nitely a physiological vigor of growth; its real explanation is to be sought in physiological, possibly biochemical investigations.

As pointed out in my introduction Ashby's hypothesis[7, 9, 10] as he stated it, depends upon greater "initial capital" represented by a larger embryo or larger growing point in the embryo, enjoying the same growth rate, which he expressed as "rate of interest." To restate my results in terms of his analogy, I can definitely state that hybrid vigor is due to an initial capital which is no larger, stage by stage, than the mean between the parent species, but the embryo enjoys a higher growth rate, or a higher compounded "rate of interest," before the seed is mature as well as after planting. It may be expected that in an angiosperm wherever the hybrid embryo in a seed is larger than that of the parents, this is the result rather than the cause of hybrid vigor.

OBITUARY

NEVIN M. FENNEMAN

DR. NEVIN M. FENNEMAN, professor emeritus of geology of the University of Cincinnati, died in Cincinnati, Ohio, on July 4, 1945, in his seventy-ninth year. In the fields of geology, geography and physiography, his fellow workers in this country and abroad will regret the passing of a distinguished and greatly esteemed colleague.

He was born on December 26, 1865, at Lima, Ohio, a son of William Henry and Rebecca Oldfather Fenneman. He took his undergraduate course at Heidelberg College, Tiffin, Ohio, where he was graduated A.B. in 1883. There followed a period of high-school teaching and eight years, 1892 to 1900, as professor of physical sciences at the Colorado State Normal School, now the Colorado State College of Education. He had his graduate training under Chamberlin and Salisbury at the University of Chicago, receiving the Ph.D. degree in 1901.

Dr. Fenneman became the first professor of geology at the University of Colorado in 1902, at about the time the oil fields in the Boulder area were opening. These fields were of minor commercial importance, but their geologic setting abounded in scientific interest and Dr. Fenneman's report upon them, published in the bulletin series of the United States Geological Survey, attracted considerable attention. He received various assignments from the Geological Survey for work in western and southern states, with resultant publications during these and later years. After three semesters at the University of Colorado, he was called to the University of Wisconsin in 1903, and he served as professor of geology there for four years. From 1900 to 1902 he was geologist of the Wisconsin Geological and Natural History Survey, and, from 1906 to 1908, geologist of the Illinois Geological Survey.

In 1907, Dr. Fenneman came to the University of Cincinnati and established the department of geology and geography. Nature had made the Cincinnati area one of geological significance as the type locality for Ordovician marine deposits. Dr. Fenneman made it a center of scientific importance for instruction and research in geology and geography. He chose, guided and inspired young members of his department, and they and the students majoring in geology at Cincinnati have accomplished notable professional work. As a departmental colleague expresses it:

> Behre, Bucher and a long list of others regard him as the outstanding influence on their lives. His stern teaching, his kindly, searching criticism, his keen encouragement and his own deep humility, all left their mark. Hardly a month goes by but some U.C. graduate, whose only contact with Fenneman may have been in freshman geology, recalls the impact of a mind which taught him to think rigorously and which opened new vistas. . . . He was a master of logical presentation, the last of the great trio of American physiographers—Davis, Fenneman and Johnson—of the early twentieth century, who followed in the steps of the great pioneers in this field and developed a rigid application of logic to the study of land forms and their evolution.

During his thirty years as department head to 1937 and afterward (he was at his campus desk daily and continued his advanced courses during his eight *emeritus* years) Dr. Fenneman slowly and steadily worked on studies which won wide acclaim upon publication. These included numerous reports and bulletins, ranging from a local enterprise—direction of a survey of the natural and industrial resources of the Cincinnati area—to an international project—direction of scientific work on Africa preparatory to the World War I peace conference at Paris. The U. S. Geological Survey, which he served as assistant geologist, associate geologist and geologist for more than a quarter of a century, published his map "Physical Divisions of the United States," which was the original of its type. His *opus magnum* was the "Physiography of Western United States" and "Physiography of Eastern United States," volumes now already classic in this field.

Fellow scientists in his and related fields recognized Dr. Fenneman's achievements in many ways. He was elected president of the Association of American Geographers in 1918; chairman of the National Research Council's division of geology and geography

in 1922; vice-president and chairman of the geology section of the American Association for the Advancement of Science in 1923; president of the Geological Society of America in 1935; president of the Yellowstone-Bighorn Research Association in 1936. Among his international contacts were those made in the Far East in 1926, when he represented the United States at the Pan Pacific Science Congress at Tokyo. His name was starred in editions of "American Men of Science" for the past quarter of a century. "For eminent achievements in the physiography of the United States," Dr. Fenneman was awarded the gold medal of the Geographic Society of Chicago in 1938. He received the honorary degree of doctor of laws of the University of Cincinnati in 1940.

In addition to the societies and associations already indicated, Dr. Fenneman held membership in the American Society of Naturalists, Sigma Xi, Phi Beta Kappa, Ohio Academy of Science, the Cosmos Club of Washington, D. C., and the Literary Club of Cincinnati, of which he was president in 1924–25.

Dr. Fenneman was married in 1893 to Sarah Alice Glisan, who died in 1920. They had no children.

Aside from his scientific interests, Dr. Fenneman followed national and world affairs closely and was long an advocate of an association of nations. He had a lighter side, with flashes of wit and dry humor which were the delight of colleagues and students alike. He wrote numerous familiar essays marked by an individuality and homely flavor which charmed his hearers when he read them as papers at meetings of the famous Literary Club of Cincinnati.

Dr. Fenneman was a tall man of rugged physique who, up to his last weeks, walked with springy step between his Clifton home and the university campus. A portrait, painted recently by Frank H. Myers, the Cincinnati artist, admirably shows his Lincolnian features. His voice was deep and resonant, his speech deliberate, his manner one of courtesy and charm. A stalwart and fascinating personality, he was an eminent figure in the history of the university which he served so loyally and well. Undaunted by storms, he was like a great oak tree, spreading friendly protection for others. This influence is typified in a letter from a scientist who owed much to him: "He never knew how greatly I admired in him that in which he was great: his iron self-discipline; his sturdy self-sufficiency; his profound urge to grasp fundamentals; his fastidiousness; his rare sense of fitness in the choice of words; and his live sense of humor."

At the funeral service on July 6 in the Mt. Auburn Presbyterian Church, Cincinnati, of which Dr. Fenneman was a member, the Reverend Henry C. Rogers read the passage from "Pilgrim's Progress" relating to Mr. Greatheart and his service to others, concluding: "Mr. Greatheart has returned to his Master."

RAYMOND WALTERS
UNIVERSITY OF CINCINNATI

RECENT DEATHS

DR. AUGUSTUS H. FISKE, chief chemist of the Rumford Chemical Works, retired, died on July 27 at the age of sixty-five years.

DR. GEORGE A. HARROP, JR., of Princeton, N. J., a vice-president of E. R. Squibb & Son and research director of the Squibb Institute for Medical Research, New Brunswick, N. J., has died at the age of fifty-four years.

A LETTER received by Dr. William Randolph Taylor from Dr. F. Børgesen of Copenhagen announces the recent death of Mme. Anna Weber-van Bosse, of Eerbeck, Netherlands. She was a distinguished student of Netherlands East Indian algae whose elaborate reports in the "Siboga Expeditie" are well known, as is her monograph on *Caulerpa* and other works on tropical algae. She had passed her ninetieth birthday at the time of her death.

DR. LEON J. COLE writes that a report has come from the Philippines that Dr. Miguel Manresa, formerly head of the department of animal husbandry in the College of Agriculture at Los Baños, met his death on February 11 before the liberation of Manila.

SCIENTIFIC EVENTS

THE PROFESSIONAL TRAINING OF CHEMISTS

THE American Chemical Society is planning to seek the release for further training of a select group of servicemen who have received college degrees since 1940 and who as students showed unusual promise in science and technology, according to a statement made by Dr. Erle M. Billings, of Rochester, N. Y., secretary of the Committee on the Professional Training of Chemists.

The committee has sent a questionnaire to the departments of chemistry and chemical engineering of colleges and universities throughout the country requesting them to provide "a highly selective list of college graduates since 1940 in certain fields, whose high ability, intelligence and leadership make their continued training at the earliest possible moment of demonstrable value to the country." In addition, the society hopes that some of the best upperclass students may also be discharged so that they may finish