the history and nature of various important American agricultural crops. In addition, the practical problem of the sequence and duration of postulated post-glacial climatic cycles may only be solved when the archeological record is clear.

For these and similar reasons, it is the fundamental belief of the Committee on Basic Needs in American Archeology of the National Research Council that unless the foregoing minimum requirements of scientific archeology can be fully met by any federal, state or local institution, it should not undertake archeological research.

OBITUARY

FLOYD KARKER RICHTMYER

ON November 7 death came without warning to Dean Richtmyer of Cornell University. He collapsed while preparing to go to a concert with his family, and before the doctor arrived he was dead from coronary thrombosis. Thus was struck down, in the full tide of amazing activity, a prominent figure of the Cornell campus and one of the most influential members of several learned societies and institutions.

Floyd Karker Richtmyer was born on October 12, 1881, in the rural community of Cobleskill, New York. He showed an early interest in scientific research as an undergraduate at Cornell University. After graduation in 1904 he married and taught for two years at Drexel Institute, Philadelphia; then he returned to Cornell as instructor in physics, and in 1910 was awarded the degree of Ph.D.

In his activities as a graduate student, the main lines and characteristics of Richtmyer's life work are already visible. Stimulated by E. L. Nichols to an interest in photometry, he presented a paper before the Illuminating Engineering Society in which he advocated more instruction in the subject of illumination for engineers and described a new laboratory course in the subject. Thus he showed an early interest both in educational problems and in the applied side of physics. For the subject of his Ph.D. research, however, he chose the photoelectric properties of the alkali metals. In this investigation he did the careful, clean-cut experimental work for which he possessed an unusual talent; and he also revealed his outstanding characteristics of looking at a set of data from all angles and extracting from them every possible conclusion. He was preeminently a man with a passion for doing things well; and he saw many things to do.

From this point, Richtmyer's career falls naturally into three periods. During the first, he taught physics for students of engineering and pursued his interests in applied optics. In the Illuminating Engineering Society we find him on the council and on several committees, acting as chairman of a committee on education. Furthermore, in 1916 he assisted in the organization of the Optical Society of America, and throughout his life he contributed greatly to the work of that society; he was president in 1920, and for 22 years he participated in the conduct of the *Journal*, becoming editor in 1933.

About 1918, however, when he became full professor of physics, Richtmyer began to turn toward other fields. After a brief interlude in the study of thin films he developed an interest in x-rays which was destined to be permanent and to establish him as an authority in the field. After spending a sabbatic year as "investigator" in the laboratories of the General Electric Company, he undertook at Cornell a series of well-planned and precisely executed measurements on topics related to x-ray absorption, the principal result of which was to establish the law that absorption due to ionization in a given shell in an atom is proportional to the cube of the wave-length of the x-rays and to the fourth power of the atomic number. Then, in 1927, as a result of several months in Siegbahn's laboratory in Uppsala, Sweden, he became interested in the faint x-ray lines known as "satellites." He proposed a new theory concerning the origin of these lines, ascribing them to jumps made simultaneously by two electrons in an ionized atom; and he made a series of experimental studies in an endeavor to support the theory. Later he himself recognized, in the light of further developments, that most of the observed satellites are probably due to a mechanism proposed earlier by others, namely, to a one-electron jump in a doubly ionized atom; but it is still possible that some of the faintest lines are of his double-jump type.

Richtmyer's interest in x-ray research continued to the end. He inspired and supervised a number of investigations which did much to clear up the subject of x-ray line widths and shapes; after 1930, however, the actual work was done by others. His enthusiasm and obvious mastery of fact and technique attracted many graduate students into his field, and during many years he had the help of an assistant. His attainments as a scientist were given recognition by his election as president of the American Physical Society in 1936, and as vice-president in charge of section B of the American Association for the Advancement of Science in 1930; and in 1932 he was elected to the National Academy of Sciences (councilor in 1938).

About 1931 began the third period of Richtmyer's activities, during which most of his time was devoted to administrative work of wide variety. In that year he became dean of the graduate school at Cornell. In this capacity he strove, with tact and infinite patience, for the maintenance of high standards, hampered by

the circumstance that he had neither a budget nor direct control over students' work. In 1931, also, he participated in the organization of the American Institute of Physics, and thereafter he contributed greatly to its management, as a member of the executive committee of the governing board and of several other committees. Finally, in the same year he participated in the founding of the American Association of Physics Teachers, of which he remained a member of the executive committee and served several years as vice-president (1935, 1936), president (1937, 1938) or associate editor of the *Journal*.

In spite of these new responsibilities he continued to be active in the American Association of University Professors, of which he was vice-president in 1932 and 1933; serving on various committees, he took the leading part as chairman of a committee which studied the effects of the depression on higher education. As dean of the graduate school he was also brought actively into the work of the Association of American Universities; besides membership on several committees, he acted as chairman of one on foreign student problems which did a great deal to improve the lot of foreign students in America. In 1938 he was chosen to be the first personal permanent secretary of the association. And, finally, he continued until 1937 to share in the work of the National Research Council, of which he became a member in 1923; he was chairman of the division of physical sciences from 1930 to 1935 and on the fellowship board from 1930 to 1937.

During later years Richtmyer's teaching was restricted to an occasional graduate course and a senior course of his own devising. The subject-matter of the latter he published in 1928 as a book, "Introduction to Modern Physics," in which he surveyed from the experimental standpoint the advances of the present century. In this book, as on the lecture platform, he showed himself a master of clear and forceful exposition. He was often invited to lecture on scientific or educational topics; during the last two years he gave at least 15 lectures on his experiences as a physicist accompanying the National Geographic Society-U. S. Navy expedition to the South Pacific to observe the solar eclipse of 1937.

Richtmyer was a member of many scientific societies. In Sigma Xi he headed a committee on revision of the constitution, and from 1924 to 1926 he was president. He also took a warm interest in the Cosmopolitan Club of Ithaca, doing a great deal to establish this club on a sound basis. He seemed to feel surest that here he had, beyond all possibility of dispute, accomplished something to benefit mankind. It was characteristic of him in general that he was always willing to lend a helping hand to others; there are many, within the university and without, who feel a deep personal sense of gratitude toward him for such assistance. This trait and his graciousness as friend and host won him many friends, both on and off the campus. His closest friends speak of his frankness, sincerity and modesty. His going leaves many with a sense of irreparable loss.

He is survived by his widow, Bernice Davis Richtmyer, and three children: Robert D., now instructor in physics at Stanford University, Sarah (Mrs. Mann) and Lawson E.

EARLE H. KENNARD

CORNELL UNIVERSITY

WILLIAM HENRY BROWN

WHEN an active and productive man, experienced and successful in research, in teaching, in the preparation of important texts and in administration, altogether too rare an association of talents, suddenly and unexpectedly dies at the relatively young age of fifty-five years, not only his colleagues and associates keenly feel his loss but science itself suffers. This statement applies preeminently to Dr. William Henry Brown of the department of botany, Johns Hopkins University, whose death occurred in Baltimore on the morning of November 9, 1939.

Dr. Brown's active and productive career centered in the Philippines, for with the exception of one short vacation trip to the United States in 1925, he resided there continuously for twenty-seven years, a very long term of tropical service. Yet his investigations and his publications have given him a distinctly wide and favorable clientele not only in the Philippines and in the United States, but in all parts of the world where botany is an established and recognized field of instruction and research.

Dr. Brown was born in Richmond, Va., on October 6, 1884, receiving his bachelor's degree from Richmond College in 1906. In the fall of 1906 he entered Johns Hopkins University, taking advanced work in botany under the late Dr. Duncan S. Johnson. In 1909, after Dr. Burton E. Livingston joined the Johns Hopkins staff, he became more and more interested in plant physiology, and in this year accompanied the latter as research assistant to the Desert Laboratory of the Carnegie Institution, Tucson, Ariz. As an interim appointment he also served as scientific assistant in 1908 at the United States Fisheries Laboratory at Beaufort, N. C. While a graduate student at Johns Hopkins University he served as graduate assistant in botany, was appointed a fellow in 1909, and, after receiving his Ph.D. degree in 1910, was appointed a Bruce fellow, a post-Ph.D. fellowship for studies planned to be carried on at the Desert Laboratory. In the fall of that year, however, he resigned the Bruce fellowship to accept an instructorship in plant physiology at Michigan State College. These brief data suffice to cover his formative years, but in whatever field he worked, technical publications resulted.