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MEMOIR OF CLEVELAND ABBE, 1838-
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W. J. HUMPHREYS

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NATIONAL ACADEMY OF SCIENCES
OF THE UNITED STATES OF AMERICA
BIOGRAPHICAL MEMOIRS
PART OF VOLUME VIII

BIOGRAPHICAL MEMOIR

OF

CLEVELAND ABBE

1838-1916

BY

W. J. HUMPHREYS

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ried Charlotte Colgate, who came of a line of Dissenters registered at Leyden in 1610-1620.

8. CLEVELAND ABBE, 1838-1916, subject of this sketch.

Walter, 1841 —, for many years head chemist of the Atlantic White Lead Works.

William, 1843-1879, died from after-effects of a wound received at Gettysburg.

Charles, 1849-1917, inventor, and for some years an assistant examiner in the U. S. Patent Office.

Robert, 1851 —, eminent surgeon in New York.

Helen, 1853 —, married Hubert Howson of New York.

Harriet, 1855 —, single, New York.

9. Cleveland Abbe, Jr., 1872 —, meteorologist and editor of the *Monthly Weather Review*.

Truman Abbe, 1873 —, surgeon, Washington, D. C.

William Abbe, 1877 —, patent attorney, New York.

10. Several children: of Cleveland, one son; Truman, two sons and two daughters; William, three sons and three daughters.

Professor Cleveland Abbe was born on Madison street, New York City, December 3, 1838, and died at his home in Chevy Chase, Md., October 28, 1916, from effects incident to the malignant degeneration of a mole, which had rapidly become so extensive as to prevent his resting comfortably in other than one position. For more than a year he had also been afflicted with partial paralysis of the right side, but this, from which he had largely recovered, never in any wise affected either his mind or his cheery hopeful disposition nor, apparently, at all hastened the end.

Professor Abbe's preliminary education was obtained, first, in private schools and, later, in the David B. Scott Grammar School, No. 40, on 20th street, New York. His academic training was acquired at the New York Free Academy, now the College of the City of New York, which he entered in 1851, and from which he was graduated with distinction, obtaining the degree B. A. in 1857 and M. A. in 1860.

But this formal education was abundantly supplemented by extensive reading on all manner of subjects. Nor did he ever lose his interest in every branch of human knowledge, nor

cease to read, or at least desire to read, everything printed that by any chance could be worth reading. In reference to this characteristic an admiring friend, writing of him as he knew him in his later life, says:

"From the first I was impressed with his broad interests, extending not only outside of meteorology and astronomy to the other sciences, but to philosophy, art, and literature. His knowledge was very broad; his reading comprehensive. I remember, when living at his home, seeing him very early in the morning sitting in his library reading the *Encyclopedia Britannica*. He told me that he was reading it through consecutively."

During his school days he had the advantage of spending his summer vacations in the country with his grandfather, Moses Cleveland Abbe, near Windham, Conn. On these occasions the future meteorologist, it is said, sometimes found it more pleasant to loiter in the shade and contemplate on the beauty and mysteries of the floating clouds than to help his worthy ancestor with the exacting duties of the farm. But the youthful dreamer was ever subject to the old gentleman's wholesome admonition to the effect that "boys that don't work don't eat," and so it happened that these summer vacations furnished both healthful exercise and abundant opportunity to get acquainted with many natural phenomena of absorbing interest.

Early in his life, indeed when he was only eight years old, there happened a trivial occurrence which perhaps should be recorded, as it seems to have had an important influence on his entire intellectual career. This was the gift to him by his mother of "Smellie's *Philosophy of Nature*," a remarkable book by the editor and in great part author of the first edition of the *Encyclopedia Britannica*. This he pored over as a boy, kept sacred in his library throughout the whole of his active career, and so frequently and feelingly alluded to during his last illness that in loving tenderness it was placed in his hands as a fit companion during his long rest beneath the oaks and the roses of beautiful Rock Creek Cemetery.

Professor Abbe was twice married and on each occasion most happily. His first marriage, May 10, 1870, was to Miss Frances Martha Neal, daughter of David Neal of Cincinnati.

Practically all their wedded life, terminated by death on July 24, 1908, was spent in that historic old mansion, once (1817) the "White House," 2017 I Street N. W., Washington, D. C. which they owned, where they entertained their numerous scientific and other friends, and where, dearest of all to them, they reared with every thoughtful care their three sons, Cleveland, Jr., Truman, and William.

His second marriage, April 12, 1909, was to Miss Margaret Augusta Percival, of Basseterre, St. Christopher, B. W. I., under whose constant care and unfailing devotion the remainder of his useful life was most happily spent.

In religion Professor Abbe was always devout and sincere, and saw only the good in every Christian creed. Though a member of the Baptist Church from the age of 15, and devoted to its earnest simplicity, he nevertheless loved the beautiful ritual of the Episcopal Church, in which, especially during his later years and in company with his second wife, he frequently found inspiration and comfort. To him form in religious worship, apart from its æsthetic appeal, was of small matter, so long as the sincerity and the substance were the same.

As already stated, Professor Abbe was graduated from the New York Free Academy (College of the City of New York) in 1857. During 1857-'58 he was tutor of mathematics, a subject of which he was very fond, in Trinity Latin School, New York. The following year, 1859, he was an assistant professor of Engineering in the Michigan Agricultural College; and later, 1859-'60, tutor in Engineering at the University of Michigan, where he found in Professor Brünnow an inspiring instructor in Astronomy, the Science whose marvelous revelations had, above all others, aroused and directed his youthful aspirations.

Near the close of his year at Ann Arbor stern duties arose, and Abbe responded in April, 1860, to Lincoln's first call for volunteers. For a few weeks he was tried out at a recruiting camp, but finally, to his severe disappointment, rejected because of excessive myopia, an affection that debarred him from youthful games, forbade him a soldier's service, and all his life long restricted his pleasures and limited his opportunities. Though rejected as a soldier he nevertheless served

his country during the years 1860-'64 by assisting Dr. B. A. Gould at Cambridge, Mass., in the telegraphic longitude work of the United States Coast Survey. Presumably it was this practical work with Dr. Gould that led to his spending the next two years, 1865-'66, as a guest or supernumerary astronomer at the Observatory of Pulkova, near Petrograd, noted for its contributions to applied astronomy, and then under the direction of the famous Otto Struve. Here he found not only congenial work but also pleasant companions and the good cheer of warm hospitality. In this happy atmosphere his sympathetic nature found such peace and content as to cause him always to remember Pulkova as a scholar's paradise!

On his return to the United States Professor Abbe accepted, in 1867, the position of aid in the U. S. Naval Observatory; but shortly afterwards, on February 1, 1868, assumed the responsible duties of director of the Cincinnati Observatory, to which he began giving his entire time on the 1st of June. The inclusiveness of his plans on taking charge of this observatory was set forth in his inaugural report, June 30, 1868, to the Board of Control, in which he says:

"If the director be sustained in the general endeavor to make the observatory useful, he would propose to extend the field of activity of the observatory so as to embrace, on the one hand, scientific astronomy, meteorology, and magnetism, and, on the other, the application of these sciences to geography and geodesy, to storm predictions, and to the wants of the citizen and the land surveyor."

This generalized plan he then elaborated into a scheme, magnificent in scope and noble in purpose, but out of all possible proportion to a one-man observatory whose chief function hitherto had been that of entertaining the public. His disposition always was so hopeful that, apparently, he seldom took into consideration such obstructive factors as lack of time or want of opportunity. But if, perhaps, this accounts for his beginning some things that were never completed, it doubtless, on the other hand, also accounts for the completion of many things that otherwise might never have been begun.

During his directorship of the Cincinnati Observatory, however, Professor Abbe's active interests, in spite of his all-inclusive program, soon turned more and more to meteorology, and

especially to that eminently useful application of it by which warnings may be given of approaching storms. He was much interested in the fact that telegraphic circuits were then generally made up so as, presumably, to be least disturbed by storms as indicated by the morning reports from many stations, of the weather, height of the barometer and direction of the wind. This demonstration of the value and practical use of weather predictions aroused in him an impatient desire, born of earnest conviction, that the great benefits of storm and flood warnings be extended to the entire public and all its industries. Accordingly, on July 29, 1868, he addressed the following letter to the president of the Cincinnati Chamber of Commerce:

"Mr. JOHN A. GANO,

President, Cincinnati Chamber of Commerce.

"DEAR SIR: I take the liberty of bringing to your attention, and through you to that of the Associated Press, a plan of operations looking to a system of storm warnings such as will, I believe, be highly appreciated by the public.

"It cannot have escaped your notice that during the past 20 years very many endeavors have been made by various nations to utilize the science of meteorology. From the Paris Observatory daily bulletins are published showing the state of the weather in western Europe. In England storm warnings are published many hours in advance and sent to the ports that are threatened.

"The great value of such storm warnings long ago suggested the importance of the study of the phenomena of our own climate, and these labors have met with commensurate success. But such endeavors must be long continued and not spasmodic, and in view of their importance I take the liberty of suggesting a simple plan by which the Associated Press may contribute much towards the progress of the science of meteorology as well as towards its utilization.

"The Cincinnati Observatory, because of its central position with reference to the railroad and the telegraph systems of our country, may with special propriety be made the central station for meteorological dispatches from all parts of the country. The newspapers daily publish such dispatches from ten to fifty stations, and it is suggested that if the Associated Press will substitute for these far more accurate and valuable observations of the trained meteorological observers stationed all over the country, and will forward them to this observatory, we will submit them to a careful discussion, and will within a few hours return them systematically arranged and condensed to the Associated Press. In this shape they will be of increased value to all who consult them.

We shall, moreover, ourselves enter these observations upon an appropriate manuscript chart, and propose that when we send the daily digest of the weather to the Associated Press we accompany it with such general predictions of the weather for the next two days as we may seem authorized to venture upon.

"It seems certain that, at least in the case of a great storm, we may arrive at a greater degree of certainty in these predictions than is attained in England and France, where only three-tenths of the predictions are verified.

"Such a system as we propose would, it is believed, powerfully contribute to advance science and practical meteorology.

"We have received promise of the hearty coöperation of the observers of the Smithsonian Institution and of the army in case the systematic daily publication of good observations and storm warnings is attempted.

"To render these meteorological reports as simple and brief as possible consistent with accuracy, a series of blanks will be issued to each observer, who will each day at an appointed minute (8 a. m., Cincinnati mean time) record the following data:

"a. Barometer reduced to 2 degrees and to a common standard.

"b. Temperature of the free air.

"c. Amount of moisture in the free air.

"d. Direction and force of the surface wind.

"e. Quantity of lower clouds, kind, and direction of motion.

"f. Quantity of upper clouds, kind, and direction of motion.

"g. Amount of rain or snow during the past 24 hours.

"h. Condition of the atmosphere (clear, hazy, foggy, etc.).

"Further instructions will be given to the observers by which the dispatches from each will average twenty or twenty-five numbers or letters. Observers of the requisite experience can readily be found in all desired localities. They should be distributed widely over the country. If not found at any desirable place, then the telegraph office at that point will be supplied with the proper instruments, and some employee of the company instructed in their use, the company being responsible to the extent of \$100.00 for the value of the instruments. The observers will send their blanks to the nearest telegraph office addressed to the 'Cincinnati Observatory,' and we must receive them all at the Cincinnati office of the Western Union Telegraph by 12 o'clock noon. Should there be no communication with any station, we are to be informed of the fact, and the delayed dispatches are to be forwarded at the earliest opportunity. These dispatches are to remain and be the property of the Cincinnati Observatory. The observers will furnish their observations gratis, receiving in return a copy of the daily bulletin or summary in a form convenient for preservation.

"The daily digest and the weather predictions are to be furnished by the Cincinnati Observatory gratis to the Associated Press and to such