

Whitman, Charles Otis

(14 December 1842–06 December 1910)

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<https://doi.org/10.1093/anb/9780198606697.article.1301799>

Published in print: 1999

Published online: February 2000

Whitman, Charles Otis (14 December 1842–06 December 1910), zoologist, was born in Woodstock, Maine, the son of Jacob Whitman and Marcia Leonard. His father did some farming and some carriage building, while both parents were motivated by a strong religious (Millerite) conviction that the world would end with the Last Judgment in 1843. When that did not occur, and with a young baby, the couple moved to Waterford, Maine. In 1861 they returned to Woodstock, built a carriage shop, and continued their strict worship as Adventists. Born on the eve of the frustrated Second Coming, Charles remained a disappointment to his father, and the two were never close. Whitman also diverged from his parents' extreme religious views. He revealed an early interest in natural history by collecting birds and raising pigeons.

Whitman received his B.A. from Bowdoin College in 1868, with a typical classical education. He taught high school at Westford Academy in Westford, Massachusetts, then at Boston's English High School until 1875. While in Boston, he met Harvard's charismatic naturalist Louis Agassiz and attended Agassiz's summer program at the Anderson School of Natural History on Penikese Island, Massachusetts, in 1873, and again in 1874 following Louis's death, under Agassiz's son Alexander.

This experience inspired Whitman to pursue further studies in natural history, for which he traveled to Leipzig in 1875. He remained there until 1878, when he received his Ph.D. for his embryological work on the leech *Clepsine* under Rudolf Leuckart. After a brief return to English High School, he turned down a research fellowship at the prestigious Johns Hopkins University to replace Edward Sylvester Morse in the chair of zoology at the Imperial University in Tokyo in 1879. There he trained some of Japan's leading embryologists until he left in 1882, largely because of disagreements with the rigid university bureaucracy.

Returning to the United States, Whitman stopped at the Stazione Zoologica in Naples. As the first American to visit, Whitman was invited by director Anton Dohrn to work at the exciting new research station for six months. He then went to Leipzig to write up the results of his Naples research for publication. He returned to the United States in the fall of 1882, hoping to secure a rare position in zoology.

Fortunately, Alexander Agassiz hired him as assistant in zoology at Harvard's Museum of Comparative Zoology from 1882 to 1886. There he served essentially as Agassiz's assistant, though he also pursued his own research. During that time, he produced a series of articles examining the latest microscopic techniques and equipment, summarized in a useful manual in 1885. He also married a zoologist who worked in Agassiz's private Newport Laboratory, Emily Nunn, though there is no evidence that they did any research together. They would have two sons.

Whitman preferred greater independence than Agassiz allowed, and he accepted the directorship of the new Allis Lake Laboratory in Milwaukee, Wisconsin, from 1886 to 1889. It was at this private laboratory started by Edward Phelps Allis that Whitman began to articulate his ideas about how biology should be organized with a combination of specialization and coordination of specialties. He persuaded Allis to start a new American publication for zoological research in 1887, the *Journal of Morphology*. With William Morton Wheeler, Whitman began the *Zoological Bulletin* in 1898 for shorter articles (after two volumes, renamed the *Biological Bulletin* and moved to the Marine Biological Laboratory).

By 1888 Whitman had had considerable experience in directing and organizing biological research. He was thus selected as the first director of summer activities at the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts, an institution he sustained through numerous severe financial crises. There he combined teaching and research, junior and senior scientists, and physiology and morphology (as the two recognized main branches of biology) into a community of researchers examining questions especially about the embryology and morphology of marine organisms. He withdrew from active administration of the MBL after 1903, handing over the directorship to his protégé Frank Rattray Lillie officially in 1908.

In 1889 Whitman also moved to Clark University to accept his first academic position as chair of the zoology department at the just-founded graduate research-oriented university. He attracted a group of outstanding researchers and continued his own embryological work there until political battles over who should have control over curricular and research matters at the university caused him and nearly half the faculty to leave in 1892.

Whitman, and much of his department, went to the new University of Chicago, which promised greater support for scientific research. There Whitman remained until his death. At Chicago he carried out his duties as zoology department chair but soon returned to his real love, birds. He took up his boyhood interest in pigeon behavior, which resulted in 1898 in a lengthy pioneering and influential paper, “Animal Behavior.” In it Whitman argued that animal behavior is biological and instinctual rather than psychological or concerned with mind.

Whitman did not publish the bulk of his pigeon studies, which he carried out in coops in his own backyard, since the university never fulfilled his dream of developing a “biological farm” to raise such animals. Instead, he left the data and his partially developed interpretations for his students to publish posthumously. Whitman preferred to spend his time with his birds, and he withdrew increasingly from the university’s administrative and teaching demands. His health began to fail. On 1 December 1910, when a sudden cold spell hit Chicago, Whitman worked outside in the wind to protect his pigeons. He slipped into a coma, caught pneumonia, and died five days later.

Bibliography

A few of Whitman’s papers are in the Whitman Collection in the Department of Special Collections of the Joseph Regenstein Library at the University of Chicago, and a few are at the Marine Biological Laboratory. In addition, the Stazione Zoologica in Naples has a few of his letters. Whitman’s major works include “The Embryology of *Clepsine*,” *Quarterly Review of Microscopical Science* 18 (1878): 215–315; *Methods of Research in Microscopical Anatomy and*

Embryology (1885); "Animal Behavior," *Biological Lectures Delivered at the Marine Biological Laboratory* (1899): 285–338, repr. in Jane Maienschein, ed., *Defining Biology, Lectures from the 1890s* (1986), pp. 217–72; and *The Posthumous Works of Charles Otis Whitman* (3 vols., 1919). The major biography, including a complete bibliography, is Frank R. Lillie's biographical sketch in the *Journal of Morphology* 22 (1911): xv–lxxvii. For discussion of the Whitman family's unusual religious views, see Philip Pauly, "From Adventism to Biology: The Development of Charles Otis Whitman," *Perspectives in Biology and Medicine* 37 (1994): 395–408.

See also

Agassiz, Louis (1807-1873), zoologist and geologist

Morse, Edward Sylvester (1838-1925), biologist and expert on Japanese culture

Agassiz, Alexander (1835-1910), marine biologist, oceanographer, and industrial entrepreneur

Allis, Edward Phelps (1824-1889), manufacturer

Wheeler, William Morton (1865-1937), entomologist

Lillie, Frank Rattray (1870-1947), scientist

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