Rubbing Elbows and Blowing Smoke: Gender, Class, and Science in the Nineteenth-Century Patent Office

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Abstract: The United States Patent Office of the 1850s offers a rare opportunity to analyze the early gendering of science. In its crowded rooms, would-be scientists shared a workplace with women earning equal pay for equal work. Scientific men worked as patent examiners, claiming this new occupation as scientific in opposition to those seeking to separate science and technology. At the same time, in an unprecedented and ultimately unsuccessful experiment, female clerks were hired to work alongside male clerks. This article examines the controversies surrounding these workers through the lens of manners and deportment. In the unique context of a workplace combining scientific men and working ladies, office behavior revealed the deep assumption that the emerging American scientist was male and middle class.

In the 1850s, the United States Patent Office was the site of a radical experiment in equal pay for equal work. Commissioner Charles Mason hired Clara Barton, future founder of the American National Red Cross, and other women to work in the same spaces, at the same tasks, for the same salaries, as male clerks. The failure of this experiment is part of the long history of office work that includes over a century of sex-segregated workplaces and gender-based pay disparities.1 The patent office at this period was also occupied by another new group of office workers, patent examiners. These workers, all male, were engaged in their own failing experiment: to claim the patent office as a space of science. The unique overlap of these two...
contestations makes Mason’s experiment part of the equally long history of gendered science and the persistent gap in the participation of women in science in the United States. As all the white-collar workers of the patent office rubbed elbows with each other and with the inventive public, and fought to retain their jobs, they were enacting gender and class as much as science and technology. Through their deportment, the workers made manifest the assumed embodiment of the emerging American scientist as male and middle class, assumptions that were naturalized by the time the American scientific community was well established in the late nineteenth century.

To read these workplace interactions, this article uses the lens of manners, the rules of bodily engagement, to reposition two patent office controversies previously considered separately. Mason’s experiment, which triggered hostility from Barton’s male coworkers and from Mason’s superior, the secretary of interior, is usually told as an interlude in the life of an American icon. The struggles of self-designated scientific men to support themselves as patent examiners while also participating in the nascent American scientific community has been told as part of the history of technology. While drawing on the written traces of these controversies, this article focuses on how they were experienced by the participating workers in daily interactions within the space of the patent office. Thus reconsidered, they become part of the history of science as an embodied practice that occurred in specific sites, including government offices.

The queer theorist Sara Ahmed reminds us that spaces like the patent office “are not exterior to bodies; instead, spaces are like a second skin that unfolds in the folds of the body.” The

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3 For ease, I employ the twentieth-century term “technology,” although it was not used in its contemporary meaning in the nineteenth century. See Leo Marx, “Technology: The Emergence of a Hazardous Concept,” *Technology and Culture*, 2010, 51:561–577, esp. p. 562. While this essay focuses on gender and science, technology was also gendered masculine during the nineteenth century. See Nina E. Lemans, “Categories of Difference, Categories of Power: Bringing Gender and Race to the History of Technology,” *ibid.*, pp. 893–918. These essays are essential for understanding the gendered development of technology.

4 The struggle of self-designated scientific men to support themselves as patent examiners while also participating in the nascent American scientific community has been told as part of the history of technology. While drawing on the written traces of these controversies, this article focuses on how they were experienced by the participating workers in daily interactions within the space of the patent office. Thus reconsidered, they become part of the history of science as an embodied practice that occurred in specific sites, including government offices.

ability of anyone to occupy space comfortably, to feel a sense of belonging and ownership of that space, is dependent on inhabiting the space as a “second skin.” To feel comfortable within the patent office, each worker needed an alignment between his or her embodiment and that of the other bodies in the space, an alignment orchestrated by the shared rules of social behavior. The key was deportment, both individual and collective. “The social also has its skin, as a border that feels and that is shaped by the ‘impressions’ left by others.”6 Each patent office worker left his or her impressions on the others, as each act helped determine whether together they could feel comfortable within the social skin of their shared office space, permitting ease of occupancy and occupation.

The unease felt both by Barton and by the scientific men reveals a contest about the ordering of society as enacted by the patent office workers. Only with agreement on the relative position of each inhabitant of the office could the proprieties be followed. Nineteenth-century Americans expressed the enactment of such agreement as their “honor.” Honor touched on both gender and class, as men and women sought to maintain their respectability in an urban setting, where ordered rankings were increasingly ambiguous and continuously challenged.7 To retain honor, an individual’s self-identification needed to be confirmed by the behavior of those around him or her. In a social setting in which others did not treat them according to their self-designated ranking, Americans could lose honor and fail to experience that space as a well-fitting second skin. The patent office workers of the 1850s sought to maintain their sense of honor in a doubly new context, salaried employment and a mixed-gender workplace, at a time when few other men and women faced such a dual challenge. The ability of the men and women of the patent office to maintain their honor depended on their comfortable enactment of their chosen occupations within the office. Other office workers faced the challenge of salaried employment as well, but they did so in sex-segregated settings.8 Further, scientific men in antebellum America, like other men of their class and race, largely did not interact with any women outside of domestic or social spaces. In addition to the presence of working ladies, the patent office was unique as a space devoted to technology—a space that erupted in a public controversy about whether it could be an honorable workplace for scientific men. In the 1850s, neither scientific men nor working ladies found lasting comfort there.

Mason’s experiment with female clerks did not challenge the assumption that science was a male occupation. But it forced the scientific men of the office, struggling to define themselves as scientists through the daily tasks of patent examination, also to express in their workplace behavior the extent to which they were seeking to maintain distinctions of gender and class as foundational features of the scientist. Their behavior, magnified by the actions of many more scientific men outside of the patent office, resulted in an American scientific community in which, as noted by the historian Margaret Rossiter, the term “woman scientist” was an oxymoron by the end of the nineteenth century.9

The patent office was new in the 1850s, both as a bureaucracy and as a building. Begun in 1790, the United States patent system had been completely revamped in 1836, when Congress created for the first time a patent office with dedicated employees, including the new position of patent examiner. Examiners became the heart of the patent system. Their job was to scrutinize each application to determine whether an invention was sufficiently new and useful to be worthy of a patent.10

The new office called for a new building, also authorized in 1836. The grandiose Patent Office Building first opened for business in 1840, although it continued to be built in sections until 1867.11 At a time when much of Washington, D.C., remained a raw backwater of muddy streets and clapboard houses, the building was a striking manifestation of federal grandeur, an ornate structure in the classical style, built of Virginia sandstone painted a gleaming white. In 1852, two German visitors found it “a most magnificent, indeed palatial edifice,” more imposing than the White House. The Germans, like other tourists, not only admired the building from without but went inside.12

The Patent Office Building contained what was reportedly the largest room in the United States. This grand hall on the top floor was a display space. It functioned as a national museum, providing a visual tour of the ingenuity of the new nation. In addition to patent models, at various times the items on display included the Declaration of Independence, military memorabilia from the Revolutionary War, and specimens from Western explorations.13 Here Americans learned that the courage of the Founding Fathers and the Revolutionary Army, coupled with the resources of a vast continent, could be harnessed by the inventiveness of a democratic people enthusiastic about using patents to build their new nation. This hall made the Patent Office Building a must-visit tourist site for both foreigners and Americans.14 Men and women strolled the hall to view the displays, making this portion of the building a space where the emerging middle class could engage in mixed-gender public leisure. As visitors gazed and were gazed upon, their clothes and deportment as much on display as the models and other exhibits, they enacted class and gender.

13 Trantmann et al., “Washington through German Eyes,” p. 87, Evelyn, “Exhibiting America” (cit. n. 11), pp. 32–33; and “Homes of the Patent Office” (cit. n. 11), pp. 133, 135. The original plan was to house models on the first floor and use the top floor as a “National Gallery of American Manufacturers and Agriculture”. Evelyn, “Exhibiting America,” p. 30. After other departments began to occupy the building in 1849, the patent models were moved upstairs: “Homes of the Patent Office,” p. 135.
14 Alfred Peale, nephew of the patent examiner Titian Peale, visited Washington, D.C., during his uncle’s patent office tenure and spent two days viewing the patent office exhibits, detailing in his diary the ornamental features of the room and the contents of the display cases. See Diary of A. C. Peale, n.d., Albert C. Peale Papers, Edwin O. Kirk–Albert C. Peale Collection, American Philosophical Society, Philadelphia.
The lower floors of the Patent Office Building were devoted to work. Despite the building’s name, after the patent office became part of the Interior Department in 1849 other agencies shared the building, and the patent office workers found themselves perennially short of space. In the cluttered rooms, patent models were viewed instrumentally, as part of the evidence proving that an invention was patentable. All the patent office employees were involved in a struggle to classify and organize the inventive output of the public, a struggle that was both intellectual and spatial. To recognize an invention as new, the examiners needed to compare it to previous inventions and knowledge, as represented by earlier patents and other publications, from the United States and abroad. Creating knowledge hierarchies as they divided inventions into classes by subject, the office staff developed systems of drawers and files to allow both employees and the public to access past applications. Clerks were in charge of writing each patent by hand, making copies for the inventor and copies for the office, as well as assisting with other correspondence. These tasks, both intellectual and clerical, were made more difficult by the cramped quarters.

By 1853, each examining office was the workspace for one principal examiner and two assistant examiners, and within this room the examiners had to store the models for the classes they worked on, maneuver files and drawings, and meet with inventors and their agents. Examiners and clerks alike worked amidst piles of models and an unceasing flow of paper, as space constraints forced the clerks to work “crowded into the apartments of other officers, whose rooms are too full without them,” while mail was sorted in the hallway and reference books were scattered among the offices, the designated library insufficient to hold the volumes.

WORKING LADIES
Until Mason initiated his experiment, the bodies that rubbed elbows in the crowded rooms may have differed in terms of education and employment, depending on whether they were examiner, clerk, or inventor, but they shared a common performance of masculinity. All of the office employees were men. While women were permitted to apply for patents, very few did so in this period. The masculinity of all the occupants was displayed by the broadcloth jackets covering those elbows and by the use of tobacco. Each of the cluttered examination rooms probably included a spittoon, essential office equipment used by the male workers and visitors alike. The working spaces of the patent office, unlike the display spaces of the upper floor, assumed the masculinity of all the activities taking place therein. Masculinity remained as securely invisible as whiteness. In the prevalence of spitoons, and the presumption of mascu-
The patent office was no different from other federal offices. Before the hiring of female clerks by the United States Treasury Department in 1862, there were virtually no women in the civil service. In the 1850s, however, the assumption of masculinity was challenged, forcing the occupants of this unique building to demonstrate that on the lower floors, as much as in the display hall, they were enacting gender and class.

Charles Mason arrived in Washington, D.C., in the spring of 1853 as the newly appointed commissioner of patents. He came from Iowa, where he had a successful legal and political career, serving as chief justice of the territorial supreme court and then of the state supreme court. By 1854 he had begun his unprecedented experiment, hiring several female clerks. The new clerks included Barton, whose tenure was the longest of the women clerks, lasting until 1857.

Barton was also new to Washington, D.C. An experienced schoolteacher, she had recently resigned her job in New Jersey, disappointed when her successful efforts to found a free public school led to the hiring of a man to supervise it rather than Barton herself. She was thirty-two years old and unmarried, and she had supported herself for more than a decade. Although unconventional in her decision to live away from her parents, who remained in her native Massachusetts, Barton relied on and sought to maintain her status as a “lady,” marked not just by her sex but also by her status as an educated, white, native-born woman whose male relatives were landholders and independent businessmen. Her father, always called Captain Barton in recognition of his three years of service in the Indian wars of the Northwest Territory, was a farmer and a town leader. As a lady, she had connections. Alexander DeWitt, a member of the Massachusetts congressional delegation and a distant cousin, soon introduced her to Mason, who was evidently much impressed. His initial offer to hire her as a governess for his young daughter was transformed, through DeWitt’s suggestion, into an offer of a clerkship in July 1854. Barton had a formal interview in the patent office and, according to her account, was hired on the spot. “I went before the Commissioner of Patents, and was seated at my desk before removing my hat or coat.” Barton was initially employed as a temporary clerk, paid by the word for copying work, a status and compensation arrangement shared by about twenty women clerks in the 1850s. See Aron, “To Barter Their Souls for Gold,” pp. 803–809; and Schieb, “Charles Mason and the Civil War,” pp. 803–809; and Benjamin F. Gue, History of Iowa from the Earliest Times to the Beginning of the Twentieth Century, Vol. 4 (New York: Century History, 1903), pp. 183–184.

For Barton’s tenure in the patent office see the sources cited at note 4, above. This article focuses on Barton because her papers have been preserved. I have found little information about the other women in the office in the 1850s.

For Barton’s lifelong struggle to retain her status as a lady see, e.g., ibid., pp. 61–62; and Oates, Woman of Valor, p. 8.
male clerks.25 Within a year Mason had hired at least two other women, who may have joined Barton in a former basement storage room as the patent office repurposed the lowest story in a quest for space.26

Mason's reasons for such a bold step can only be surmised. Now fifty years old, in his youth he had been a fiery advocate for equality, decrying anti-immigrant sentiment. As a judge, he had ruled that a slave brought into the free territory of Iowa with the consent of his master became a free man, an interpretation of law later overruled by the United States Supreme Court decision Scott v. Sanford. After he left the bench, Mason served on the commission that drafted the first state code of Iowa, a code notable for its respect for married women's property rights.27 In hiring female clerks, he may have been driven by personal philosophy, but his actions may also have been pragmatic. Although well connected in Iowa and a presidential appointee, Mason was an outsider to the federal bureaucracy who throughout his four years as patent commissioner demonstrated his failure to inhabit his own desk as a comfortable second skin by his repeated resignations. He may have sought to add employees who were absolutely loyal to him. Soon after he arrived in 1853, he had brought fellow Iowan and former legislative clerk and state auditor Joseph Fales to the patent office, naming him "principal temporary clerk."28 Women, lacking access to the civil service career path and outside traditional patronage networks, might have been ideal loyal employees, beholden to him as their sole sponsor. Barton, who left few contemporaneous records of her patent office employment and was known to rewrite her personal history in later retellings, occasionally suggested that Mason hired her as a "confidential clerk" to help him identify and root out dishonest patent office workers.29

Despite the unprecedented nature of her position, Barton, long accustomed to being a working woman and comfortable since childhood with boys and men, initially found her occupancy of a patent office desk congenial. Her copying work compared favorably with her previous teaching jobs. In October 1854 she wrote a friend: “My situation is delightfully pleasant.

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26 My account of Barton's early days in Washington and of her hiring is derived from a review of her papers from 1854 to 1857 in the Clara Barton Papers, 1805-1968 (Library of Congress, Washington, D.C., microfilm collection), which are not conclusive on the exact details of her patent office employment. I have supplemented this review with the following secondary sources, which are not consistent on all points and rely in part on Barton's statements made decades later. Sellers, “Commissioner Mason and Clara Barton”; Pryor, Clara Barton, pp. 55–57; Williams, Clara Barton, pp. 54–55; and Oates, Woman of Valor, pp. 11–12. For example, although some biographers report Barton's hiring as a $1,400/year clerk (e.g., Pryor, Clara Barton, p. 56), a review of patent office payrolls has suggested that she was first hired on a per-word basis (Sellers, “Commissioner Mason and Clara Barton,” p. 814). While Sellers indicates that Barton worked in the basement of the Patent Office Building with other female copyists (ibid., pp. 813, 816), an official civil service history states that a Mrs. Thompson and a Mrs. Cook were also temporary clerks in 1854 but that they worked from home: United States Civil Service Commission, Biography of an Ideal: A History of the Federal Civil Service, rev. ed. (Washington, D.C.: U.S. Government Printing Office, 1974), p. 161. For the basement layout see “History and Description of the U.S. Patent Office Buildings,” Scientific American, 1 Feb. 1851, 6:156.
27 Regarding Mason's advocacy for equality see Schwiebert, “Charles Mason and the Civil War” (cit. n. 4), p. 11. His ruling regarding the slave brought into the territory of Iowa came in In re Ralph, 1 Morris 1 (Iowa 1839). It is discussed ibid., pp. 18–23; and Toussaint, “Biography of an Iowa Businessman” (cit. n. 4), pp. 30–34. Scott v. Sanford, 60 U.S. 393 (1856), involving a slave brought into the free territory of Wisconsin and the free state of Illinois, is often known as the "Dred Scott case." For Mason’s work on the Iowa code see Schwiebert, “Charles Mason and the Civil War,” pp. 27, 29–30; and Toussaint, “Biography of an Iowa Businessman,” p. 65.
29 Epler, Life of Clara Barton (cit. n. 4), p. 25; and Barton, Life of Clara Barton (cit. n. 4), Vol. 1, p. 90. For the limited support in patent office records for this story see Sellers, “Commissioner Mason and Clara Barton,” pp. 820–822. For an example of Barton's revisionist history regarding her employment in the patent office in the 1860s see ibid., pp. 826–827.
There is nothing in the world connected with it to trouble me and not a single disagreeable thing to do, and no one to complain of me.” The office evidently fit her like a second skin. This pleasant situation did not continue. In July 1855 Mason submitted the first of his three resignations and returned to Iowa. Mason’s superior, Secretary of Interior Robert McClelland, disapproved of the female clerks. With Mason gone, McClelland promptly moved against Barton and the other women, and from July to September Barton received no copying work—and no pay. In August she and the other female clerks were informed that they must vacate their desks. DeWitt wrote McClelland seeking Barton’s reinstatement. McClelland’s response revealed his disapproval of Mason’s experiment: “There is such obvious impropriety in the mixing of the sexes within the walls of a public office, that I determined to arrest the practice.”

The problem was the enactment of femininity in the office space, in close proximity to male workers and the male inventive public. The presence of working ladies was so far outside the bounds of usual behavior that there were no applicable rules of propriety, leading to McClelland’s charge of impropriety. In the first decades of the nineteenth century, all Americans were engaged in a project to define the behavior of a new creature, the citizen of a democratic republic. An outpouring of etiquette books prescribed a newly American approach to deportment, replacing the aping of English manners advocated in the colonial and early republican period. Manners were the hallmark of the expanding middle class, a means by which Americans could, by their dress, behavior, and speech, claim a place in the upper reaches of a society that did not recognize aristocracy of birth. In the United States, while there was some tension between a claim to gentility and a salary, a gentleman might work for a living—as long as he behaved like a gentleman. The rules of deportment, however, did not encompass working ladies.

Just as etiquette had to be rethought for a society without nobility, it also had a particular role in a country where “all men were created equal” but women could not vote or, if married, own property in many states. C. Dallett Hemphill has noted how etiquette served to throw a “ritual mantle over the cultural contradiction between democracy and gender inequality.” Manners provided an “elaborate form of protection and reassurance” to women to soften the harsh reality of female subordination, while simultaneously imposing “severe restriction upon female freedom.” One of those restrictions was the exclusion of middle-class women from paid labor. Etiquette manuals therefore did not address workplace behavior of men or women. As all-male, workplaces were outside the rules of heterosocial interactions. “Adult middle-class males at work were to be excused from obligations to pay punctilious attention to ceremonial forms.” An American lady seeking employment thus had to manage her deportment carefully, for she risked loss of the protections of manners and, thus, her honor as she exercised a freedom not granted to her sex. For both male and female office workers seeking to maintain middle-

30 Clara Barton to Frank Clinton, Oct. 1854, Clara Barton Papers. For Barton’s comfort with boys and men see Oates, Woman of Valor, pp. 7–8; and Pryor, Clara Barton, pp. 13–15.
33 Declaration of Independence (1776); and Khan, Democratization of Invention (cit. n. 20), pp. 163–170.
34 Hemphill, Bowing to Necessities (cit. n. 32), p. 180.
35 Kasson, Rudeness and Civility (cit. n. 7), p. 132.
class status, a gender-integrated office space presented a social challenge. Barton’s presence was an “obvious impropriety” because there were no conventions by which it could become proper. The skin of the social could not be comfortably inhabited by her or her coworkers when there was no agreement about how they were to enact their occupations side by side.

This controversy focused on the intrusion of ladies into the assumed masculinity of the office space. McClelland did not have any objection to women earning money, and Mason was not the first commissioner to employ female copyists. Ladies in the 1850s, however, had assigned spaces where they could earn money. The most common was the classroom. Women could teach mixed-sex groups of children, as Barton had done previously, or young women in single-sex seminaries. They could even perform copying work, usually done by men, as long as they stayed out of male spaces. Previously, the patent office’s female copyists had worked from home. Mason’s innovation was bringing the women into the crowded office, where they worked in close proximity with men. The spatial basis of Barton’s challenge to gender and class hierarchies is demonstrated by contrasting her experience with that of a contemporary, Elizabeth Lindsay Lomax.

Lomax was the widow of an army officer and the daughter of a Revolutionary War veteran. In 1854 she, like Barton, was residing in Washington, D.C., supported by monies and property inherited from her husband and her father. Her only son was at West Point, and five daughters and one granddaughter lived with her. The family maintained a lively social life, receiving and making calls, attending balls, and hosting open houses and teas. While she had income, Lomax felt that “a few hundreds” more a year would be very welcome to sustain the household. Through her connections with the military, Lomax got copying work from the War Department in the summer of 1854. Like Barton, she struggled to maintain regular work. Hoping for more, Lomax wrote a personal note to President Franklin Pierce in June 1855, was promptly granted an interview at the Executive Mansion, and was given a letter to future major general George McClellan. Lomax immediately hand-carried the letter from the president to McClellan’s residence, pleading her case for work. When she began to receive regular work, it arrived by messenger at her home.

Lomax conducted all her business with the government in domestic spaces. She called on the president and McClellan in their homes, received her work assignments at her home, and did her work at home. Lomax, and other ladies like her, differed from Barton not only in the physical spaces in which they interacted with the male government employees who controlled their work but also in the way they proved their merit for a government job. Lomax based her petition for work on the past military service of her male relatives, an option Barton chose not to exercise, and her situation as a widow with many dependents. Lomax’s actions emphasized, rather than destabilized, the gender and class hierarchy in which she was embedded. While stressing her dependence and the derivative nature of her claim for wages, Lomax also refrained from disturbing General McClellan and the male clerks of the War Department by brushing past them in her hoopskirt in order to hang her bonnet in one of their offices.

To maintain the income she needed, Barton followed Lomax’s example in late summer 1855, cleaning out her desk and working from home as a copyist. In October she made brief visits to the office to turn in completed work and pick up new assignments. Her retreat was only temporary, however. When Mason returned to the patent office on 1 November 1855 Barton remained on the rolls as a temporary copyist, but her wages increased to a monthly rate equivalent to $1,400/year, the same salary paid to a second-class clerk and an extraordinary amount for a woman. According to some versions of Barton’s history her duties also changed, as it was at this point that she became a “confidential clerk,” with a desk upstairs among the men. While the only records show that she was a copyist, she later told reporters that she helped identify corrupt examiners who took bribes to issue patents and fingered employees who were drunk on the job. It was during the fall of 1855, when she occupied a desk at a man’s pay and all the other women remained banished, that a campaign of harassment by some of her coworkers evidently began.

As a clerk, Barton was joining a new but growing occupation, a category encompassing a range of duties from mindless copying tasks to sophisticated accounting work. In the patent office, clerical positions ranged from that of the chief clerk, Samuel Shugert, whose capabilities were such that he became acting commissioner in 1857, to those of the temporary clerks. Temporary clerks were an expedient developed by Mason’s predecessors to expand the workforce in the absence of needed statutory amendments to increase the number of formal employees. Some were paid by the drawing or the word to make copies, like Barton. In addition to copies of papers and records needed by the office itself, the public was entitled to order copies of patents, and each order had to be fulfilled by hand. Other temporary clerks evidently performed “responsible services.” Fales, who was not only Barton’s coworker but also her landlord, as she boarded with him and his wife, used his position of principal temporary clerk as a stepping-stone, later gaining an examiner post.

For the most part, men employed as clerks in the federal civil service were, like Barton, white, native born, and from relatively elite backgrounds. They were struggling to mark these new bureaucratic jobs as manly and genteel in a country that had long exalted the financial independence of the landowner and the sole proprietor. To face the possibility that such work could be equally well performed by females was an added source of insecurity, which evidently was too much for Barton’s coworkers to bear and a burden they felt justified in acting

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42 Fales was second assistant examiner in 1859 (*Register of Officers and Agents, Civil, Military, and Naval, in the Service of the United States, on the Thirtieth September, 1859* [Washington, D.C., 1859], p. 88) and principal examiner by 1869 (*Register of Officers and Agents, Civil, Military, and Naval, in the Service of the United States, on the Thirtieth September, 1869* [Washington, D.C., 1870], p. 161). For the friendship among Fales, his wife, Almira, and Barton see Pryor, *Clara Barton*, p. 58. Almira Fales was the first woman to engage in army relief work: ibid., p. 82.

to remove. Like Secretary McClelland, Barton’s coworkers focused on propriety, targeting her honor as a lady. They refused to abide by the etiquette that governed social interactions, such as those that occurred on the upper promenade. Instead, they behaved as though the office remained an all-male space in which the rules of conduct were relaxed.

Deploying tobacco as a weapon, they changed Barton’s experience of the office from “delightfully pleasant” to “trying.” According to Barton’s later reports, her coworkers blew smoke at her in the hallways and spat tobacco juice at her skirts. By thus causing her physical discomfort, the men were not risking their own gentility so much as rendering Barton invisible. Smoking and spitting were ubiquitous and accepted in all-male spaces. Nineteenth-century ladies, however, did not use tobacco, nor were they present in spaces where men used it.44 In the blowing smoke, Barton either disappeared altogether or, worse yet, was stripped of her class status, becoming a working-class woman of the sort whose presence was tolerated in smoky rooms full of men, such as barmaids or prostitutes.

Barton’s honor—that is, her status as a lady—was dependent on male adherence to class-based social conventions. By the standards of the day, if the men around her disregarded such conventions it was her fault for attracting rude behavior; and not only her status, but also her reputation, was in danger. Male rudeness was proof of female dishonor, particularly sexual impropriety. The persistent rumors of sexual misconduct that followed Barton throughout her unconventional life appear to have begun at this time. It is no wonder that she found the experience “trying.” In Ahmed’s bodily terms, she was being refused incorporation into the social skin, a rejection that precluded her from continuing to inhabit the office as her own “delightful” second skin. As Barton described it later, she endured, staring fixedly down at the floor as she ran a gauntlet of male hostility in the halls. “It wasn’t a pleasant experience, in fact, it was very trying, but I thought perhaps there was some question of principle involved and I lived it through.”45 The only proper response open to Barton was both to ignore any impropriety and to remove herself from the assault on her class status—that is, to abandon her desk and leave the site of the abuse. Each stream of tobacco juice and puff of smoke was the equivalent of a physical shove toward the exit. A strong-minded woman with powerful friends—who was also being well paid—Barton persisted for over a year, resisting those shoves by continuing to perform as a working lady, in what she considered a “sturdy battle, hard fought.”46

Mason, uncomfortable himself, resigned again in late September 1856 but was persuaded by President Pierce to unpack his bags and stay on. Barton went home to Massachusetts for a period in the spring of 1857 but returned to work in Washington through the summer, evidently mostly from home. Mason’s resignation was finally accepted in August 1857.47 Barton, seeing her patronage network vanish with a new presidential administration and DeWitt’selectoral defeat, wrote home in September that she began “to feel that [her] Washington life [was]

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drawing to a close,” as she reached the end of a “weary pilgrimage.” By Christmas Barton was fired and returned to Massachusetts. There she looked for clerical work in state government offices and was told that there was “no room for ladies.” As her unemployment persisted, Barton complained that although she could use her connections to help her inexperienced nephew get a clerical position, because she “couldn’t wear broadcloth” she was unable to find a new appointment for herself.48

Barton would continue this “sturdy battle” for the rest of her life. She persisted in claiming her honor as a lady in spaces and occupations where the rules of propriety did not apply, from battlefields to the stages of public auditoriums, as she founded and led the Red Cross, a national charity. In a first step toward what became her life’s work, Barton returned to Washington, D.C., as the nation moved toward war in 1860 and was rehired by the patent office as a copyist. She remained on the patent office payroll throughout the war. Like men who hired placeholders to perform government jobs while they fought, she paid a substitute to do her work while she traveled to the front lines, bringing supplies and aiding the wounded.49

In the 1860s, federal bureaucrats began to develop techniques to fit working ladies within the social skin of federal offices. When women were hired in the Treasury Department in 1862, the first large influx of women into the civil service, they were paid at one-half the rate of their male counterparts, reinforcing their subordinate status in the social ranking. Women office workers were separated spatially as well, cordonned off into sections where they could be spared the indignity of tobacco smoke, while the men continued to perform masculinity unhindered elsewhere. During the Civil War (1860–1865), this approach was inaugurated in the patent office when the commissioner realized that he could get more work for less money by hiring women clerks to work in the office for half of men’s wages than by paying women by the word to copy documents at home. He brought the women into a cluster of women-only rooms within the patent office, reminiscent of the basement room where Barton and other women may briefly have worked earlier. By 1871 the patent office had a recognized category of “female copyist,” a job that paid $900 per year—much less than Barton had made fifteen years earlier.50

While these strategies may have mitigated the discomfort of male workers, they did not spare these later women employees harassment similar to that experienced by Barton. The female Treasury employees were subjected to tobacco juice spitting and smoking, as well as, on occasion, sexual harassment and allegations of sexual misconduct. The message was dual: first, women were to be admitted to these spaces only under clear terms of unequal pay for equal work; and, second, any middle-class woman who accepted these terms and entered these spaces faced a threat to her status as a lady, requiring her constant vigilance and reassertion of her gentility, her honor always vulnerable to the refusal of male colleagues to recognize her claim. This vulnerability could have serious consequences. In 1871, a newspaper broke the

48 Clara Barton to Julia Barton, 6 Sept. 1857 (cit. n. 46), refers to the “weary pilgrimage.” “No room for ladies” comes from Clara Barton to Bernard Vassall (her nephew), 4 Apr. 1860, Clara Barton Papers (quoted in Pryor, Clara Barton, p. 71; and Oates, Woman of Valor, p. 12). For the remark about “broadcloth” see Clara Barton to Vassall, 13 Feb. 1860, Clara Barton Papers (quoted in Pryor, Clara Barton, p. 70).


50 The institutionalization of women’s unequal treatment in the civil service is traced in Claussen, “Gendered Merit” (cit. n. 21). For the postwar experience of female patent office clerks see “Washington,” New York Times, 13 May 1869 (fifty-three female clerks were authorized to begin on 1 July 1869); and Aeon, Ladies and Gentlemen of the Civil Service, pp. 72–73. For the new category of “female copyist” see Register of Officers and Agents, Civil, Military, and Naval, in the Service of the United States, on the Thirtieth September, 1871 (Washington, D.C., 1871), p. 170.
story of “rascally oppression” of the female copyists in the patent office, alleging that the male clerk with the power to fire them for cause was extorting $400 annually from each woman as the price of keeping her job, through “blackmail.” While the details were not provided, simply threatening to allege impropriety might have been sufficient to induce such payments. Eventually, increasing numbers of women workers caused supervisors to develop new rules of office conduct, employer-enforced etiquette for a mixed-gender workplace, to lessen feminine discomfort. In 1896 the secretary of interior banned all smoking in the hallways and in rooms “occupied by lady employees.” At least formally, tobacco could no longer be deployed to make federal office spaces inhospitable to working ladies as they walked through the corridors and took their desks, clothed in bonnets and dresses rather than broadcloth jackets.

SCIENTIFIC MEN

As the experience of later female Treasury clerks proved, Barton would likely have had a similarly unpleasant experience if Mason’s experiment had been attempted in any other office. The fact that this bold experiment occurred in the patent office, however, placed the enactment of gender by male white-collar workers in the same spaces as the contested enactment of science. In the patent office of the 1850s, some of those jacketed elbows belonged to self-proclaimed scientific men. Although the further radical step of hiring women as equally paid scientists was far in the future, this confluence helps us understand how the professionalization of science contributed to its persistent gender disparities. Like Barton, these scientific men were attacked as inappropriate occupants of patent office desks. The dual controversies taught that the crowded midcentury patent office was both no place to enact femininity and no place to enact science.

By the time Mason had been commissioner for six months, the office had about fifty employees. Six of this number were primary examiners and an additional six were assistant examiners. The Patent Act of 1836 had provided for only one examiner, a job immediately filled by one of the clerks of the former system most knowledgeable about patents, Charles Keller. Congress rapidly authorized a second examiner in 1837, then two assistant examiners. In 1848 it doubled the number of examiners and assistants. Mason’s predecessor had managed to get the numbers increased to six of each. By the time Mason resigned for the last time, in 1857, the numbers had doubled again, to twelve of each, plus another dozen men working in a new job category Mason had created, second assistant examiner. Between 1848 and 1857, as the number of primary and assistant examinerships increased from four to twenty-four, scientific men battled to gain these positions and to claim them as a means not only of earning a respectable salary but also of performing science.

Any job that fulfilled both these goals was a rarity. Since the colonial period, Americans had struggled to participate in the European scientific community and to form their own.
midcentury Americans were making progress. In 1848 a select group founded the American Association for the Advancement of Science (AAAS), which served as a nucleus of professionalization as earlier societies had tried and failed to do. Yet scientific employment remained a scarce resource in a nation largely without scientists. American colleges had barely begun to offer formal scientific training, and there were none of the corporate research laboratories that would become prominent by the end of the century. “Scientific man” or “man of science” was the transitional designation intended to distinguish men with particular training and experience from the more general eighteenth-century status of “natural philosopher.” Natural philosophy had long been idealized as the province of gentlemen, marked both by their masculinity and their economic independence. Eighteenth-century gentlemen did not work for wages.

Many aspiring American scientific men, however, lacked independent means and needed to earn a living. One option had been to find nonscientific employment and participate in science in their spare time, as amateurs. This option was becoming problematic at midcentury. In these years Joseph Henry, who became the first secretary of the Smithsonian Institution in 1846, and Alexander Dallas Bache, who led the United States Coast Survey from 1843, were consciously engaged in creating a professional scientific community. These men “had taken it as their mission to upgrade the image of American science by restricting entrée to those whose credentials and conduct they judged sufficiently ‘professional.’” Amateurs as well as those engaged in the mechanical or useful arts began to be judged deficient in both respects.

To achieve a professional livelihood, scientific men often looked for employment as faculty, although the number of professorships remained small. Both Henry and Bache had been professors before relocating to Washington. Colleges might employ up to four faculty members to cover all of mathematics and the natural and physical sciences. Government jobs were not only proliferating but often offered less onerous responsibilities than professorships, as well as the chance to be in a metropolitan center with other scientific men. In these coveted office jobs, however, the scientific men faced a dual challenge. Like other male white-collar workers,
they were also negotiating their position in the emerging middle class. In seeking to claim a place in professional science through salaried office employment, they sought not only to be scientific men, but also to be working gentlemen.

To establish patent examination as scientific, the scientific men in the office sought to foster the perception, among both the public and other aspiring scientific men, that their work drew on scientific expertise and created scientific knowledge. This task was aided by the hiring practices in the patent office from 1836 into the 1850s. Senator John Ruggles, sponsor of the Patent Act of 1836 that created the examiner role, articulated the notion that “an efficient and just discharge of the duties [of an examiner] . . . requires extensive scientific attainments.” 60 A supporter of the bill to add examinerships in 1848 agreed, suggesting that those “qualified for one of the learned professorships in our institutions of learning” were appropriate candidates. 61

Even Keller, the first examiner and a holdover from the previous patent regime, joined the National Institute for the Promotion of Science, a short-lived organization that before the AAAS had sought to create a national scientific community. The second examiner hired, Thomas Jones, was well connected to the emerging scientific elite as editor of the prominent Philadelphia-based *Journal of the Franklin Institute*, a scientific and technical publication, as well as a former professor of natural philosophy and chemistry. 62 When Jones left the office his replacement, Thomas Donovan, and the first two assistant examiners, Henry Stone and W. P. N. Fitzgerald, also signaled their interest in participating in the scientific community by joining the National Institute. In 1842 Donovan was replaced by Charles Grafton Page. Page had all the indicia of the scientific man—a medical degree, an extensive publication record, and his own natural history collection. He was a correspondent of Joseph Henry and became a prominent member of the AAAS after it formed. Page hoped that his new job would further cement his scientific position. 63

The expansion of examinerships in 1848 brought a further influx of scientific men. Henry Renwick, a college graduate with postgraduate training in engineering, and Leonard Gale, a former chemistry professor who also became prominent in the AAAS, became primary examiners. The new assistants included Titian Peale, a well-known naturalist who would become a principal examiner by 1853 and remained in the patent office through the 1860s; Samuel Cooper, another National Institute member; and Jonathan Lane. Lane, like Page and Peale, was closely associated with Henry and the nascent scientific community and later a charter member of the Philosophical Society of Washington and a member of the National Academy. He had worked at Bache’s Coast Survey, another government office claimed as a site of science. He evidently decided to move to the patent office because of the opportunity to work with Page, whom he considered “a scientific man of high order.” 64

64 On Renwick and Gale see Post, “‘Liberalizers’ versus ‘Scientific Men,’” p. 31; and “Biographical Directory of the AAAS.” On the new assistants see Post, *Physics, Patents, and Politics*, p. 117; and Post, “‘Liberalizers’ versus ‘Scientific Men,’” p. 38. On Lane...
With hiring decisions reflecting the vision of the examiner as a highly trained, specialized scientific man, the result was what the historian Robert Post has characterized as “a most impressive conclave of scientific talent” within the office. The patent commissioners referred to the examiner positions as the “scientific desks,” certifying the scientific nature of the job and of the men who held it. As the number of applicants climbed—eighty applicants for four positions in 1848—the use of other scientific men as references demonstrated both the type of expertise aspirants claimed as qualification for the job and the willingness of scientific men outside the office to support such claims. For example, Peale obtained letters of recommendation from the two deans of the emerging American scientific community, Bache and Henry, when he applied to the commissioner.65

Other examiners moved from professorships, seeking scientific community and higher salaries. William Langdon, a former professor of astronomy, became the second ex-faculty member in the office in 1851; he was followed by four others from “our institutions of learning”: Thomas Anitsell, Edward Foreman, Henry Wurtz, and Thomas Everett. Once Langdon arrived in Washington, he showed his continuing alliance with the scientific community by joining the AAAS. At the meetings he would have encountered his fellow examiners, fourteen of whom belonged to the association during the 1840s and 1850s.66 The ready movement of scientific men from the academy to the patent office, and their interaction with other scientific men through scientific societies, seemed to establish patent examiners as professionals who enacted science through their employment—that is, men who had the requisite “credentials and conduct.” Like the classroom, the laboratory, and the field, the patent office was a place of science. Claiming the examining desks of the patent office as sites of science, however, soon became hotly contested.

Many of the eager applicants for examinerships made no pretense of being scientific men. They considered the job of “examining clerk,” as it had been first designated in 1836, similar to other government clerkships in that it should be awarded to loyal partisans, under the Jacksonian principle that government jobs should be equally available to all Americans. In the 1850s, the federal civil service was firmly enmeshed in what has become known as the “Spoils Era,” and all federal jobs were a source of political power for those who could distribute them to supporters.67 The patent commissioner was a presidential appointee, and his choices for patent office jobs were subject to review by the secretary of interior. McClelland, who as a congressman had opposed examiner pay increases designed to attract scientific men, insisted that he should be able to hire and fire all patent office workers according to political criteria, adding

in particular see Post, Physics, Patents, and Politics, p. 117; and Post, “‘Liberalizers’ versus ‘Scientific Men,’” p. 38 n 47 (quoting Lane Diary, July 1848, Jonathan Homer Lane Papers, RG 167, National Archives, Washington, D.C.).


67 Post, “‘Liberalizers’ versus ‘Scientific Men,’” pp. 37–38, 46–48; Post, Physics, Patents, and Politics, p. 118, 155, and throughout; Historical Note, Finding Aid to Edward R. Foreman Papers, Smithsonian Institution Archives, Washington, D.C., Record Unit 7216, “Biographical Directory of the AAAS” (cit. n. 63); and Daniel Smith Lamb, “Antieseill, Thomas (1817–1893),” in American Medical Biographies, ed. Howard A. Kelly and Walter L. Burrage (Baltimore: Norman, Remington, 1920), pp. 32–33. There were thirty-four antiseillium examiners (Post, “‘Liberalizers’ versus ‘Scientific Men,’” pp. 29, 54), and fourteen of these were active in the AAAS (“Biographical Directory of the AAAS”).

the sought-after examiner jobs to his patronage network. Some new examiners—like the Iowan Fales, who had been promoted from temporary clerk—had no scientific training or interest, neither claiming scientific education nor joining scientific societies. Although Peale had been able to gain an assistant examiner position by emphasizing his scientific credentials, he found himself repeatedly passed over for promotion from assistant to primary examiner, despite further backing from Henry and Bache; he realized that he needed “strong political backing.”

The scientific men remained at the mercy of a nonscientific political appointee, the secretary, who did not understand patent examination to be a scientific job. Commissioner Mason, though a political appointee, had graduated at the top of his class from West Point, which provided a technical education. Like his predecessor as commissioner, Thomas Ewbank, he was sufficiently interested in science to join the AAAS. He disagreed with McClelland not only with respect to the propriety of female clerks but also on the requisite expertise of examiners, an issue that contributed to his ongoing feud with the secretary. As scientific men worked side by side, for equal pay, with nonscientific men as examiners, their claims to be performing scientific work were undermined. Like male clerks working alongside female clerks earning equal wages, the scientific men felt their honor threatened.

Matters became worse with mounting criticism of scientific men as examiners from the inventive community, led by Scientific American, a weekly that was the mouthpiece of the largest patent agency. This criticism stemmed from high rejection rates as the men of science determined that applications failed to meet the statutory requirements of patentability. The media campaign identified the scientific men as too prone to look deeply into the prior literature and find that, unbeknownst to the applicant, the claimed invention was not in fact new. The inventor, on the other hand, relied on direct bodily experience with tools and machines and understood his invention from this practical, material perspective. The argument was that the expertise of the scientist had no place in an office devoted to technology. Many scholars have noted that modern science, an international endeavor begun among European colonial powers, is distinguished by its claim to produce disembodied knowledge. Science privileges observational knowing that can travel in written form over the tactile, embodied knowing of the artisan. Yet the observer, while claiming a “God’s Eye view,” is always situated, and the embodiment of the scientist carries gender, race, and class. In the patent office, as in other places of science, the observations of certain bodies—male, educated, free from the necessities of manual labor—were privileged over the observations of other bodies, to the disappointment of many would-be patentees.


69 Mason had remained at West Point to teach engineering. See Sellers, “Commissioner Mason and Clara Barton,” p. 804; Schwiebert, “Charles Mason and the Civil War” (cit. n. 4), p. 8; Toussaint, “Biography of an Iowa Businessman” (cit. n. 4), p. 2; and “Biographical Directory of the AAAS” (cit. n. 63).


While this distinction in modes of knowledge production was fomenting dissatisfaction among inventors and their agents, it was being reinforced elsewhere in Washington, D.C., by those engaged in the process of organizing a defined national scientific community. Professionalization of science involved separating the true “scientific man,” with his appropriate credentials and conduct, from the broader group of persons who sought patents. Individuals of this sort were variously termed the “scientific mechanic” or the “mechanically minded man.” The men of the “scientific desks,” selected for their “attainments,” were distinguished in education and socioeconomic status from the mass of inventors in ways that would have been apparent as inventors stepped into the patent offices. In the cramped offices, inventors rubbed elbows with examiners who both showed a command of scientific knowledge inaccessible to most Americans (in part because scientific publications were often written in French or German) and embodied different ways of speech, dress, and behavior. Scientific men, on average, were better educated than inventors. They were more likely to be from urban centers and to be children of men who earned their living by mental, rather than manual, labor. In these ways, scientific men were separated by birth and experience from the majority of Americans, who lived in rural areas and were engaged in agricultural pursuits. The family backgrounds of inventors, on the other hand, were much closer to those of the country at large; a much smaller percentage were from professional, educated families. The differences that scientific men were painstakingly creating and maintaining as part of the professionalization of American science and enacting at the “scientific desks” made the patent office a place where inventors might feel unable to fit within the social skin, assigned an inferior rank in a hierarchy based on expertise that prized disembodied over embodied knowledge. In their embodiment of class, education, and urbanity, the scientific men could make the office space unwelcoming to the inventor and, worse yet, demonstrate that their elite knowledge trumped the inventor’s expertise with regard to his own invention by denying his application.

More than the discomfort of inventors was at stake. Rejections were bad for patent agents, whose business it was to obtain patents for inventors. Scientific American, serving its patent agency owners, stated with increasing stridency that the patent office should not be a site of the enactment of science. Performing science, it argued, was incompatible with performing...
technology, and the solution was the expulsion of scientific men, in favor of “practical” men or “thorough bred mechanics.”75

Although this contest about the patent office as a place of science took place through print, rather than via the hallway deployment of tobacco, the experience of the embattled scientific examiners in some ways paralleled that of Barton in her “sturdy battle.” Gale, for example, fought back to preserve his job and his honor. In describing his job for Congress and the public in 1852, he emphasized his mental labor and use of the scientific method to generate knowledge, stating that he had read “more than a hundred foreign patents to decide a single application, and in other cases . . . continue[d a] series of experiments for several weeks in succession to decide a single point.”76 Just as the failure of male clerks to behave as though they were in the presence of a lady threatened Barton’s honor, Gale privately lamented that he felt his “honor” slipping away with each appointment of a nonscientific man as an examiner.77 Almost at his elbow, nonscientific men were performing the same tasks at the same pay, denying his elite status. Like Barton, Gale and the other scientific men were finding the enactment of their jobs within the spaces of the patent office an uncomfortable fit.

The scientific men in the patent office did not receive support in their battle from scientific colleagues elsewhere. Despite his support of Langdon and Peale for examiner jobs, Henry, himself a former apprentice silversmith and a trained engineer, went on record in 1850 as leaving the “application of my discoveries” as a matter of “subordinate importance” to others, and he described “the feeling common to men of science” to disdain patenting their discoveries.78 The Scientific American campaign emphasized a conceptual separation between science and technology that was also being drawn by professionalizing scientists outside of the patent office. It was only a small step from noting that men of science did not seek patents for themselves to the conclusion that the business of the patent office, no matter who occupied its desks, was in no way related to professional science. According to Henry and other leaders, science was distinct from and superior to the “subordinate” domain of technology. Page, Langdon, and other examiners struggled unsuccessfully to use the patent office as a platform from which to build and maintain a scientific reputation. Page, perhaps the preeminent scientific man in the examining corps, saw his reputation slip during his years in the patent system. Langdon, the promising former professor, after leaving the office in 1856, also left the scientific community, working briefly as a patent agent and then becoming an Episcopalian priest.79

The combination of political and merit-based attacks had an impact, too, within the office. The secretary of interior was only too happy to satisfy the clamor of Scientific American to get rid of scientific men while pursuing his own goal of using examiner appointments for political patronage. After President James Buchanan’s election and the departure of Mason in 1857, not only did Barton leave; nearly half of the patent examiners were replaced and by 1858 the “conclave of scientific talent” no longer existed. Mason’s successor as commissioner, Joseph Holt, described the ideal examiner in terms that emphasized the equivalence of examiner


78 Henry’s speech is quoted in Post, Physics, Patents, and Politics, p. 133; see p. 129 for additional antipatent rhetoric by Henry.

and inventor, rather than the examiner’s elite qualifications. According to Holt, examiners no longer “receive[d] the inventor as a stranger” but “welcome[d] the inventor as a friend and
patron.”80 The examiner and inventor met as friends, each comfortable within the social skin
of the patent office, because of their shared commitment to the embodied knowledge of the
inventor and the end to claims of elite expertise by examiners. If there was a hierarchy, it was
the inventor who was superior, as the “patron,” providing the opportunity for the examiner to
act as a public servant rather than as a scientific gentleman.

GENderED SPaCES Of SCiENCE
In the 1850s, occupancy of the Patent Office Building, so unproblematic among the exhibits
of the upper floor, was a risky business on the lower floors. The patent office was a place of
insecurity for its white-collar workers, its employees fighting for their professional identity,
their class status, and their gender identity at the same time. Rubbing elbows with multiple
“others,” their degree of comfort in the daily enactment of their occupations signaled their
success in maintaining their honor. As tobacco smoke assaulted nostrils and stung eyes, as
backwoods plain speaking was countered with references to European publications, as cheeks
reddened with embarrassment and anger, many of those occupying desks in the patent office
felt uncomfortable.

During those years of “sturdy battle,” the performance of their jobs by male and female
workers alike threatened to disrupt ordered rankings based on gender, class, and the methods
of knowledge production that precariously supported the American scientific community. Sci-
entific men sought to carve out their own place in the patent system, where they could enact
the disembodied knowledge of science and elite gentility while simultaneously being well paid.
When Barton and the other women were present as clerks, the examiners also found them-

selves in a workspace where at least some of the men felt forced to defend their masculine sta-
tus. Barton never specified whether her harassers were clerks or examiners. Whether or not any
scientific men participated in the campaign of manners against her, however, they benefited
from actions that preserved all white-collar jobs, scientific and nonscientific, as male-only.81

As participants in Mason’s failed experiment, in which Barton and her unnamed female
colleagues came closer than any other midcentury women to working alongside scientific men
under gender-neutral employment conditions, the scientific men of the patent office partici-
pated in shaping the American scientific community as a social space in which only men could
be comfortable. Either by action against Barton or inaction against her harassers, in their ev-
eryday deportment in the office they enacted masculinity as an assumed characteristic of the
scientist. In rubbing elbows with the common man as inventor, scientific men were forced to
articulate assumptions of class, education, and means of knowledge production that ultimately
caus ed the end of the “scientific desks.” By working in an office where skirts and petticoats were
made unwelcome, they also demonstrated by their deportment the assumption of masculinity
that was shared by their colleagues elsewhere in the single-sex spaces of professionalizing science.

This assumption ran deep. While the suitable employment of scientific men was under
negotiation at midcentury, the “men” of “scientific men” was simply not in question. The

(Washington, D.C., 1858), p. 2. On the changes by 1858 see Post, Physics, Patents, and Politics, pp. 154–158; and Post, “ ‘Liberal-
izers’ versus ‘Scientific Men,’” pp. 49–50.

81 For a similar midcentury exclusion that helped doctors identify their profession as white and male see Ronald T. Takaki,
“Aesculapius Was a White Man,” in The “Racial” Economy of Science: Toward a Democratic Future, ed. Sandra Harding (Bloom-
historian George Daniels has stated flatly that “there were no women” in American science, at least through 1840. While the historian Sally Gregory Kohlstedt has identified a few, she has agreed that in this period their efforts were “largely invisible” to their contemporaries.82 Such women were also generally unpaid for their scientific work. Mason’s bold experiment did not extend to considering women for examinerships. Even Barton, a trailblazer who chafed at the limitations on women’s roles, did not attempt to claim such a position.83 The exclusion of women from scientific jobs in the government matched their exclusion elsewhere during these decades.

The foremost exception to the masculinity of science at midcentury was the astronomer Maria Mitchell. Trained by her father, and working in his home on Nantucket Island, she gained entrée to the spaces of professional science after earning international fame by identifying a new comet. She was admitted to the AAAS in 1850, participating in its meetings. Mitchell became “perhaps the only American woman to have self-supporting scientific employment” when she began in 1849 to work as a calculator for the federal Nautical Almanac Office.84 Yet even Mitchell did not work side by side with scientific men. Like Lomax, Mitchell worked from her home, where she continued to live with her father, making her observations at night. Not until 1865 did Mitchell obtain employment in a space of science, as professor of astronomy at a newly founded women’s college, Vassar, where her primary duty was to teach women in a largely single-sex environment. She then fought for four years to receive a salary equal to that granted male professors, and she remained a rarity in the academy for decades. In 1880, less than 4 percent of faculty positions in all fields were held by women, with a minority of those in science. Even at other women-only schools, like Mount Holyoke Female Seminary (later Mount Holyoke College), male professors gave the science lectures.85

Through an investigation of the contested spaces within the patent office, the masculine embodiment of the American scientist can be understood as more than an inevitability or another example of the gendered hierarchy of office work. American science developed along its own path in the early republic. That path led through the patent office, one of the only sites of the formation of the American scientist at midcentury where “scientific men” rubbed elbows with working ladies in a position of some equality. Their deportment in this shared space demonstrated what would not be verbalized until later: that women, as well as amateurs and mechanics, were part of what was being excluded from the professional scientific community.

82 Daniels, American Science in the Age of Jackson (cit. n. 54), preface to 1994 ed., p. xi (see also Bruce, Launching of Modern American Science (cit. n. 55), pp. 78–80); and Sally Gregory Kohlstedt, “In from the Periphery: American Women in Science, 1830–1880,” Signs, 1978, 4:81–96, on p. 82. This invisibility continued into the twentieth century; see Oreskes, “Objectivity or Heroism?” (cit. n. 71). For the assumed whiteness of science and scientists see Harding, ed., “Racial” Economy of Science (cit. n. 81).


There was “no room for ladies” of science because their gender identity, class, and claim to scientific knowledge production could not be simultaneously embodied. As the nineteenth century advanced, the truism that there was no room for ladies shifted from assumption to articulation. Before 1860, the exclusion of scientific ladies from the professionalizing scientific community could be easily assumed in part because there were so few women vying for reputational position in science. Just as women began to move into government jobs in the 1860s, women increasingly sought to occupy spaces within the scientific community after the war ended in 1865, particularly as more earned college degrees. American scientists reacted to this challenge much as the white-collar workers of the patent office had, seeking to reinforce the masculinity of what some male scientific leaders were beginning to call “pure” science.

One tactic, adopted in the patent office by 1870 and copied by male scientists, was segregating women into separate spaces and job categories. Jobs like Mitchell’s, transforming observational data into scientific fact through calculating, became more feminized. Edward Pickering referred to his special room of female calculators at the Harvard Observatory as his “harem.” Another was conceptual segregation, or outright bans. In the 1870s and 1880s, the increasing number of specialized scientific societies created barriers to women. The AAAS, for example, created a separate, higher membership category of “fellows,” which remained almost exclusively male, for those “professionally engaged in science,” allowing women to join but keeping them at the lower, unprofessional level. Tobacco remained an effective weapon, as male scientists exploited etiquette to keep women out of communal places of science in ways as powerful as formal rules. Until well into the twentieth century, “smokers” hosted by professional societies and the after-dinner cigar smoke at professional banquets served to exclude women scientists.

Ladies still did not enter rooms in which men were smoking; so just as Barton had been fifty years earlier, scientific ladies were put in an untenable position, with the contradiction between “lady” and “scientist” allowing for no place where they could be comfortably present. Entering smoke-filled spaces of science in order to claim status as professional scientists, women relinquished their claim to class equivalence and respectability. Giving up class status not only risked the loss of reputation but also undermined female claims to be professional scientists, since lower- or working-class people labored with their hands rather than with their minds and therefore could not produce the disembodied knowledge of science. Or women could stay outside the smoke, following the conventions of ladylike behavior and also rendering themselves invisible as scientists, giving up the possibility of scientific interaction. The woman scientist became a “contradiction in terms” because there was no space for her to practice her occupation as an equal. The “sturdy battle” begun by Clara Barton in the patent office continued in places of science throughout the twentieth century.

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86 Women faculty at Mount Holyoke who ventured into science teaching found themselves navigating the same tension between performing science and risking loss of gentility. See Levin, Defining Women’s Scientific Enterprise, p. 38.
88 Rosser, “Women’s Work in Science,” pp. 383–384, Fig. 1.
89 Rosser, Struggles and Strategies to 1940, p. 76 (emphasis added). Rosser also discusses similar tactics by the Boston Society of Natural History and the American Chemical Society: ibid., pp. 77–78.
90 For women’s experience in professional science in the late nineteenth century, including their reluctance to intrude on smokers, see Rosser, Struggles and Strategies to 1940, pp. 52–99 (for smokers see pp. 91–94). For cultural resistance to women smoking through the 1920s see Allan Brandt, The Cigarette Century: The Rise, Fall, and Deadly Persistence of the Product That Defined America (New York: Basic, 2007), pp. 57–58, 63–67.