the_earth_closet

(and_the_domestic_economy_of_poo_in_nineteenth-century_america)

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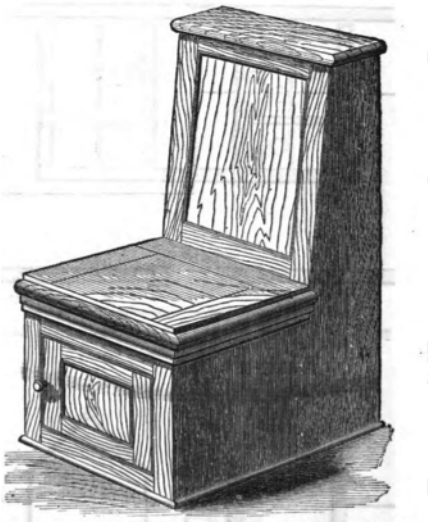
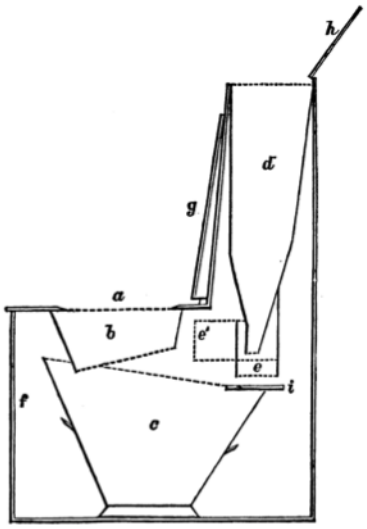
In their five-hundred-page manual on domestic economy, ambitiously titled *The American Woman's Home; or, Principles of Domestic Science; Being a Guide to the Formation and Maintenance of Economical, Healthful, Beautiful, and Christian Homes*, Catharine Beecher and Harriet Beecher Stowe included an entire chapter on the earth closet. Introducing this novel household technology to their presumably female, middle-class audience, they wrote, "the earth-closet is an invention which relieves the most disagreeable item in domestic labor, and prevents the disagreeable and unhealthful effluvium which is almost inevitable in all family residences."[1] The imagined "American woman" in the Beecher sisters' manual was responsible for managing bodies at the scale of the family and building a living apparatus that accommodated that labor. When it came to managing waste, they promoted the earth closet as a promising alternative to, and perhaps replacement for, the water closet, which by 1869 had become pervasive in some areas and, if not already incorporated, much desired in middle and upper class American homes. In contrast to the water closet, the earth closet was economical and ecological, revaluing human excrement as an agricultural commodity and situating humans among a wider ecosystem of biological agents.

The earth closet was what today would be known as a composting toilet. As a commode, it resembled a water closet, but it applied dry earth instead of water to human excrement, and treated excrement instead of flushing it away from sight and discarding it as waste. As pictured in Figures 1 and 2, dry earth remained in the hopper (d), until it was applied to human excrement, which would move from the opening (a), to the pan (b), and then deposited in the pail (c), where it would combine with dry earth. The dry earth acted as an absorbent of odors and moisture, and would transform excrement into valuable manure.





Figures 1 and 2. George Edwin Waring, *Earth-Closets: How to Make Them and How to Use Them* (New York: The Tribune Association, 1868), 16, 18. Figure 2 was reprinted in Catharine Beecher and Harriet Beecher Stowe, *The American Woman's Home* (1869), 414.

As an invention to remedy the shortcomings of existing waste management technologies, the earth closet exists at the intersection of domestic economy and political economy, public health and private space, miasma and modesty, human production and human waste, domestic labor and agricultural labor. This essay cracks open the earth closet to investigate its connections to nineteenth-century bodies and politics. In focusing on the earth closet, I aim to uncover the development of perceptions of waste, health, gender, and labor that encoded the technology.

Domestic Empiricism

The promotion of alternative health practices and alternative technologies to the mainstream and male-dominated realm of science, medicine, and technology by the Beecher sisters—Catharine especially—and their work towards expanding domestic education, was part of a larger project that I call "domestic empiricism." I use the term to indicate the type of knowledge production that occurred in the domestic domain and conducted by domestic laborers (mostly women). Catharine Beecher's career as a writer and reformer of women's education and domestic labor encapsulates the spirit of "domestic empiricism." Since 1842, with the publication of the first edition of *A Treatise on Domestic Economy*, she made domestic economy the perfect complement to political economy. She promoted an ideology in which the gendered division of labor was necessary for true equality and harmony between the sexes, as well as national health and well being. In the case of the earth closet, domestic waste management potentially made political economy and domestic economy seamless. As Beecher defined the term in the glossary of her manual, political economy was "the science which treats of the general causes affecting the production, distribution, and consumption of articles of exchangeable value, in reference to their effects upon national wealth and welfare."[2] Waste management, a responsibility of domestic laborers according to contemporary literature, could be transformed by the earth closet into a function of political economy, in which domestically treated waste could be marketed to farmers to generate profit and economic growth.
The primary argument that drives my exploration of the earth closet, then, is that the desire to re-value human waste was part of a larger campaign by a group of reformers to re-value domestic labor as equally important to nation-building as was the male domain of political economy. While the home was increasingly perceived as a sanctuary from the harsh, industrial world in which men labored, women like Beecher were determined to make domestic labor visible and valuable, and moreover, to engage in knowledge production regarding the science, medicine, and engineering of the domestic environment and its interaction with a human ecology.

The Construction of the Earth Closet

Though the practice of composting human waste has a much longer history, this essay focuses on the earth closet that emerged in the nineteenth century as an improved alternative to the water closet and the privy or outhouse. Historical debates about health and disease, as well as a political and economic history of colonial application, constitute the earth closet. The specific earth closet to which American sewage reformers referred was "Moule's Earth-Closet," which Reverend Henry Moule of London, England patented in 1860. Moule's invention responded to the failures of contemporary sanitation practices in preventing the spread of cholera in England. Moule published a short pamphlet on his invention, where he noted that water sewage polluted rivers and contaminated water sources, which had damaging effects on public health.[3] The London situation corresponds with a series of cholera outbreaks ravaged major cities over the course of the nineteenth century, provoking wide-ranging policy changes regarding the role of the state in safeguarding its population's health.[4]

Dry earth's potency compared to water made it a tool for controlling disease and public health. Its chemical composition prevented the spread of miasmas that resulted from the fermentation of excrement in privies and cess-

pools. Moule wrote that when it came to managing public health and disease outbreaks, "The evil must be cut off at its source"[5]—the evil being disease (such as dysentery or cholera) and the source of evil being "excrementitious and other offensive matter."[6] Adhering to the miasma theory of disease, Moule acknowledged that exposure to odor and the foul, noxious gases that waste emitted was "one of the most frequent means of communicating infection."[7] Such damning language indicates the negative perception of untreated human waste that nineteenth-century Westerners shared.

Aside from offering an improvement to England's public health, the British Empire employed Moule's dry sewage system in its colonies. Moule reported,

> Many high class natives in the Punjaub have been induced to adopt it; and the able Inspector-General of Gaols [Jails] in Bengal, who led to this by bringing to the notice of the Sanitary Committee in Calcutta a paper read by me before the Society of Arts in 1863, has, together with other medical officers, expressed his decided opinion that the benefits already apparent are such as to render it impossible to overestimate the advantages likely to arise to India, both as to comfort, health, and economy, through the adoption of this system.[8]

The earth closet's British colonial ties suggest the means through which states could experiment with alternative sewage systems. Not only did colonial sanitary officials implement experimental sewage systems on colonial subjects, but they also delegated the labor involving the removal of this "nuisance" to prisoners. Explaining in detail the system carried out in Bengal institutions of confinement, Moule reported the range of tasks the expanded earth system involved, writing towards the end, "The last work every afternoon of a gang of prisoners should be to sift and carry a supply of earth, and deposit it in the earth reservoirs attached to each latrine..."[9] In describing the work involved in maintaining the earth sewage system, Moule referred to the roles of sifters, "sweepers," "scavengers," among others, performed by those confined in the British colonial institution. Agricultural scientists and sewage reformers in the United States would cite different forms of experimentation with the dry earth system, from military contexts to clinical and domestic ones.

In understanding how the British earth closet traveled to America with its political and social history embedded within it, it may be fruitful to explore some other dimensions of Moule's earth closet. Moule framed his pamphlet as a comparison between earth sewage and water sewage. The title implied his association of earth sewage with "national health and wealth" and water sewage with "disease and waste." In setting up an earth-versus-water conflict, Moule evoked the concrete and symbolic dimensions in which earth and water might generate meaning through comparison. Attempting to get at the cultural existence and perceptual experience of earth and water, the following list offers some possible points of comparison—both material and immaterial—between the two substances:

EARTH	WATER
Dry	Wet
Solid	Liquid
Opaque	Transparent
Bury	Carry
Cover	Flush, wash
Thud	Splash
Ecosystem	Municipal System
Walk, run	Float, swim
Gravity	Buoyancy
Potent	Neutral
Treat	Dilute
Absorbent	Absorbed
Crumble	Leak, trickle
Agricultural	Industrial
Rural	Urban
Stillness	Flow
Health Ecology	Hygienic Modernity
Sift	Drain, purify
Ammonia, clay	Hydrogen, oxygen
Bloom, sprout	Birth
Land on	Travel through
Colonize, settle	Navigate, transport
Quake	Flood
Terrarium	Aquarium
Jesus healing blind man	Jesus's baptism
Death rituals	Birth rituals

Although just skimming the surface of the earth-water binary, the above chart suggests the ways in which matter is characterized, and even *animated*, to use gender studies scholar Mel Chen's terminology. Mel Chen's work asks "how matter that is considered insensate, immobile, deathly, or otherwise 'wrong' animates cultural life in important ways."[10] Examining the earth closet and the earth-water binary using Chen's interpretive approach to matter helps formulate a number of compelling questions. Are earth and water, and their respective sewage potentials, racialized, gendered, or sexualized? How did domestic sewage arouse concerns over national biosecurity? Chen's analysis of the animacy of lead—"an animate contaminate"[11]—and its role in sparking racial anxieties that echoed the "Yellow Peril" of the early twentieth century is compelling, especially when compared to the earth closet in Beecher's estimation.

Rather than eliciting an outbreak narrative, as Chen shows with lead, the earth closet elicited a narrative of geopolitical competition. With the "animate contaminate" being human waste—a trans-racial, trans-spatial bio-product—Beecher portrayed the Chinese as more advanced than Americans in their handling of waste. Beecher began her chapter on earth closets indicating an important role for domestic labor in international politics, writing,

> In some particulars, the Chinese are in advance of our own nation in neatness, economy, and healthful domestic arrangements. In China, not a particle of manure is wasted, and all that with us is sent off in drains and sewers from water-closets and privies, is collected in a neat manner and used for manure. This is one reason that the compact and close packing of inhabitants in their cities is practicable, and it also accounts for the enormous yields of some of their crops.

Earth was a substance that promoted productivity and efficiency, whereas water signaled danger, idle luxury, and waste. In favoring the productive labor within the home, Beecher also hinted towards the tensions between rapid urbanization, Western expansion, and the lingering agrarian ideal that characterized American society in the period following the Civil War. Turning to the urban example of China, Beecher provoked concerns about America's status from a comparative standpoint in an increasingly global society. But local and politically specific concerns in America gave the earth closet a particular appeal to reformers of America's domestic environment. The earth closet's history in America is the focus of the following section.

The Earth Closet in Post-Civil War America

The first earth closet commode was imported to the United States in 1868, according to George E. Waring's pamphlet on the earth closet. Waring was one of the earth closet's most vocal advocates during the period. Indeed, it was Waring's pamphlets from which the Beechers quoted extensively when they promoted it in their own domestic manual. Waring was a sanitation engineer who had worked in New York as the city's street drainage engineer, and one of his successful projects was designing the drainage system of Central Park in the 1850s. A Civil War veteran, he drew from his military service to approach his street cleaning activity in New York.[13] He first came across the earth closet in *Judd's Agricultural Annual* of 1868, which he claimed constituted the "first complete description" of the earth closet published in America.[14] At the time, he resided at Ogden Farm, a "model" farm in Newport, Rhode Island, where inhabitants employed the latest agricultural technologies and practices. There, he experimented with Moule's earth system and concluded it was superior to water sewage and water closets.

The Civil War took up an important place in the history of the earth closet in America. Having played an important role in George E. Waring's career and self-perception (he rose the ranks of the Union army and preferred his military title, Colonel Waring, to the title of "commissioner" later given by municipal authority[15]), the Civil War also offered an experimental space for portable, efficient, and sanitary sewage practice. In his pamphlet, Waring reproduced a plan of the soldiers' closet at Fort Adams, which he suggested could be used as a base for plans in factories, hotels, and railroad stations. The violence of the war also provided the context for which the discovery of dry earth's curative potential was made possible.

Waring cited Dr. Hewson of Philadelphia, a physician at Pennsylvania Hospital, who supposedly discovered that dry earth could be applied to open wounds as a healing agent. In a paper Hewson presented, he reported a case in which the patient suffered from a severe compound fracture on his lower leg. The surgical ward's sewage system was "the experimental Commodes, sent out by the Earth-Closet Company at Hartford." When Hewson observed his patient's wound exuding large amounts of puss and a "sickening, even dangerous, stench" that responded to none of the "usual disinfectants," he wondered whether dry earth could absorb the odor as it had the excrement. After testing his hypothesis, Hewson reported, "The effect was magical. Not only was the offensiveness entirely overcome, but the effect on the character of the wound itself was such as no previous treatment had been able to compass." Applying a half pint of earth to the wound every day, Hewson observed, relieved the patient's pain, reduced the wound's inflammation, and eventually restored the patient's health.[16]

Accompanying the evidence Waring accumulated from military and clinical sites, he also gave a more comprehensive, epidemiological account of the health reasons that made the earth closet more effective than the water closet and privies. Bringing together health ecology and political economy, Waring cited Samuel W. Johnson, a professor of analytical and agricultural chemistry at the Yale College's Scientific School and chemist to the Connecticut State Agricultural Society.[17] Professor Johnson summarized concerns that brought the earth closet to civic-minded city-dwellers' attention. He asked two questions that "relate to the disposition of the liquid and solid waste of the human body. One of them is, How shall the waste be effectually prevented from being an annoyance and source of disease? and the other, How shall it be made a means of fertility to the soil, and thus an item of national wealth?"[18]

First, when it came to preventing annoyance and disease, the water closet was technically limited. Waring described the process in which water sewage contaminated drinking water and vegetation. The pipes, bound to burst in the winter, brought waste to a subterranean level where "a festering mass" sent "its foul and poisonous gases back through the soil-pipe and kitchen-sink drain into the house" where it developed "in its putrid fermentation the germs of typhoid fever and dysentery that any film of gravel in the lower soil may carry to the well or the spring."[19] Second, the water closet made human excrement into waste, while the earth closet made it into a commodity. Drawing from the agricultural and scientific expertise of Professor Johnson, Waring's pamphlet reported that gardeners and farmers spent remarkable sums on phosphates and nitrogen for their crops, importing "guanoes and fish-manures" from afar. Johnson advocated the earth closet for its efficiency in agricultural economy. Quoting Johnson in Waring's pamphlet, "It requires but little art to convert his excrement into increment, and the conversion may be made extremely profitable."[20]

What Waring and others called "the Manure Question" made the domestic environment a site of production. The biological products of human families could better integrate with the system of agricultural economy if the earth closet system was universally employed. Such a vision would tie together domestic economy and political economy in ways that it had not been carried out before.

Health and Work in the Domestic Environment

Waring's pamphlet made American women a central obstacle in the universal adoption of the earth closet. After listing the many health and economic benefits of the earth closet, Waring was concerned that "the masses" would not be persuaded. He continued, "The water-closet has won its way to universal favor on the grounds of convenience, comfort, and decency alone..... The water-closet is the chief thing of which women living in the country envy their city cousins the possession." Possessing a water closet, a steep expense that required a new plumbing apparatus, was "one of the first steps toward elegance."[21] However, in terms of domestic economy, the earth closet was far superior, offering the same advantages as the water closet and a better system in terms of health and economy. Waring warned that plumbing required the demanding vigilance of household managers and would accumulate high repair and labor costs. Moreover, the cesspool to which water closets emptied would endanger the well water and endanger the life and health of those inhabiting domestic environment and its surroundings. But these drawbacks had no effect on the water closet's popularity, for as Waring opined, "Unknown evils are unfeared; and even our best people have a comfortable way of ascribing to the inscrutable dispensations of a Divine Providence rather than to their own folly even such a disease as typhoid fever, *of which no single case occurred in a civilized community without the direct intervention of human agency.*"[22] Waring complained about people's comfortable passivity in the face of disease, preferring to ascribe divine agency instead of human agency as the reason for one's infection.

Women, he assumed, should find the earth closet appealing for reasons of decency and privacy. He wrote that if a household manager with limited financial means was considering the earth closet, "It is, of course, most desirable, as far as the ladies of the family are concerned, that the Closet should be on the second floor of the house, if only one is made." He continued that it should be placed adjacent to the outer walls so that a (presumably male) laborer could reach its earth-shaft without entering the house. Domestic labor regarding waste could potentially become displaced to public service: "In thickly settled communities, it will be necessary to have some regular system of earth supply and removal that will relieve individual householders not only of the labor and personal attention necessary, but even of all thought concerning it."[23] He described the role of a "public dustman" if the earth system caught on, who, he imagined "makes his rounds, with his load of sacks filled with dry earth, and his implements for removing the contents of the vault," fills the reservoirs and then

> shovels out the moist earth below, locks the door, and goes on to the next house. He asks no questions, and has no communication whatever with housekeeper or servants. His work is perfectly simple, and is performed without need for the concurrence of any one inside the house. As the deposit which he removes is no more offensive than so much coal-ashes, he need not work stealthily by night, like a scavenger, and his cart in its rounds will give no offence to the public.

The design that would make this labor system possible is depicted in Figure 3 below. Waring referred to the earth system's implementation in New Haven, where "an organized Dry Earth Co." delivered the service to its city-dwellers, treating dry earth like a commodity analogous to ice or coal.[2]

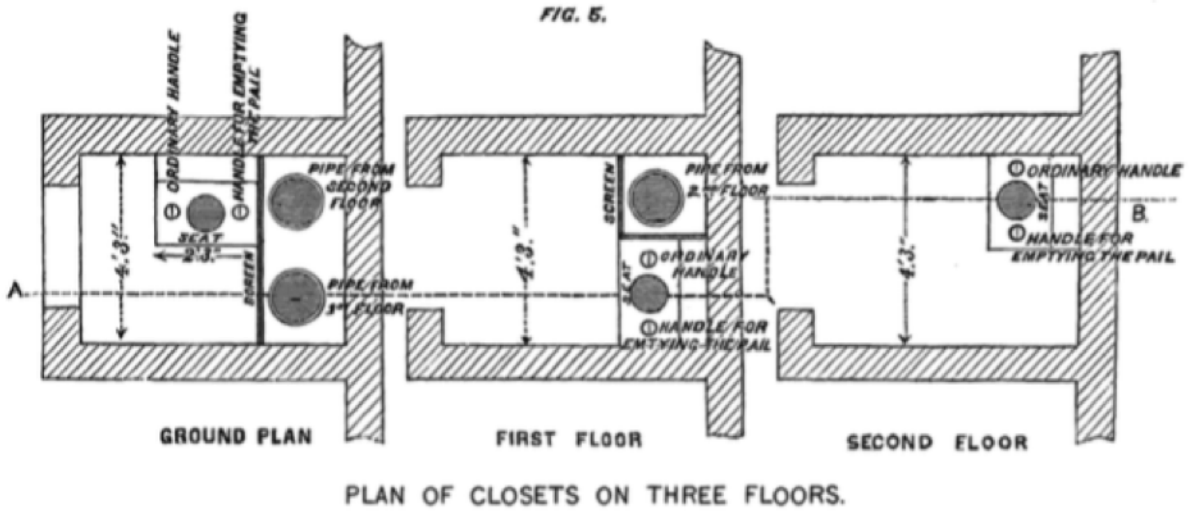


Figure 3. George E. Waring, *Earth-Closets and Earth Sewage*, 18.

Middle-class American women faced distinctive health concerns when it came to domestic sewage practices. Speaking at the intersection of technology and gender, Waring brought up the issue of women's digestive health. Social

constructs of female decency and female fragility to environmental hazards prevented women from acting according to their digestive needs. With privies located outside of the home, women would practice retention instead of exiting the house to have a bowel movement. Waring described this issue as "the aggravation of the difficulties of delicate females," a health concern that produced, "in the aggregate, far worse results" than the public health concerns of typhoid or dysentery outbreaks, Waring alarmed. "It is universally admitted that nothing is more injurious to health than irregularity and the undue retention of the rejectamenta of the intestines." He further stated that it was woman's "duty" to maintain her regularity, "for the sake of preventing troubles of which she is yet ignorant."[26] At a time when American women were agitating for the franchise, Waring suggested that women should put "health and happiness" before suffrage as a woman's right.

Catharine Beecher agreed that regularity was a key concern in women's health. Retention was one of the health concerns typical of "civilized life," along with nervous illness and improper diet. Beecher cited an eminent British physician to explain how retention caused impurity in the blood, inflammation, brain deprivation, and general discomfort. Women's clothing was another facet of the gendered social practices that contributed to female constipation. Beecher suggested that women who faced irregularity should remove corsets, belts, and any waistbands that interfered with easy respiration, and to perform active exercise to engage the digestive system to action. Resorting to a physician or drug medicines was unnecessary, Beecher insisted, and even damaging. She wrote, "It is little realized that purgative drugs are unnatural modes of stimulating the internal organs, tending to exhaust them of their secretions, and to debilitate and disturb the animal economy."[27] The results of her domestic empiricism demonstrated the superiority of preventive health practices over male medical expertise.

A Neglected Technology

The earth closet never took off as Waring hoped it would when he wrote in 1870, "its universal adoption (except in houses in which there are water-closets supplied from public water-works) is certain."[28] Why did the earth closet retreat from the vision of reformers like Waring and Beecher?

Secularization theory holds that modernity is associated with desensitization and disembodiment.[29] The rise of modern science, historians have argued, hinged on scientists' claims of objectivity, or a "view from nowhere."[30] Modernity is juxtaposed with tradition, and mind with materiality. Modern cities are defined by their sensory escape—an advanced city is one that effectively manages odors, noise, and visual order.[31]

The earth closet was aligned with modern technologies because it raised particular concerns about sensory escape, and it also claimed to offer modern comfort because of its portability. Excrement was all too human, and its immediate elimination from human space was a token of modernity. As explained earlier in this essay, the earth closet was supposedly more effective than the contemporary water closet in eliminating unpleasant odor and managing the potential for disease. If Moule's patented earth closet worked as designed, the mass deposited in the commode "looks and smells like fresh earth."[32]

But perhaps the earth closet failed to gain mainstream adoption because it made waste visible at a time when it became increasingly possible to make waste invisible to the American middle-class family. Perhaps de-visualizing excrement became more important to Americans than de-odorizing and re-valuing it. Perhaps *earth* became unequivocally *dirt* in the sense it is perceived today, whose presence made in an interior space made the space *dirty*, the opposite of clean and hygienic. The water closet, on the other hand, effectively carried excrement out of the home and out of sight. Moreover, as the germ theory of disease gradually replaced miasmatic theory, odor became a secondary concern to hygiene—more of a result or symptom of disease rather than its cause. In the end, the water closet symbolized domestic comfort—a technology that affirmed the domestic realm as refuge from the chaos of an emergent industrial capitalistic society, and a modern tool that adequately discarded what many considered were the miserable aspects of human nature.

[1] Catharine Beecher and Harriet Beecher Stowe, *The American Woman's Home: or, Principles of Domestic Science; Being a Guide to the Formation and Maintenance of Economical, Healthful, Beautiful, and Christian Homes* (New York: J. B. Ford and Company, 1869), 403.
[2] Beecher and Stowe, *American Woman's Home*, 485.
[3] Henry Moule, *Earth Sewage Versus Water Sewage; or, National Health and Wealth Instead of Disease and Waste*, edited by E. A. Meredith (Ottowa: G. E. Desbarrats, 1868), 1.
[4] For a key study of cholera and the social meaning of disease in the U.S. context, see: Charles E. Rosenberg, *The Cholera Years: the United States in 1832, 1849, and 1866* (Chicago: University of Chicago Press, 1962).
[5] Moule, *Earth Sewage*, 3.
[6] Ibid., 1.
[7] bid., 2.
[8] bid., 1.
[9] bid., 12.
[10] Mel Y. Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham: Duke University Press, 2012), 2.
[11] Chen, *Animacies*, 167.
[12] Beecher and Stowe, *American Woman's Home*, 403.
[13] Jennifer Lee, "He Cleaned the Streets, and Left the Presidency to Others," *New York Times*, October 1, 2009.
[14] George E. Waring, *Earth-Closets and Earth Sewage* (New York: The Tribune Association, 1870), 3.
[15] Ibid.
[16] Ibid., 36.
[17] This information about Johnson was verified in the following sources: "Affairs at Yale College. Opening of the Gymnasium at New-Haven—Interesting Ceremonies." New-York Times (February 1, 1860) and *First Annual Report of Prof. S. W. Johnson* (Hartford: Press of Case, Lockwood and Company, 1858).
[18] S. W. Johnson, quoted in Waring, *Earth-Closets and Earth Sewage*, 5.
[19] Waring, *Earth-Closets and Earth Sewage*, 13.
[20] S. W. Johnson, quoted in Waring, *Earth-Closets and Earth Sewage*, 8.
[21] Waring, *Earth-Closets and Earth Sewage*, 13.
[22] Ibid.
[23] Ibid., 17.
[24] Messrs. Olmested, Vaux & Co. quoted in Waring, *Earth-Closets and Earth Sewage*, 17-20.
[25] Waring, *Earth-Closets and Earth Sewage*, 20.
[26] Waring, *Earth-Closets and Earth Sewage*, 26-27.
[27] Beecher and Stowe, *American Woman's Home*, 338.
[28] Waring, *Earth-Closets and Earth Sewage*, 3.
[29] See: Sally M. Promey, ed., *Sensational Religion: Sensory Cultures in Material Practice* (New Haven: Yale University Press, 2014); Constance Classen, *Worlds of Sense: Exploring the Senses in History and Across Cultures* (London and New York: Routledge, 1993), who calls into question secularization theory's binary between modern and material religions, where material religions are seen as traditional and primitive because of rituals closely tied to bodily practices and interaction with sacred objects; Robert Jütte, translated by James Lynn, *A History of the Senses: From Antiquity to Cyberspace* (Cambridge: Polity, 2005).
[30] See: Lorrain Daston and Peter Galison, Objectivity (New York: Zone Books, 2007) and Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, 3 (Autumn 1988): 575-599. Haraway describes science's reliance on vision and the scientist's "conquering gaze from nowhere" (581). Haraway also mentions "feminist empiricism" in her essay, which resonates interestingly with the domestic empiricism explored in this paper.
[31] On the relationship between modernity and deodorization, see: Constance Classen, David Howes and Anthony Synnott, *Aroma: A Cultural History of Smell* (London: Routledge, 1994).
[32] Moule, *Earth Sewage*, 3.