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Clean up our home: Ellen Swallow Richards' human ecology and emerging environmental ideologies, 1890-1915

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CLEAN UP OUR HOME: ELLEN SWALLOW RICHARDS' HUMAN ECOLOGY AND EMERGING ENVIRONMENTAL IDEOLOGIES, 1890-1915.

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In the late 1880s, after years of study and hard work, Ellen Richards began publishing her ideas on the home and the natural and urban environment. She called for the knowledge of basic scientific principles to be available to everyone. She believed that ignorance was holding back the public from altering their environment to make life healthier, happier, and safer. Over one hundred years later, Malcolm Gladwell wrote the book *The Tipping Point*. In his book, Gladwell explores the Broken Windows Theory that social scientists claimed they developed in the 1980s. The Broken Windows Theory states that there is a connection between how people act and the environments in which they live. Crime tended to be more prevalent in areas of the city that were degraded, and proponents of the theory believed that by cleaning up those neighborhoods crime would decrease. If the broken windows were fixed, attitudes and behavior would change for the better. Gladwell writes,

> "Children are powerfully shaped by their external environment…the streets we walk down…play a huge role in who we are and how we act…It is possible to be a better person on a clean street or in a clean subway than in one littered with trash and graffiti."[1]

This quote is an application of Ellen Swallow Richards' concept of human ecology yet Gladwell never mentions her or other early reformers of sanitary science in his book. The theory was not a new idea, and its origins can be found in the work of Ellen Richards.

The supposed degradation of human efficiency, intelligence, and health in the cities after the mid-1800s prompted scholars to question how humans could be made better. They began to look at external living conditions to solve these social problems. A few people came to the conclusion that the city, although a built environment, was an important factor

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[1] Malcolm Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference* (New York: Little, Brown, and Company, 2000) 144, 168.

in human health. Ecology, the study of interactions between humans and their environments, became to many the arena in which a host of issues could be solved. Scientists in many fields took up this line of inquiry including Ellen Richards in her field of Sanitary Chemistry.

Historians studying the progressive era have overlooked this early urban environmental movement headed by Richards and other sanitarians. This lapse can be attributed to the disconnection between historical environmentalism and the built environment. Scholars tend to connect environmentalism with the natural environment. Many historians share the sentiment of Adam Rome when he claims environmentalism to stem from a manly exploration of the wilderness. This idea leads to a focus on people like John Muir, Gifford Pinchot, or Theodore Roosevelt and places such as Yellowstone or Yosemite Valley.[2] Rome also claimed that environmentalism tends to emanate from people on the outskirts of society. Women and gendered topics of early environmentalism are prevalent, but historians have focused on women's clubs and issues such as forestry.[3] As earlier noted, recent sociologists claimed to have thought of something new in how cleaning up surroundings affects people, an idea previously promoted by Richards.[4]

While historians have scratched the surface, none have deeply looked into how Ellen Swallow Richards' work defined her as an environmental mover and shaker as well as an advocate for the advancement of women by means of exploiting traditional values of women. This essay explores how Richards developed the field of ecology and how ecology and

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[2] "The Progressive Movement and the Environment," in Lisa M. Benton and John Rennie Short, *Environmental Discourse and Practice: A Reader* (Malden, MA: Blackwell Publishers, Inc., 2000) p. 106-23 discusses environmental practices of the progressive era but focuses on the natural environment, Theodore Roosevelt, and Gifford Pinchot.

[3] Carolyn Merchant, "The Women of the Progressive Era Conservation Crusade: 1900-1915," in Kendall E. Bailes, *Environmental History: Critical Issues in Comparative Perspective* (Lanham, MD: University Press of America, 1985) 153-72.

[4] Malcolm Gladwell, *The Tipping Point* (New York: Little, Brown, and Company, 2000) 144, 168.

environmentalism stemmed from three factors not mentioned in most of the historiography; domesticity, 'small r' republicanism, and progressive era reform.

Richards was a central character in the relationship between women's expanding participation in social reforms and the new environmental consciousness that arose during the time of rapid urbanization of the built environment. She promoted the idea that the world was the home for humanity and should be kept up like any housewife should keep her home. Close examination of Richards' idea of the world as a home and how its condition affects all aspects of life show how immense the implications of her work were. She believed that the condition of bodies effect individuals, homes affect families, cities affect communities, and the condition of the world affects every organism. Each level represents a type of environment. These environments were all utilized by humans and were inextricably linked to the condition of the others. To take care of one environment would only matter if the problems plaguing the other environments were also addressed. Richards believed that it was the duty of those within the environment to control it and change it to better suit humanity. By studying Ellen Richards' beliefs, their presentation through her publications, and the application of her ideas, a new vision of urban environmentalism in the progressive era United States can be examined.

Ellen Henrietta (Swallow) Richards was born in 1842 and grew up in the countryside of Massachusetts. Richards spent much of her youth outside helping her family on the farm. She also spent time helping her mother with chores inside the house, learning the basics of clean and healthy living. Hours of sitting in the sun, breathing fresh air, and drinking fresh water seemed to turn her from a sickly child to a strong young woman. Her childhood living conditions would later affect the principles of her teachings: clean air, clean water, good food, and plenty of sunshine could strengthen the human body, spirit, and mind.

By 1868, Richards enrolled in Vassar College. She debated over the focus of study, her twin passions being astronomy and chemistry. Upon learning the many ways in which chemistry could be applied to practical matters, chemistry won. After graduating in 1870, she wanted to continue her education, but there were few scientific institutions that admitted women. Taking a chance, she applied to the Massachusetts Institute of Technology, MIT, and was admitted in 1871 as a special exception. Richards received her Bachelor of Science from MIT in 1873, as well as a Masters of Arts from Vassar after completion of a thesis and examination. Richards held multiple positions at MIT until her death. In 1875 she married the MIT professor Robert H. Richards. The home they constructed for themselves in the Jamaica Plain section of Boston was the model of sanitary and efficient living.

For the rest of her life, Richards devoted her time and effort to humanity. Through the outcome of her studies and experiments, Richards saw that with improved sanitary measures, the standard of living could be raised. Raising the standard of living would, using the terms in vogue at the time, produce a better human race. Her passion for science and her desire to better society led her to be vocal about how the built environment (cities and homes) and the natural environment (air, soil, and water) can affect health. She also believed women should be leaders in the movement to better conditions for themselves, their family, and all of humanity.[5]

The historical context of the progressive era was one of rapid urbanization. In the mid-1800s, the American public began moving to cities in droves. Many of these people were working class, looking for jobs and cheap rent. They found their jobs in factories and their cheap rent in tenement buildings in cities like New York, Boston, and Chicago. Streets, air, water, and homes grew filthy as public sanitation lagged behind the influx of people. The working class

[5] Caroline L. Hunt, *The Life of Ellen H. Richards* (Boston: Whitcomb & Barrows, 1912) and Robert Clarke, *Ellen Swallow: The Woman Who Founded Ecology* (Chicago: Follett Publishing Company, 1973) both biographies contain overviews on Richards early life, college years, and adulthood.

needed to live in cities close to their place of work, but with the advent of railroads and subways the wealthy could afford to live farther away from the city. Slums of tenement buildings soon replaced spacious, well-kept homes. New industries belched dust and soot from their smoke stacks. Disease ran rampant as people who had scarce access to information on hygiene or causes of diseases cramped into working and living spaces. The Working class housing generally had one window per apartment and only minute traces of sunshine and fresh air could enter an apartment. While a wealthy housewife could hire a domestic helper and the middle class housewife could afford new timesaving cleaning appliances, the working class mother had little time, money, or energy for sanitary measures. The disparity between the health of the people living in the cities compared to those in the country was undeniable.[6]

Ellen Richards believed she had something to teach the world that would change the conditions under which many people were living. She wanted to help, but she also needed to stay within the parameters of what was acceptable for a woman. The 'cult of true womanhood' suggests that religiosity, purity and virtue, and submissiveness were the necessary characteristics one must have in order to be a true woman. Throughout the 1800s, the media suggested the best way a true woman served society was by staying in the home. By taking care of their families and not worrying about worldly things, these women were showing how patriotic and American they were. This is the framework into which Ellen Swallow Richards was born. From an early age, these ideals were presented to her by the women and men in her life as well as society in general. One woman who had a profound effect on Richards' worldview and championed the idea that women should publically address societal issues was Catherine Beecher. As Beecher

[6]Jacob A. Riis, *How The Other Half Lives: Studies Among the Tenements of New York* (New York: Charles Scribner's Sons, 1889); Robert W. DeForest and Lawrence Veiller, *The Tenement House Problem: Including the Report of the New York State Tenement House of Commission of 1900* (New York: MacMilllan Company, 1903); both sources show living conditions among urban poor during the time in which Richards was promoting her ideas.

would realize in her lifetime, the 'cult of true womanhood' carried its own seeds of destruction, because if women were such wonderful, virtuous, and godly people, why shouldn't they become more involved in helping humanity?[7]

As Beecher began to question women's inactivity, she confronted the divide between what was expected of women and what she felt was right. At nearly the same time Ellen Swallow Richards was coming of age, Catharine Beecher became vocal about her ideas of true womanhood. While Beecher grew up fully entrenched in the framework noted above, she began to question the limits placed on her as a woman and the scope of her influence. Beecher was the first to mold traditional values of womanhood and apply them as moral callings to leadership roles for the betterment of society. Her new idea of morality was not being submissive to the husband, staying at home, and turning a blind eye to societal issues over family matters. Her new morality was submission of the self to the benefit of the general public. Women could no longer consider themselves moral or patriotic by being inactive ornaments: Beecher pushed them into activity.[8]

Decidedly adhering to the call made by Beecher for active involvement in social issues, Richards spent her entire life on the go. She was a prolific writer of notes, letters, journal articles, and books. She was involved in many endeavors including the Rumford Kitchen exhibit at the Chicago World's Fair, the Association of Collegiate Alumnae (currently the American Association of University Women), and the Home Economics movement. By the end of her life, Richards had introduced two new concepts, human ecology and euthenics, that dealt with human interactions with their environments. The study of human ecology and euthenics led scientist like

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[7] Barbara Welter, "The Cult of True Womanhood: 1820-1860," *American Quarterly,* v. 18, no. 2 (Summer, 1966) 151-74.
[8] Kathryn Kish Sklar, *Catharine Beecher: A Study in American Domesticity* (New Haven, Yale University Press, 1973).

Richards to draw conclusions on how to create better mental, moral, and physical conditions. In her book *Sanitation in Daily life*, Richards defined human ecology as "the study of the surroundings of human beings… The features of the environment are…climate… noise, dust, poisonous vapors, vitiated air, dirty water, and unclean food."[9] Richards' book *Euthenics, The Science of Controllable Environment; A Plea for Better Living Conditions as a Step Toward High Human Efficiency* was published in 1910 and is a compilation of her 40 years of research and fieldwork. Richards defined the field of euthenics as controlling the environment to better living conditions, which in turn would produce more efficient humans.[10] In *Euthenics* Richards' discussed the importance of education to promote human ecology and euthenics.

Richards proposed that education was the key to progress because it illuminated the unknown. Richards promoted widespread teaching of the fields of human ecology and euthenics in order to disseminate her ideas. Richards believed that with the education of women and children, boundless leaps could be taken in the sanitation field. Although Richards wrote 18 books and numerous papers, she believed writing papers or preaching could make little advance in sanitary measures. The publications were written for a middle class audience, but working class people living in tenements rarely had access to or time to spend reading. Richards said,

> "we must remember how little words mean…that actual showing in an alley of the process of cleaning up; the going into a house and opening the windows at the top and tacking on a wire netting to keep out flies; the actual cleaning of the garbage pail… all such actual doing, even if it is done only in one house on the street, will spread the information all over the neighborhood."[11]

Richards believed that by focusing on small tasks first, eventually larger goals could be reached.

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[9] Ellen Swallow Richards, *Sanitation in Daily Life* (Boston: Whitcomb & Barrows, 1910) v-viii, found in Carolyn Merchant, *Major Problems in American Environmental History* (Boston: Houghton Mifflin Company, 2005) 428.
[10] Ellen H. Richards, *Euthenics, The Science of Controllable Environment; A Plea for Better Living Conditions as a Step Toward High Human Efficiency* (Boston: Whitcomb and Barrows, 1910) (Boston: Thomas Todd Co., 1910) vii-viii.
[11] Ellen H. Richards, "Instructive Inspection," *American Journal of Public Hygiene* v. 20, no. 3 (August 1910) 495.

"Instructive Inspection," as Richards called it, would be the most cost efficient way to reach as many people with the best chances of success. Women trained in sanitary science should be appointed to carry out the task. Because women were generally the ones in the home to take care of cleaning and cooking, they would more readily trust and be open to suggestion from another woman. She wondered why people should expect the poor and the immigrants to keep high standards of cleanliness when they had no tools to do so. Simple cleaning materials like brooms and dustpans were scarce. Many urban poor came from rural areas or different countries where conventions and living conditions required a completely different set of knowledge than living in cities. Richards wrote that successful measures must include instruction of factory workers that were, "usually of non-American origin, with no knowledge of hygiene or sanitation, only traditional habits which are put out of joint by American conditions."[12]

Policeman often tried to explain cleanliness to tenement residents, but many could not speak or understand English. When unable to achieve the desired results, policemen reverted to chastising the tenement dwellers. Richards disliked the thought of policemen roughing up citizens living in poor conditions because she believed scare tactics only fostered feelings of distrust between people and public officials. The consequence of negative interactions was usually that the inhabitants often continued their old ways once the policemen were gone. Education, the opportunity for hands-on training, and habits of understanding and cooperation were what cities should implement, Richards concluded.

Examples of similar situations were occurring around the United States. Richards heartily gave recognition to the work done by a Mrs. Wagner in Yonkers, New York. Mrs. Wagner was a trained nurse, and she worked as a Sanitary Inspector for the local Board of Health, traveling to

[12] Ellen H. Richards, *Sanitation by Conservation* (New York: John Wiley and Sons, 1911) 137-8.

tenements to assess the situation and teach tenants solutions to their sanitation problems. Because the Board of Health backed her, landlords, plumbers, and carpenters took her seriously, and her suggestions were often included in construction or remodeling plans.[13]

Richards believed more women could hold professional positions like that of Wagner, but they needed education. Traditionally, women's education had been received working under her mother, and primarily consisted of learning to take care of the home and the family. The 'home' as a place of sanctity free from evils was the prevailing ideal in the 1800s and early 1900s. Inside the home, one should feel safe, comfortable, and well nourished, both with good food and lessons of moral behavior. Because of the shift from rural to urban, many people lived in tenements, apartments, hotels, and lodges that rarely passed as the ideal home. Middle class women living in the suburbs or country still received that traditional teaching, but those in the city rarely did. The need for urban women to seek jobs in factories left many homes without a mother to act as teacher and housekeeper during the day. People worried that the institution of the home was fading in importance. Richards proclaimed a solution for the problem in stating, "But where do all the Sciences meet if not in the home, the centre of all activity…Upon the education of the school girl depends the future of the American home."[14] Education outside the home for women of all classes would enable them to understand not only why they should cook, clean, and conserve, but also how to do so in an economical and healthy way.

Children also needed education because they had been brought up watching their parents sweep refuse into the alley and dump dirty water and waste into the streets. Knowledge gained in schools could be applied currently in their homes and would be a useful asset later in life when

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[13] Johanna Von Wagner, "Nurses as Sanitary Inspectors," *The American Journal of Nursing* v. 1, no. 7 (April 1901) 489-91.

[14] Ellen H. Richards, "Domestic Economy as a Factor in Public Education," *Educational Monographs, New York College for the Training of Teachers* v. 2, no. 4 (July 1889) 128.

they had families and homes of their own. Mary Clark Barnes wrote that in her school, domestic science classes included the art of cooking, chemistry of foods, chemical elements of the body, chemical uses of food principles, chemistry of fuels, and house sanitation that discussed plumbing, drainage, ventilation, gas fixtures and more.[15] Similar classes were being offered in upper levels of high school and at many colleges.

By the turn of the century, it was still considered questionable whether women should attend college. Some argued that college would turn women against the social conventions of the day like motherhood and housekeeping. Reputable colleges had been founded for women, including Vassar, Smith, Wesleyan Female College, Bryn Mawr, and many more. Richards knew too well the trials and tribulations faced by women who wanted to further their education. Luckily, she had the support of her family members, which was not always guaranteed to women of traditional families. To Richards the scope of public sanitation and reform would be broadened greatly by up-and-coming educated women. The field of public health was the perfect area for women's involvement because it was vitally important and dealt with subjects traditionally under a woman's care in the home. She pressed for women interested in higher education to be "subsidized and encouraged…we have in the past done many things were told we could not do… It is within the bounds of probability that the next half dozen great leaders in the reconstruction of society will be found among university women."[16]

Night classes or lessons put on by women's clubs helped educate and training housewives who could not attend college. In every aspect, Richards believed that greater knowledge was beneficial. Products on the market contained an ever-increasing set of complex

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[15] Mary Clark Barnes, "Science of Home Management," *North American Review* v. 167, no. 504 (November 1898) 638.
[16] Ellen H. Richards, "Tendencies in Women's Professional Education," *The Women's Journal* v. 38, no. 46 (November 16, 1907).

chemicals for cleaning and new types of foods left many wondering how to best prepare them. Proper disposal of those products needed addressing so they would not damage air or water quality. Educating women on chemicals, foodstuff, and proper techniques for cleaning, cooking, and disposal would save them anxiety that would result from mixing deleterious chemicals, from sickness induced by improper food preparation, and from the ill effects of unsanitary disposal or storage of the products. Upon presentation of the overwhelming amount of evidence for further education, to the skeptics Richards posed the question, "If the young mother can learn how better to fulfill her duties by going out of the house to lectures or classes, why not?"[17] Richards' statement reflected her idea that properly taking care of domestic responsibilities required background experience of materials and appliances used in homes, learned skills that could be acquired by lessons in sanitary science, and the knowledge of how the home influenced the environment.

Like American then and now, Richards' held an anthropocentric view of nature. She believed that humans held importance above everything else in nature and that they should be able to control their environments in order to live comfortably and be healthy. She writes, "The teaching…of home economics…is intended to give the people a sense of *control* over *their* environment and to avert a panic as to the future."[18] Education would ensure that everyone had the proper knowledge to implement measures that enabled them to control their surroundings. In Richards' view, suitable environments included strong bodies, clean homes, beautiful cities, and a natural world that could sustain humanity on earth indefinitely through proper conservation.

Richards pressed education as a way to inform people about the environments that humans interact with. The environments Richards identified were bodies, homes, cities, and the

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[17] Richards, *Euthenics,* 77.
[18] Richards, *Euthenics,* 158; emphasis original.

world. Richards' human ecology stated that each environment came into contact with the others, and all of the environments needed to be clean and healthy in order for humans to live the highest quality life possible. The first environments, human bodies functioned as the outer shell that came into contact with substances like food, water, air, and light. Richards noticed a stunted look to many people in the cities, especially children born and raised in the poor conditions tenement life offered. She also noticed the robust look of many children raised outside of the city. Richards suggested that human bodies functioned like machines, and that everything that came into contact with the body should be pure so as not to poison the body. She also believed humans should avoid contact with erosive elements like germs, dirt, sewage, and morally degrading influences. She advocated exercise to keep the body running smoothly. Her own office was located up a number of flights of stairs that she walked almost daily until a few months before her death. She wrote that humans

> "permit themselves to sit and walk badly, they breathe with only a portion of their lungs, and so fail to furnish the blood stream with oxygen. They dress unhygienically. They eat wrongly. They exercise so little. In short, they subject their bodies to abusive treatment which would ruin any machine."[19]

Richards tirelessly worked to show humans ways in which they could treat their bodies and their surroundings so that each person could function efficiently.

Many reformers and businessmen during the progressive era preached a gospel of efficiency. Time and money had contemporaneously risen as a standard of measuring value and efficiency. Efficiency meant expending the smallest amount for the greatest return. Businessmen wanted healthy and efficient workers, but did not try to improve their workers. They were content with firing those who fell behind and hiring one of the healthy young men from rural areas filing into the city looking for jobs. Reformers tried to implement changes to improve the

[19] Richards, *Euthenics,* 30.

health of the average worker, therefore increasing their efficiency. Reformers believed bodies needed exposure to fresh air, clean water, sunshine, proper shelter, and food. Food was especially important to maintaining an efficient body and life. Richards claimed, "Life itself is conditional on the food-supply…Man can and does exist on very unsuitable, even more or less poisonous, food, but it is merely *existence* and not effective life."[20] She believed the process of cooking, the nutritional and chemical makeup of foods, and the digestive functions had not been studied enough.

Richards considered food a factor that influenced the environment of the human body. In her book *The Chemistry of Cooking and Cleaning: A Manual for Housekeepers*, coauthored with S. Maria Elliot, the authors use the first half of the book to describe different foods, their values, and various ways to cook them. The book suggests that physical and mental conditions are dependent upon proper food selection and preparation. They write, "Cooking has thus became an art worthy of the attention of intelligent and learned women…Let her see to it that no bursts of temper, no sullen disposition, no intemperance of any kind be caused by *her ignorance* or *her disregard* of the chemical laws governing the reactions of the food she furnishes."[21]

Richards spent time studying potential adulterations in food sources in Boston. Her conclusions were that most food stores added few to no substances that were not supposed to be in the food source. Similar products would be sold under different names and claimed to be of much high quality. These products may be sold at higher prices, but upon chemical study of the makeup they would be identical to the cheaper product. The demand for efficiency of time, lead to a new market of foods that Richards warned people to be wary of. These included, "so-called

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[20] Ellen H. Richards and Alpheus G. Woodman, *Air, Water, and Food From a Sanitary Standpoint* (New York: John Wiley and Sons, 1900) 142.
[21] Ellen H. Richards and S. Maria Elliot, *The Chemistry of Cooking and Cleaning: A Manual for Housekeepers* (Boston: Estes and Lauriat, 1882) 62-3. Emphasis original.

predigested foods, infant foods, "hygienic" preparations, two-minute meals, and the countless proprietary packages…designed to meet the demands for quick results..."[22]

Test kitchens were a passion of Richards. They were places where healthy food could be studied. They gave valuable statistics as to what foods could be made the cheapest with the most nutritive return and what foods people enjoyed eating. The kitchens were also perfect examples to people stopping in to buy food over the counter. They utilized the latest technologies like the slow cooking Aladdin Ovens that could transform tougher cheaper meats and beans into delicious rivals of the most expensive cuts. The New England Kitchen was opened in 1890 to reach Boston's immigrants and poor, but also to help schools make better lunches. By 1893, the kitchen was serving over 500 students and 300 working girls daily.[23] The Rumford Kitchen was an exhibit at the Chicago World's Fair designed by Ellen Richards and Mary Hinman Abel in the same fashion as the New England Kitchen. In connection with the Rumford Kitchen were published nearly twenty informative leaflets on various aspects such as the role chemistry plays in cooking.[24] Along with food, other necessary aspects for bodily health were clean air, sunshine, and pure water.

Richards identified water as another factor that influenced the human body, and she spent many years of her life working to determine the water quality throughout the state of Massachusetts. In her laboratory, Richards spend countless hours testing the water samples that were sent to her from all across the state. From her data she was able to map waterways throughout the state and make suggestions as to which sources should be used for drinking in the city. Later, she devoted a period of time to studying the waters of Jamaica Pond, a body of water

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[22] Richards and Woodman, *Air, Water, and Food From a Sanitary Standpoint,* 7.
[23] Ellen H. Richards, "Scientific Cooking-Studies in the New England Kitchen," *Forum* v. 15 (May 1893) 358.
[24] Maria Parloa, "The Rumford Kitchen: One of the Most Interesting of the Boston Exhibits at the Columbian Exposition in Chicago," *Boston Evening Transcript*, October 26, 1893.

located near her home. Jamaica Pond had been the source of the first public water supply to Boston and had maintained its quality until at least 1876; Richards having tested the nearby water sources before building her home in the neighborhood. In 1886 Richards began noticing a change in animal and vegetation life around the pond, and the following year a quick growing algae was observed. Over the next thirteen years, Richards and a colleague, Isabel F. Hyams, studied the algae. Nearly two years of daily observation from 1900 to 1901 were spent documenting growth patterns and shifting colors. Depending on time of year, amount of sunshine, and temperature of the water, the algae looked brown, green, yellow, orange, red, or purple. Although the algae stumped many scientists, the scientific rigor of Richards and Hyams' examination led them to conclude that the algae was *Oscillaria Prolifica*.[25]

Studying the *Oscillaria Prolifica* in Jamaica Pond cemented the idea that quality of environments should depend on aesthetic factors as well as chemical makeup. Although the water would be safe to drink, the strange colored algae and the strong odor of decay led people to look elsewhere for their drinking water. The study also showed that by experiencing nature firsthand, women could make valuable contributions to science and the health of their community. Richards knew water supplies were very important not only to humans for drinking and cooking, but also for the animals and vegetables humans eat. She recognized there was a limited amount of water and with growing cities more water was needed to meet the demands. She wrote, "there is only so much water in existence and man is totally dependent on nature's supply. The conservation of this natural resource is becoming one of man's important duties."[26] Richards called for cities to build municipal water works, rainfall to be collected in sanitary vats,

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[25] Ellen H. Richards and Isabel F. Hyams, "Notes on Oscillaria Prolifica (Grenville)," *Technology Quarterly* v. 14, no. 4 (December 1901) 302-310; Ellen H. Richards, Personal Notes, Tests, Photographs, Series III, Box 1, Folder 51-5 "Water Supply and Water Pollution: Oscillaria Prolifica," in the Ellen Richards Papers in the Sophia Smith Collection, Smith College.

[26] Ellen H. Richards, *Sanitation by Conservation*, 91.

and more resources to be devoted to the protection of the few remaining safe water supplies. In order for cities to function properly for any extended period of time, nature, in this case bodies of water, needed to be preserved.

Humans needed to be more careful about what materials they exposed water to. Richards tried to explain that the practice of dumping sewage in the streets or digging an outhouse near the well that supplied water for the house were harmful to the quality of the water and the health of the inhabitants. She wrote that engineers and managers of waterworks needed to be more aware of the tendencies in ground water, they showed obvious signs of ignorance with the "almost universal proximity of cemeteries to reservoirs, but also in common practice of dressing the sloping banks of turf with a heavy coating of manure."[27] Trash and sewage inevitably found its way into water supplies. Richards also believed it was the duty of the state or city government to take over refuse collection, so less of it got into the water supply. In Richards' view, a reciprocal relationship between nature and cities must be formed for either to last. This relationship was one in which nature would provide the city with high quality water as long as the city implemented practices that saved nature from human destruction.

Richards warned that collective use of the water supply also called for collective responsibility. The supply should benefit everyone, not just those who live upstream or those who could buy pure water. The importance of the limited resource should be stressed and that,

> "water is held to be a gift of nature to man for use by all, and therefore not to be diverted from its natural channels for the pleasure of or profit of any one to the exclusion of the rest. Neither has one the right to return to the channel water unfit for the use of his neighbor farther down the stream."[28]

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[27] Richards and Woodman, *Air, Water, and Food From a Sanitary Standpoint*, 70.
[28] Richards and Woodman, *Air, Water, and Food From a Sanitary Standpoint,* 57-8.

Richards thought, that like other for-profit endeavors, if private owners controlled the water supply, the wealthy would receive more and higher quality water. She wanted access to be equal for all classes so that the standard of living, efficiency, and health could be raised universally.

Air quality had an affected the human body. Factories and crowded cities increasingly filled the air with soot, dirt, and dust. Communicable diseases like tuberculosis were spread through the mixing of dust and contaminated spittle that was picked up on clothing from the grime in the streets and brought into the home. The air smelled foul because of trash in alleys, so tenants on lower levels rarely opened their windows to let in fresh air. Little airflow and scant sunshine created areas that were warm, moist, dark, and perfect for the prolific increase of bacteria and mold. Richards believed rooms needed ventilation in order to be sanitary. Fans that suctioned air out of homes, fireplaces, or windows that opened at the top with wire screens attached worked well for ventilation.

Direct sunlight could limit the diseases the body came into contact with by killing germs. Richards wanted all homes to be built with as many windows as possible. Many sanitary minded women abandoned the old fashion of hanging heavy drapes. The drapes would collect dust that was illuminated by sunlight and showed how dirty the air actually was. Richards made her point about light early in her career, writing in *The Chemistry of Cooking and Cleaning,* "the first requisite for cleanness is light direct sunlight if possible….light is often shut out through man's greed or through mistaken economy…and prevent the beneficent sunlight from acting its role of germ-prevention and germ-destruction.[29] To Richards, clean environmental factors like water, air, and sunshine, were imperative to overall health. The first environment, a healthy body, also needed wholesome shelter in order to remain healthy.

[29] Richards and Elliot, *The Chemistry of Cooking and Cleaning,* 82-3.

The second type of environment Richards discussed was the home, the living place for the family and often the workplace for women and children. In cities, the worst problem facing reformers were housing conditions. The buildings were hastily put up with little consideration for the drainage of the area, the materials used, and the design of rooms to let in air and light. Diseases and illnesses that attack the body such as tuberculosis, influenza, and colds continued to be a problem for tenement dwellers because of uncleanliness. In the case of diseases that deteriorate the body, these unsanitary homes produced harmful effects that took their toll after long exposure.[30] Richards called for environmental concepts like drainage, proper sewage and water transportation, and access to light and air to inform architecture and civil engineering. Simple modifications in design could improve the environment of the home, which would in turn positively affect the people living within and the neighbors in the community. Besides concern over the physical welfare of the family, moral conditions were also threatened because of the improper environments of some homes.

In the early 1900s, a settlement study of the north and west side of Boston was conducted and Robert A. Woods documented the results in the book *Americans in Process*. Woods described the living conditions as,

> "dark and unsanitary dwellings…and the overcrowding…combine to foster, if not call into existence, tendencies to immorality, moral ills as well as physical ills spring from unwholesome surroundings…Not until the housing conditions have been radically improved can the community be reclaimed."[31]

Some families rented space in their tenements to travelers, squeezing as many people into their small space as possible in order to afford the rent. The close proximity of unrelated

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[30] Ellen H. Richards, Marion Talbot, and Association of Collegiate Alumnae, *Home Sanitation: A Manual for Housekeepers* (Boston: Ticknor and Company, 1887) 8-9.
[31] Robert A. Woods, *Americans in Process: A Settlement Study by Residents and Associates of the South End House* (Boston: Houghton Mifflin Company, 1902) 219-20.

men and women was sometimes seen as scandalous and could create extra problems for the urban poor, such as unintentional pregnancies.

In her book *Euthenics,* Richards envisioned the perfect future living conditions. She saw apartments constructed with sanitation in mind, with easily cleaned surfaces and plenty of windows with screens. Surrounding the apartments, playgrounds, gardens, and wholesome entertainment halls would provide a buffer from other houses and busy streets. Dust and dirt of the streets would be eliminated with the implementation of new waste removal and street cleaning system. Each building would be equipped with a central laundry and a bakery. The buildings could be numerous stories tall, because that would allow for more sun, air, and less noise. She believed the single most important aspect of her future vision was a central office where trained men and women could assist residents with sanitary or economical questions.[32] An architect named Mr. Pratt constructed houses that met many, but not all of Richards' expectations in Brooklyn. The Morris houses were spacious apartments, contained laborsaving devices, and were located in a good neighborhood. Richards hoped many similar tenements and even better ones would be constructed in the near future.[33]

Richards bemoaned the condition of the urban home. She believed its purpose was not only shelter from the elements, but also shelter form degrading forces. The proper home environment for children and adults was a clean and morally uplifting one, which many tenements utterly failed to provide. She knew that simple changes in cleaning to the home and surrounding city could change the circumstances considerably. She wrote, "O woman, how can you resist the thought of a clean, cool house, sans dust, sans flies and mosquitoes, sans the

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[32] Richards, *Euthenics,* 51.
[33] Ellen H. Richards, *Cost of Shelter* (New York: John Wiley and Sons, 1905) 20-25.

intolerable street-noise, with abundance of fresh filtered air at the desired temperature! It is all ready at your hand."[34] The surrounding area of the community and the larger area of the city often influenced the cleanliness of the home.

Cities were the third type of environment that influenced health. By the late 1800s, streetcars carried people long distances, and products came to stores from all over the city. The general intermixing of people, products, diseases, and dirt reached new heights during this time. The fact that the welfare of the entire community affected everyone was widely realized. One author wrote that modern families have,

> "so completely destroyed the isolation of the home, that he causes all the elements to pass freely though it and through thousands of other homes in connection with it, and so has inextricably interwoven the comfort or distress of his own family with that of the entire community."[35]

Boston in 1900 had a population of 560,892 and 11,670 deaths were reported, many due to disease.[36] In the cities where diseases spread most rapidly, citizens began calling for increased sanitation measures to curb the transmission of communicable diseases.

The disposal of garbage increasingly became an issue as more people lived in less space. Richards understood that piles of waste were breeding grounds for rats, bugs, and diseases. She believed that laws like the Boston Health Act of 1885, which made landlords responsible for proper waste disposal, sewer systems, and to keep the premise of their property clean, could never be enforced until the people of the city were educated on the dangers of neglecting them. She believed trained women would be perfect inspectors. She urged civic leagues to teach as many children as possible about community cleanliness. In 1897, the Boston Street Cleaning League formed a volunteer group of young boys to take up

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[34] Richards, *Cost of Shelter*, 66.
[35] Mary Clark Barnes, "Science of Home Management," *North American Review* v. 167, no. 504 (November 1898) 633.
[36] Woods, *Americans in Process,* 93-4.

work cleaning the streets of garbage and dust. Although enthusiastic, the boys eventually gave up the work because, "as fast as they cleared up the rubbish other dirt was thrown into the streets, this being done largely by the children's own parents and relatives."[37] The job was considered impossible for the volunteer boys. While the Street Cleaning League fussed over physical evils of the city, other volunteer groups tried their hand at combating the social evils of cities.

Various religious groups including Catholics, Roman Catholics, Jewish, and many Protestants were active in Boston. Religious groups set out to build up the people spiritually and morally. This type of reformers wanted vice eradicated from the area, believing that they were building up, "the spiritual life by the improvement of the personal, family, neighborhood, and municipal conditions."[38] Religious reformers attacked saloons, brothels, and hotels. The alcohol question burned in the back of many minds during the progressive era. Immigrants were often charged with excessive drinking, especially the Irish. Nearly every tenement was close to a saloon, and reformers charged some urban men of squandering their paychecks on drinks instead of responsibly on their family. Violence ram rampant in urban areas, and reformers argued that alcohol, overcrowding, dark and dirty alleys, and poverty all contributed to its' prevalence. Gambling, drinking, and other immoral and unsanitary acts occurred in those places and generally led to disease, crime, and vagrancy. Marian Talbot asserted that the interest of the sanitarian should concern, "whatever can cause…discomfort, pain, sickness, death, vice, or crime- and whatever has a tendency to avert destroy, or diminish such causes."[39] Reformers of all different purposes

[37] "Boston Street Cleaning League: Volunteer Work by the School Boys Has Been Given up and Effort on Other Lines is Now Being Tried," *Boston Evening Transcript*, November 15, 1897.
[38] Robert A. Woods, *Americans in Process* (Boston: Houghton Mifflin Company, 1902) p. 287-8.
[39] Marion Talbot, "Sanitation and Sociology," *Journal of Sociology* v. 2, no. 1 (July 1896) p. 74-6.

agreed that by planned building, cleaning up, and creating more green space in cities, many of the social issues caused by degraded environments would cease.

With the thought of improving city environments, Richards encouraged public planning. The hodge-podge way in which private establishments were constructed was conducive to neither public health nor public beauty. Out of this same idea came the City Beautiful movement that was taking root in cities across the United States at the turn of the century. Proponents of the City Beautiful movement believed that aesthetic appeal would promote overall wellbeing. The idea was that implementing trees, parks, murals, appealing architecture, and discrete but functional receptacles for waste would limit vandalism and littering. These beautiful and clean places would create urban spaces that were safe and wholesome for people to go. Richards wanted to show that overall health depended on cooperation between individuals, other members of the community, and the surrounding natural areas. When she heard opposition to the public effort to clean the city, she rebuked the offenders saying they were foolish to not recognize that cooperation gives everyone more knowledge, security, and resources.[40]

Although Richards was writing to an audience that lived and worked in an urban environment, the fourth type of environment, the natural environment, affected them too. The world outside of the city was just as important to maintaining health as the home and community. Richards was concerned with rural conservation as well as urban. People relied on the soil to grow crops, the crops to feed animals, and waterways to water vegetation and quench the thirst of animals and humans. Conservation of these areas meant the difference between being healthy or ill and living sustainably or eventually dying off. She whole-

[40] Richards, *Euthenics,* 64-5.

heartedly believed that humans should be able to control their environments. Richards understood control to mean conscious and knowledgeable development or informed underdevelopment. In some cases, untouched natural environments were beneficial to sanitation and health. For instance, Richards believed a pristine mountain range could more successfully purify water than any human contraption.

By the early 1900s, regulatory laws on living conditions like the New York State Tenement Act of 1901 had been passed, laws regulating food materials to certain standards like the Food and Drug Act of 1906 was enacted, and many cities had begun to see the appeal in beautiful and clean city spaces. As for the natural environment, the rivers, soil, and vegetation, had not been studied to Richards' satisfaction. She wrote, "In everything else he has advanced, but in his intimate personal relations with nature and natural force he has acted as if he believed himself not only lord of the beast of the field, but of the very laws of nature without understanding them."[41]

Richards saw humans as a part of the natural world, but with the power to create built environments in which they could thrive. She knew that humans, like other animals, must consider the laws of nature. She suggested that the only way humans could survive in their built environment is if they wholly understand and utilize the powers at work in the natural environment. In order to achieve that goal, humans would have to conserve, protect, and at times preserve the natural environment.

Richards knew the mindset of the American people needed to change if any lasting sanitary reforms were going to be successful. She wanted humans to recognize that their actions affected not only themselves, but also the people and environments surrounding

[41] Ellen H. Richards, *Cost of Shelter* (New York: John Wiley and Sons, 1905) p. 64.

them. This created a chain reaction and affected everyone. She wanted people to feel like they were personally invested in the welfare of the other humans and the environments in which they lived. She said that communities were like,

> "a larger family group, and social consciousness must in time take in to account social welfare. Moreover, a neighbor may pollute the water supply, foul the air, and adulterate the food. This is the penalty paid for living in groups. Men band together, therefore to protect a common water supply, to suppress smoke, dust, and foul gases which render the common air unfit to breathe."[42]

Richards wanted people to share the burden of conservation and protecting humanity's health. She knew that a tragedy of commons situation would occur if the streak of individualism that formed the idea that humans were independent of others and their environments continued.

Tragedy of the commons occurs when an area is open for public use, like a park, a street, or a field for grazing cattle. The tragedy occurs when people begin to exploit the communal place for their personal gain. It would not be horrible if one person dropped trash into the park, but if everyone who walked through followed suit, the park would be completely covered in waste. Another example given by Richards fortified her belief; she wrote, "The offense of one person dropping a paper or a banana skin is of small account, but the offense of one thousand is intolerable."[43] Richards saw the exploitation of air, water, city streets, and human lives everyday. While 'tragedy of the commons' is a recent economic term, it certainly applies to situations where few regulations existed and the above named environments could be easily exploited for economic gain by a few, but overall detriment to the populous. Along with convincing the public of their shared responsibility in taking care

[42] Richards, *Euthenics,* 40.
[43] Richards, *Sanitation by Conservation*, 144.

of the environment, Richards worked to prove that implementing conservation and cleanliness measures were cost effective.

Businessmen were shrewd with their money, although they would probably say efficient. Investors wanted perceptible results or benefits if they were to donate funds. Charity workers and philanthropic societies often had a lot of enthusiasm and sympathy, but little monetary reserves. Like any other venture, the crusade for public health by conservation and sanitation would need money. Richards acknowledged the problem stating, "The one question every person asks when these suggested improvement are discussed is, but how much with it cost? Thus confessing that cost, not effectiveness, is the measure."[44] Richards was sure the return in healthy and efficient people would far out weight the costs.

Richards had faith that community members would soon realize that prevention of disease may cost more initially but would save money in the long run. Sick people need doctor's visits, medicine, and support because they could not work while ill. It would be more economical to make sure the person was not exposed to disease producing areas than to continuously pay for treatment. People who were surrounded by vice may have a moral breakdown and spend their money on gambling and drinking. Both these actions lessened efficiency, the first by taking away all money earned at work and the second by physically impairing the person. It would be more cost effective to turn saloons into respectable entertainment halls or tear them down for parks or playgrounds.

Private businessmen and charitable associations were a good place to start, but Richards believe that large-scale government action was needed to fully attain healthy environments. She believed that healthy living conditions were the responsibility of the

[44] Richards, *Cost of Shelter*, 101.

government because, "no state can thrive while its citizens waste their resources of health, bodily energy, time, and brain power, any more than a nation may prosper which wastes its natural resources."[45] She asserted that cooperation between a strong central power, individuals, and communities were necessary. This social view of cooperation and shared responsibility shows an application of 'small r' republicanism. To improve health and sanitation the elected officials in government needed to pass legislation and the people and larger communities would need to uphold their end by implementing and following the laws. She believed that even great civilizations could not survive without proper control and conservation of their environments. Richards discussed the southwestern ruins of the Chaco Canyon where it was believed that because of lack of water, or the mismanagement of resources, the large civilization there failed.[46]

Richards resented that the government spent resources on studying animals but spent little on the study of humans. To Richards economically, it made no sense that the government expended, "large sums annually for the study of the food of cattle…but it rarely makes and appropriation for the study of the food of any citizen, even though his body and brain may represent hundreds of thousands of dollars in invested capital…"[47] By putting funds toward keeping the environments of humans (their bodies, homes, cities, and the natural environment) clean, the government would create more efficient people. With greater strength and health, mentally, physically, and morally, these improved humans could work harder, create more capital and revenue for taxes, and use their improved intellect for inventions.

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[45] Richards, *Euthenics,* 84.
[46] Richards, *Euthenics,* 157. She also discusses ruins of Asian civilizations.
[47] Ellen H. Richards and Marion Talbot, *Food As a Factor in Student Life* (Chicago: The University of Chicago Press, 1894) 3.

By the end of her career, Richards had seen vast changes in sanitation and public commitment to the health of bodies, homes, cities, and the natural environment. Few laws had been passed, but she was hopeful that the future would bring increased commitment by the government and citizens alike. She wrote, "The control of man's environment for his own good as a function of Government is a comparatively new idea in republican democracy."[48] Richards believed that the sense of shared responsibility would lead to the idea that a person's neighbors life was just as important as his own, and that those who had resources and education had a duty to help the people who had less than them. Her belief was that by spreading education, wealth, and health nearly equally, society as a whole would improve. This type of social consciousness could be carried out by a wide range of people, state boards of health, city health officers, inspectors, corps of engineers, chemists, biologists, charity groups, political leaders, educated children, and housewives. [49]

Richards' work was multifaceted, but it seems her two most widely pursued passions were elevation of the home and education for women. The home was the most important aspect of growth and development for future generations. Inside, cleanliness and economic use of materials should be the standard. Only with this type of home can children become efficient adults. It is no coincidence Richards likened the environment to the home saying, "The environment is, more largely than we think, the house and the manner of life it forces upon us."[50] Richards saw the environment as a home to humanity. As a home, the environment took on monumental importance. If there was any chance for a future for humanity, all environments must be kept clean, be governed by educated and powerful entities, and must be utilized with thrift and communal respect.

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[48] Richards, *Euthenics,* 131-2.
[49] Richards, *Sanitation by Conservation*, 146.
[50] Richards, *Cost of Shelter*, 10.

The work Richards began in the field of human ecology continued to spread after her death in 1911. Cities everywhere embraced beautifying measures including state managed street cleaning and waste pick up and park building. Richards' home making and cooking lessons lived on in the Home Economics movement, known today as Family and Consumer Sciences. Richards was loved and remembered by many young women who she had taught in their journey for higher education. Richards' push for people to perceive the environment as a home for humanity would reemerge in the environmental movement of the 1960s. Women and mothers involved in the movement wanted to clean, protect, and preserve the environment to maintain health and safety for their families and future generations. While Richards' ideas were largely overlooked as a whole, they remained applicable and were picked up piecemeal by different organizations. The perfect environment Richards envisioned required bodies, homes, cities, and the entire world to be cared for individuals, families, communities, and the government. She saw this cooperation as the only way in which to infinitely sustain an efficient life on earth.

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