Perhaps Wilson's outstanding contribution was in the field of cell-lineage, following the classical studies of Whitman. Work of this kind is extremely laborious, requiring the most meticulous attention to details, but Wilson never lost sight of its broader aspects. He soon became one of the outstanding leaders in cytology, as the study of the cell came to be called. His researches and wide reading of the literature culminated in the final edition of his fine book on "The Cell in Development and Heredity," to the writing of which he devoted more than twenty years. Cytology in his hands covered a broader field than the traditional histology. In fact, it became a search for the factors or causes, starting with the primordial cell—the egg—that are at work during development bringing about the segregation of groups of cells into organs and their subsequent histological and functional specialization.

Later when other methods came into vogue for studying the developmental problems of the egg by cutting the egg into fragments or by separating the blastomeres —a procedure that traces back to Chabry, Roux and Driesch—Wilson with a more thorough background of cell-lineage made outstanding contributions both factual and theoretical. The fundamental problem at stake, which is spoken of in general terms as "the organization" of the egg, is still with us. It has, I think, become more apparent that the many attempts that have been made to interpret the organization of the egg are futile until organic chemistry furnished us with more information as to the properties of proteins, their catalysts and the reconstructive properties of living protoplasm. Nevertheless, the descriptive and experimental work of embryology has made clear the kind of problems involved.

Wilson added greatly to our knowledge of the chromosomes and especially to their behavior during the maturation of the germ-cells. The beauty of fine preparations appealed to his artistic sense. His interest and leadership in this field led to two important discoveries. One of his students, W. S. Sutton, was the first to point out that the manoeuvers of the chromosomes furnish the mechanism for Mendel's two laws of heredity. The other discovery, following an earlier suggestion of McClung, was made independently by Miss N. M. Stevens of Bryn Mawr and Wilson of Columbia, namely, the rôle of the sex-chromosomes or the X-chromosomes, as Wilson called them, in the determination of sex. These discoveries prepared the way for the interpretation of sex-linked inheritance that has played an important rôle in modern genetics.

Wilson's death will be felt deeply by his many friends and admirers. His scientific career was well rounded out and was, in a sense, complete. Few men have accomplished as much, and one may well envy him the great joy he had in carrying on his work and the enthusiasm that he imparted to a host of colleagues, students and friends.

THOMAS HUNT MORGAN
CALIFORNIA INSTITUTE OF TECHNOLOGY

SAMUEL STEEN MAXWELL

SAMUEL STEEN MAXWELL was born of Scotch-Irish parentage at Manor-cunningham, County Donegal, Ireland, on August 4, 1860. He died in Berkeley, California, on January 28, 1939.

Dr. Maxwell's ancestry has been traced to Max, son of Unwin, who settled near the Tweed in Scotland about 1160. His immediate family settled in the midwest of the United States when he was still a young boy.

After taking a B.S. degree at Amity College, Iowa, in 1886, he remained another three years at his alma mater, instructing first in mathematics, later in natural science and in the meantime working for an M.S., which was awarded him in 1888. Summers were devoted to instruction in the Iowa Teachers' Institutes. He married Lula Beatrice Taylor, of Lovelace, Kentucky, on June 30, 1887. His widow and three of his four children survive him.

A year of graduate work at the Johns Hopkins in 1889–90 was followed by a professorship in biology at Monmouth College, Illinois. Here he remained for the next twelve years, except for an interval of two years spent in graduate work under Jacques Loeb at the University of Chicago, where he obtained his Ph.D. in 1896. His thesis on the physiology of the annelid brain was published in *Pflüger's Archiv*. For two years Monmouth College was without a president, and during this period Dr. Maxwell served on the board of administration, and at the same time he edited the college magazine.

In 1902 he left the Midwest on a fellowship in physiology at the Harvard Medical School and remained on for two years as instructor. In 1902, Loeb left Chicago for the far West to head the division of physiology at the University of California. The rooms assigned to him in the old East Hall were inadequate for the school of experimental physiology which Loeb wished to establish, but when the Spreckels Physiological Laboratory was built on a knoll overlooking the beautiful Faculty Glade, it was equipped with special aquaria for experimentation on marine invertebrates, and there was space enough for mammalian experiments and biochemistry as well. Dr. Martin Fischer, one of Loeb's pupils, had gone with him from Chicago to serve as instructor, and when Fischer accepted the professorship of pathology at the Oakland College of Medicine and Surgery in 1905, Dr. Maxwell was brought from Harvard to take his place.

Dr. Maxwell remained at the University of California for the rest of his life, rising gradually through the various ranks from instructor to professor. When Loeb went to the Rockefeller Institute in 1910, biochemistry was split off from physiology and Dr. Maxwell was made chairman of the division of physiology. Except for an interval of four years, he continued to hold this position until his retirement.

At the time of Dr. Maxwell's arrival in California the activity in Loeb's laboratory was intense. The subject upon which all the workers were concentrating their attention was temperature coefficients of physiological reactions. Martin Fischer had investigated the effect of heat on the beat of the crab's heart, and Dr. Theodore Burnett, at that time a volunteer in the laboratory, was assisting Loeb in similar experiments on the rate of conduction of the nerve impulse in the huge garden slugs found on the campus. For this purpose Loeb had had an expert machinist construct an elaborate piece of apparatus of shining polished brass and ebonite, which, unfortunately, proved useless. Loeb in disgust turned the problem over to Dr. Maxwell as soon as he arrived. Dr. Maxwell merely soldered a few wires to a discarded candy tin, and solved the problem in short order. This was typical of Dr. Maxwell's experimental methods. Simple, home-made gadgets to supplement the ordinary physiological apparatus in his hands brought results.

Dr. Maxwell's early papers were along lines similar to Loeb's, *e.g.*, the effect of salts on ciliary activity, chemical stimulants of the cerebral hemispheres, etc. He wrote a popular article on Loeb's experiments in chemical fertilization, and with Loeb wrote on heliotropism in plants and animals.

It was, however, not until 1919 that he began the work on the labyrinth with which his name is always associated. Loeb founded the *Journal of General Physiology* in 1918, and in the second volume appeared two articles by Dr. Maxwell, (1) "Comparison of the Otolith Organs and of the Semicircular Canals" (2) "The Mechanism of the Dynamic Functions of the Labyrinth." This was the beginning of a series of papers which in 1923 were summed up in his book "Labyrinth and Equilibrium" in the series of monographs on experimental biology sponsored by Loeb, Morgan and Osterhout. This was the first, and for some time, the only volume on vestibular function in English. The conclusions drawn were based almost entirely on experiments on the dogfish, but by inference they have been considered to apply to mammals and have been incorporated in many texts of physiology for medical students. Until 1930, when Creed translated Canus's "The Physiology of the Vestibular Apparatus," Dr. Maxwell's book was the authority on this subject.

Shortly after his retirement Dr. Maxwell suffered partial paralysis which affected both speech and muscular movements. However, he made fairly good recovery and for several years was able to go about with the use of a cane, and his speech, although slow, had suffered no other impairment. Death was caused by a second stroke.

Dr. Maxwell's name will always be associated with that of Loeb in the scientific work which came out of the Spreckels Physiological Laboratory of the University of California during the early years of this century and for his careful experiments on the inner ear of the dogfish.

J. M. D. OLMSTED

UNIVERSITY OF CALIFORNIA
MEDICAL SCHOOL,
BERKELEY

RECENT DEATHS

DR. ARTHUR EDWARD HILL, professor of chemistry in the College of Arts and Pure Sciences of New York University and head of the department of chemistry, died on March 16 at the age of fifty-eight years.

DR. IRVING GILMAN DAVIS, professor of agricultural economics and chairman of the department of economics of Connecticut State College, died on March 15 at the age of fifty-four years.

DR. FRANK PARSONS NORBURY, since 1913 superintendent of the Norbury Sanatorium at Springfield, Ill., died on March 15 at the age of seventy-five years.

DR. LEONARD HALFORD DUDLEY BUXTON, since 1928 reader in physiological anthropology at the University of Oxford, fellow and bursar of Exeter College, died on March 6. He was forty-nine years old.

SCIENTIFIC EVENTS

THE IMPERIAL BUREAU OF DAIRY SCIENCE

IN 1936 the British Commonwealth Scientific Conference, which met in London to consider the working of the organizations controlled by the Executive Council of the Imperial Agricultural Bureaux, recommended that a new Imperial Bureau of Dairy Science be established. The conference also suggested the National Institute for Research in Dairying as the most suitable location for the bureau.

Following agreement by all the authorities concerned the new Imperial Bureau of Dairy Science has now been established at Shinfield, near Reading. Professor H. D. Kay, director of the National Institute