American Social Hygiene Association and is nearing completion. It is understood to be the first comprehensive review of research in this field that has been made either in the United States or abroad.

The survey of tropical diseases has culminated in a statistical report upon the "Geography of Diseases" which is now in process of publication as a volume of some 700 pages.

Division of Engineering and Industrial Research

The National Research Council recognizes the advancement of science by research in industrial laboratories. The Council believes that the research work of industry should never become dissociated from the basic scientific work of the universities. The Division of Engineering and Industrial Research lends its assistance also to work on special projects, such as the coordination of investigations in the field of dielectrics, systematic studies upon the conservation and transfer of heat through various materials used in industrial processes and investigations upon the friction of fluids in pipes. For a number of years the division has supported the American Bureau of Welding in cooperation with the American Welding Society for the encouragement of investigations upon both the theory and the practice of welding.

The Highway Research Board of the Council has for thirteen years been cooperating with the U. S. Bureau of Public Roads in the coordination of research conducted by numerous state and university agencies upon the construction and maintenance of highways. In addition the board is sponsoring special cooperative investigations upon (a) the use of high elastic limit steel for concrete reinforcement, (b) the warping of concrete pavement slabs, (c) the stabilization of the curve of low-cost-type roads, and (d) studies upon highway costs as an element in regional economic improvement.

Conclusion

This brief review pertains to a few of the Council's activities that have special interest at this time. It includes no reference to other highly interesting and valuable work of the divisions of Physical Sciences, Chemistry and Chemical Technology, Biology and Agriculture, Geology and Geography, and Educational, States and Foreign Relations. The reports of the chairmen of these divisions will appear in the next Annual report of the Council and are of such general interest to scientists that they would be summarized here were it not for the limitations of space. It is fitting that acknowledgment should be made to many for financial aid and especially to the Rockefeller Foundation and the Carnegie Corporation for their willingness, during the past year, to contribute to the general support of the Council as well as to specific projects.

OBITUARY

EDWARD SALISBURY DANA

THE death of Edward Salisbury Dana on the sixteenth of last June at the age of eighty-five ended a most remarkable chapter in the history of American science. He was of the third generation of a family that for more than a century and a third guided and enriched our scientific life. The record of this family is unique.

The story may be said to have commenced in 1802 when the elder President Dwight appointed Benjamin Silliman to the professorship of geology, mineralogy and chemistry in Yale College. It was Yale's first recognition of science as a part of the college curriculum. Silliman made two most important contributions to the development of science in the United States. Through his influence the first important mineral collection which came to this country, the Gibbs collection, was brought to New Haven for exhibition and later was purchased by friends of Yale for its permanent use. This collection afforded material for study and early made Yale a center for mineralogical investigation. His second great contribution was the founding in 1818 of the *American Journal of Science*. This, the oldest scientific magazine in the country, was for more than a hundred years edited and supported by the members of the Silliman-Dana family.

James Dwight Dana was a student of Silliman and in time became his scientific successor. These ties were strengthened when he married Silliman's daughter. The elder Dana was perhaps most renowned as a geologist, but it was as a mineralogist that he had his greatest influence on his son Edward's career. J. D. Dana published the first edition of the "System of Mineralogy" in 1837 when only a few years out of college. This book, which has had the greatest influence in that science of any single book published anywhere, passed through five editions under J. D. Dana's editorship, the fifth edition being dated 1868.

Edward S. Dana was born in New Haven on November 16, 1849, in the house on Hillhouse Avenue where he lived the greater part of his life and in which he died. He graduated from Yale in the class of 1870. The next two years were spent in graduate work, chiefly in mineralogy under the direction of Professor George J. Brush, of the Sheffield Scientific School. The following two years he was abroad, studying at

Heidelberg and in Vienna. He returned to New Haven and took his M.A. degree at Yale in 1874 and his Ph.D. in 1876.

There being at that time no opportunity for him to teach mineralogy at Yale he became a tutor in mathematics and physics. In spite of his world-wide reputation as a mineralogist he continued to teach physics and from 1890 until he retired in 1917 he served as professor of physics in Yale College. It should be said that he had a deservedly high reputation as a teacher of physics and even wrote an elementary text-book on mechanics which was widely used for many years.

His real work, however, lay elsewhere. In 1872 he published a paper "On the Composition of the Labradorite Rocks of Waterville, New Hampshire," which is of historical importance, as it was among the earliest reports of an investigation of a rock from the petrographic point of view. His doctor's thesis on "The Trap Rocks of the Connecticut Valley" was the first important memoir using the methods of microscopical petrography to be published in this country. His first paper in mineralogy was published in 1872. In 1876 the remarkable mineral locality at Branchville, Connecticut, was discovered and Professor Brush enlisted Dana's aid in its exploration and the description of its unusual and new minerals. Together they published the five so-called Branchville Papers, the first four between 1878 and 1880 and the fifth ten years later in 1890. These papers contained the descriptions of fourteen minerals, nine of which were at that time new species. Dana furnished the crystallographic and optical and general physical descriptions, while two younger colleagues, Horace L. Wells and Samuel L. Penfield, made most of the necessary chemical analyses. These papers recorded the most important series of mineralogical investigations that had been made in this country up to that time.

Dana's most important contribution to the advancement of mineralogy, however, was in the books that he wrote. His first volume was the "Textbook of Mineralogy," the first edition of which was published in 1877. A second edition, entirely revised, was published in 1898 after the appearance of the sixth edition of the "System of Mineralogy." In the second edition of the text-book appeared chapters on crystallography and the optical properties of minerals, two subjects in which Dana was particularly interested, that were models of clear exposition and which set a standard by which all subsequent treatments have been judged. Two more editions of this book have since appeared.

Dana's greatest achievement, however, was the publication in 1892 of the sixth edition of his father's "System." There was an interval of nearly twenty-five years between the dates of the fifth and sixth editions. During this period mineralogical investigation was very active and much new material had accumulated. The sixth edition was, therefore, practically a new book. He spent the better part of ten years on its preparation, while at the same time carrying on his teaching and general faculty work, together with many other tasks. It was a heroic undertaking and an extraordinary accomplishment for one man working practically unaided. Not only did the book show great discrimination and rare judgment but an astounding accuracy as well. Mineralogists will bear testimony to the very few errors, even of a typographical kind, that have ever been found in it. It at once established itself as the major reference book in its subject in any language. It is safe to say that references to "Dana" in the mineralogical literature during the last forty years have far exceeded those to any other book. The strain, however, under which Dana worked on this book was so great that his health was in consequence seriously impaired and his subsequent activities were of necessity much curtailed.

There is no space here to enlarge upon his work in the Yale faculty, where for many years he served upon two important committees. His genial nature and ready tact helped to straighten out many an involved situation. His invaluable services to the Yale Peabody Museum as curator, trustee and finally as chairman of the board of trustees covered a period of many years. Dana became an editor of the *American Journal of Science* in 1875. After the retirement of Silliman in 1885 the two Danas, father and son, carried on as proprietors and editors until the elder Dana's death in 1895. From that date until 1926 Edward Dana was editor-in-chief and was wholly responsible for its publication. At that time the journal was transferred to Yale University and other men have since served as editors, but up to his death Dana took an active interest in its affairs. Because of his wide interest in and knowledge of diverse scientific fields, Dana was able to fill its pages with a long series of important articles and to maintain its high standard as a general scientific journal.

Dana's was a most charming and genial personality. He had a ready smile and a quiet humor. He was always most interested in what other people were doing and always helpful in his advice. It was always difficult to get him to talk about himself, for his was a true modesty. He was generous to a fault, of time and of money. No one knows the extent of his private benefactions. Many people could testify to his helpful encouragement. One instance may perhaps be cited as typical of many others. A young high-school boy in Texas became interested in minerals and wrote a letter to Professor Dana asking advice. Dana,

already then eighty years old, at once entered into a lively correspondence with the lad, sending him books and mineral specimens and doing all he could to encourage the boy's scientific interest. When the young man graduated from his school he asked as his graduation present enough money to enable him to travel east and to go to New Haven and pay his respects to his old friend. It was a tribute that must have warmed Dana's heart.

Another typical instance of unselfish service must be related. After the war some of the older mineralogists and their families living in Vienna were in desperate circumstances. Recalling his student days in that city, Dana on his own initiative solicited small contributions from American mineralogists and transmitted the funds thus obtained to Vienna. He continued this self-imposed task until the end. The Vienna Academy sent this greeting to him on the occasion of his eightieth birthday:

> We recognize you as the master and leader of American mineralogists, and we of Vienna may rightfully claim Edward S. Dana as one of ourselves. Since 1873 bonds of personal friendship have been formed between you and a number of physicists and mineralogists in Vienna. . . . With this circle of friends you have kept faith during one of the saddest times which Vienna and Austria have ever experienced. When the State was finally unable to protect Austrian scholars of world-wide fame and their families from bitter need, you have remembered your friends and with the courage of a kind heart, have been one of the first to collect funds for their support. We all think of you with lasting gratitude.

That in itself alone forms a monument that will endure.

WILLIAM E. FORD

RECENT DEATHS AND MEMORIALS

JOSEPH ALLEN JOHNSON, chief engineer of the Buffalo, Niagara and Eastern Power Corporation, in 1934 president of the Institute of Electrical Engineers, died on October 5. He was fifty-three years old.

DR. JOSEPH PETERSON, professor of psychology at the George Peabody College for Teachers, died on September 20 at the age of fifty-seven years.

HAROLD WARD DUDLEY, biochemist of the British Medical Research Council's Laboratories at Hampstead and from 1924 to 1930 one of the editors of *The Biochemical Journal*, died on October 3 at the age of forty-seven years.

THE death is announced in *Nature* of Professor A. Guntz, professor of applied chemistry at the University of Algiers and correspondent of the Academy of Sciences, Paris.

HOWARD CROSBY WARREN, founder of the department of psychology of Princeton University, is commemorated by a plaque recently installed in the vestibule of Eno Hall, the laboratory erected largely through his efforts and generosity. The plaque, designed by Harriet Hyatt Mayor, of Princeton, and presented by Mrs. Warren, carries a brief biographical inscription and a relief portrait of Dr. Warren. From the year after Dr. Warren's graduation until his death in 1934 he was a member of the Princeton faculty. When psychology became a department separate from philosophy in 1920, Dr. Warren was chosen as its first chairman. Four years earlier he had become director of the first psychological laboratory, then in Nassau Hall. He had become associated with the *Psychological Review* in 1900 and was its senior editor from 1910 until his death. Before he died he brought near to completion a dictionary of psychology on which he had worked for many years.

SCIENTIFIC EVENTS

INTRODUCTION OF PLANTS TO PREVENT SOIL EROSION

A TWO-YEAR search for grasses and other plants that will resist drought in the Great Plains has ended, and the work of testing hardy varieties from Asia is now being carried out by the U. S. Department of Agriculture. On September 21 the department terminated the expedition in North China headed by Professor Nicholas Roerich.

Since the spring of 1934 the department has had three groups of plant collectors in Asia gathering seeds of grasses and other plants which might some day protect the Great Plains against the effects of drought and erosion. H. G. MacMillan and J. C. Stephens made some collections in Manchuria in 1934, and a seven months expedition under the direction of H. L. Westover and C. R. Enlow scoured Russian Turkestan. The Roerich expedition spent the 1934 collecting season in the Hingan Mountain region of Manchuria, and the current season on the edge of the Gobi Desert in Inner Mongolia.

The 1934 collecting season yielded 2,242 lots of seed and planting stock, including 798 grasses, 555 legumes and 889 miscellaneous items. Westover and Enlow sent back 2,124 lots of seed; MacMillan and Stevens 98 lots of seed, and last season the Roerichs collected 20 lots. The extent of this season's collections by the Roerich expedition is not yet known.

The seeds collected in 1934 were planted in various nurseries and greenhouses throughout the western part of the United States. It is too early to determine the ultimate value of these collections, since each collection