the Eastern Regional Research Laboratory, USDA, has received a departmental citation for its work "which resulted in better quality synthetic rubber and substantially increased rubber production without further expansion of plant facilities and which made possible the utilization of low-grade animal fats for making improved emulsifiers needed in the manufacture of GR-S synthetic rubber." Members of the unit include **Waldo C. Ault**, **B. A. Brice**, **M. J. Copley**, **E. T. Roe**, **B. B. Schaeffer**, and **Margaret L. Swain**.