for and unforeseen. A dictatorship which would endure must raise a new dictator, and the history of absolutism shows that no way has yet been found to select a succession of absolute monarchs guaranteed to maintain the level of the founder of the line.

You are all aware of the damage science has suffered in the highly regimented states. Every student in the realm of natural science would be justly indignant if he were told what deductions he must draw from his experiments before he began them, but over great areas of the world workers in the social sciences are, in effect, admonished in just this manner. Scholarship withers wherever and whenever it must subscribe in advance to a political, social or economic superstition. You are brought together here by the pursuit of truth, not to validate *Das Kapital* or *Mein Kampf*, and if you sacrifice the untrammeled pursuit of truth in one line of endeavor for a prescribed conclusion, there is the strongest likelihood that the perversion will spread to other disciplines and contaminate them all. Paradoxically, but not for the first time, only the martyrs will survive.

But fortunately, prejudice is a hothouse plant withered by the first breath of air from the great outdoors of truth. The cosmos is one and the world of mankind at heart is international. Interruption of the free flow of thought and the free flow of trade from nation to nation, mutual enmity, armaments, restrictive tariffs and monopolies damage most in the long run those responsible for them, and sooner or later they are doomed to pass away. In spite of the efforts of political, social or clerical groups to coerce the spirit of man, it has shown in all ages the capacity to resist and to reassert its freedom. To those emotional insanities which have for their object the curtailment of human liberty it has opposed the grander movements of the soul such as the social and ethical uplift which came with Christianity, the great revolutions of the eighteenth century and the emergence of the scientific approach. The morale which carried through those achievements was due to the fact that participants in them had a vision of truth and justice beyond that prevailing in the world about them, and a sense, too, that evolution and the course of history are, or can be made to be, upward processes. This is one reason why I object to that superficial materialism which would give mind a place secondary to matter, and why I refuse to regard the "heat-death" hypothesis as the last word in cosmic theory. The persistent climb of life up the evolutionary ladder, and, in spite of his numerous lapses, of mankind up the cultural ladder lead me to believe that decline is temporary and progress normal.

And now for one ultimate question. We may assume that evolution among the organisms below man was unconscious, but that is not true, not altogether true at least, of cultural advance. Why do we aspire? Why do we scientists pursue truth? Is it for the gratification of our curiosity? Or the mere interest of the quest, like the resolution of a crossword puzzle? Or is it for the material benefit of mankind, ourselves included? While all these play a part, I am inclined to think our feeling comes to be simply that it is good to penetrate more and more deeply beneath the veil of appearances and the veil of prejudice and orient ourselves more and more to the profounder realities.

The conscious attitude of some of you is no doubt essentially humanistic. You are engaged in congenial work in pleasant surroundings and among appreciative associates. Like Thoreau you are willing to waive questions of the hereafter with the thought, "One world at a time." You are willing to trust your immortality in the hands of the scholars who may come after you and let such good work as you do benefit future generations upon this material world without disturbing yourselves as to another. There are some, however, and I am numbered among them, who, while they may be satisfied sufficiently with their own immediate surroundings, are unwilling to contemplate as the entire story the fates which seem to have been allotted undeservedly to many about them. They would like to regard themselves as inhabitants of a cosmos which, after all, and in the final summing up, is just, and, what is another way of saying the same thing, they would like to feel that this enterprise of life upon which we have been embarked without any volition on our part, is a worth-while process. They would like to think of it as something more than an endless procession of life out of and into the dark.

OBITUARY

EDMUND BEECHER WILSON

1856–1939

IT is given to few men to exert so great an influence in their chosen field of scientific research and also to attract so many friends over a much wider range of interest. The beauty of Wilson's workmanship and the balanced judgments of his decisions are two of his outstanding accomplishments. In the discussions of the broader aspects of the problems, connected with his researches, his careful consideration of the pros and cons might lead one who did not know him personally to infer that he held no very definite opinions in the wider philosophical fields of speculation. On the contrary, he had very strong predilections, but he had so thoroughly trained himself to control his personal opinions that he kept them well in hand.

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.