

Edward Tuckerman.

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BIOGRAPHICAL MEMOIR OF EDWARD TUCKERMAN.

The sad duty of presenting an account of the life and writings of our lamented associate, EDWARD TUCKERMAN, has been assigned to the writer by order of the Academy.

Edward Tuckerman, the eldest son of Edward Tuckerman, a merchant of Boston, and Sophia (May) Tuckerman, was born in Boston, December 7, 1817. When a boy he attended Ingraham's school, and later fitted for college at the Boston Latin School. He then entered the Sophomore Class of Union College, Schenectady, and received his Bachelor's degree in 1837. After graduation he entered the Harvard Law School and obtained the degree of LL. B. in 1839. He continued to reside in Cambridge for two years longer, pursuing studies in law and also taking a special course at the Divinity School. In 1841-42 he traveled in Europe, extending his journey as far north as Upsala where he formed the acquaintance of the celebrated Prof. Elias Fries. He returned to this country, it would appear, in the summer of 1842, for in the autumn of that year he made a trip to the White Mountains with Prof. Asa Gray. Soon after, he took up his residence at Union College and there received his Master's degree. He returned again to Cambridge in 1844 or 1845 and, wishing to obtain an Academic degree from Harvard, he entered the Senior Class in 1846 and passed the regular examinations with distinction, receiving the degree of A. B. in 1847. Although he had already obtained two degrees from Harvard, he entered the Harvard Divinity School two or three years later and passed through its course of study and prescribed exercises, although it appears from the Harvard Triennial Catalogue that he did not take the degree of Bachelor of Divinity. It should be said in this connection that his family were members of the Protestant Episcopal Church and he himself remained a member of that denomination during his life, although, at the time of his connection with the Harvard Divinity School, it was under the control of the Unitarian denomination.

In May, 1854, he was married in Boston to Sarah Eliza Sigourney Cushing, who still survives him. Soon after his marriage he removed

with his wife to Amherst, Mass., where he built a house in a beautiful spot and resided until his death, March 15, 1886. In 1854 he was appointed Lecturer on History in Amherst College, and until 1873 he continued to give instruction in history, during a part of the time filling the chair of Oriental History. In 1858 he was appointed Professor of Botany, a position which he held during the rest of his life, although during his later years he was relieved from class instruction. He received from Amherst the honorary degree of LL. D., was elected a member of this Academy in 1868, and was connected either as an active or honorary member with numerous scientific societies both of this country and of Europe.

As a man, Professor Tuckerman was noted for his sincerity and amiability. He is described by the surviving friends of his earlier years as a most agreeable companion, one whose society was sought by those who prized that good fellowship to which both the heart and head contribute. If he was at times reserved he was also genial when the occasion demanded; if he was often absorbed in his own studies, he unbent when friends sought his society. The writer could repeat many anecdotes told by his old Harvard friends to show how, when students together, they respected his character and enjoyed his companionship. After his removal to Amherst his life was passed in the quiet pursuit of his favorite studies, especially botany, and he rarely left home except to make some botanical excursion. His family relations were most happy, and his wife was not only a devoted companion but also a sympathizer with his work. By his brother professors and, in fact, by the people of Amherst generally, he was highly esteemed as a man and a citizen. As a teacher he inspired the better class of students with an enthusiasm which did not cease with college life, but afterwards developed into an activity of which science in this country has already in part reaped the fruit.

From the first, Professor Tuckerman was of a retiring and sensitive temperament, and, as years passed on, he was forced to become more and more secluded in consequence of a deafness which gradually increased, and at last reached a stage at which conversation became difficult. Although probably never very robust, in his early life he possessed great bodily activity and a degree of venturesomeness and fondness for exploration hardly to have been expected. He made numerous visits to the White Mountains and botanized on the most inaccessible peaks and in the wildest ravines at a time when the White Mountains were as difficult of access as the Rocky

Mountains or the Sierras at the present day. With the exception, perhaps, of Oakes, no botanist has ever explored the mountains with the same zeal and success as Professor Tuckerman, and, as far as lichens are concerned, the collections of Oakes are naturally not to be compared with those of Tuckerman.

His natural activity and power of work were unfortunately diminished by sickness during the latter part of his life. A number of years before his death he suffered from a sunstroke from which he probably never quite recovered, and this made it difficult for him to work continuously as had been his habit. For the last few years he failed steadily, and, in the autumn of 1885, he went to Virginia in the hope of restoring his health; but he soon returned to Amherst and continued in comparatively good health, although he was known to be suffering from Bright's disease, until a few days before his death, when complications of the disease confined him to his room, and he at last passed calmly away.

The writings of Professor Tuckerman, apart from his botanical works, relate to historical and theological subjects, and in the present connection do not call for an extended notice. He privately published an edition of Josselyn's "New England's Rarities Discovered," with annotations, including a biography of Josselyn, and a sketch of the earlier sources of our knowledge of New England plants and of some of the people who made them known. In 1832 and 1833 he assisted Mr. Samuel G. Drake in the preparation of his "Book of the Indians" and "Indian Wars." Between 1834 and 1841 he contributed to the *New York Churchman* no less than fifty-four articles under the title of "Notitia Literaria" and "Adversaria," upon points in history, biography, and theology. He was also a frequent contributor to other religious journals.

Professor Tuckerman's fondness for botany was shown at an early age. When a student at Union College he was appointed curator of the Museum. His acquaintance with William Oakes, of Ipswich, Mass., one of the pioneers of botany in New England, and Dr. T. W. Harris, a noted entomologist and librarian of Harvard College, dates, perhaps, from a still earlier period; at any rate the influence of these two men—the one an indefatigable collector and explorer, the other a thorough student—must have had much to do in forming his tastes and shaping his future career. Of all plants lichens were always the most attractive to him, and his first paper, "An enumeration of some Lichenes of New England," was presented to the Boston

Society of Natural History in 1838-'39, the year after he graduated at Union College, when he was only twenty-one years of age. This was followed by a second paper in 1840, "A Further Enumeration of some New England Lichenes," and a third in 1841, "Further Notice of some New England Lichenes." These papers, it will be noticed, were the work of a young man who had studied only in this country, and relate to a group of plants which, up to that time, can hardly be said to have been studied at all by American botanists; for, if we except Halsey's "Synoptical View of the Lichens growing in the Vicinity of the city of New York," the references to lichens in works by American botanists consisted of lists of species determined by Europeans from specimens sent to them and published often without the names of authorities, and too frequently with glaring typographical errors. Tuckerman's papers, even the earliest, are full of critical notes on structure and distribution, giving the results of his own explorations, especially in the mountainous regions of New England, whose lichen-flora he was the first to investigate.

The most important event of his life, botanically considered, was his journey to Sweden in 1841, where he met Elias Fries, professor of botany at Upsala, the leading lichenologist of his time, and, after Linnaeus, the most distinguished of Sweden's many distinguished botanists. Thirty years later, when the writer was at Upsala, Professor Fries, then a venerable man of eighty with undiminished mental vigor, recalled the days when the enthusiastic young American was at Upsala and related how, when walking together on the famous avenue near the university, Tuckerman discovered a species of lichen which he, the authority on lichens, had not seen there before. The visit to Fries was important because it enabled Tuckerman to acquire, if one may say so, the traditions of the science. In some branches of cryptogamic botany it is almost a necessity that an American should see the species of Europe under the guidance of a botanist trained on the spot if he would clearly recognize the same species when they occur in America. There is an indescribable something, especially in lichens, which certainly is not and probably could not be laid down in books. It is fortunate for our lichenologists that Tuckerman was able to transfer to America and perpetuate on this side of the Atlantic the ideas of classification and specific limitations derived from Fries himself. Certainly

during his life he always adhered to the Friesian views of classification, which he preferred to those of later botanists.

While in Europe he did not limit his botanical studies to lichens, but also worked on some of the more difficult genera of phænogams. Before his return to America he contributed to Hooker's *Journal of Botany* a paper on "*Oakesia*, a new genus of *Empetreae*," and shortly after his return, in 1843, he printed privately at Schenectady his "*Enumeratio Methodica Caricum Quarundam*," of which Professor Gray says: "He displayed not only his critical knowledge of the large and difficult genus *Carex*, but also his genius as a systematizer, for this essay was the first considerable and a really successful attempt to combine the species of this genus into natural groups." In the *American Journal of Science* of the same year he published "*Observations on some interesting plants of New England*," and this was followed in 1848 and 1849 by two papers on similar subjects, including an elaboration of the American species of the difficult genus *Potamogeton*, which he was the first in this country to study critically. These papers include about all that was ever published by Professor Tuckerman on phænogamic plants, if we except the "*Catalogue of plants growing without cultivation within thirty miles of Amherst College*," issued in 1875, of which he prepared the list of flowering plants. But it should be added that the papers already named do not comprise all that he contributed to phænogamic botany, for he furnished valuable notes on distribution of species to other workers in the same field, which, if they were sometimes properly acknowledged, were, it is to be feared, sometimes absorbed without suitable recognition.

In 1845 he published in the *Journal of the Boston Society of Natural History* "*A further notice of some alpine and other lichenes of New England*," and in the same year there appeared at Cambridge his "*Enumeration of North American Lichenes*, preceded by a general account of lichens and of the Friesian system, together with an essay on the natural systems of Oken, Fries, and Endlicher." In 1847 he presented to the *American Academy of Arts and Sciences* a "*Synopsis of the Lichenes of New England, the other Northern States, and British America*," which was issued separately the following year. This work was the first attempt at a systematic description and classification of all lichens known, at that time, in the temperate regions of North America and may be called the lichen-primer of this country. It included 295 species, of which 20

were new. Incomplete as it seems at the present time, it offered to the student of that day the means of recognizing and referring to their proper places in the then accepted system the more prominent species of the eastern portions of the United States and it served as an incentive to the study of lichens which was important. As an adjunct to the synopsis should be mentioned the "*Lichenes Americæ Septentrionalis Exsiccati*," in three fasciculi, Cambridge, 1847-1855, including specimens of many of the species given in the synopsis and collected mainly by Tuckerman himself.

But the study of lichens soon assumed a new phase. The microscopic characters began to be more carefully studied, new regions were explored, and the number of observers increased rapidly. Naturally, with the increase of collections and a more minute anatomical study, not only did the older descriptive works prove inadequate but the systems of classification themselves required modification. The Western explorers and a new generation of botanists in the East amassed a large amount of material, while the various expeditions to foreign lands brought home rich collections of lichens which were placed in his hands for determination. From 1848 to 1872 he published numerous papers of which the more important were a "Supplement to an Enumeration of North American Lichens," in the *Journal of Science* in 1858 and 1859, where he described many new species from the Southern States and California; *Observationes Lichenologicæ*, in four parts, in the *Proceedings of the American Academy*, 1860 to 1877; the *Lichens of the Wilkes Exploring Expedition*, and the *Lichens of California, Oregon, and the Rocky Mountains*; Amherst, 1866. The second and third parts of the *Observationes* related principally to species collected in Cuba, by Charles Wright, and the range of his studies of exotic forms is shown by the fact that, not including the papers previously named which contained accounts of species from Eastern Asia, the Pacific Islands, the Cape of Good Hope, etc., he also published papers on species from Kerguelen's Land, the Hawaiian Islands, and Arctic America.

The elaboration of this rich material enlarged his views of classification and gave him a broad knowledge of generic types as well as specific forms which he embodied in his "*Genera Lichenum*," published at Amherst in 1872. This, it seems to the writer, should be regarded as his greatest work. In it he displays a remarkable knowledge of lichen forms and a thorough acquaintance with the

literature of systematic lichenology. That it is not more widely read and known is probably due to the prevailing fondness for microscopic details. It must be confessed, however, that the somewhat involved style in which it was written is in part responsible, for it is a hard book to read. It was addressed to experts, not to beginners, and, when it appeared, the older experts were too busy attempting to split up genera and species to an unendurable degree of artificiality, while the younger men, attracted by the writings of Schwendener, Bornet, and Stahl, were too much interested in developmental and physiological questions to care much for systematic works. The *Genera Lichenum* is a protest against the artificial classifications based almost wholly on the spore characters without regard to other equally important characters, a method first advocated by the Italian lichenologists, with De Notaris at their head, and adopted by the Germans and other continental botanists. Tuckerman advocated the systems of Fries modified by his knowledge of exotic forms. His view of species was a large one, and he recognized numerous varieties of the type but refused to admit that, if a form differed in any visible respect from the type, it must constitute a distinct species. If his classification is at times less easy to follow than that of the modern continental school, it presents ultimately fewer difficulties and is certainly more natural, and hence more scientific.

On the completion of his *Genera* his whole aim was to complete a descriptive work which should include all the species known in the United States. For this work no living botanist had so ripe an experience or such a mass of valuable material as he. Unfortunately his health failed, and, being the long acknowledged authority on lichens in this country, much of his time was absorbed by correspondents who, at times, ill requited his valuable services. In 1882 there appeared the first volume of his much-desired "Synopsis of the North American Lichens," which comprised the *Parmeliacei*, *Cladoniei*, and *Cænogoniei*. He applied himself industriously to the preparation of the second volume, which it was hoped would soon appear; but death interrupted his task, and it is not now known whether his manuscript is in a state to admit publication.* If not, the loss to American botany will be very great, for

* Since the above was written it has been learned that the manuscript of the *Lecidiacei* and *Graphidacei* was left by Professor Tuckerman in condition for printing, and it is the intention of his family to publish it at an early day.

it is certain that he had in his possession a large amount of new material, and no one could so well as he treat the difficult groups *Lecidiacei* and *Verrucariacei*.

A word should be said about Professor Tuckerman's views with regard to the Schwendener theory. Following the earlier indications of De Bary, Schwendener, by a minute study of the thallus of lichens, brought forward proofs to show that the gonidia of lichens had no real genetic connection with the hyphæ, but were, in fact, algæ upon which the hyphæ were parasitic; in other words, what is called a lichen is, properly speaking, a fungus of the order *Ascomycetes*, which is parasitic on some alga; in most cases a species belonging either to the *Parmellaceæ* or the *Nostocaceæ*. The botanical world was divided in opinion, and, for the last fifteen years, the so-called algo-fungal theory of lichens has given rise to endless controversies of a personal and very acrimonious character. As a rule, the systematic lichenologists were opposed to the theory, while the histologists supported it. Professor Tuckerman, who began his studies at a time when microscopic technique had not reached its present perfection, could hardly have been expected to take a very active part in a direction requiring difficult microscopical work. It is said that at first he was inclined to favor the theory, but if so, he soon changed his views and sided with the opponents of the theory. It must be said to his credit that his references to the subject were always courteous and dignified in marked contrast with the course of some other well-known lichenologists. The most definite expression of his opinion in print is to be found in the American Journal of Science and Arts of February, 1879, where, under the title of "The Question of the Gonidia of Lichens," he reviewed the first part of Minks' "Beitraege zur Kenntniss des Baues und Lebens der Flechten." Minks had observed small green bodies in the hyphæ, which finally escaped from them and developed into gonidia. In his review Tuckerman confirms the statement of Minks with regard to the existence of the green bodies called by Minks microgonidia, and remarks that he has observed them himself in *Parmelia tiliacea* v. *flavicans* of Cuba, but he does not go so far as to say that he saw them develop into gonidia. He accepts Minks' statements on this point, however.

The life of our lamented associate was one devoid of some of the incidents which make the lives of many men of science picturesque. It is a simple story, not of struggles against poverty and the enmi-

ties of opponents, but of one who, endowed with a fair share of this world's goods and always happy in his family relations, pushed steadily onward in his chosen field—a worker to the last in spite of increasing bodily infirmities. If it was a life so quiet and retired that it may almost be said to have been eventless, it none the less has left its mark. Professor Tuckerman's death has left a gap in the ranks of American botanists which will not be filled for years, and while his contemporaries mourn the loss of a personal friend, the younger generation of botanists feel no less keenly the loss of one whose letters were not only highly instructive and encouraging, but also full of enthusiasm and enlivened by reminiscences of the time when he was young.

The name of Tuckerman is commemorated in a genus of *Compositæ*, dedicated to him by Nuttall, and in several species named in his honor by different botanists. A more widely known memorial is the noble ravine on Mount Washington, the seat of his early explorations, which now bears his name. He will long be remembered by the poor and afflicted relieved by his sympathy and beneficence whose extent, not suspected even by his intimate friends during his life, has been made known only since his death by the grateful recipients of his bounty.

LIST OF THE BOTANICAL WRITINGS OF EDWARD TUCKERMAN.

An Enumeration of some Lichenes of New England, with remarks. *Boston Journal of Natural History*. I, 245-262. 1839. Read Dec. 5, 1838.

Note on *Geaster quadrifidus*. *Am. Jour. Sci. and Arts*. XXXVI, 380, July, 1839.

A further Enumeration of some New England Lichenes. *Boston Jour. Nat. Hist.* III, 281-306. 1841. Read March, 1840. Ditto, 438-464. Read March 17, 1841.

Notice of some *Cyperaceæ* of our Vicinity. *Hovey's Magazine of Horticulture and Botany*. VII, 208-210. June, 1841.

On *Oakesia*, a new genus of the order *Empetreaæ*. *Hooker's London Journal of Botany*. I, 443-447. 1842.

Observations on some interesting plants of New England. *American Journal of Science and Arts*. XLV, 27-49. 1843.

Enumeratio methodica Caricum quarundam. Species recensuit et secundum habitum pro viribus disponere tentavit Eduardus Tuckerman. Schenectady, 1843. 8vo. Pp. 21.

Descriptions of several new Plants of New England. *Hovey's Mag. Hort. & Bot.* IX, 142, 243. April, 1843.

A further Enumeration of some alpine and other Lichenes of New England. *Boston Jour. Bot.* V, 93-104. 1845.

An Enumeration of North American Lichenes, with a preliminary view of the structure and general history of these plants and of the Friesian System: to which is prefixed an Essay on the Natural Systems of Oken, Fries, and Endlicher. Cambridge, 1845. Small 8vo. Pp. 59.

Observations on some New England Plants, with characters of several new species. *Am. Jour. Sci. & Arts*. VI, N. S., 224-232. 1848.

A Synopsis of the Lichenes of the Northern United States and British America. *Proceedings American Academy of Arts and Sciences*. I, 195-285. 1848. Read Dec. 7, 1847. Reprint, 8vo. Pp. v, 93.

Observations on American species of the genus *Potamogeton*, Linn. *Am. Jour. Sci. & Arts*. VII, N. S., 347-360. 1849.

Lichens in T. G. Lea's Catalogue of Plants, native and naturalized, collected in the vicinity of Cincinnati, O., during the years 1834-1844. Philadelphia, 1849. Pp. 44-47.

EDWARD TUCKERMAN.

Lichenes: in "Lake Superior, its physical character, vegetation, and animals, compared with those of other and similar regions." By Louis Agassiz. Boston, 1850. Pp. 171-174.

Lichens: in Rept. Exp. and Surveys for a railroad from the Mississippi River to the Pacific Ocean. Vol. VI. Botanical Report, p. 94. Washington, 1857.

Carex argyrantha sp. nov. Privately printed at Amherst, 1859.

Supplement to an Enumeration of North American Lichenes. *Am. Jour. Sci. & Arts.* XXV, N. S., 422-430, May, 1858, and XXVIII, 200-206, Sept., 1859.

The Vegetation of the White Mountains: in the White Hills, their legends, landscape, and poetry by Thomas Starr King. Boston, 1860. Pp. 230-241.

Observations on North American and some other Lichenes. *Proc. Am. Acad. Arts. & Sci.* IV, 383-407, read March 13, 1860: V, 383-422, read April 22, 1862: VI, 263-287, read April 12, 1864: XII, 166-185, read May 29, 1877. Parts 3 and 4 under the title of *Observationes Lichenologicæ*.

Lichenes: in United States Exploring Expedition during the years 1838-1843, under the command of Charles Wilkes, U. S. N. Vol. XVII. Botany. Philadelphia, 1862 (1874). Pp. 113-152. Pl. 1, 2.

Lichens of California, Oregon, and the Rocky Mountains; so far as yet known. With an appendix. Amherst, 1866. Small 8vo. Pp. 35.

Lichenes: In "Enumeration of Hawaiian Plants," by Horace Mann. *Proc. Am. Acad. Arts and Sci.* VII, 223-234. 1868.

Carex glaucodea in *Carices Novæ*, by S. T. Olney. *Proc. Am. Acad. Arts. and Sci.* VII, 395. 1868.

Can lichens be identified by chemical tests? *American Naturalist.* II, 104-107. April, 1868.

Lichens: In United States Geological Exploration of the Fortieth Parallel, Clarence King, geologist in charge. Washington, 1871. Pp. 412, 413.

Genera Lichenum: An Arrangement of the North American Lichens. Amherst, 1872. 8vo. Pp. xv, 281.

Two Lichens of Oregon. *Bulletin of the Torrey Botanical Club.* V, 20. April, 1874.

Lecidea elabens. *Flora.* 1875. Pp. 63, 64. Ratisbon.

Lichens of Kerguelen's Land. *Bull. Torrey Club.* VI, 57-59. October, 1875. Also in Smithsonian Miscellaneous Collections. Vol. XIII; Bulletin U. S. Nat. Museum, I, No. 3, 27-30.

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A catalogue of plants growing without cultivation within thirty miles of Amherst College. Amherst, 1875. 8vo. vi, 97. The *Musci*, *Hepaticæ*, *Characæ*, and *Fungi*, by C. C. Frost.

Lichenes: In Report upon United States Geographical Surveys West of the One Hundredth Meridian, in charge of First Lieut. Geo. M. Wheeler. Washington. Vol. VI. Pp. 350, 351. 1878.

List of Lichens collected in the vicinity of Annanactook Harbor, Cumberland Sound, at about Lat. 67° N., Long. 68° 49' W. (Howgate Expedition). Bull. U. S. Nat. Museum, No. 15. Washington, 1879. Pp. 167, 168. *Smithsonian Misc. Collec.* Vol. XXIII. 1882.

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Lichens or Fungi? *Bull. Torrey Club.* VII, 66, 67. June, 1881.

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A Synopsis of the North American Lichens. Part I, comprising the *Parmeliacei*, *Cladonieï*, and *Cænogonieï*. Boston, 1882. 8vo. Pp. xx, 262.

New Western Lichens. *Bull. Torrey Club.* X, 21-23. February, 1883.

A new *Ramalina*. *Bull. Torrey Club.* X, 43. April, 1883.

Two Lichens of the Pacific Coast. *Bull. Torrey Club.* XI, 25, 26. March, 1884.



