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WILLIAM RIPLEY NICHOLS

M. I. T. '69, Professor of General Chemistry, 1872–1886

William Ripley Nichols was born in Boston, April 30, 1847, and died in Hamburg, Germany, July 14, 1886. He could trace his ancestry to eight of those who came over in the *Mayflower* and to three who came in the *Ann*, Elder Brewster, John Alden, and George Morton among them. Of his grandmother Ripley it is related that having a volume of "The Lady of the Lake" lent to her for a short time, she sat up late reading it aloud, and that after this one reading she was able to repeat pages of it. To this Puritan ancestry he owed his exceeding conscientiousness, his religious tendencies, and that high ideal of moral responsibility which made an uncompromising attitude often seem harsher than was intended. He united with the Eliot Church at the age of fifteen and throughout his busy life he found time to serve in various capacities, even in that exacting position, superintendent of the Sunday school.

He was graduated from the Roxbury Latin School at the age of sixteen and then went abroad with three of his schoolmates in charge of the head master, Mr. Augustus H. Buck. During his two years' absence he not only travelled extensively but studied with avidity, as is shown by his proficiency in French and German and by the fact that on his return in 1865 he entered the Sophomore Class of

Harvard University. Although his early predilections were in the direction of language and literature, he seems to have found the then rigid, non-elastic system too narrow for the best fulfilment of his purpose for himself, and "he deliberately resolved to sever his connection with the first and oldest college in the country and adopt the Institute of Technology, then in the second term of its existence, as the place to prepare himself for the duties and responsibilities of his future life."[1] This step made him at once the object of attention and doubtless aided his rapid advancement, — instructor on graduation, assistant professor the next year, and professor for fourteen years. "It was the first instance in which a young man of promise had made a choice so gratifying to the friends of the new and comparatively unknown school."[1] Although keeping up his interest in modern languages, he became an ardent advocate of the then comparatively new method of teaching chemistry by laboratory work, under the instruction of Charles W. Eliot, now President of Harvard University, at that time the professor of analytical chemistry and metallurgy at the Institute of Technology, and of Frank H. Storer, professor of general and industrial chemistry. In him they found an apt pupil, and what was of more importance to the Institute, in them he found masters from whom he could learn not only details of science but that wisdom which makes for character. His career was profoundly influenced by both. To Eliot he doubtless owed much of the educational creed which made his work so valuable in the formative days of the school; from Storer, whose assistant he became, he took in large measure that high ideal of scientific honor and that regard for accuracy and perfection of detail which characterized his future work.

[1] Professor Runkle. Institute Memorial, p. 16.

Having been implicated as student and assistant in each stage of the development of the Eliot and Storer Laboratory Course of instruction in chemistry, as teacher he was able to bring it to such perfection that it had a national recognition, so that for many years the abridgment of the original was the chief text-book in use in the country, and was even adopted in England. By inheritance and inclination a pioneer, he remained loyal to his chosen Alma Mater even in her darkest days and declined the offer of his old chief — Eliot — of a position at Harvard and, later, of one at the University of Virginia.

His literary taste and facility in modern languages led to his selection in helping to prepare the works of Count Rumford. "He translated anew whatever of Rumford's writings had been published in German or French, and acquitted himself admirably of this by no means easy task. His services finally became so important to the committee, that he was authorized to prepare for the press the copy of the last three volumes of Rumford's works, and to take charge of the revision of the proofs. During a visit to Europe he ransacked the libraries of London, Paris, and Munich in the committee's behalf, and was rewarded by the discovery of some inedited writings of Rumford, which were published by the Academy in due course." [1] All the work of this period, as well as that which followed, was thoroughly well done, and gave full satisfaction to every one connected with it, and to this was doubtless due the turn toward what may be truly called scientific philanthropy.

His association with that pioneer in sanitation, Dr. George Derby, and his readiness to go abroad for study and investigation — not then as common as now — led to his association with the early work of the State Board of

[1] Professor Storer. Proceedings American Academy, 1886, p. 529.

Health. So that when in 1872 it was decided to undertake in Massachusetts a survey for the State similar to that of the Rivers Pollution Commission in England, he was given the commission to carry out the work and for ten years he was, in his own person, engineer, chemist, and sanitary expert. He spent several summers abroad in familiarizing himself with the work of all European countries, while directing the laboratory work of his assistants by correspondence.

Although not a skilful manipulator, he was a critical observer and an appreciative employer. His habit of systematic laying out of work made possible the great amount done, and nothing short of absolute accuracy, as if under oath, was accepted. Each new assistant was put through a vigorous process of testing as to the accuracy of work, no matter at what cost of time and money. This habit of caution, excellent as it was for the sort of work done, combined with a certain reverence for authority inherited from the long line of Puritan ancestry, stood somewhat in the way of the highest fruition of the scientific mind. The work of those years is indicated in the title of the papers found in the list of the publications of the Institute, which he first originated and edited, and in the library which bears his name, and which contained at the time of his death the most complete collection of works on water supply in the country. A characteristic trait is seen in the fact that when he began to receive remuneration for professional work outside of school duties he divided the sum into three parts, one third going to his assistant, one third to himself, and one third to the purchase of standard books for the Institute as a nucleus for the chemical library. This was done without, so far as I know, any suggestion, certainly no compulsion, merely as a matter of right and justice, just as

was his devotion of a fixed part of his income to religious uses. He never used his position for self-aggrandizement at the expense of the Institute.

His great capacity for work, and his talent for organization made him a welcome member of every association, and led him to be severe on those who from mental or physical incapacity could not come up to his standard. All came so easily to him that it seemed impossible for him to sympathize with those who had to grope. It was to him photographic, sudden, and either right or wrong; the suspension of judgment, the middle ground, had no place.

"As a teacher, Professor Nichols was a clear expositor, strong and terse in argument, apt in illustration. To faithful and ambitious students he was, in his calm, steady, lofty way, a constant source of inspiration and encouragement.

"As a disciplinarian, dealing with mixed classes of young men, often ill-trained in their previous studies and exercises, and not always duly attentive and diligent, he was, let it be said in that spirit of truthfulness of which his own character and career afford so shining an example, somewhat severe. Dealing heroically with his own life, health, hopes, pleasures; setting for himself a lofty standard, and holding himself unflinchingly up to its full height, he was, in a degree, deficient in toleration for faults and errors in half-formed or ambiguous characters." [1]

"As a worker, Professor Nichols was distinguished for patience, accuracy, thoroughness, intelligence, and good judgment. Though painstaking to a degree, no trace of pedantry contaminated him. He was never slow or sluggish, and seldom seemed to be in haste. To all appearance, there was plenty of time in each day for the affairs he

[1] General Walker. Institute Memorial, p. 22.

had to attend to, and, indeed, time to spare. Even when most heavily weighted with the burden of his own multifarious occupations, he would cheerfully read proof for his friends, or revise their works; and he was accustomed methodically to answer his share of that innumerable host of letters of inquiry, which in this country pour in like locusts to consume the time and strength of every scientific man who works upon matters of general or public interest. He wrote easily, clearly, and courteously, and his thorough mastery of whatever subject he might present, enforced attention, and disarmed criticism." [1]

His publications of considerable length, relating to sanitary chemistry, number forty-four. The most important among them is his well-known work "Water Supply, Chemical and Sanitary," published in 1883. And in spite of the advances in knowledge it is still a standard work, with a steady sale.

But Professor Nichols did not confine his literary activity to the field of sanitary chemistry. In conjunction with Prof. John Trowbridge and Dr. Samuel Kneeland, he prepared the "Annals of Scientific Discovery" for 1869 and for 1870.

"From the first moment of his connection as a student with the Institute, he had clearly recognized the meaning and significance of the new educational movement to which this school gave expression, and from that time forth he labored for it without haste and without rest." [4]

It is for his work for the Institute in the formative days and the principles for which he stood that every Institute graduate should honor his memory. As a member of the Faculty his influence was, from first to last of his connection with it, altogether and highly useful. "No man did

[1] Professor Storer. Proceedings American Academy, 1886, p. 529–530.

more — doubtless all my colleagues of the Faculty would hasten to say, no man did so much — to create and maintain the peculiar character of this school. He was, beyond all others, master of its rules and methods of procedure. His moral courage and lofty principles of action not only kept him from faltering in difficult situations, in doubtful cases, but were a positive force to hold up the hands and the hearts of his colleagues. Here he was eminently a leader, — and that not by any desire to lead, or a disposition to manage or govern; not from any wilfulness of temper, or through any dialectical or rhetorical artfulness; but solely and always by the clearness of his reasons, and the thoroughness of his convictions, the perfect consistency of his views and purposes." [1]

"In holding this Faculty up to its high standard in the administration of this school, he has done his full share. His broad scholarship, his active and intelligent interest in all departments of instruction, combined with a singularly calm and judicial judgment, have always given his opinions weight in all our most delicate and important deliberations.

"If, in his dealings with the students, he sometimes seemed severe, it was only because he would not allow his sympathy for the individual to swerve him from his duty to the higher interests of the school.

"While he had but little consideration for the idle or the wayward student, beneath a somewhat unimpassioned and austere exterior, there beat a noble and generous heart, sympathetic with the deserving, faithful in its friendships, loving and true in all its family relations, and with a calm and abiding trust in the wisdom, goodness, and mercy of the Infinite Father." [2]

[1] General Walker. Institute Memorial, p. 22.
[2] Professor Runkle. Institute Memorial, p. 18.

"As a teacher, Professor Nichols will long be remembered by those who knew him. He was a clear and terse expositor, and he stood before his scholars as a constant source of inspiration and encouragement, and as a worthy ideal of scientific accuracy and conscientiousness. Indeed, the standard he set for himself was so high, and he held himself so unflinchingly up to it, that he was often judged severe; and it was no doubt difficult for him to appreciate the faults and struggles of characters less lofty than his own.

"It has well been said that if ever one of our race proved the utmost effects of resolution and fortitude in contesting the progress of fatal disease, that man was William Ripley Nichols." [1]

"No suspicion of venality, no flavor even as of affairs commercial, mercantile, or litigious, will ever be found attached to any statement of his. He was wholly free from a certain tendency to strive for triumph rather than for truth, which has sometimes been supposed to be part and parcel of an 'expert's' life, and which is undoubtedly apt to mar the statements of public analysts, and to detract from the respect and esteem in which members of the profession might well be held by the community at large.

"There is no room for doubting that Professor Nichols did earnestly desire to alleviate suffering humanity, and to support to the utmost of his power wise schemes for the better ordering of those state and municipal affairs with which chemical science or art has relations; but he had no wish for mere notoriety, or for the overthrowing of adversaries, or for the forcing of crude thoughts or schemes upon an unwilling public. That the truth would prevail in due course, he had no doubt or fear. By those of us who knew

[1] Prof. G. F. Swain. Proceedings New England Water Works Association, 1886.

him well, he will always be remembered, not only as an accomplished chemist, but a loyal, devoted friend and a thoroughly conscientious Christian man." [1]

"No labor was too hard, no effort too great, if his loved Institute was to receive benefit from it. In 1881, in consequence, doubtless, of overwork, the disease which finally ended his life attacked him, and his last five years were years of continual pain and weakness. Twice he sought relief by the aid of the surgeon's knife, but the second operation resulted fatally, and he died at Hamburg, Germany, on July 14, 1886, aged 39 years. His domestic life had been singularly happy, and to the devotion and care of his wife was due, in no small degree, the courage with which he fought deadly disease during these long years, and the determination which enabled him while an invalid to continue his work with unabated zeal. His career had been a busy and useful one, and his upright character and his love of science will continue to live in the minds and aims of the many students who came under his influence." [2]

The following extracts from the address given by Professor Nichols as vice-president of Section C, Chemistry, at the meeting of the American Association for the Advancement of Science in August, 1885, the year before his death, are given, not only to illustrate his own personal attitude, but to emphasize the definitions of sanitary chemistry and to show the directions in which its value must be recognized. The subject of the address was "Chemistry in the Service of Public Health."

In the service of sanitary science chemistry has an educational office to fill, first that of investigating the actual condition of exist-

[1] Professor Storer. Proceedings American Academy, 1886, p. 530.

[2] Prof. L. M. Norton. *American Chemical Journal*, Vol. VIII.