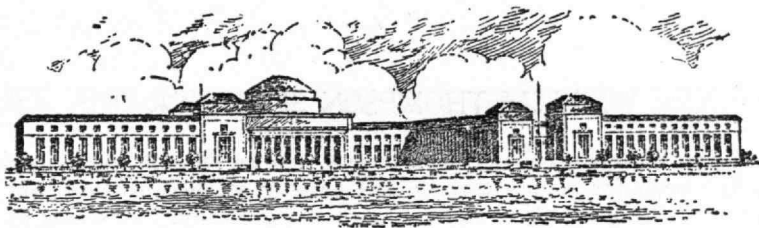




ERNEST FOX NICHOLS  
President of the Institute



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## ERNEST FOX NICHOLS

THOSE of the Alumni who were present at the Memorial Service to Dr. Maclaurin at the All-Technology Reunion last June remember, perhaps, with keenest pleasure the eloquent, kindly, human address by Ernest Fox Nichols upon the life and personality of his dead friend and colleague. Fellow teachers of physics at Columbia, both men left that school, one upon the heels of the other, to positions of administrative responsibility, Dr. Nichols to Dartmouth and Dr. Maclaurin to the Institute. Dr. Maclaurin gave his life to that work; Dr. Nichols, after a few important years at the New Hampshire college, returned to his chosen work in pure science. And now the Institute has called him to take up the work his friend laid down a year ago, and he has accepted.

Beyond and above the natural feeling of pride and satisfaction that the Institute has secured a leader who, by calling, by reputation and by experience, is eminently fitted to carry on our great work, we have in these days that other pleasure, elusive, almost irrational, the source of which lies in the old intellectual fellowship and personal comradeship of the two men. Dr. Maclaurin spoke highly of Dr. Nichols. In a way it is as if his hand still guided us, in this last opportunity for service, to the choice of the man on whom his mantle was to fall. We are glad to welcome Dr. Nichols as our leader, not merely for his own sake but for the sake of his friend and ours.

## WILLIAM THOMPSON SEDGWICK

WHEN Professor Currier died, over a year and a half ago, a person who had been for a long time in the employ of the Institute, not a member of the instructing staff, remarked regretfully, "It seems as if Technology is losing, with these older men, a kind of personality, of individuality, of humanity, that we do not see in the younger men who are taking their places. The younger members of the faculty are competent teachers and even distinguished scholars, but, somehow, they seem all cut from one pattern, and not a particularly interesting pattern either. They seem sapless. They lack the personal charm, the broad humanity, the knowledge of the past and the humanities and the arts, the *juice of life*, which some of the older men had."

If ever that characterization of the older generation of teachers applied, it was to Professor Sedgwick. He was a distinguished scholar and author, an eminent teacher, a great pioneer in his chosen work of Public Health, an enthusiastic and unwearied servant of the *res publica*, the service of the state, busied, like Martha, about innumerable things, but never neglectful of the things of the spirit.

He was in length of service the dean of the faculty, and in that unofficial but important capacity he never failed to impress on those of a later generation the charm of his personality, as well as his kindly interest in everything pertaining to Technology, of which he was the staunchest and most faithful of servants. To him, as he said after Dr. Maclaurin's death, Technology was a great ideal, demanding and deserving the sternest devotion and the most ungrudging effort. He could conceive of no happier death than that met in her service. And now his own life, too, is laid a sacrifice upon her altar. He might have retired years ago; he knew for years of that disease of the heart which was to conquer him. But he would not give up. He died in harness as he would have wished.

There is a fine phrase that best expresses an almost obsolete thing. "Gentleman and scholar!" It comes down to us from the days of the aristocracy of the intellectual life, as the finest expression of the finest force in the world. Scholar, teacher, scientist, all these — but also humanist, man of letters, impregnated with "the best that has been thought and known," the true culture which transcends time and place. To the defence of that ideal have rallied for ages the most glorious company of the apostles. And yesterday William Sedgwick took his rightful and eternal place, no mean place, in those memorable and splendid ranks.

# LIFE AND WORK OF WILLIAM THOMPSON SEDGWICK

BY SAMUEL CATE PRESCOTT, '94

*Professor of Industrial Biology, Massachusetts Institute of Technology*

WILLIAM THOMPSON SEDGWICK, Ph.B., Ph.D., Sc.D., LL.D., Ph.B., Sheffield Scientific School, 1877; Ph.D., Johns Hopkins University, 1881; Sc.D., Yale, 1909; LL.D., University of Cincinnati, 1920. Professor at Massachusetts Institute of Technology since 1883.

In the ebb and flow of busy life that courses ceaselessly through the halls and laboratories of Technology one who is now lost to us has been for many years a beloved and conspicuous figure. Like our great presidents who have died at the very summit of their devoted and epoch-making service he too passed on in the full current of splendid activity, leaving a record of his loyalty, unblemished character and constructive service which will ever stand as his most enduring monument, and as an example to those who shall carry on the torch of learning and the banners of civilization and devotion to the welfare of our common country.

William Thompson Sedgwick was born at West Hartford, Connecticut, December 29, 1855, the son of William and Anne Thompson Sedgwick. He was descended from Robert Sedgwick, first of the name in America, who settled in Boston in 1636. Reared in the beautiful farming region of West Hartford and Farmington, he early developed an intense love of nature and a keen appreciation of the phenomena of living things which determined in later years the profession he would pursue.

After a preparatory course at the Hartford High School he entered the Sheffield Scientific School in 1874 to take the course in biology in preparation for medicine and was graduated in 1877. In his undergraduate days he clearly showed the exceptional qualities which in after life determined his success in the larger world in which he was destined to become so marked a figure, his personality, character and attainments making him a leader in his class not merely in scholastic standing but in those other fields of student activity which play such an important part in college life. He is described by one of his intimate companions (Professor E. B. Wilson of Columbia University) as "a cheery and even jovial companion, endowed with a keen sense of humor and with that equally precious and saving gift of fortune which he himself was fond of calling 'horse sense.' One cannot, indeed, think of Sedgwick's personality apart from these traits, which never failed him, then or in later life. Equally characteristic was a sane and good-humored optimism, of which he seemed to possess an inexhaustible store. Like the rest of us, he may have had his moments of despondency; if so they were never perceptible even to his closest intimates. His mere presence

radiated a buoyancy and good-will that were an infallible antidote for low spirits or morbid imaginings; and he was a generous, never-failing friend, whose brotherly love helped many a man across the difficult places in life. It is no wonder that 'Sedg.' was a general favorite among his college mates, none the less so when in the small rivalries of undergraduate life they sometimes found themselves far out-distanced by him. He took a leading place in his studies without apparent effort, and not less surely became one of the leading spirits outside the classroom by virtue of qualities that won for him not only the liking but the respect of both students and instructors.

"Prominent among one's early memories of him are his intense love of nature and his delicate literary gift. He was country-born and bred and never lost his affection for the New England hills and woods through which he loved to roam. Of these experiences he knew how to write with a charm of style and warmth of feeling that was at first surprising to one who had thought of him as concentrated on the technical aspects of science. He was one of a small group of enthusiastic amateur botanists who devoted much of their spare time to the collection of plants in the neighborhood of New Haven, sometimes wandering as far afield as the Meriden Hills, and who afterwards published a list of the plants of this region in the name of their college fraternity. In this undertaking, encouraged and aided by the genial professor of botany, Daniel C. Eaton, Sedgwick took a leading part. It involved some hard work, but I doubt whether the rivalries of football, rowing and other college sports were ever pursued with a keener sporting instinct or brought larger returns in the way of health and happiness than did those rather strenuous tramps among the Connecticut wilds." It was during these happy days that he met Miss Mary K. Rice who later became his wife and helpmeet for many happy years, and whose gracious personality and admirable intellectual and social qualities have ever endeared her to the many generations of Professor Sedgwick's students at Technology.

Primarily intending to devote his life to the practice of medicine it is little wonder that the studies which most attracted him were general biology, physiology and physiological chemistry. Especially was he influenced by Professor Brewer, one of the pioneers of the Sheffield Scientific School who for more than forty years occupied with grace and distinction the chair of agriculture, and whose remarkable gifts as a teacher found their happiest expression in the renowned course on stock breeding wherein he introduced students to the great fundamental aspects of heredity and evolution as they were understood at that time. Of this course Professor Wilson writes:

"These lectures were much appreciated by many generations of Yale students, and in our time gained added piquancy outside the classroom from Sedgwick's lively imitations of his beloved professor's sonorous and picturesque style of lecturing. To the end of his life, indeed, Sedgwick loved to cite Brewer's method of introducing Galton's law of heredity by eloquent insistence on the fact that 'every man has two

parents, four grandparents, eight great-grandparents, and so on to the end of the category.' "

Another distinguished Yale teacher whose influence was prominently felt was Professor R. H. Chittenden, now the head of the Sheffield Scientific School, but who was at that time an instructor in physiological chemistry. That Sedgwick must have proved an apt and satisfactory pupil is proved by the fact that in his senior year he was an assistant and later while a student at the Yale Medical School he was chosen by his instructor to carry on the course in this subject while Chittenden was on leave of absence to continue his studies abroad. Professor Chittenden speaks with admiration and respect of the keen intellect and high attainment of his pupil, and of the splendid way in which his work was conducted during his absence.

Graduating with high rank in his class, Sedgwick was chosen to read his thesis at the graduation exercises of the university in 1877.

The following autumn he entered the Yale Medical School, where he studied for two years, at the same time teaching physiological chemistry at the Sheffield Scientific School. His medical studies there were never completed, for as he became more and more deeply engrossed in experimental physiology and bio-chemistry, he felt dissatisfied with the unscientific manner in which the medical instruction of the period was conducted and felt the need of better knowledge of physiology. Moreover, his interests had gradually but strongly turned toward a career in science and investigation in the field of general biology and experimental physiology, and, while not entirely abandoning his idea of becoming a physician, he left his medical studies at New Haven, and in 1879 embarked with zeal upon further graduate study. Accompanied by his lifelong friend Wilson he entered the new university at Baltimore, Johns Hopkins, when it was only just beginning to appear as a luminary of the first magnitude in the scientific firmament. Here as Fellows a new life opened up to them — a life of hard work, real professional investigation and pleasant recreations, but as Professor Wilson expresses it, "it was not free from some of the material limitations of impecunious youth." Studying here with H. Newell Martin, the brilliant physiologist who had recently come from Huxley's laboratory at South Kensington and with W. K. Brooks in Zoölogy, and with lectures in minor subjects by Remsen, Rowland and other scientific leaders then at Johns Hopkins, the years spent there were a period of rapid intellectual awakening and widening of scientific horizon. With his natural aptitude for teaching and the magnitude of the opportunities as he saw them, at the end of his first year in Baltimore he abandoned the idea of medicine and decided to follow teaching as a life work. Associated with them during this period were Samuel F. Clarke, afterwards for many years professor at Williams College, and Kakichi Mitsukuri, who afterwards became the leading zoölogist of Japan and dean of the Scientific Faculty at Tokio. The four friends set up common quarters (locally known as the Biologists' Bower) and thus developed a friendship and intellectual companionship which remained warm and vital through the years of later life.

Receiving his Ph.D. degree in 1881, Sedgwick returned to Johns Hopkins as an instructor in General Biology, his marked gift of teaching having been quickly recognized by his professors. In the same year on his twenty-sixth birthday, December 29, 1881, his marriage to Miss Rice took place. This post of instructor he held for two years, when he was called to the chair of biology at the Institute of Technology. One detail of his appointment is of interest, his association with Gen. Francis A. Walker, then president of the Institute. As an undergraduate at New Haven, Sedgwick had been a student in Walker's class in political economy, and had greatly admired and respected the keen, handsome teacher, with his military bearing, his unbounded energy, and his logical and brilliant mind. Apparently there must have been some memory of outstanding qualities on the part of the student as well. At any rate, there was renewed in 1883 the association of Walker and Sedgwick—now as president and professor respectively—and between them existed a lifelong intimate friendship. Although practically without assistance, and teaching a number of subjects, on joining the Institute faculty Sedgwick's training and qualities were readily appreciated. He quickly espoused the cause of technical training and bent his energies toward applied biology, and almost at once began those studies pertaining to public health which have made his career so notable. The first important investigations were made in association with Prof. William Ripley Nichols on the relative poisonous effects of coal and water gas. But the new developments in the science of bacteriology opened an attractive field for study which was quickly taken up. The establishment of the germ theory of disease had been accomplished. The discovery of the organisms of cholera, typhoid fever, and tuberculosis had just been announced and the growing interest in sanitation of water supplies opened up a new line of applied biology to Sedgwick's keen mind. As a result there followed a series of brilliant papers bearing on biological water examination and the relation of water supply to public health. This led to his association with the State Board of Health as biologist and the epoch-making work of the late eighties and early nineties in conjunction with Dr. T. M. Drown and Mrs. Ellen H. Richards—pioneer investigations of the problems of water and sewage purification which gave to the State Board of Health of Massachusetts an international reputation. The work under his general supervision at the Lawrence Experiment Station, the investigations of the typhoid epidemics at Lowell, Lawrence and other cities and his writings on sanitary science brought Professor Sedgwick into the foremost rank among public health workers and the Institute of Technology as perhaps the leading institution of learning in this field. Although relatively few men entered the course in biology their achievements, with those of men from the allied courses in chemistry and sanitary engineering and general studies who also studied and worked with Professor Sedgwick, have brought renown to the school and have added some of the most brilliant pages to the history of sanitation in America. In those early days were worked out the methods of bacterio-



logical examination of air and of water, the Sedgwick-Rafter procedure of water examination for microscopical organisms, the data of water and sewage purification by slow sand filtration and the bacteriological analysis of milk, all processes which are now widely taught and still more widely used. But not only in the field of applied science was Professor Sedgwick's reputation a growing one. He wrote and spoke with distinction and authority on problems of general education. With Prof. E. B. Wilson as a colleague, the old laboratory in the Rogers Building was the birthplace in 1884-5 of the famous textbook of general biology which bears their joint names.

Professor Sedgwick's interests and influence broadened with the years. It would be impossible to detail all his professional accomplishments, or the manifold public services he rendered. A few, however, deserve special mention. He assisted Mrs. William Barton Rogers in the preparation of those remarkable volumes: "The Life and Letters of William Barton Rogers." In 1902 he published his celebrated book, "Principles of Sanitary Science and Public Health," which for literary merit as well as scientific soundness is sure to hold its place as one of the great classics of biological literature. A few years later in collaboration with Professor Hough came "The Human Mechanism," a textbook of physiology and personal hygiene. Nor should one overlook the work of the Sanitary Research Laboratory and Sewage Experiment Station conducted under his general direction for many years through the generosity of a donor long unknown (the late Mrs. William H. Hughes) who had appreciated his great service to sanitary science and felt this to be a most effective way of aiding in the cause of public health. Through her munificence in supporting this work, ten volumes of valuable reports have been published, and requests for them from all over the world attest the value of this service and the reputation which the scientific work carried out had attained.

While the achievements of Professor Sedgwick in his chosen field of sanitary science and public health naturally demand the greater share of attention in any record of his life and work, the breadth of his interests is shown by some recognition of his works in the field of general culture. Believing that the historical approach to a subject is often the most logical and the one most likely to lead to appreciation of the broad principles of any science, he felt the great cultural value of the history of all the sciences, and early in his career instituted a course of lectures on the history of the inductive sciences to the students in the departments of physics and biology. It is of much significance that this course, the first of its character to be given in America, should have been developed in the severe curriculum of an engineering school, and speaks with no uncertainty of the belief of the Faculty in broad training and culture. These lectures (at first more like informal talks) were so illuminating in their character, so fascinating in their presentation and so tinged with the appreciation of art and poetry as well as of science that the students of those early years eagerly looked forward to them, and doubtless would gladly have "cut" the more laborious



"professional" subjects in order that they might get this refreshing draught from a realm remote from the more exacting domain of modern science they were pursuing in laboratory or departmental room. With the lecture growth of the Institute and the increase of the cultural or general studies this course was greatly expanded. Professor Tyler collaborated with Professor Sedgwick by giving the history of the mathematical sciences. This co-operative work came to rich fruition in the admirable "Short History of Science" by Sedgwick and Tyler which appeared in 1917.

For fifteen years after coming to the Institute Professor Sedgwick's department was cramped into the one large room at the rear of the first floor in the Rogers Building. Here in the early days, as he often said, he was professor, assistant and janitor. There were dark days, but he never complained or faltered, and faith in a great cause triumphed. In 1898 the department moved into more adequate quarters in the Pierce Building where it was possible to develop normally, and there took place the broadening in scope of the work which has added to his fame. Here the Sanitary Research Laboratory was started, and research in various bacteriological lines began to grow up under his encouraging leadership. Through his untiring devotion broader public health relations were established, reaching their highest development in 1913 in the formation of the Harvard-Technology School of Public Health of which he was not only chairman but the magnet which drew men to it. This association of the department of biology and public health with certain departments of the Harvard Medical School and Harvard College at once attracted men of ability, enthusiastic and eager to be enrolled in the public health army. How skilfully he, with his able colleagues from the other schools, surmounted almost insuperable obstacles and placed this school in the leading position of schools of its kind is attested by the service records of its students, not merely in the United States but all over the world. No more cosmopolitan or interesting group could be found than these classes of earnest men and women, representing Canada, Mexico, China, Siam, Brazil, Colombia, Italy, Czecho-Slovakia, India and other countries, as well as America, which yearly gathered to study in the school which Professor Sedgwick's reputation had done so much to create. It is typical of his modesty and unselfishness that his last act as a member of the Administrative Board of this school was to aid in the preparation of a plan for a more stable organization of the school in order to guarantee its future permanence and continued service to the cause of public health education, but by which his own position as its nominal head would be sacrificed. Whatever the future development of the school may be, he will always be looked upon as its real founder and first great leader.

Although primarily a great teacher, Professor Sedgwick was an investigator of high order and an ardent believer in research. He urged his students and assistants to undertake investigations and to publish, not merely as a means of becoming known, but in order to increase their own knowledge and to test and develop their own power of original



WILLIAM THOMPSON SEDGWICK  
Head of the Department of Biology and Public Health  
DIED JANUARY 25, 1921