

BIOGRAPHICAL MEMOIR

OF

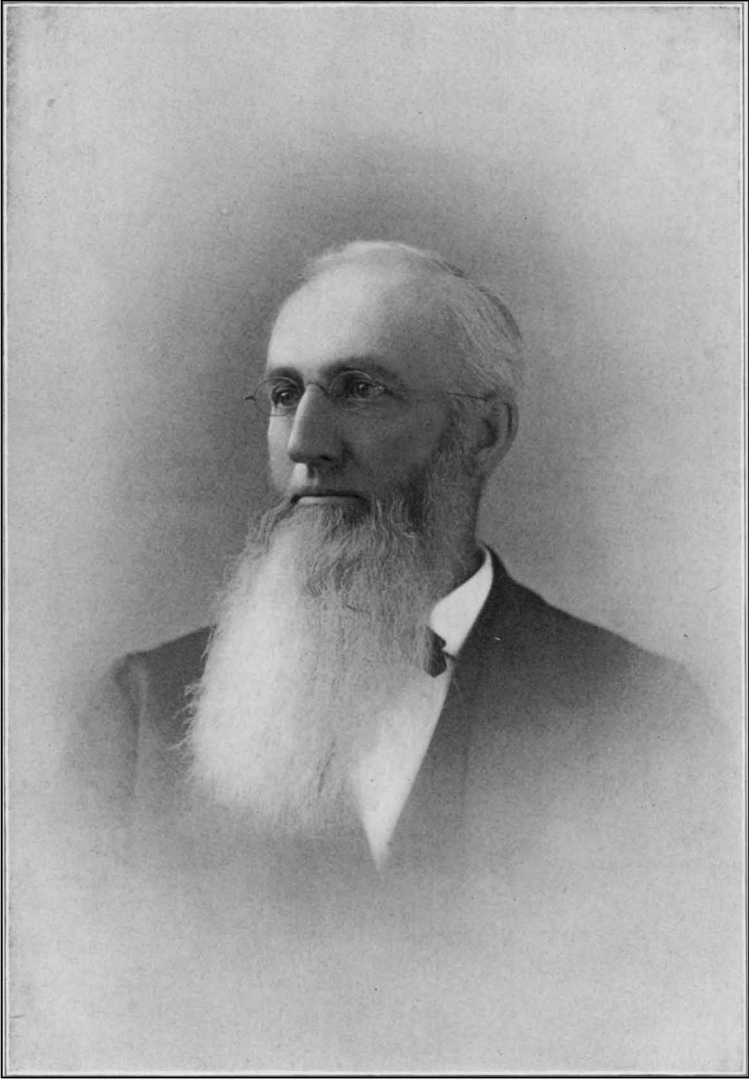
SERENO WATSON,

1820-1892.

BY

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BIOGRAPHICAL MEMOIR OF SERENO WATSON.

SERENO WATSON was the eighth son and ninth child in the family of thirteen children of Henry and Julia (Reed) Watson. He was born December 1, 1820, at East Windsor Hill, Connecticut, became a member of this Academy in April, 1889, and died in Cambridge, Massachusetts, March 9, 1892.

His parents were both of New England stock. His father descended from Robert Watson, who emigrated from the city of London and became one of the earliest settlers of Windsor, the oldest town in the state of Connecticut and the earliest permanent settlement in the valley of the Connecticut River. His descendants are still numerous in that region and are widely distributed elsewhere. The family has furnished a considerable number of persons of eminent ability in various vocations and activities in this country. His mother was a daughter of Dr. Elisha Reed, also of East Windsor Hill.

His father, Henry Watson, had been in earlier life a merchant, and on the death of his father, John Watson, retired to the ancestral farm near the village and there spent the latter years of his life. On this farm Sereno Watson spent his boyhood and developed that vigorous physique which was an important factor in his ultimately successful career.

This portion of the valley of the Connecticut is one of great beauty and fertility and is especially attractive. East Windsor Hill is the name given to a district with ill-defined geographical limits and without a separate municipal existence. It might be described as a country village and its surrounding farming neighborhood. It was originally a part of the old town of Windsor, but as population increased the town was divided and subdivided again and again. It was a part of East Windsor when Sereno was born, but for the last half century or more it has been a part of the town of South Windsor. The population is largely concentrated along a great thoroughfare—the old road which runs upon the second terrace which skirts the valley for many miles. East Windsor Hill is the swell of ground and table of terrace lying between the Scantic River on the north

and Taylor brook on the south, two streams which cut into the terrace on the eastern side of the river, and some seven or eight miles northeasterly from Hartford. Here the wide street, adorned with several rows of trees, becomes a country village, with its pretty residences and gardens, and with post-office, shops, stores, etc., and, not the least important, East Windsor Hill Academy, where Sereno prepared for college.

In this neighborhood his ancestors had lived from the earliest settlement of this state, and, combining the quietude and industry of the farm with the business activities of a country village of those days, Henry Watson had lived on the main street in the village for some years, and removed into the country soon after the birth of Sereno. Amid these beautiful surroundings, on a farm endeared by family traditions, his youth was passed. The environment of his early life was peculiarly well suited to those tastes and faculties which ultimately turned his activities into scientific paths. No other industrial vocation is so favorable for the cultivation in youth of habits of observation, industry, and quiet study as is the life and work on an American farm. It was peculiarly adapted to his constitutional peculiarities.

He was by nature excessively diffident, retiring, reticent, and silent. He possessed keen powers of observation, a love of nature and nature study, combined with an excellent physique. He prepared for college at the East Windsor Hill Academy and entered Yale College in the spring of 1844, at the beginning of the third term of freshman year. His time there was quietly and studiously spent. He was so retiring that most of his classmates carried away with them only the college memories that he was of gentle and retiring disposition, and that he was a diligent student with a taste for the classics. The college records show that he took prizes in Latin composition and Latin translations, and he appears to have been what students now call "a good all-around man" in his studies. He did not room in the college buildings on the campus where the student life was mostly concentrated, but in private houses on quiet streets, and made comparatively few intimate college acquaintances.

He graduated in 1847, in his twenty-first year of age. This class has given to American botany two other earnest students, Professor Henry Griswold Jessup, of Dartmouth College, and

John Donnell Smith, of Baltimore, widely known for his investigations of the flora of Guatemala.

For many years after graduation his excessive diffidence stood sadly in the way of satisfactory success in any of the several vocations he attempted to pursue. These traits kept him in obscurity, and no one knew it better than he, as letters to his relatives and to some of his classmates abundantly show. Had he died twenty years after his graduation the world of science would never have heard of him, and most of his college mates would have considered his life a failure. He attended most of the meetings of his class during his lifetime. He greatly enjoyed these meetings, but there, as elsewhere, he was a man of few words.

He was continually conscious of his extreme diffidence and its repressing effect. In a letter to a relative in 1851 he says that "on leaving college I knew not what to do. I had no predilection for any of the professions," and that the only way that seemed open to him was teaching school. After graduation he remained at home three months ("on the anxious seat," as he later wrote a classmate), and then, from December, 1847, to April, 1848, he taught school at Scantic, in the town of East Windsor, Connecticut, and studied medicine with Dr. Watson of that place. From April to November of that year he taught school and continued the study of medicine at Flushing, Long Island. From November, 1848, to April, 1849, he taught at Warren, Rhode Island. It was the custom at that time for medical students to pursue their studies mostly in the private offices and under the direction of practicing physicians, and then supplement such instruction by lectures at some medical college. Accordingly, after leaving Warren, Rhode Island, he studied medicine with Dr. T. Sill, of Windsor, until November, 1849, then until March, 1850, attended lectures at the medical school of the University of New York, and then, as he told a friend, "left with a much diminished respect for medical practitioners and professors in general, apart from medicine itself, which is a noble profession." He resumed teaching in March, 1850, in Allentown, Pennsylvania, and in 1851 taught in Tarrytown, New York.

But his innate diffidence clung to him, teaching remained distasteful, and he went to farming again in his native place.

In 1852 his uncle, the Rev. Dr. Julius A. Reed, of Davenport, Iowa, one of the founders and a trustee of Iowa College, invited him to that institution, where he remained two years as tutor.

Before he had gone to Iowa, an elder brother, Dr. Louis Watson, a physician, in practice in Quincy, Illinois, had invited him to study in his office and enter practice in that town. He went there in July, 1854, studied with this brother, and entered on the practice of medicine and handled his cases well. But the practice was probably distasteful to him, for he gave it up in 1856, much to the regret of some of his patients. He then went to Greensboro, Alabama, as secretary of the Planters' Insurance Company, of which his eldest brother, Henry Watson, was president. He remained there until after the war broke out, in 1861, and then came north and was engaged with Dr. Henry Barnard, of Hartford, Connecticut, in literary work, chiefly on the *Journal of Education*. When Dr. Barnard went to Washington as Commissioner of Education this service ceased, and in January, 1866, at the age of forty, Mr. Watson entered the Sheffield Scientific School of Yale University and pursued the studies of chemistry and mineralogy. He worked very diligently in these studies for about a year, but botany formed no part of his instruction while there. He was so much older than the other students that he held little intercourse with them and made no acquaintances other than those of persons he necessarily met.

When and where he began the study of botany is unknown, but most probably it was in connection with his medical studies and soon after he left college. He collected and determined plants when living in Illinois and in Alabama, and it is very probable that during many years he pursued botany in an amateur way for the pleasure it gave him and as a congenial recreation.

He sailed for California by way of Panama, probably in March, 1867, and apparently without definite plans for the future, further than that he hoped to find there a more congenial occupation than he had found East.

While in the laboratory of Yale the previous year, Californian matters were much talked about. The writer had recently become a professor in the Scientific School, coming there from the State Geological Survey of California, on which he had been at

work from 1860 as first assistant. Clarence King, who had also been an assistant on the same survey, spent part of that winter in New Haven, dividing his time between this place and Washington, where he was inducing Congress to institute a topographical and geological survey of a belt of land along the route of the Pacific railroad (then under construction) from California to the eastern base of the Rocky Mountains. Mr. Watson must have known something about this, but if it had any influence whatever in his going to California, it was very indirect and remote. He never spoke to the writer on the matter, and he never saw Mr. King until the next year, when he went to the camp of the surveying party in Nevada.

He had been faithful and diligent in every work he had tried to do, in a wide variety of vocations and several localities, and other activities were offered him. During the year before he left for California, his friend, Mr. Barnard, wished his assistance in the U. S. Department of Education at Washington, to which he had been called. He declined this as he did other offers—one of going into the drug business at Selma, another inducement to buy a sawmill and go into the lumber business at Mobile—and we know not how many other things.

The facts appear to be that all these were distasteful to him, and it is probable that when he went to California he had no definite plan or place in view, but he simply hoped that he might find there some work that was more congenial to his tastes and less hindered by his retiring nature. Several things indicate that he had in his mind vague possibilities of settling on a ranch. A letter written to a friend from San Francisco, April 28, 1867, shows that he had had the matter of going to California on his mind for some time; that he had "been ready to start on short notice, but one thing after another turned up which involved the possibility of my not coming at all, so I was kept in a state of uncertainty and not able to say whether I was coming here or not;" and that "one Friday I found myself clear of all questions of the kind and, to give no more time for any more to come, I determined to take the steamer which sailed on Monday." He hastily packed, hurried to New York the next day, and immediately sailed. He says at that writing that he had "no idea of going to the mines," and that he was as yet "unsettled and do not know where I will be nor at what busi-

ness." He was at Sacramento a few days later. He spent two or three months in the Sacramento valley, and when at Woodville he heard that the expedition under Clarence King had started across the mountains. He resolved to join it.

From the terminus of the railroad he set out alone and on foot, crossed the Sierra Nevada, and found his way to the camp of the party, which was then on the Truckee River below the present town of Wadsworth. The trip had been a hard one and he was unused to mountains and deserts. He reached the camp weary, dust-covered, and so footsore with his hard tramp that he carried his heavy boots with his luggage over his shoulder. The camp men were struck with his appearance and condition as he inquired for Mr. King, and he in turn was taken aback by the very youthful appearance of the commander of the party. He brought a letter of introduction from Dr. Barnard, whom Mr. King had known in Hartford, and was so earnestly anxious to join the expedition that, if there was no scientific work for him, he offered to accept any position the camp offered. He was engaged to assist in topography, observe barometer, and "make himself generally useful" in such ways as he could. He entered on this new career as a "volunteer" with "wages nominal," his official rank and duties sufficiently vague to include a vast range of possibilities.

Mr. W. W. Bailey (now professor of botany in Brown University) was the botanist in charge, but he was already weakened by fever and could ill withstand the hardships and labor of collecting in a desert region. Watson began to assist him in the care of the collections and to collect plants in connection with the topographical work assigned him. He had already a general knowledge of botany and some specific knowledge of the flora of several regions east of the Mississippi River, but the plants of that dry and partly desert country were all new to him and intensely interested him.

After twenty years of struggle, with numerous discouragements in the several vocations he had attempted and the mental discomforts which his innate diffidence had caused him, he had at last found the work for which, of all others, nature had fitted him and which fate had reserved for him. It was especially congenial to his tastes and mental peculiarities, and, moreover, his great physical strength and powers of endurance were important

factors in his success in the exploration of the country he was now in. His untiring diligence, his keen observation of plants, his uncomplaining endurance of the many discomforts and hardships of desert campaigning, soon gave evidence of his zeal in scientific work, and his patient, kind, and gentle personality soon endeared him to the whole camp.

Camp life and exploration work were entirely new to him, and his early experiences would have exhausted the patience and repressed the zeal of most men. The camp mule, which he had to learn to pack and ride, was not the least of the new discoveries awaiting him. The nature of the difficulties to which camp life introduced him contributed to the amusement of his new acquaintances, who were all well seasoned to such work, but the calm patience with which these difficulties were overcome inspired respect at first and admiration later.

Mr. King, commander of the expedition, has said of him: "He impressed me as a man of work, grimly and conscientiously in earnest. * * * He smiled only as a forced concession to humor. * * * Everything pertaining to his duty was sacred. * * * He soon learned to ride, and after the first anxieties regarding his duties had worn off, he began to enjoy the campaign life and the weird scenery of the region with the greatest enthusiasm. Mr. Bailey became more and more subject to camp illness and at last gave up and went home to the East. * * * I then installed Watson in charge of the botany. He was then as nearly perfectly happy as I have ever seen a human being. * * * When the hereditary New England grimness vanished from his face and he wore a free, careless air, * * * the general tone was calmly happy, and so I believe he remained till his connection with the Fortieth Parallel Survey ceased."

His actual botanical career began July 16 in the valley of the Truckee River, where he began collecting plants along with his other work. He soon proved himself to be an eminently useful man to the party, and at the end of his first month he was placed on a permanent footing in the service. He remained technically in the topographical section until the next year, and was botanist only by virtue of that vague duty he assumed, on first joining the party, to "make himself useful in such ways as he could." That wider duty was a natural outcome of his innate

kindness. It had been learned much earlier, and was never forgotten to the end of his life.

His collecting that year was in the western part of Nevada, and he wintered with the party in Carson City. Meanwhile Mr. Bailey's health grew worse. He resigned and returned to the Eastern States in March, 1868, and Dr. Watson was appointed to succeed him as "Botanist in Charge." This was technically the beginning of his professional career as a botanist.

His collecting in 1868 began in the Carson valley in April. Early in May the party took the field again and worked eastward from the Washoe through the Trinity, West Humboldt, Havallah, and the several other mountain ranges to Ruby River, and from there the East Humboldt Mountains were explored, and thence eastward through the intervening ranges to Ogden, in the Salt Lake valley.

In the spring of 1869 his collecting began at Salt Lake, the party working eastward into the Wasatch, Uintah, and other ranges of the Rocky Mountains. At the close of his field work in autumn, he went to New Haven, Connecticut, and immediately began work on his report at the herbarium of Professor Daniel C. Eaton, of Yale University.

In a letter written soon after to a botanical friend, he says: "My work is at Professor Eaton's house, where all my plants are. I spend from two to twelve hours a day upon them and it is going to be an everlasting job to work them up. It is the best and the largest collection that has ever been brought in by any government party and promises to yield a fair proportion of new species." He continued the work here about a year, and late in 1870 went to Cambridge, Massachusetts, to the Gray Herbarium of Harvard University, where he finished his report in August, 1871, and it was immediately issued.

This report constitutes the fifth volume of the publications of the "United States Geological Survey of the Fortieth Parallel," under the charge of Clarence King. It is a quarto volume of 578 pages, 426 of which constitute a descriptive "Catalogue of the Known Plants of Nevada and Utah," with descriptions of such as do not occur east of the Mississippi River. It is therefore a systematic and descriptive botany of a broad belt of country from the great plains across the Rocky Mountains and the Great

Basin to the Sierra Nevada. It contains a map of the region, and many of the descriptions of new species are illustrated by full plates. The catalogue embraces 1,325 species and is preceded by a general description of the climatic and physiographic features of the region and a study of the distribution of these species in regard to their varied and interesting environment, along with notes and observations on the effects of these conditions on the growth and habits of the plants, which conditions are very unlike those of any region east of the Mississippi River.

The publication of this volume may be said to have constituted an epoch in the history of the botanical literature of this country in that it was the first descriptive list of species of the whole known flora of any region of western North America. There was an immense literature relating to it, but it was all fragmentary and was distractingly scattered as to publication. There was not even a published list of the mere names of all the plants known to occur in any state, territory, or even county west of the great plains. The present writer began collecting in California in 1860, and in 1864 had begun the preparation of the "Botany of California," but this work went on intermittently and was not completed until nine years after this "Catalogue" was printed, and then only by Dr. Watson's aid. He had by that time become much more familiar with the details of the flora of the western United States than any other botanist.

From the time when he was appointed the official botanist of the expedition by Clarence King, in 1868, until his death, he devoted himself continuously and most industriously to botany, although for several years after ceasing his connection with the Survey of the Fortieth Parallel he had no official position as botanist. He remained, however, at the Gray Herbarium and continued botanical work, beginning immediately a most valuable series of "Contributions to American Botany," the first of which appeared in 1873, the last in 1891, but a few months before his death. There were eighteen of these "Contributions," the first appearing in the *American Naturalist*, most of the others in the Proceedings of the American Academy, at Boston, of which society he had become a member.

These "Contributions" extended over nearly twenty years, the work being carried on while attending to other duties. New collections were continually coming in for his examina-

tion. Some of the results were published in special "Reports," while the "Contributions" contained odds and ends of various others and many side questions that arose incident to this work. They also include the elaboration and reports of various special collections; hence they are very varied in their character; but every one bears evidence of his great capacity for patient and critical work. He possessed to an eminent degree a most extensive knowledge of minor details along with the faculty of seeing their relations to the broader generalizations involved. Thus it came that the series included revisions of several whole families of plants, so far as they were represented in the North American flora, and of more than a score of genera distributed through other families. Hundreds of new species were described, new light thrown on a multitude of others, and innumerable puzzles were cleared up. They constitute a storehouse of information pertaining to American systematic botany, and every succeeding worker in this field has been greatly aided and helped by it. Perhaps no other series of publications representing so much similar work has ever been published which has called forth so little criticism. All showed painstaking care, and hasty judgment has never been imputed to him.

His "Bibliographical Index to North American Botany," the first volume of which appeared in 1878, illustrates better, perhaps, than anything else he did, his faculty for critical work in taxonomy, along with his wonderful capacity for patient drudgery in its accomplishment. It also played a directly important part in his subsequent botanical career.

With the publication of his first work he stepped suddenly into the very front rank of systematic botanists. He was before totally unknown in the botanical world except to the very few botanists who had personally known him during the preparation of the volume. He had kept hidden behind his innate reticence, and when his official connection with the Survey of the Fortieth Parallel ceased he was in a sense again thrown upon the world. He loved botany for its own sake; but, however deep this love, the old proverb that "love don't make the pot boil" applies to botanists as it does to other men. Professor Gray, then in his sixty-second year, and overburdened with his constantly increasing labors and responsibilities, was very anxious to retain Dr. Watson at the Herbarium and Botanical

Garden of Harvard University, but the means then at the command of the Botanical Department did not warrant an "appointment." Professor Gray, however, asked him to remain as his private assistant while he cast about for the means of tiding over the period until the hoped-for time should come when he might be taken on the official staff of the university. The preparation of the Index enabled this to be brought about.

The writer was then at work in the preparation of the botany of California. His work and that of Dr. Watson had much in common. Geographically they covered adjoining regions having many physiographic and climatic features in common. Many of the species were the same. The literature relating to them was the same, except, that pertaining to California was much greater, more scattered, and more difficult of access. No list of the western species had ever been assembled or collated, but now it had to be done, so far as these adjacent regions were involved. Each of us had begun this in his own way as a necessary tool in the production of his local flora, but on different plans. The writer's plan for the Californian species was the easier and simpler, being merely an alphabetical index of the names and synonyms with reference to publication and habitat. Dr. Watson in his list had included notes on botanical characters and systematic classification. The writer discussed with Professor Gray the desirability of an alphabetical index of references to all the species west of the Mississippi River and the value of these two lists as a good beginning in such a work. The result of various conferences on the matter was that the writer corresponded with botanists on the subject and raised by subscription a sum of money large enough to warrant Dr. Watson's remaining at Cambridge for at least a year or two and beginning this compilation. Had this work been confined to the limits originally considered, it might have been finished; but even then almost any one but him would have shrunk from it.

The plants of western North America had long attracted attention. Menzies, Haenke, Née, Mociño, and others had collected plants along the coast as early as the eighteenth century, and in the next fifty years more than a score of other botanical collectors had visited some part of the region. Botanists accompanying expeditions from nearly all the civilized countries

had botanized along the whole coast. Nuttall had crossed the continent, numerous collectors had penetrated far inland, commercial botanists and seed collectors had been numerous and busy. The collections had been distributed into many herbaria and the seeds to many botanical gardens; and the new species found were described here and there in many sorts of publications scattered over Europe and America. Probably no single library in the world had all this literature.

With the acquisition of California and the settlement of the Oregon question, the discovery of gold in California, and the consequent rush of miners and emigrants to the West, the plant collecting had been greatly stimulated. More than sixty government expeditions of our own country had been into this region before the preparation of the *Botany of California* was begun; many of them had botanists attached; numerous collections had been examined and the results published in separate reports. So it is not strange that, though most of the species had been already described, when a new collection was made no one knew whether all its species had been described or, if so, when and where published. Of course, a burdensome and conflicting synonymy had arisen. Many of the species had a wide range in latitude. Mexican species from the south met Alaskan species from the north and had been described from both countries along with species collected in other lands.

To collect the American portions into one reference list would be an immense work, and in whatever shape published the labor must be tedious, time-consuming, uninteresting clerical drudgery. Dr. Watson did not shrink from this. He knew well what a boon it would be to all future systematic botanists of the country. He would extend its scope and usefulness, and thus the *Index* grew on his hands. It contained an alphabetical list of western plant names, but that was only a necessary part of the greater *Index* of all the recorded species of North America, with bibliographic references and a chronological arrangement of the synonymy. Only Part I, *Polypetalæ* (1878), was published. Although never completed, this small volume is probably more used for reference by American systematic botanists than any other work he wrote.

Late in 1873 he began to aid the writer on the botany of California. The next year a few liberal citizens of San Francisco

provided means for its publication, the printing was soon begun, and in 1875 the writer, being unable to carry on the work longer, turned over all the material to him. The first volume appeared in 1876, the second in 1880. This was the first complete systematic botany to be issued of any part of western America.

His official connection with Harvard University began June 29, 1874, when he was appointed "Curator of the Gray Herbarium," which office he held until his death. In 1881 he was appointed "Instructor in Phytology," which office he held two years. From 1872, as the assistant of Professor Gray, he had much to do with the care of the Botanical Garden, and part of the time was practically its manager; but this came by virtue of his helpful nature and his relations to Professor Gray rather than by office under the corporation.

With the assistance of Professor John M. Coulter, Professor Gray had begun a revision of his "Manual of the Botany of the Northern United States," which was brought to a sudden close by his death in January, 1888, and the transfer of his copyrights to Harvard University. The revision was then assigned to Dr. Watson, with Professor Coulter, and was published in 1889-1890.

Without further reference to the varied character of Dr. Watson's other work, it is sufficient to state that the list of his publications appended to this sketch of his life amounts to about a hundred titles; but this is only a feeble indication of their actual amount. A number of the "Contributions" and other titles consist of several sections, each of which would have been a valuable paper of itself if published separately, and this would possibly have been done by any one more anxious for posthumous fame. About twenty of his titles were published in the Proceedings of the American Academy at Boston, over forty were contributed to seven or eight different scientific periodicals, six appeared as government publications, and the remainder in various other ways.

His place in the ranks of American botanists is well defined. He stood in the first rank in his special field—the Phænogamic portion of the Systematic Botany of North America. His work on mosses was first class, so far as it went, but it was relatively very limited, and his ramblings in other botanical fields, though varied, were not extensive. It was the quantity and quality of

his original work in his own field that gave him his position. He was as conscientious as he was diligent, and his botanical work was done with the same sense of moral and religious duty that he carried into all the concerns of his private life. He did not work for fame or reward. He loved to work, he believed it was man's duty to work, and whatever he did he felt should be done truthfully and well; hence the laborious care with which his studious observations were made and through which he arrived at his conclusions. His own intellectual instincts were supplemented by college studies along the old line of a definite curriculum, and his literary ability further trained by his earlier work as teacher and that with Dr. Barnard on the *Journal of Education*. He was by nature a man of few words; the style of his descriptive botany is terse, clear, and sharp, leaving but small chance of dispute as to its meaning. Imperfections due to youth had worn off in the various vocations he had pursued previous to his botanical career, which was begun with mature judgment. By nature not given to hasty conclusions, his acquired habits of patient, diligent study, his reticent ways—all these, as well as other factors, combined to give him great aptitude for botanical work, while the amount and quality of that work gave him a name and fame in the world of science. It is the kind of work that endures.

In the revolutionary disturbances in the field of botanical nomenclature pertaining to sequences and synonymy, that came on during his later years, he naturally took a conservative position. His mental constitution, his critical study of the American flora, both as to the plants themselves and the names that had been given them, the enormous amount of work he had done in handling names while preparing his *Index of North American Botany*, the maturity of his judgment—all tended toward conservatism in the matter. With him botany was the science of plants. Names were necessary for their classification as means to an end, and when a name had been long and reasonably well established, he questioned the wisdom of new and radical changes founded on the theory that hereafter language might be rendered stable by establishing new rules. Changes in classification may and doubtless will occur in the further evolution of botanical science as our knowledge of plants increases and the genetic history of their species is better known. Such evolution of the

science will no doubt necessitate changes in many specific names he created or used. To such changes he would be the last to object. But they will in no way or degree undo his work or set it aside. That was chiefly a critical study of the plants themselves, and it will remain an enduring contribution to our stock of knowledge, and his name and fame as a master of systematic botany will endure.

The last twenty-one years of his life were spent at Cambridge. Its quiet was broken by only three trips of any considerable length. In 1880 he made a trip into the Northwest in connection with the forest work of the Tenth Census. In 1885 he went on a collecting tour to Guatemala. In 1886, in company with his colleague, Professor George L. Goodale, he traveled three months in Europe, a most restful and beneficial trip to him, as well as a very enjoyable one.

The personal peculiarities which so suppressed him in early life were not serious hindrances in his later and happier botanical career. His innate reticence remained to the end, and it often seemed repellent to strangers and others not in his intimate acquaintance. Owing to this, his warm personal friendships were relatively few compared to what they might have been had he courted acquaintance or even met strangers with the cordiality which really existed in his heart. As it was, all who knew him closely, not merely esteemed him, but held him in affection. Those who knew him best loved him most. Professors Gray and Goodale, the two university colleagues who were in the more direct official relations with him, perhaps enjoyed his closest friendship. The latter says of him :

“Those who were engaged in neighboring fields of botanical investigation knew him as a faithful friend of few words. He was observed to carry on his researches in silence, seldom alluding to any special task in hand until it drew near completion, and even then only briefly. He was always ready to interrupt his studies to assist others in theirs. He would enter with unconcealed pleasure into the plans of others, but without ever speaking of his own. Hence it happens that his intimate friends, when called upon to speak in his memory, think first of the reserve and silence in which he worked.”

He was, both by instinct and training, a student and a lover of nature. He loved study for its own sake, and he loved plants

because they were plants, and studied them with the keenest interest as well as with acute powers of observation. He was also by nature a calm and patient man, and these characteristics had been intensified by his religious convictions, and trained during the discouraging struggles of his earlier years. This calm patience kept with him to the end; it was seen in every phase of his work. Nothing excited him, nothing ruffled him, nothing disturbed him. The most monotonous clerical drudgery was not shirked, but calmly and uncomplainingly pursued. In the study he would stop his work to help another, kindly and graciously; in the field even the government mule did not anger him, his calm, patient persistence always overcoming the difficulties. Through all his early discouragements it is not known that he was ever despondent.

He talked none about himself and but little about his work, either while doing it or later. Sometimes the publication of an important paper would be the first intimation that he was at work upon it to any but his immediate associates, and all this silence was without any intentional concealment. It was merely a result of his silent ways and unobtrusive nature.

He did not shun company, but he did shun taking any public part or in any way being placed personally conspicuous. He attended the meetings of his college class whenever he could, and enjoyed them as silently as was possible. He was a constant attendant at the meetings of the American Academy in Boston, but his botanical papers, which enrich the Proceedings, were read by title; some short and less technical ones were read by the secretary. He attended a few meetings of the National Academy of Sciences at Washington with much pleasure, but he took no part in discussion at any public meeting.

He was a member of many scientific societies at home and abroad and received the degree of Doctor of Philosophy from Iowa University.

He was a member of the Congregational Church and a faithful attendant. One of his classmates, a clergyman, says of him:

“His was one of those true and gentle natures that can always be trusted.” * * * “In the family he was self-denying and very thoughtful of the interests of others, doing many a kind act, the recipient of which knowing nothing of the source from which it came.” * * * “He was a man of decidedly relig-

ious character, though he could seldom be induced to take any public part in religious exercises. He was fond of his church, and for years instructed in a Bible class." * * * "He believed that he must work while the day lasted and with no reference to reward except the knowledge that he had done what he could. I doubt whether he ever thought of posthumous fame."

He was never married. About the middle of December, 1891, he was attacked with the epidemic influenza then prevailing in Cambridge, and which became complicated with dilatation of the heart. For some weeks his recovery seemed possible, and he often talked with hopeful longing of soon returning to work; but he grew weaker and weaker, until he peacefully passed away on the morning of March 9, 1892, in his sixty-sixth year. He was buried in the Harvard College lot in Mt. Auburn Cemetery, at Cambridge.

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