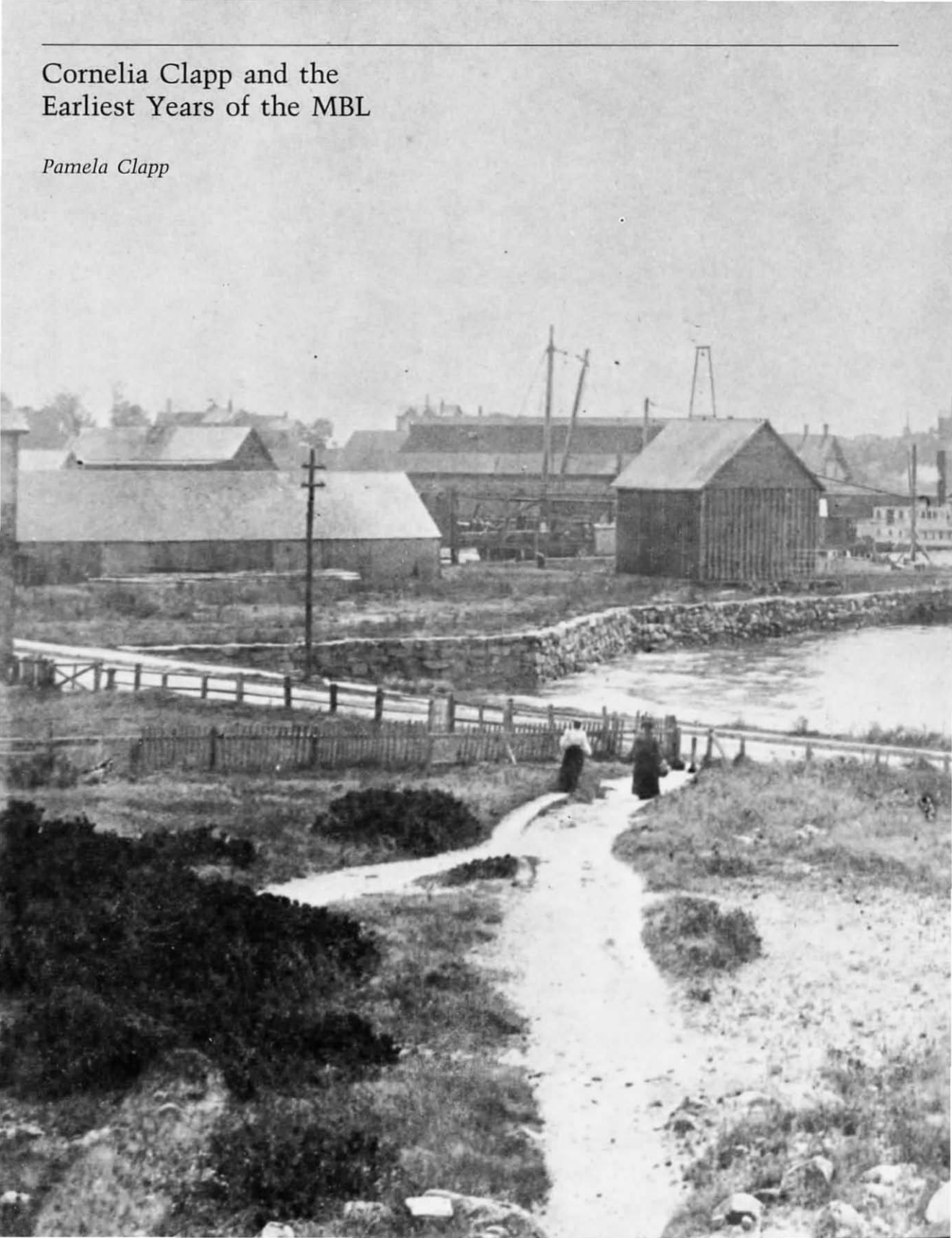
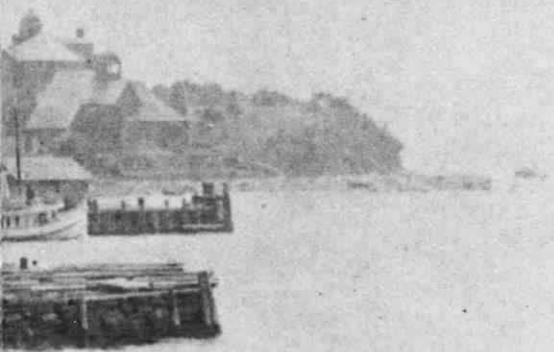
Cornelia Clapp and the Earliest Years of the MBL

Pamela Clapp





Negotiating the boulders on the way to Water Street from Old Main, 1893. Baldwin Coolidge photo No. 7046. Courtesy MBL.

Rocks and boulders littered the site where the first Marine Biological Laboratory building — Old Main — was constructed. Cornelia Clapp, the first scientist to arrive at the MBL during the laboratory's inaugural summer, found these boulders easy to negotiate in daylight, but a bit treacherous at nightfall.[1] Despite the inconvenience, she dodged the boulders as she did many of the roadblocks that she faced throughout her scientific career: skillfully and with enthusiasm.

It wasn't easy, or even really acceptable, to be a woman scientist in the 19th century. In most circles a woman was expected to be a wife and a mother. Rarely did she complete secondary school, never mind receive any sort of degree in a subject other than home economics. As one anonymous nineteenth-century author wrote:

"Culture in young women should never develop into learning. A young woman cannot and ought not to plunge with the obstinate and persevering strength of a man into scientific pursuits so as to become forgetful of everything else. Only an entirely unwomanly young woman could try to become so thoroughly learned in a man's sense of the term, and she would try in vain for she has not the mental faculties of a man."[2]

These beliefs were tremendously difficult to overcome. By the 1830s a number of women, most notably Emma Willard and Mary Lyons of Mount Holyoke, began forming women's seminaries and academies. Although the goal of these institutions was still to produce "more religious and self-sacrificing mothers," young women were now being exposed not only to studies in literature and home economics, but to science as well.[3] Despite these increased educational opportunities, women, particularly women scientists, found it nearly impossible to be integrated into the academic community at large. And a woman's acceptance into a professional scientific society was almost unheard of.

As a result, women began to found their own, primarily philanthropic societies in the 1840s. These societies were usually organized by wealthy city women, whose children were grown, and who had time to pursue other interests.[4] These societies were important stepping stones for professional women of the era, and were instrumental in the founding of a number of marine laboratories in the United States, including the Marine Biological Laboratory in Woods Hole, Massachusetts.

Attitudes towards women in science began to change by the 1870s. More and more professional societies opened their membership to women, although many of these societies developed new, less prestigious membership categories in which women were usually placed. The 1870s saw a great increase in the number of women studying natural history due in part to the establishment in 1873 of the Anderson School of Natural History.[5] The school's director, Louis Agassiz, was a strong supporter of women's education and as such invited a number of women to attend his little school on Penikese Island. Cornelia Clapp was invited to attend the session of 1874. It was an experience, she later wrote, that enabled her to find "the opening of a thousand new doorways."[6]

Cornelia Maria Clapp was born on March 17, 1849 in Montague, Massachusetts, the eldest of Richard and Eunice (Slate) Clapp's six children. The Clapps were a farming family, but both Richard and Eunice had been teachers and thus encouraged all of their children to pursue a formal education. Cornelia was educated locally in Montague and then was sent in 1869 to Mount Holyoke Seminary in South Hadley, Massachusetts. She graduated from Mount Holyoke in 1871, and then taught Latin at a boy's school in Andalusia, Pennsylvania. In 1873, the same year that Agassiz opened the Anderson School, Cornelia was invited back to Mount Holyoke to teach.[7]

There she worked closely with Lydia Shattuck, one of the women who had attended the first session of the Anderson School the previous summer. Lydia had returned from Penikese that summer eager to bring nature into the classroom and to observe it first hand. Her excitement further piqued Cornelia's developing interest in science as the two women spent close to a year searching droplets of pond water for the elusive amoeba, a single celled organism they had seen pictured only in books.[8]

The following summer Cornelia accompanied Lydia to Penikese for the second and final session of the Anderson School.[9] The experience changed her life. There on the lonely, desolate island of Penikese she learned to study nature, not books. She explored every nook and cranny of the island, all the while watching and observing. It was unlike any learning experience she had ever had, and when she left the island she did so filled with excitement and an eagerness to share with her students what she had learned.

Scientists and their friends taking time off for some lighthearted fundraising for the future Marine Biological Laboratory in Woods Hole. 1887. Dr. E.G. Gardiner in white wig second from the end on right, back row. Courtesy Molly Rudd Dreyer.

Cornelia wasn't the only participant who was influenced by the Penikese experience. The school played an important role in improving science teaching in the U.S. by providing teachers and professors a chance to learn biology from direct observation through fieldwork rather than indirectly through textbooks.[10]

When Cornelia returned to Mount Holyoke, she discarded the textbooks she had used previously. Nature and organisms became an integral part of Mount Holyoke's science curriculum, and students began learning from their own observations in the laboratory. To make this possible, Cornelia needed specimens to study. Whenever a student traveled, Cornelia asked her to collect and send specimens back to Mount Holyoke. As she received these organisms from Africa, India, Europe — from all over the world — she would go to Harvard University's Museum of Comparative Zoology to identify them.[11]

In 1874 Cornelia introduced embryology to Mount Holyoke.[12] She "hired" a brooding hen and placed one new egg under the hen each day for twenty-one days. On the twenty-first day she opened the eggs and exhibited 21 phases of development of the chick. She charged admission to see this novel exhibit, thus paying for the rental of the brooding hen.

Cornelia's interest in natural history led her to participate in a number of collecting trips. One summer she traveled to the White Mountains with a group of entomologists to collect insects. Another summer she traveled through the South to visit marine laboratories with a party of zoologists led by David Starr Jordan, a fellow Penikesian. They seined and collected throughout their travels, and one participant noted:

"Miss Clapp, having short hair and short dresses, went in and out of the water at a moment's notice."[13] Such behavior, at least for a woman, may have been somewhat unusual.

These trips were important to Cornelia. She realized that she had to learn continuously in order to be the best possible teacher. For Cornelia, teaching was the most important facet of being a scientist. She would occasionally take time during the academic year to study with various prominent scientists.[14] And she would always return to Mount Holyoke with a renewed enthusiasm for teaching.

By 1883 she was considered one of the foremost zoologists in the country.[15] This distinction was confirmed by her being named a Fellow of the American Association for the Advancement of Science, an honor seldom given to women at the time.

Meanwhile, in 1879, another marine laboratory had been established on Cape Ann, at Annisquam, near Gloucester, Massachusetts.[16] The laboratory was sponsored by the Women's Education Association (WEA) of Boston and by Alpheus Hyatt, a student and friend of Louis Agassiz, and curator of the Boston Society of Natural History (BSNH). The laboratory was very popular, and attendance was divided fairly evenly between men and women. Unfortunately, the facilities were sparse and unsatisfactory.

In 1887 the WEA and the BSNH joined with other interested groups to raise $10,000 to found a better, more permanent laboratory.[17] By March 1888 the group had incorporated the Marine Biological Laboratory, and selected Woods Hole as the site for the new laboratory. Alpheus Hyatt was elected the laboratory's first president, and eventually a piece of land (78 x 120 feet) was purchased in Woods Hole, close to the Fish Commission building. Construction was to begin at once, with the first summer session scheduled that very year.

Charles Otis Whitman was appointed the first director of the laboratory. He was considered an excellent choice, having spent much time at two of the world's most prestigious and important marine stations at the time: the Anderson School and the Naples Zoological Station in Italy.[18]

When Cornelia received the announcement for the opening of the new laboratory, she was intrigued. The idea of studying at the seashore was an inviting one, and the fact that the director was a fellow Penikesian was an added incentive. So she applied and was accepted for the summer of 1888.[19]

Botany Class on Collecting Trip, 1895. Baldwin Coolidge photo No. 7664. Courtesy MBL.

When she arrived at the MBL on July 10, 1988, she assumed she was on time for the session.[20] But when she made her way to the laboratory she found only carpenters, still putting the finishing touches on the laboratory building. Whitman, she was told, was delayed, probably due to family illness, and no one else had yet arrived.

She soon learned that no arrangements had been made for her room or board, so she quickly searched Woods Hole for a place to stay. She finally found a room at Mrs. Hatch's house on Little Harbor and was told of an eating establishment at the railroad station. The dining room, as she described it, was a "dark dingy hole where two or three men from the Fish Commission took their meals."[21] Luckily, this arrangement didn't last long, as a cottage at the head of Little Harbor was made available to MBL workers by Mr. Fay. This was the original "Mess," so named by Dr. Gardiner who sat at the head of the dining table and entertained the young people.

Investigators, MBL. Cornelia Clapp seated near end of second row, bird hat perched on her head, July 25, 1896. Baldwin Coolidge photo No. 7904. Courtesy MBL.

Whitman finally arrived in Woods Hole a few days later, as did equipment from the Annisquam laboratory that had been donated by the WEA to the MBL. Cornelia, Whitman, and Dr. Minot unpacked late into the evening. "Then," Cornelia remembers, "we repaired to Tommy Howes' Ice Cream Parlor, which was just closing for the night, and regaled ourselves with ice cream and sherbet."[22]

Just as laboratory equipment was somewhat lacking that first summer, so too were boats, nets, and other collecting materials. The Fish Commission was very important, and generous, to the new laboratory.[23] The government scientists loaned their boats and supplied seawater for the aquaria. Cornelia reports, "The men from the Fish Commission used to come over evenings to visit the new laboratory and perhaps to consult our books, for we had in the corner of our upstairs laboratory a few shelves containing the nucleus of our present library."[24]

Now that the laboratory had opened and Cornelia was settled, she had to decide whether to enter the session as a student or as an investigator. At Whitman's recommendation, she chose to be an in-

vestigator and decided to study the development of the toadfish, a topic she would pursue in subsequent years.[25]

Whitman proved to be quite influential to Cornelia's scientific career. Although she had already received a PhD degree in anatomy from Syracuse University in 1889, she eventually took a three-year leave of absence during Mount Holyoke's change from a Seminary to College in the 1890s to complete a second PhD degree in biology at Whitman's home institution, the University of Chicago.[26] She was 49 years old.

Whitman impressed upon her the importance of research, an influence from Agassiz's Anderson School, no doubt. Whitman was adamant during the first MBL session that the goal of both students and investigators was "to see and to get the results."[27]

Cornelia remarks, "I was introduced to his ideas of original work or research, to his methods of work, to the idea that persistent and completely absorbed attention to one subject will lead to comprehension of much beside that."[28]

And about that first summer she concludes, "The atmosphere of that laboratory was an inspiration; the days were peaceful and quiet; there were no lectures or anything else to distract the attention from the work at hand."[29]

From that point on, the MBL was an important part of Cornelia's life. She returned to the MBL nearly every summer until her death in 1934. While in residence in Woods Hole, she followed Whitman's example of "no lectures" at the MBL, giving only one at the 50th anniversary celebration of the founding of the Anderson School at Penikese.[30] She served as librarian at the laboratory from 1893 to 1907, and during a financial crisis at the MBL (1896-1897) was instructed to discontinue all journal subscriptions for the coming year. Realizing that this could be a grave mistake, she ignored the request. Later in the year, when she submitted a bill to the Trustees for the subscriptions, she was told to pay it herself and keep the journals as her property. Eventually the Trustees found the funds to cover the cost of the journals, realizing, one hopes, the importance of maintaining a continuous journal collection — something on which the MBL prides itself today.

In 1890 Cornelia became a member of the MBL Corporation, and from 1897 to 1903 she was a staff member of the MBL's embryology course.[32] All of this occurred during a time when women scientists were still being shunned by many professional organizations. Women, now better educated and less constrained by motherhood, were beginning to encroach on men's monopoly of intellectual life. New barriers and restrictions arose to combat this. Universities now applied more rigorous standards to women than men before hiring them. Societies added new membership requirements and allowed few women into the more prestigious professional membership categories.[31]

Despite women's long-standing and important role at the MBL, it was years after the initial three women trustees (Anna Phillips, Susan Minns, and Florence Cushing) retired that Cornelia Clapp (in 1901) was elected to the board of trustees. And only one other woman, Ethel Browne Harvey, was among the first 100 trustees elected by the laboratory.[34]

Cornelia's contributions to the MBL and to science were numerous, but she was most fondly remembered as a teacher. The following accounts by students, friends, and colleagues best describe the teacher, person, and scientist that Cornelia Clapp was:

Dr. Cornelia Clapp seated at her lab table in Old Main, MBL, 1934. Courtesy MBL.

"Arriving at Mt. Holyoke as a special student in the spring of '91, I caught my first glimpse of Dr. Clapp through the glass panel of her lecture room door. All aglow, eyes dancing and piercing by turns, the lecturer was holding her class spellbound. At Lake Erie College, then a seminary, principal Mary Evans had said, 'You ought to study under Dr. Clapp. She keeps live frogs in tanks!' I came, I saw, she conquered. Her bounding vitality and search for knowledge were contagious. I felt then and have felt ever since that I was never fully alive until I knew her. Her philosophy of life seemed to be something like this: live wholeheartedly in the now, fret not over the past, worry not about the future."

Louise Baird Wallace[35]

"Her teaching was never detailed in content, but it was wonderful in its vividness and in its choice of what was lasting and significant."

Abby H. Turner[36]

"When Dr. Clapp came to the Alumnae College last June her eagerness and vigor permeated the school. At that first session she helped to launch (a) new project, encouraging it with her faith, and cheering it with the saltiness of her wit. Again she saw something new and fascinating over the hill. And with that in her mind she went exploring as she always had, not by herself but with the others, inspiriting them as she went. That was the way she learned and that was the way she taught."

Ann H. Morgan[37]

On the centennial of Cornelia Clapp's birth, E.G. Conklin, the distinguished embryologist, summed up her life's work nicely,

"Some trust hopes of immortality to art, literature, or institutions, others to the influence of life and character on individuals. This is the chief function of a teacher; this is the finest, most useful of all roads to immortality. For like life itself, such influence multiplies and passes on from generation to generation."[38]

As a woman and as a woman scientist working at the turn of the century, Cornelia Clapp undoubtedly encountered numerous professional roadblocks. However, from all accounts it's clear that she let few problems deter her from the work at hand. She has been hailed as one of the great zoologists of the time, but above all else she was a teacher — a teacher whose unfailing enthusiasm and insatiable hunger for knowledge influenced and touched countless lives.

Pamela Clapp, a native of Harwich Port, Massachusetts, received her B.S. degree in biology from Mary Washington College in Fredericksburg, Virginia. She is the associate editor of the MBL's journal, *The Biological Bulletin*, the coordinator of Centennial events at the laboratory, and the program coordinator of the MBL's Science Writing Fellowship program. She is very, very distantly related to Cornelia Clapp.

Notes

1.
The Collecting Net XIII, #105.

2.
Margaret W. Rossiter, *Women Scientists in America: Struggles and Strategies to 1940.* Johns Hopkins University Press, Baltimore, MD, 1982. p. 74.

3.
Ibid.

4.
Ibid. p. 75.

5.
Ibid. p. 86.

6.
Mount Holyoke Alumnae Quarterly. XIX, #1. 1935.

7.
Edward T. James, editor, *Notable American Women 1607-1950,* Vol. 1. Harvard University Press, Cambridge, MA. 1971. p. 337.

8.
Op cit. p. 1.

9.
Agassiz died in December 1873. The school was operated for the summer of 1874 under the directorship of Alexander Agassiz, Louis' son.

10.
Rossiter, p. 86.

11.
Mount Holyoke Alumnae Quarterly. pp. 1, 2.

12.
Ibid. p. 1.

13.
Ibid. p. 2.

14.
James, p. 337.

15.
Ibid. p. 337.

16.
Jane Maienschein, "Agassiz, Hyatt, Whitman, and the Birth of the Marine Biological Laboratory" in *The Biological Bulletin,* 168, #28. 1985.

17.
Frank R. Lillie, *The Woods Hole Marine Biological Laboratory.* University of Chicago Press, Chicago. 1944. p. 35.

18.
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19.
Collecting Net, XIII, #104.

20.
Jane Maienschein, "Agassiz, Hyatt, Whitman, and the Birth of the Marine Biological Laboratory" in *The Biological Bulletin,* 168, #30. 1985.

21.
Op cit. p. 104.

22.
Ibid. p. 105.

23.
Maienschein, p. 31.

24.
Op cit. p. 105.

25.
Ibid. p. 105.

26.
Maienschein, p. 31.

27.
Collecting Net, p. 105.

28.
Ibid.

29.
Ibid.

30.
MBL Archives. E.G. Conklin's remarks at centennial of Cornelia Clapp's birth.

31.
Marine Biological Laboratory Trustees Minutes. 1888-1897. MBL Archives, Woods Hole, MA. pp. 122, 124.

32.
Mount Holyoke Alumnae Quarterly, p. 9.

33.
Rossiter, p. 275.

34.
Op cit. p. 3. and Rossiter, p. 88.

35.
Ibid. p. 4.

36.
Ibid. p. 6.

37.
Ibid. p. 3.

38.
MBL Archives. E.G. Conklin's remarks at centennial of Cornelia Clapp's birth.

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