pneumonias, St. Louis and equine encephalitis, measles, chickenpox, smallpox and mumps.

To aid in the necessary planning and execution of the project, the National Foundation has made a three-year grant, amounting to $120,000, to the university. This is in addition to three previous grants amounting to $110,000, made during the past three years. This makes $230,000, which the foundation has made available to the School of Public Health of the university since May 13, 1940, when the first steps in the program were planned by Basil O'Connor, director of the foundation, and Dr. Henry F. Vaughan, dean of the School of Public Health.

President Alexander G. Ruthven made a statement in which he pointed out that, even though the school has not had adequate facilities during the two years since it opened, it has made several outstanding contributions to our knowledge of how the disease is transmitted and on other epidemic diseases in the army and in vital war industries. In addition, twenty men and women have received training in virology during that period.

This is the first time in the history of the National Foundation that three long-term grants have been made within the space of a single year. In April a five-year grant of $150,000 was made to Yale University to permit it to reorganize its work on infantile paralysis and establish the Yale Poliomyelitis Study Unit. Last summer a five-year grant of $300,000 was made to the Johns Hopkins University to establish and conduct a Center for the Study of Infantile Paralysis and Related Virus Diseases.

HONORARY DOCTORATES CONFERRED BY COLUMBIA UNIVERSITY

THE doctorate of science was conferred by Columbia University on June 1 at its one hundred and eighty-ninth commencement on Dr. Charles F. Kettering, vice-president of the General Motors Corporation, and on John Van Nostrand Dorr, president of the Dorr Engineering Company. The doctorate of laws was conferred on William Church Osborn, president of the Metropolitan Museum of Art. The citations by President Nicholas Murray Butler read:

Charles Franklin Kettering: Who for some forty years as engineer and as inventor has contributed in many important ways to human comfort and human safety, particularly in the field of transportation; an outstanding representative of the applied science of our time.

John Van Nostrand Dorr: Graduated at Rutgers University, from which he entered upon a long and most useful career as engineer, inventor and administrator in the fields of metallurgical, sanitary and chemical engineering, with results which have been of exceptional service to the American people and their industries.

William Church Osborn: Graduated at Princeton University when it was under the historic presidency of Dr. McCosh, accepting at once the full responsibilities of good citizenship and continuing to serve the public interest year by year, well illustrating the saying of George Eliot that service done by willing and discerning souls is a glory; now president of the Metropolitan Museum of Art, one of the great art collections in this modern world.

SCIENTIFIC NOTES AND NEWS

DR. WILLIAM D. COOLIDGE, vice-president and director of research of the General Electric Company, has been awarded the "Order del Merito" of Chile for his "many services to civilization."

AT a recent meeting of the Royal College of Surgeons of England, the president, Sir Alfred Webb-Johnson, admitted two new honorary fellows, Colonel Elliott C. Cutler, Moseley professor of surgery at Harvard University and chief surgical consultant to the United States Army in the European theater of operations, and Professor W. G. Penfield, professor of neurology and neurosurgery at McGill University.

DR. OTIS W. CALDWELL, general secretary of the American Association for the Advancement of Science, who has been a member of the New York Botanical Garden since 1920, has been voted a life member by the executive committee of the Board of Managers in recognition "of his many services to botanical science and to this Botanical Garden over a long period of years."

THE American Association of Industrial Physicians and Surgeons has awarded the Wm. S. Knudsen Medal for "the most outstanding contribution of the year to industrial medicine" to Dr. William A. Sawyer, medical director of the Eastman Kodak Company. The award was made in recognition of his "work in control of tuberculosis, constructive contributions to a practical program of nutrition in industry and setting up a program of rehabilitation for handicapped workers in industry."

DR. CHARLES KENNETH LEITH, professor of geology at the University of Wisconsin, now head of the metals and minerals branch of Production Research and Development of the War Production Board, received the honorary degree of doctor of science at the commencement exercises of Stevens Institute. Dr. Leith gave the commencement address.

THE Medical School of Tufts College conferred at commencement the honorary degree of doctor of laws on Dr. Lewis H. Weed, professor of anatomy at the

Johns Hopkins University School of Medicine and chairman of the Division of Medical Sciences of the National Research Council. Dr. Weed delivered the convocation address. He spoke on "War Research in Medicine and Dentistry."

DEPAUW UNIVERSITY conferred at its commencement on May 16 the honorary doctorate of science on Dr. Harlan H. York, professor of botany at the University of Pennsylvania.

MAJOR GENERAL RALPH ROYCE, commander of the First Air Force, on June 5 received an honorary doctorate of engineering from the Michigan College of Mining and Technology.

AT the annual dinner meeting and ladies' night of the Branner Geological Society, which was held on May 26 at the California Institute of Technology, the following officers were elected for the coming season: *President,* Herschel Driver, of the Standard Oil Company of California; *Vice-president,* Robert W. Webb, of the department of geology of the University of California at Los Angeles; *Secretary-Treasurer,* Vincent W. Vandiver, of the Seaboard Oil Company. Retiring officers are Wayne Galliher, of the Barnsdall Oil Company; W. C. Putnam, of the department of geology, University of California at Los Angeles, and Clement D. Meserve, of the department of geology, Glendale Junior College. The speaker of the evening was Dr. Beno Gutenberg, professor of geophysics at the California Institute of Technology, who delivered an address on "The Structure of the Earth."

THE anniversary meeting of the members of the Royal Institution, London, was held on May 1 with Major Charles E. S. Phillips, secretary and vice-president, in the chair. The annual report of the visitors was received and adopted, and the following officers were elected: *President,* Lord Eustace Percy; *Treasurer,* Sir Robert Robertson; *Secretary,* Major Charles E. S. Phillips.

DR. S. L. MACINDOE has been elected president of the New South Wales Division of the Australian Association of Scientific Workers. F. Milthorpe is secretary of the division.

BRIGADIER GENERAL JAMES S. SIMMONS, chief of the Division of Preventive Medicine in the Office of the Surgeon General, has been appointed visiting lecturer in public health for the coming year by the School of Medicine of Yale University.

AT the Cornell University Medical College, Dr. McKeen Cattell, who has been a member of the staff since 1924, has been appointed professor of pharmacology and head of the department. Dr. John M. McLean has been promoted to a professorship of clinical surgery (ophthalmology).

DR. JOHN GODWIN DOWNING has been appointed professor of dermatology at the School of Medicine of Boston University and head of the department of dermatology.

DR. A. C. CHIBNALL, professor of biochemistry at the Imperial College of Science and Technology, South Kensington, has been elected to the Sir William Dunn professorship of biochemistry of the University of Cambridge in succession to Sir Frederick Gowland Hopkins.

DR. E. D. HUGHES, lecturer in chemistry at University College, London, has been appointed professor of chemistry at the University College of North Wales at Bangor.

DR. J. ALLEN SCOTT, associate director of the Division of Malaria and Hookworm Service of the Georgia Department of Public Health, has resigned to accept an appointment as senior statistician of the Division of Vital Statistics, U. S. Bureau of the Census, Washington, D. C.

DR. FREDERICK MACCURDY, professor of hospital administration at Columbia University and director of the Vanderbilt Clinic of the Columbia Presbyterian Medical Center, has been appointed New York State Commissioner of Mental Hygiene.

A. C. HOFFMAN, formerly agricultural economist of the U. S. Department of Agriculture and now director of the Food Price Division of the Office of Price Administration, has been appointed assistant to the Deputy Administrator for Price. He will be succeeded in his former post of director of the Food Price Division by R. B. Heflebower, who has served with the Office of Price Administration for approximately a year, first as state price officer for Idaho and more recently as special assistant to the deputy administrator on assignment to the Denver Regional Office.

DR. CARL A. FRISCHE has been named chief research director of the Sperry Gyroscope Company. He will assume charge of the laboratory at Garden City, L. I., which employs more than 1,500 technicians for the design, development and test of military, marine and aircraft precision instruments.

H. N. RILEY, director in charge of research and quality control of the H. J. Heinz Company of Pittsburgh, has been elected vice-president of the company.

DR. CHARLES HANES, F.R.S., has been appointed director of food investigation in the British Department of Scientific and Industrial Research.

DR. ARTHUR H. SMITH, of the department of physiological chemistry of Wayne University College of Medicine, gave the Sigma Xi address at the annual

initiation of the Chicago Colleges of the University of Illinois Chapter on May 21. The subject was "Nutrition—A Factor in National Effort."

DR. ALEXANDER SILVERMAN, head of the department of chemistry of the University of Pittsburgh, gave a radio broadcast on "Glass Goes to War" over Station WGY, Schenectady, N. Y., on June 9.

THE two hundred and fifty-fifth meeting of the American Physical Society will be held at State College, Pennsylvania, on June 18 and 19. There will be a symposium on "Physics in War Training Programs." At twelve noon a lecture on Cosmic Rays will be given by Professor W. F. G. Swann of the Bartol Foundation. At 2:30 P.M. there will be a symposium on "The Role of Physics in the Post-War Period." The program continues through Saturday with invited papers concerning Chemical Analysis by Physical Methods and with contributed papers. The American Association of Physics Teachers holds a meeting which begins with contributed papers on June 18 at 7:30, and continues throughout the following day. The dinner of the societies is set for Friday evening, and will be followed by a lecture by Dr. F. C. Whitmore on "Organic Chemistry for Physicists."

A MEETING was called by the Nutrition Foundation on May 27 in New York City to discuss normal ideas of food preservation and distribution which are being revolutionized by the war, and how the cooperation of food and research laboratories with specialists in nutrition is essential to meeting these new problems. Dr. Charles Glen King, scientific director of the Nutrition Foundation, presided at the meeting, at which sixty research and technical directors of food companies were present, as well as representatives of the government.

THE seventh annual Huntington College, Ind., Botanical Garden Day meeting was held early in May. The address for the occasion was given by Dr. Truman Yuncker, of the department of botany of DePauw University. He gave some of his botanical experiences in the South Sea Islands where he studied for a year. The Huntington College Botanical Garden is now in its eighth year and has six hundred and seventy-one living species all of which have been moved into the garden from various habitats in the central states.

THE late Edsel Bryant Ford, only son of Henry Ford, left the major part of his stockholdings in the Ford Motor Company to the Ford Foundation, incorporated in January, 1936, for the purpose of receiving and administering funds for "scientific, educational and charitable purposes, all for the public welfare." The value of the estate is estimated at $200,000,000.

THE library of the late Professor Franz Boas, a collection of nearly 5,000 volumes and 10,000 reprints, which is particularly rich in early works on anthropology, has been acquired by Northwestern University.

THE American Standards Association has announced the publication of its new "List of American Standards" which will serve as a useful reference to the engineering and purchasing departments of manufacturing firms. More than six hundred standards are listed, ninety-four of which represent new and revised standards approved since the last issue, which appeared in August, 1942.

QUARTZ crystals are needed by the Miscellaneous Minerals Division of the War Production Board for the manufacture of quartz oscillator plates used in radio equipment for the armed forces. At present practically all the quartz used for this purpose comes from Brazil. Only separate individual crystal-clusters are wanted. Each crystal must weigh at least half a pound, be at least an inch thick and three inches long. It must be clear and colorless on the inside, although light smoky quartz can be used. Milky quartz, rose quartz and purple quartz (amethyst) are useless. Citizens who may own property on which such material may be found are requested to get in touch with the Division, Temporary "R" Building, Washington, D. C. If samples can be provided at the same time, they will be welcome. There should be several samples of the best crystals obtainable from each location.

IT is reported that investigation on certain aspects of nutrition in Great Britain is at present handicapped by lack of cooperation. In view of the importance, at the present time, of a thorough knowledge of the state of nutrition in Great Britain, the Nutrition Society has accordingly set up a Committee on Nutrition Surveys, with Sir Joseph Barcroft as chairman; the terms of reference are the coordination of nutrition surveys dependent on (*a*) clinical, physiological and biochemical examinations of human subjects, (*b*) examinations of food budgets, and (*c*) chemical analyses of food and meals (including collective meals). The committee will put investigators in touch with others who are working on the same lines or would cooperate; it will supply information, recommend methods and make periodical summaries of the results of investigations. It has the support of the Ministries of Health and of Food and cooperation of the Services. Professor J. R. Marrack has been appointed as a director serving under the committee.

Nature writes: "Professor A. V. Hill, in a debate on Colonial affairs in the House of Commons, gave his powerful aid to recent pleas for the active support and cooperation of the universities of the British Empire in the advance of Colonial education. He recalls

the opportunity for their active participation in the training of the body of teachers and scientific and professional men that the Colonial peoples so greatly need, and must provide as rapidly as possible from their own ranks. He suggests not only taking a mission—with a harmonium rather than a big drum—around the universities to enlist their active contribution, but also the establishment of a central organization of some kind to watch over the needs of the higher education of Colonial peoples, and to bring their needs and the opportunities these offer continually to the notice of schools, universities and learned societies at home."

THE British National Trust has acquired nine hundred and fifty acres of land at Avebury for the nation. The purchase includes the greater part of the group of prehistoric remains that make this one of the most important archeological sites of Europe.

THE Library of Congress has acquired a microfilm of *Khimicheskii Referativnyi Zhurnal* (chemical abstracts journal) for the years 1938 to 1941 (Volumes 1–4, No. 9) except for No. 4, 1939, and No. 12, 1940. This publication contains abstracts of scientific material published exclusively in the U. S. S. R. The microfilm is available for consultation in the Microfilm Reading Room of the Library of Congress or positive prints may be obtained from the Library of Congress Photoduplication Service.

ACCORDING to a Reuter dispatch from London, Sir Isaac Newton's library has been sold to the Pilgrim Trust. The library consists of 858 volumes, nearly all in contemporary calf bindings. The most important items are first and second editions with many corrections in Newton's handwriting. A number of the books have Newton's autograph signature. The destination of this collection has not been announced. Some months ago the Pilgrim Trust bought the Newton birthplace for the nation.

DISCUSSION

SCIENCE AND WAR

IN SCIENCE (Vol. 97, p. 485), Professor R. A. Millikan attempts to refute the argument that the physical sciences are largely the offspring of war and in so doing makes statements to which scholars who have devoted their lives to the history of science and technology will probably object.

There is no acceptable proof that "gunpowder was invented and first used only for peaceful purposes about 880 A.D." Professor George Sarton has studied all the original sources of information and concluded that gunpowder first appeared toward the close of the thirteenth century either in Syria or western Europe. Moreover, it was used in incendiary and explosive hand grenades soon after its invention.

Professor Millikan maintains that the application of artillery "first began on a serious scale about 1800 A.D." Cannon and muskets were so effective by the sixteenth century that they were rapidly displacing the long bow and other feudal equipment. Sombart goes into this matter thoroughly in his "Krieg und Kapitalismus."

To insist that the discovery of the principles of Galilean-Newtonian mechanics "had nothing whatever to do with war" is to fly in the face of the facts. All the physicists of the Renaissance were inspired by military problems. Newton and Galileo were much concerned with ballistics. The historic evidence that both were strongly influenced by military and naval considerations has been gathered and weighed by B. Hessen in "Science at the Crossroads." His interpretation is widely accepted.

Professor Millikan's statement that science flowered with exceptional vigor from 1814 to 1914, one of the few relatively peaceful periods in European history, ignores the fact that every country was then preparing for possible war, that standing armies were increasing in numbers and that military and naval technology were brought almost to their present pitch of perfection. It was in this period of armed peace that we had such developments as battleship armor, built-up guns, machine-guns, high explosives, coal-tar chemistry (closely linked with explosives), the reduction of nitrogen from the atmosphere (for military purposes primarily), aviation (encouraged for military reasons by every power) and the beginning of synthetic rubber (developed by the Germans in view of an inevitable blockade).

In considering this period Professor Millikan ignores "derivative problems," as Professor Robert Merton calls them, that is, such problems as the expansion and compressibility of gases, strength of metals, rates of combustion of powders, resistance of the air to projectiles and a host of others which were presented by explosives and which received the attention of physicists to the advantage of both war and science. Professor Millikan seems to imply that because the research scientist may be unaware of social pressure he remains immune to it. But the pressure is there and can not be avoided.

It is difficult to see that Professor Millikan proves anything by saying that "the average span of life . . . is about sixty years, whereas only 150 years ago it was about thirty years." Soldiers benefit from advances