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Structures of Antifeminism: Drugs and Women's Education in the Texts of Dr. Clarke

Andrew Fiss

Abstract: *Focusing on Dr. Edward Hammond Clarke, this article explores the formal structures linking nineteenth-century texts about drug abuse and women's education. Although Clarke's *Sex in Education* (1873) has been extensively studied for its antifeminist arguments, this article is unique in incorporating the materia medica (pharmacy) lectures he delivered at Harvard. Through the similar organization and use of clinical case reports in both types of texts, Clarke framed women's education as a potentially dangerous drug, and encouraged the treatment of female students as objects of medical research. This article analyzes formal patterns linking pharmaceutical literature with antifeminist arguments against women's education.*

Keywords: *Rhetorics of health and medicine, nineteenth-century America, women's education, antifeminism, pharmaceutical rhetorics, *Sex in Education*, Dr. Clarke*

Dr. Edward Hammond Clarke (1820-1877) is a quintessential antifeminist, according to many encyclopedias. His book *Sex in Education: Or, A Fair Chance for the Girls* (1873) advocated women's biological inferiority, saying that they would have lifelong reproductive problems if they spent too much time in school. Clarke's compiled texts, maintained by the Countway Library of Medicine at Harvard University, confirm this stance, though they emphasize instead his varied interests in diseases of the eye and ear, American medical history, and especially the latest drug treatments. Clarke, after all, was Harvard's professor of "materia medica," the medical subject that overlapped significantly with pharmacy, and he tried to excite interest in this topic through numerous public lectures and college classes. His compiled works therefore mix writings on drugs with those on women's education, inviting analysis of the formal patterns linking his well-known antifeminism with lesser-known materia medica (i.e. pharmacy).

As this paper will show, similar organizational patterns and gendered case reports appeared in both Clarke's pharmaceutical and antifeminist texts, despite their differing topics and audiences. Both used a four-part format: introduction, physiological actions, clinical uses, and potentials for misuse. This organization had its roots in the ways that Clarke hoped to reform medical education, adopting the physiological explanations of recent medical movements

and focusing on pharmaceutical dangers. Additionally, in both types of texts, Clarke used clinical case reports to construct gendered stories of excess, whether it be too much drug use or too much education. Dozens of historians have investigated the ways that Clarke's *Sex in Education* used references to scientific texts to extend educational prejudices, as Sue Zschoche has reviewed (547-548). The following paper adds to this scholarship through shifting focus to the formal similarities of Clarke's pharmaceutical and antifeminist texts. In doing so, I argue for the importance of considering a historical figure's full work because the same structure (or arrangement) can be shared between multiple texts, with important implications. In this case, though Clarke did not explicitly mention *materia medica* in his educational work (or vice versa), there are implicit connections having to do with the form of both kinds of texts. Through them, Clarke cast women's education as another dangerous drug, akin to opium, alcohol, and chloral hydrate, and he encouraged the treatment of female students as objects of medical study.

Rhetoricians have long been fascinated with pharmacy. Ancient Greek teachers, particularly Gorgias and Plato, asked how persuasive speech works on a hearer like an addictive drug (Bizzell & Herzberg 19-29). Recent generations have inverted the emphasis, exploring instead how modern pharmaceutical companies use techniques inspired by persuasive speech. Some rhetoricians follow the work of Heather Bell, Kathleen Walch, and Steven Katz, analyzing specific pharmaceutical's written protocols. Others, such as Blake Scott, uncover widespread patterns in the responses of America's "Big Pharma" to global events. Scholars in marketing, business, and related fields likewise analyze trends in drug packaging and deployment.¹ This article adds to this scholarship through investigating the ways that the rhetoric of pharmaceuticals informs other realms, subtly extending assumptions about drug use to concerns about human abilities and inabilities. Moreover, it shifts our focus to classrooms, where educators indicate the power and range of pharmacy as a field and practice.

This article is fundamentally historical, responding to recent calls that rhetoricians of health and medicine need to spend more time studying the past. In the 2017 *Methodologies for the Rhetoric of Health and Medicine*, Susan Wells and Nathan Stormer generate many arguments for the importance of history for this rhetorical subfield. They claim, for instance, there seems little benefit to focusing intensely on the present, imposing some arbitrary break divorcing materials for rhetorical analysis from those that came before. As editors Lisa Meloncon and Blake Scott note, Wells and Stormer's arguments extend larger

1 For a small subset, see: Paula Gardner, A. Peter McGraw et al, and Marcus Paroske.

trends that emphasize multiplicity and diversity, supporting the recognition of rhetoric as plural, pluralist rhetorics. *Peitho* has been a forum for this feminist work for many years, and its recent articles have argued productively for the diversity of STEM rhetorics (Jordynn Jack n.p., Brewer 251-252). This article uncovers some ways that antifeminists have collapsed the “*rhetorics of health and medicine*” (Scott, Segal, and Keränen 2; emphasis added) into exclusionary structures, negating even the possibility of women’s contributions to many professions. Though much of the article consists of a structural analysis of Clarke’s historical texts, the conclusion also introduces present-day analogues of Clarke’s pharmaceutical antifeminism in the new field of neuroeducation, the application of neuroscience to educational research.

Centrally, this paper uncovers a cache of underexplored materials related to Clarke’s pharmaceutical rhetoric. Hundreds of books and articles have analyzed Clarke’s *Sex in Education*, particularly its distrust of women physicians and its pathologization of menstruation.² But Clarke’s medical papers rarely receive scholarly scrutiny; his public lectures on medicine have appeared in only three histories (Tuchman 174, Coulter 243, Warner 340). This paper is the first to analyze the additional notes from his classroom lectures in *materia medica* (pharmacy).

In order to privilege the formal features linking pharmaceutical and antifeminist texts, this paper has two parts. The first indicates how the same organization can be found in Clarke’s classroom lectures in *materia medica* and his book *Sex in Education*, suggesting common strategies related to the movement of “scientific medicine.” The second notes the similar ways that Clarke presented clinical case reports in both kinds of texts, where he consistently claimed that men and women develop different ways of overusing, whether it be drugs or education. The paper ends through considering the afterlife of Clarke’s ideas, particularly in neuroeducation. Throughout, the case of Clarke’s pharmaceutical antifeminism urges us to pay attention to intertextual structures shared between a well-known figure’s infamous and lesser-known texts. Such structures expose implicit arguments that unexpectedly link various topics and audiences. In this case, through the same organization and use of clinical case reports in *materia medica* lectures and *Sex in Education*, Clarke implicitly argued for the treatment of female students as objects of medical research, subtly framing their education as a potentially dangerous drug.

2 On its biases toward women in medical professions, see chapter 4-5 of Walsh, Morantz-Sanchez 54-56, Vostral 26-35, chapter 4 of Bittel, and Hamlin 73-80. On its views of menstruation, see Bullough and Voght, chapter 1 of Rosenberg, Gay 213-219, and Cayleff.

Organizing *Materia Medica* and *Sex in Education*

Clarke's pharmaceutical and antifeminist texts surprisingly used the same organization, despite differing topics and audiences. Addressing all-male lecture halls of Boston medical students or mixed crowds of international readers, Clarke used the same four parts: introduction, physiology, use, and overuse. This approach to pharmaceutical remedies, I argue, followed from the contemporary movement of "scientific medicine." Also called "physiological medicine" or "rational medicine," scientific medicine was a transatlantic movement calling for the improvement of patient therapies through physiological explanations, laboratory experimentation, and clinical experience. According to gender historian Arleen Marcia Tuchman, it emerged in Germany, where physicians argued that medical practice should not be governed by the debates over classification schemes in natural history and botany (141). Clarke, too, adopted this movement, calling it "rational therapeutics" when he argued for its application to pharmaceutical concerns (*Recent Progress in Materia Medica* 7). Clearly following trends in *materia medica*, the presence of the same organization in *Sex in Education* requires more explanation, including comparisons with similar works of the period. Though Clarke never mentioned *materia medica* in his writings on women's education (or vice versa), their common organization suggests connections between nineteenth-century literature about drug overuse and gendered qualities. Implicitly, *materia medica* formed the bedrock for the presentation of Clarke's antifeminist views.

When Edward Clarke joined the Harvard faculty in 1855, it was clear that the teaching of *materia medica* had to be reformed. Partially inspired by the experiences of Clarke's predecessor, botanist Jacob Bigelow, the Harvard Medical School had issued an 1850 report that generalized from the problems of *materia medica* to broader issues in medical education throughout the school and country. "In *Materia Medica*," it asserted, "there are some thousands of substances and their compounds, which possess what is called medicinal power. Yet it is not probable that any physician effectively reads the one-half or remembers one-quarter, or employs in his yearly practice one-tenth, of the contents of the common dispensaries" (qtd. in Cowen 104). The problem of "dispensaries" (i.e. pharmacopoeias), it continued, was the problem of medical education generally. The budding physician, assumed to be male, did not need to learn so much that would be so irrelevant to "his yearly practice." The report therefore recommended that all medical professors, no matter their specialty, cut the information they taught. The remaining "one-tenth," covered in greater detail, could form the basis for a revised medical curriculum.

As evinced by Clarke's lecture notes, the revised classes in *materia medica* came to have a consistent organization. For a mere dozen of the most

common drugs, Clarke taught his students rules for use. He reliably began with (1) an introduction that covered a given remedy's historical reputations, chemical compositions, and common preparations. He then proceeded to (2) a physiological section that explained the ways the drug could pass through a patient's system, how it could be absorbed into which bodily tissues, and what effects it could produce. He theorized through (3) a clinical section that determined the medicinal uses of the drug from physiological actions. And he ended with (4) a conclusion that included possibilities for "overuse" and a summary of rules for patient treatment (*Manuscript lectures in Materia Medica*). The four-part structure itself reflected the efforts of the Medical faculty to pare down the information relayed to their students. Just as they suggested covering only the useful "one-tenth" of all known drugs in materia medica, Clarke reduced his lectures to a predictable, short sequence that repeated again and again.

Though organizationally repetitive, Clarke's lectures were not boring; he excited interest in his subject through focusing on substances that seemed quotidian or dangerous, preferably both. In one instance, he began a materia medica class with a sequence of lectures about opium, beginning with its presence both throughout history and throughout the world ("First lecture" in *Manuscript lectures in Materia Medica*). After covering common preparations, he then proceeded to the second part (physiological), emphasizing its quick absorption into the blood and the ways it refused to break down in the human body. In this way, according to Clarke, opium could slow most bodily functions, depending on its uses ("Second lecture" and "Third lecture"). The third part (clinical) related some of those uses: for sleep and relaxation of various bodily systems but also for their waking and excitation. Emphasizing the ways opium would always be available and prescribed for nearly any malady, Clarke also worried about the overuse of such a drug ("Fourth lecture" and "Fifth lecture"). Since he had already covered a short history of opium addiction in his introduction, his fourth part (conclusion) instead emphasized the ways that opium could produce opposite effects from the ones addressed in its prescription. Precisely because physicians used it so much, it could prove dangerous to individuals and to communities ("Sixth lecture"). Throughout the rest of this class, Clarke emphasized similar worries through the instances of belladonna, chloral hydrate, and alcohol. All, he claimed, were dangerous because they were so common.

Also dangerously quotidian, for Clarke, was women's education. In 1872, a member of the New England Women's Club asked him to address the group about "the higher education of Women as influenced by Physical Conditions," and, according to a news report of the lecture, he surprised his audience through telling them how he thought women's "Physical Conditions" should

severely limit their exposure to “higher education” (H.B.B. 404). Spending too much time studying without adequate time for rest, he asserted, would delay the development of girls’ reproductive systems. The prevalence of women’s colleges and coeducational institutions did not calm his fears, nor did the presence of so many collegiate alumnae in his audience. Rather, he worried that the spread of women’s higher education would result in population-level problems, making it more difficult for each successive generation to have children. Like drug addiction, Clarke asserted, over-education would harm the individual and entire communities, too. Convinced of the urgency of these claims, Clarke expanded his 1872 lecture to the 1873 monograph *Sex in Education: Or, A Fair Chance for the Girls*.

Though there was no explicit drug in *Sex in Education*, the book still had the same basic organization as a *materia medica* lecture. The table of contents contained only a slight expansion of Clarke’s four-part organization:

Part I. Introductory

Part II. Chiefly Physiological

Part III. Chiefly Clinical [i.e. the uses of education stemming from physiology]

Part IV. Co-Education [i.e. misuses of education]

Part V. The European Way [i.e. successful uses of education] (*Sex in Education* 9)

As in the *materia medica* lectures, the introduction related the recent reputation of women’s education. It began through indicating the varied interest in the topic and defining education, before the thesis that girls’ adoption of boys’ study methods was the prime cause of “female weakness” (24). Physiology appeared next. This section first outlined the few ways that women’s physiology differed from men’s, meanwhile establishing a vocabulary for discussing women’s reproductive systems, and it proceeded to argue for the necessity of understanding both blood and cellular growth for the development of healthy menstruation. The “clinical” chapter continued to discuss the physiological effects of education, illustrated through case reports supposedly from medical practice. Because he equated menstruation with waste removal, Clarke worried about the possibilities of too much blood flow and too little blood flow, both of which he claimed could come from excessive study or (occasionally) from excessive physical work. As in *materia medica*, Clarke ended with comments about use and misuse, first noting the misuses of women’s education in American co-education and then suggesting proper uses through following “the European way” from German schools and family life (assuredly not German universities). Though Clarke never did mention drug use, his infamous

Sex in Education echoed the organizational conventions of his materia medica lectures. Focusing on a phenomenon he found quotidian and dangerous, it too followed a systematic presentation of physiological action, clinical application, and potential for overuse.

This organization did not appear in similar books of the time, whether about pharmaceuticals or women's health and education. First of all, the textbooks Clarke used in his teaching did not follow this scheme. Edward Parrish's *Practical Pharmacy* and Alfred Stillé's *Therapeutics and Materia Medica* emphasized the classification of medicinal agents into types, proceeding through "botanicals" to different kinds of synthesized medicines. George Wood's *Treatise on Therapeutics and Pharmacology*, though beginning with drugs' operation and effects, similarly ended with rules of classification. Jonathan Pereira's *Elements of Materia Medica and Therapeutics* did include significant sections about physiology and clinical cases, though it too concluded with rules of classification, many based in natural history. Secondly, Clarke's organizational scheme did not appear in the other literature about women's health/education cited in *Sex in Education*. Science enthusiast W.R. Greg did not include significant clinical case studies in his *Enigmas of Life*, nor did the physician Benjamin Ward Richardson in his "Physiology of Sleep." William Hammond's *Sleep and its Derangements* focused on problems without a section about successful treatments, and Herbert Spencer's *Study of Sociology* famously used a problem-solution organization for much of its argument. Physician Francis Anstie came closest to providing a precedent for Clarke but his book *Neuralgia* used a different order: proceeding from an introduction directly to problems/misuses, followed later by physiology, clinical cases, and successful uses. Therefore, the structure of *Sex in Education* specifically linked to Clarke's materia medica lectures.

Clarke's pharmaceutical assumptions did become controversial when applied to the "question" of women's education. The predominately female audience of the New England Women's Club pointed out the ways Clarke's musings were not medically supported. In response to his physiological section, Julia Ward Howe suggested that, even if women had to rest while menstruating, they could accomplish the same mental work as men because their minds worked faster. Dr. Mary Safford, Louisa Hotchkiss, and Abba G. Woolson pointed out that the necessary physiological changes could be achieved through curtailing parties or wearing different clothing, not avoiding studies. In response to the clinical section, Lucy Stone and Matilda Fletcher offered their observations of healthy educated women, with Stone reflecting that her own Oberlin education did not send her into reproductive decay (H.B.B. 404). In short, to many in the audience, Clarke's accounting of physiology seemed mistaken, and his references to clinical experience seemed incomplete at best.

After publication of *Sex in Education*, many in this circle printed responses, culminating in the intensive medical studies of Dr. Mary Putnam Jacobi, recently analyzed by rhetorician Susan Wells (*Out of the Dead House* ch. 6).

The presence of this organizational scheme in *Sex in Education* was even more surprising because many in Clarke's audience knew the intellectual roots of his lecturing style. Clarke's repetitive use (perhaps overuse) of this four-part structure stemmed from his commitment to scientific medicine, which he had learned through a well-educated woman, the wife of New England Women's Club member Julia Sprague: Dr. Marie Zakrzewska. Though all settled in Boston eventually, Zakrzewska and Clarke met in Berlin circa 1850, where Zakrzewska worked as a midwife and Clarke acted as a tour guide for wealthy Americans traveling abroad. As Tuchman explains, Zakrzewska was already a devotee of scientific medicine because it reminded her of her German upbringing, particularly the pan-European revolutionary fervor leading up to 1848 (173-174). Scientific medicine promised to change the face of patient treatment through a reliance on physiology and recent experience, not outdated botanical theories of the "correct" classification of plants. A native New Englander nine years older than she, Clarke needed to be convinced, but soon shared Zakrzewska's enthusiasm. According to his obituaries, Clarke came to agree with the central idea that physiology and clinical experience could revolutionize patient therapy, creating a "rational" medicine better suited to modern life (Ellis 4). This realization prompted Clarke to return to the United States, to establish a medical practice, and ultimately to accept the position at the Harvard Medical School. The new "physiological" and "clinical" sections in Clarke's *materia medica* lectures assuredly came from his adoption of Zakrzewska's scientific medicine, becoming a cornerstone of reforms in medical education and practice. In patterning *Sex in Education* on his new classroom lectures, Clarke used scientific medicine to justify limits on women's education, a surprising result given his intellectual indebtedness to an educated woman.

The phrase "*materia medica*" only appeared in one part of *Sex in Education*. The title page listed: "Edward H. Clarke, M.D., Member of the Massachusetts Medical Society; Fellow of the American Academy of Arts and Sciences; Late Professor of *Materia Medica* in Harvard College, Etc., Etc" (1). Though such a title page surely did predispose readers to trust Clarke's medical authority, it is unlikely that he made this connection himself; probably, his publisher did. James R. Osgood and Company presented other authors in the same way, with

comparable lists of degrees, titles, and affiliations.³ In fact, by 1873, Clarke had begun to distance himself from *materia medica*; according to his obituaries, he resigned his professorship in 1872 because he claimed he had too many patients (Holmes 1). Though not explicit, *Sex in Education* still borrowed the organization of Clarke's earlier *materia medica* lectures. This structural echoing suggests implicit connections between Clarke's diverse texts, especially the ways that *materia medica* reinforced his arguments against women's higher education.

Cases of Overuse from Drugs to Education

Similarly, considerations of gender featured in both Clarke's pharmaceutical and antifeminist texts, though not always overtly. On the one hand, *Sex in Education* was centrally about gendered abilities. Explaining the subtitle, "A Fair Chance for the Girls," Clarke asserted that girls could not handle the physical strain of masculine expectations, so girls and boys should be raised (and educated) according to different standards (*Sex in Education* 150). On the other hand, his *materia medica* lectures did not feature considerations of gender so obviously. Clarke did not organize his lectures around masculine or feminine rules for treatment, and, though gendered physiology explained much of *Sex in Education*, he rarely mentioned such concerns in comparable sections of his lectures. Considerations of gender did enter both types of texts: through his clinical case reports. According to medical humanist Brian Hurwitz, "clinical case reports" can be considered "highly stylized accounts concerning individuals who are ill, or believe themselves to be ill," which therefore "involve discursive performances that reorganize clinical data using a variety of narrativizing techniques" (216-217). Analyzing case reports can therefore expose beliefs through privileging the ways medical evidence (in the sense of *casus*, legal case) has been reorganized into narrative. Focusing on historical women's experience, many rhetoricians have investigated the medical case reports surrounding nineteenth-century asylums and neurological patients. Carol Berkenkotter uses such sources to discuss genres of patient narratives, as in her monograph *Patient Tales*, and Anne Sealey and Susan Wells continue this work in their separate articles about the historical development of Freudian case histories. These rhetoricians urge us to consider how medical stories are told, particularly the place of clinical case reports between (legal, medical)

3 For instance, *A Practical Treatise on Hernia* from James R. Osgood and Company similarly listed the author "Joseph H. Warren, M.D., Member American Medical Association; British Medical Association; Massachusetts Medical Society; Formerly Surgeon and Medical Director U.S.A.; Etc., Etc." See Warren i.

evidence and (patient) narratives. In *Sex in Education* and materia medica lectures alike, Clarke followed such conventions in constructing clinical case reports of gendered overuse. Like many of his contemporaries, he worried about women's susceptibility to excess, though he also mentioned the possibility that men could overuse, as well. In the materia medica lectures, such stories acted as case reports, as narrative explanations for Clarke's physiological theories about how drugs affected the human body. They acted similarly in *Sex in Education*, illustrating the action of education on (usually women's) bodies instead. Occupying a similar role in both types of texts, clinical case reports implied a connection even beyond the organizational similarities indicated in the last section. Case reports of gendered overuse provided a template for Clarke's arguments against women's higher education, even though education was not explicitly presented as a drug.

In the most general sense, Clarke's use of clinical case reports reflected his ideas about reforming materia medica. Worrying that his assigned subject had the "hard and forbidding sound of dead languages," he worked to make his lectures seem sensational and modern (*Recent Progress in Materia Medica* 4). Using case reports confirmed his commitment to scientific medicine, as they showed how he privileged clinical experience over botanical theorizing. "Botanicals" had received a bad reputation; during the Civil War, they became associated with the practice of medicine outside regulations (Flannery 211-230). Even before the war, botanical treatments were thoroughly feminized, linked to the practices of women treating themselves and their communities with remedies passed down through social networks of family and friends. For decades, male pharmacists spoke about how they were worried about what happened when botanicals failed, though the successes of laywomen likely harmed their businesses even more. Under the frame of scientific medicine, Clarke's case reports instead privileged the ways he was a certified male authority, one who had observed the physiological effects of specific drugs in his patients. Generally presented as narrativized mnemonics for rules of use (and overuse), Clarke chose especially popular drugs such as opium and alcohol, and he highlighted dramatic reactions his patients had. He told his class about a time he witnessed a nursing baby "narcotized" because he gave its mother an opiate ("Second lecture" in *Manuscript lectures in Materia Medica* 6). He recollected seeing a French woman so anesthetized by alcohol that her surgeon amputated her thigh without her knowledge ("Twelfth lecture" 47). He boasted how he and another physician cured a man's particularly bad case of typhoid fever with "a pint and a half of brandy and two bottles of champagne" ("Fourteenth lecture" 43). He indicated his discomfort at telling "three clergymen, from different parts of the country, of different denominations" that they were addicted to whiskey ("Fifteenth lecture" 14). Within the broader frame of

scientific medicine, these abbreviated case reports did indicate physiological lessons: for instance, that alcohol can work as either a sedative (for the French woman) or a stimulant (for the feverish man). Their presence also reformed materia medica through encouraging interest in a famously boring subject.

The role of a patient's gender became especially important, for Clarke, when he started discussing unsafe dosages (overuse), especially of chloral hydrate. Chloral hydrate was not well understood at the time, so Clarke spent an unusually long time looking at its physiological actions. He suspected it worked on the body through slowly transforming blood into chloroform, which meant that its dosage had to be carefully monitored. Attempting to prove the immediate point about dosage and the indirect one about blood transformation, Clarke juxtaposed two case reports in which patients overused chloral hydrate. The first, "a lady," chose to take small doses for a long time, and the supposed build-up of chloroform damaged her mind ("Tenth lecture" in *Manuscript lectures in Materia Medica* 31-34). The second, "a young person" (later revealed to be a man), wanted to go to sleep so much that he took an exceptionally large dose, leading to sudden transformation and death ("Tenth lecture" 37-39). Explicitly, these case reports supported Clarke's reforms of materia medica through both emphasizing the role of physiology and the importance of "danger": "that there is danger from too large doses of the hydrate of chloral — either too large doses given at once, or too many doses, not too large in quantity, each one of them given through the whole twenty-four hours" ("Tenth lecture" 39-40). Their combination also implicitly showcased Clarke's views of gender differences. Drug abuse, for Clarke, presented along gendered lines.

Specifically, in Clarke's materia medica, gendered cases of drug overuse differed in their relation to what he termed "insanity." For a woman, drug overuse led her to "insanity"; while, for a man, preexisting insanity led to drug overuse. Little was relevant about the background of the female patient, except that she lived in Boston (but then left), that she was one of Clarke's patients, and that she had previous exposure to chloral hydrate from some other physician:

I have seen this evidenced within the last year, in the case of a lady whom I knew as a patient of mine while she lived in this city, but who left it some two or three years ago, to whom the hydrate of chloral was administered by her physician perhaps a year since. ("Tenth lecture" in *Manuscript lectures in Materia Medica* 31-32)

Her background, generally anonymous here, did not predispose her to overuse. Rather, the danger of this situation emerged from her discovered

pleasure at taking this drug, which led her to increasing use, overexposure, and then “insanity”:

She was pleased with the effect, rather took to the taking of it, and began to increase the dose, and the frequency of taking it, so that finally she took it three, four, five, six, or seven times a day, keeping a solution near by, and drinking ten or fifteen grains of it whenever during the day she felt uncomfortable. The result was, a gradual deterioration of the system, and a sort of insanity. The patient is now at Somerville [Asylum for the Insane], her whole condition approximating to imbecility and insanity combined...an unquestionable poisoning of the system. (“Tenth lecture” 32-33)

Even here, her overuse of the drug did not have to be explained, except through reference to her pleasure at taking it and her avoidance of discomfort. Nineteenth-century case reports, according to Meegan Kennedy’s multi-disciplinary analyses, did involve the similar creation of a semiotic character of a patient (2). But this particular patient’s background lacked many explanatory features. Therefore, her story appeared to be one of a ‘normal’ “lady” suddenly led to an insane asylum.

The subsequent case report of an overusing man, by contrast, included many details that suggested previous exhibitions of “insane” ideas and behaviors. It began with what Clarke called “an insane sort of notion” that the patient could achieve complete control over his sleep:

An illustration of this I can give you clinically, in the case of a young person who was taking the hydrate of chloral, and who had an insane sort of notion (the case occurred in the last month) that he would go to sleep at any rate on a given night. (“Tenth lecture” in *Manuscript lectures in Materia Medica* 37-38)

Distinguished through his adherence to a crazy idea, this patient became more fully realized through subsequent references to his nurse:

When he could not get the sleep that he desired, and in consequence of certain morbid tendencies about him, the nurse was instructed to see that he did not get at chloroform, hydrate of chloral, opium, or any other narcotic. (“Tenth lecture” 38)

In other words, the patient’s previous suicidal tendencies meant that he had to be attended by a nurse who kept narcotics out of his reach. The combination of his “morbid tendencies” and “insane sort of notion,” however, led to his overuse and death:

He had taken the ordinary dose, did not get to sleep quite as quickly as he thought he ought to, and succeeding in skipping out of the room into an adjoining apartment, and, taking a bottle of the solution of hydrate of chloral, drank from it, without measuring. By estimation afterwards, from the amount remaining in the bottle, as compared with what was in it before he drank from it, it was found he must have taken about 150 grains. He returned to his chamber, remarked to his nurse that he was now sure of sleeping, and never waked. The nurse went into the room about an hour later, and he was dead. ("Tenth lecture" 38-39)

This man overused and ultimately died through taking an exceptionally large dose rather than many small doses. He did so, for Clarke, because of his adherence to an "insane" idea that he could achieve complete control over his sleep and perhaps because of his suicidal tendencies, too. Therefore, the juxtaposition of his case report with a woman's implied not only the different ways that patients could overuse but also the importance of gender in explaining it. For a male patient, overuse followed insanity, but, for a female patient, it was the other way around.

Through Clarke's materia medica lectures, subsequent case reports reified this pattern of gendered overuse, especially through stories of healthy female patients made into something else through gradual addiction. In the case of alcohol, Clarke worried about Boston women drinking more and more until they became "drunkard[s]" without anyone else noticing:

I do not know that I should overstate the matter if I said, that a year never passes without some patient, a female, becoming a confirmed drunkard, from taking alcohol in this or some similar way. I have watched patients taking it in this way, in the very upper classes of society, where all sorts of means are used to prevent its being known, and seen them gradually drinking too much, and finally drinking constantly, until the drunkenness became a part of their nature, a sort of second habit with them. Generally, the taking of it under such circumstances is acquired in this way, and it exists much more largely among females than people are aware of. ("Fifteenth Lecture" in *Manuscript lectures in Materia Medica* 4-5)

Such overuse, for Clarke, transformed any "female" patient into "a confirmed drunkard," where drinking "became a part of their nature, a sort of second habit with them." This transformation reflected the physiological changes that Clarke suspected had to take place: where the patient's blood was gradually replaced by, in this case, aldehyde, acetic acid, and pure alcohol. In Clarke's

materia medica, drug overuse would make a female patient insane because it changed her whole “nature,” taking over her entire identity.

Though there was no explicit drug of education, *Sex in Education* continued to use clinical case reports for similar reasons. On the most general level, they continued to reflect his commitment to scientific medicine, showing his reliance on physiological explanations as opposed to feminized botanicals. He used the stories of Miss A, Miss B, and Miss C to explain how over-education could lead to increased menstrual bleeding, called “menorrhagia,” and those of Miss D, Miss E, Miss F, and Miss G showed how over-education could lead to decreased menstruation, “amenorrhea” (*Sex in Education* 65-104). Throughout, he tried to prove the claim that education (specifically, too much education) changed a woman’s blood, which caused distress in her reproductive system. As he repeatedly asserted, the cases formed “illustrations” of his physiological claims, showing his adherence to a cutting-edge medical movement (62). They also served to showcase how much Clarke privileged clinical experience, appearing at the center of his “Chiefly Clinical” chapter. Bridging physiology and treatment, these case reports implied Clarke’s commitment to scientific medicine.

Sex in Education’s case reports also followed the template of gendered overuse from Clarke’s materia medica lectures. All of the cases were normal, healthy young women, who were driven insane through over-education or over-work, just as drug overuse supposedly had driven some of Clarke’s female patients to “insanity.” The case report of Miss E was particularly striking. After explaining how she had received the best “intellectual, moral, and aesthetic” education from both of her “accomplished” parents, Clarke continued:

Just at this time, however, the catamenial function [i.e. menstruation] began to show signs of failure of power...Soon after this the function ceased altogether...In the course of a year or so after the cessation of her function, her head began to trouble her...Coincident with this mental state, her skin became rough and coarse, and an inveterate acne covered her face. She retained her appetite, ability to exercise and sleep...Appropriate treatment faithfully persevered in was unsuccessful in recovering the lost function. I was finally obliged to consign her to an asylum. (*Sex in Education* 85-87)

Though listing Miss E’s growing headaches and altered appearance, Clarke also noted the ways that this patient seemed healthy. Still, for Clarke, the loss of a menstrual “function” meant irreparable insanity; Clarke had to choose to “consign her to an asylum” despite her otherwise good health. As Clarke constructed his materia medica case reports around drug overuse driving healthy female patients insane, so too did he write about over-education here.

Clarke's thoughts about gendered overuse did not entirely transfer to *Sex in Education*, however; though he did not use any clinical case reports of overeducated men, he did make it clear that boys would suffer similar ill effects of co-education. Because the educational expectations would be constructed without any regard for sexual development, Clarke maintained that a co-educational Harvard would "make boys half-girls, and girls half-boys," and this "can never be the legitimate function of any college. But such a result, the natural child of identical co-education, is sure to follow the training of a college that has not the pecuniary means to prevent it" (*Sex in Education* 150). Clarke, in other words, worried that "identical co-education" would produce masculine women ("rough and coarse") and also effeminate men. The boys placed in such a system did not enter because they already suffered from "insane notion[s]," though. They, too, were helpless to prevent the economic realities of postbellum America: the ways that co-education helped (historically male) colleges cut costs (Cohen 52-91). Unlike in the *materia medica* lectures, male sufferers did not engage in such behaviors because of their preexisting mental states.

That said, Clarke worried more about women's overeducation because of his beliefs from *materia medica*: that (middle-class) women were already susceptible to the lures of too much. As Kate Flint has observed about the presumed dangers of women's novel reading, a vast number of medical journal and advice books contained explicit statements of this supposed "fact" decades before Clarke's work (53-117). As they did, Clarke played on selective meanings of "sensible," asserting:

The more exquisitely formed organization which is to be found among our girls, who are not subject to the vulgar way of life, to the larger exercise, to the more open-air work of other persons, render them more sensible to all forms of stimulation, and while more sensible to them, also more conscious of the relief they get from them, and the result is...with each recurring attack to require a larger dose, until finally the attack is longed for in order to get the dose, and finally the dose is taken without regard to the pain. ("Fifteenth lecture" in *Manuscript lectures in Materia Medica* 4-5)

Clarke therefore presented women as doubly "sensible." Not "sensible" in the sense of rational, they were more sensitive and more impressionable: therefore more likely (than men) to overuse prescribed drugs. Claiming them as "our girls" before his Harvard class, Clarke indicated his impression that such problems particularly affected the sisters and daughters of the college-educated. Kept inside, kept guarded, these women were the ones led to overuse because they lacked other excitement in their lives. More impressionable,

according to Clarke, they were the ones more likely to transform into other things: “opium eater[s]” or “alcohol taker[s]” (“Fifteenth lecture” 10).

Similarly, *Sex in Education* framed overeducation as a problem of Northeastern cities and upper and middle classes. Noting his reliance on scientific medicine, Clarke began his clinical chapter:

Clinical observation confirms the teachings of physiology. The sick chamber, not the schoolroom; the physician’s private consultation, not the committee’s public examination; the hospital, not the college, the workshop, or the parlor, — disclose the sad results which modern social customs, modern education, and modern ways of labor, have entailed on women. Examples of them may be found in every walk of life. On the luxurious couches of Beacon Street; in the palaces of Fifth Avenue; among the classes of our private, common, and normal schools; among the female graduates of our colleges; behind the counters of Washington Street and Broadway; in our factories, workshops, and homes, — may be found numberless pale, weak, neuralgic, dyspeptic, hysterical, menorrhagic, dysmenorrhic, girls and women, that are living illustrations of the truth of this brief monograph. (*Sex in Education* 62)

Though asserting that “examples” or “illustrations” of sickly educated women could be “found in every walk of life,” Clarke specifically cited identifiable places in Boston and New York: Beacon Street, Washington Street, Fifth Avenue, Broadway. Locating the problem of women’s overeducation in the American Northeast, he similarly implied its particular effects on the upper and middle classes, from “couches” and “palaces” to “classes,” “counters,” “factories,” “workshops,” and “homes.” Though not explicitly using the phrase “our girls,” Clarke echoed the worries from his *materia medica* lectures: that sisters and daughters of Northeastern, urban, educated classes would especially suffer from overdose or, in this case, overeducation.

Moreover, as can be seen in the passage above, *Sex in Education’s* connections with *materia medica* extended to the ways that the book encouraged the medical study of educated women, considering them medical matter (literally, *materia medica*). The book as a whole valorized “clinical observation,” emphasizing the importance of the medical spaces of the “sick chamber,” the “physician’s private consultation,” or the “hospital.” Contrasting them with the “schoolroom,” the “public examination,” and the “college,” as well as the “workshop” and “parlor,” *Sex in Education* privileged the physician’s professional vantagepoint, presenting the lessons about “modern” life that could be seen from it. The volume’s medical terminology operated similarly. The “living illustrations” of overeducated womanhood were not just “pale” and “weak”; they were

“neuralgic, dyspeptic, hysterical, menorrhagic, dysmenorrhic.” Very broadly, then, Clarke presented the medical considerations of women’s education, how physicians’ encounters and terminologies could be used to study pedagogical debates.

Making (albeit implicit) connections between *Sex in Education* and *materia medica*, Clarke encouraged the incorporation of women’s education into the doctor’s corpus. After all, his medical subject taught the compounds physicians would consult when engaging in patient care, so *Sex in Education* figuratively stocked the doctor’s bag. Though educational historians, such as John Rury, have argued that *Sex in Education* did not have a major legacy (106-110), the medical interrogation of female students has continued. After Clarke’s book, female students came to be considered from explicitly medical perspectives, as he wished: not only from the vantage of the classroom and exam but also from the perspective of the clinic, the hospital, and (later) the psychiatrist’s couch. Women’s higher education, implicitly presented as a drug that could be overused, joined chloral hydrate and other addictive compounds in medical theory and practice.

Conclusion

Clarke’s texts therefore allow us to see the interconnections between antifeminist and pharmaceutical rhetorics. Labeled a foremost “antifeminist” because of his book *Sex in Education*, Edward Clarke spent much of his career speaking and writing about the problems of overdose and drug overuse. Reading his texts at the Countway Library of Medicine, it is possible to see how certain patterns connected his pharmaceutical texts with his antifeminist ones, particularly linking his classroom lectures in *materia medica* with his notorious book *Sex in Education*. Both exhibited the same organization of physiological and clinical sections, ending with concerns about overuse. Both featured clinical case reports about overuse, driving otherwise healthy women mad and transforming them into something else entirely.

Because of its encouragement of the medicalization of female education, Clarke’s book did (and does) have a lasting impact. Though it minimally affected school policy, it had an extremely large readership in college towns throughout the country and the world, as it perpetuated anxieties about women’s futures, particularly in college women themselves (Gordon 13-51). Byrn Mawr President M. Carey Thomas recalled thirty years after Clarke’s death:

We were haunted in those days by the clanging chains of that gloomy little spectre, Dr. Edward Clarke’s *Sex in Education*. With trepidation of spirit I made my mother read it, and was much cheered by her remark that as neither she nor any of the women she knew had ever

seen girls or women of the kind described in Dr. Clarke's book, we might as well act as if they didn't exist. Still, we did not know whether college might not produce a crop of just such invalids. (qtd. in Bruder 33)

Though jokingly exaggerating the power of the "little spectre," M. Carey Thomas still did express an uncertainty and anxiety about the book. Clarke's clinical case reports, after all, emphasized the ways that apparently normal women became "invalids" through their studies, and it is not surprising that generations of college students worried about such effects.

The field of neuroeducation gives Clarke's "gloomy spectre" another life, as Clarke's antifeminist work provides a precedent for educational recommendations stemming from neuroscience. As Jordynn Jack urges in "What are Neurorhetorics?" the lure of the prefix "neuro-" is a trend that rhetoricians need to notice and analyze. As its name would suggest, neuroeducation uses neuroscientific research to recommend the best teaching methods for students' developing brains. Some of this work, which Jack cites, supports initiatives in disciplinary inclusion, such as the increasing support of arts programs in schools because of the ways that arts classes can improve cognition, attention, and general learning (Rich and Golberg 3). Other work in neuroeducation is strikingly exclusionary. With titles like *Teaching the Female Brain*, these books propose educators teach girls and boys differently because their "female" and "male" brains give them different abilities and proclivities. Neuroeducational teaching workshops, such as Alberta's "Learning with the Brain in Mind," therefore argue that true coeducation is impossible. As Clarke did many years ago, many neuroeducators today discuss how the bodies of female students constrain their educational choices. Not worrying about reproductive effects per se, they nonetheless make clear that too much "male" education would result in female students' poor academic performance, which could lead to potential health problems. Distressingly, some in the field consider Clarke's work to be particularly groundbreaking, arguing his work represents "some of the earliest attempts to couple neuroscience with education" and urging present-day researchers to look beyond the "holy war" of its reception (Théodoridou and Triarhou 122). This strand of neuroeducation suggests we need to keep arguing against Clarke's claims.

In analyzing a specific case, this article generally suggests two directions for further work in feminist scholarship in the history of rhetoric and composition. First, it proposes looking to the history of antifeminist arguments in order to analyze (and disrupt) their power. In both organization and use of case reports, Clarke's *Sex in Education* relied on the developing authority of a specific branch of medicine: pharmacy. Considered dull, though still important, pharmacy had to be reformed to be more "scientific," through invocations

of physiology and the incorporation of more clinical case reports. Pharmacy, in the end, also served the framing of women's education in Clarke's antifeminism. Therefore, an argument against Clarke's *Sex in Education* (or against the strands of neuroeducation that agree with it) would address both the sexism of its assumptions as well as the urgent search for scientific bases for pharmacy (or neuroscience). Second, relatedly, this article proposes a method of rhetorical analysis that could be extended to other figures and texts. It recommends that future rhetorical studies of well-known texts also look to the organization of lesser-known works by the same authors. Paying attention to structures shared between texts – published and unpublished, archival and more available – can expose underlying logics, subtle arguments that exist primarily at the level of form yet have far-reaching consequences.

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Works Cited

- Alberta Teachers' Association. *Learning with the Brain in Mind: Participant Guide*. Alberta Teachers Association, 2003, revised 2017.
- Anstie, Francis E. *Neuralgia and the Diseases that Resemble It*. Macmillan & Co., 1871.
- Bell, Heather D., Kathleen A. Walch, and Steven B. Katz. "'Aristotle's pharmacy': The Medical Rhetoric of a Clinical Protocol in the Drug Development Process." *Technical Communication Quarterly* 9.3 (2000): 249-269.
- Berkenkotter, Carol. *Patient Tales: Case Histories and the Uses of Narrative in Psychiatry*. U of South Carolina P, 2008.
- Bittel, Carla. *Mary Putnam Jacobi and the Politics of Medicine in Nineteenth-Century America*. U of North Carolina P, 2009.
- Bizzell, Patricia, and Bruce Herzberg. *The Rhetorical Tradition: Reading from Classical Times to the Present*, Second Edition. Bedford/St. Martin's, 2001.
- Brewer, Meaghan. "Practical Genius: Science, Technology, and Useful Knowledge in Godey's Lady's Book." *Peitho* 19.2 (2017): 251-281.
- Bruder, Anne L., editor. *Offerings to Athena: 125 Years at Bryn Mawr College*. Friends of the Bryn Mawr College Library, 2010.

- Bullough, Vern, and Martha Voght. "Women, Menstruation, and Nineteenth-Century Medicine." *Bulletin of the History of Medicine* 47.1 (1973): 66-82.
- Cayleff, Susan E. "She Was Rendered Incapacitated by Menstrual Difficulties: Historical Perspectives on Perceived Intellectual and Physical Impairment Among Menstruating Women." *Menstrual Health in Women's Lives*, edited by Alice J. Dan and Linda L. Lewis, U of Illinois P, 1992, pp. 229-235.
- Clarke, Edward H. *Manuscript lectures in Materia Medica given at Harvard Medical School. N.d. [1855]*. MS. Rare Books Collection s.v. "Clarke, Edward H." Number CB 1855.13 [CB 1855.15]. Countway Library of Medicine, Harvard University, Cambridge, Massachusetts.
- . *Recent Progress in Materia Medica: An Address Delivered in the Massachusetts Medical College, Boston, at the Opening of the Medical Lectures of Harvard University, Nov. 2, 1864*. Boston: David Clapp and Son, 1864. 1864. TS. Rare Books Collection s.v. "Clarke, Edward H." Number 1864.C53 [1.Mh.1864.C]. Countway Library of Medicine, Harvard University, Cambridge, Massachusetts.
- . *Sex in Education: Or, A Fair Chance for the Girls*. Boston: James R. Osgood and Company, 1873. 1873. TS. Rare Books Collection s.v. "Clarke, Edward H." Number 1.Mh.1873.C. Countway Library of Medicine, Harvard University, Cambridge, Massachusetts.
- Cohen, Michael David. *Reconstructing the Campus: Higher Education and the American Civil War*. U of Virginia P, 2012.
- Coulter, Harris L. *Divided Legacy: The Conflict between Homeopathy and the American Medical Association*. North Atlantic Books, 1982.
- Cowen, David L. "Materia Medica and Pharmacology." *The Education of American Physicians: Historical Essays*, edited by Ronald L. Numbers, U of California P, 1980, pp. 97-105.
- Ellis, George E. (Anonymous.) "Dr Edward Hammond Clarke." *Boston Evening Transcript*, 3 December 1877, p. 4.
- Flannery, Michael. *Civil War Pharmacy: A History of Drugs, Drug Supply and Provision, and Therapeutics for the Union and Confederacy*. The Haworth P, 2004.
- Flint, Kate. *The Woman Reader, 1837-1914*. Oxford UP, 2002.
- Gardner, Paula. "Distorted Packaging: Marketing Depression as Illness, Drug as Cure." *Journal of Medical Humanities* 24.2 (2003): 105-130.

- Gay, Peter. *Education of the Senses: The Bourgeois Experience, Victoria to Freud*. W.W. Norton and Co., 1984.
- Gordon, Lynn D. *Gender and Higher Education in the Progressive Era*. Yale UP, 1990.
- Greg, W.R. *Enigmas of Life*. James R. Osgood and Co., 1873.
- Hamlin, Kimberly A. *From Eve to Evolution: Darwin, Science, and Women's Rights in Gilded Age America*. U of Chicago P, 2014.
- Hammond, William A. *Sleep and Its Derangements*. J.B. Lippincott & Co., 1873.
- H.B.B. "Science in Education." *The Woman's Journal*, 21 December 1872, p. 404.
- Holmes, Oliver Wendell. (O.W.H.) "Edward Hammond Clarke." *Boston Daily Advertiser*, 5 December 1877, p. 1.
- Howe, Julia Ward, editor. *Sex and Education: A Reply to Dr. E.H. Clarke's "Sex in Education."* Roberts Brothers, 1874.
- Hurwitz, Brian. "Form and Representation in Clinical Case Reports." *Literature and Medicine* 25.2 (2006): 216-240.
- Jack, Jordynn. "Introduction: What are Neurorhetorics?" *Rhetoric Society Quarterly* 40.5 (2010): 405-410.
- . "Objects in Play: Rhetoric, Gender, and Scientific Toys." *Peitho* 18.1 (2015): n.p.
- Jacobi, Mary Putnam. *The Question of Rest for Women during Menstruation*. G.P. Putnam's Sons, 1877.
- James, Abigail Norfleet. *Teaching the Female Brain: How Girls Learn Math and Science*. Corwin, 2009.
- Kennedy, Meegan. *Revising the Clinic: Vision and Representation in Victorian Medicine and the Novel*. Ohio State UP, 2010.
- McGraw, A. Peter, Janet A. Schwartz, and Philip E. Tetlock. "From the Commercial to the Communal: Reframing Taboo Trade-Offs in Religious and Pharmaceutical Marketing." *Journal of Consumer Research* 39.1 (2011): 157-173.
- Morantz-Sanchez, Regina Markell. *Sympathy and Science: Women Physicians in American Medicine*. U of North Carolina P, 2000.
- Paroske, Marcus. "Overcoming Burdens of Proof in Science Regulation: Ephedra and the FDA." *Rhetoric & Public Affairs* 15.3 (2012): 467-497.
- Parrish, Edward. *An Introduction to Practical Pharmacy*. Blanchard and Lea, 1856.

- Pereira, Jonathan. *Elements of Materia Medica*. Logman, Orme, Brown, Green, and Logmans, 1840.
- Rich, Barbara, and Johanna Goldberg, eds. *Neuroeducation: Learning, Arts, and the Brain*. Dana P, 2009.
- Richardson, B.W. "The Physiology of Sleep." *Popular Science Monthly* 1 (August 1872): 411-419.
- Rosenberg, Rosalind. *Beyond Separate Spheres: Intellectual Roots of Modern Feminism*. Yale UP, 1983.
- Rury, John. *Education and Social Change: Themes in the History of American Schooling*. Lawrence Erlbaum Associates, 2005.
- Scott, J. Blake. "Kairos as Indeterminate Risk Management: The Pharmaceutical Industry's Response to Bioterrorism." *Quarterly Journal of Speech* 92.2 (2006): 115-143.
- , Judy Z. Segal, and Lisa Keränen, "The Rhetorics of Health and Medicine: Inventional Possibilities for Scholarship and Engaged Practice." *Poroi* 9.1 (2013): Article 17.
- , and Lisa Meloncon. "Manifesting Methodologies for the Rhetoric of Health & Medicine." *Methodologies for the Rhetoric of Health & Medicine*, edited by Lisa Meloncon and J. Blake Scott, Routledge, 2018, pp. 1-23.
- Sealey, Anne. "The Strange Case of the Freudian Case History: The Role of Long Case Histories in the Development of Psychoanalysis." *History of the Human Sciences* 24.1 (2011): 36-50.
- Spencer, Hebert. *The Study of Sociology*. D. Appleton & Co., 1875 [1873].
- Stillé, Alfred. *Therapeutics and Materia Medica*. Blanchard and Lea, 1860.
- Théodoridou, Zoë D., and Lazaros C. Triarhou. "Fin-de-Siècle Advances in Neuroeducation: Henry Herbert Donaldson and Reuben Post Halleck." *Mind, Brain, and Education* 3.2 (2009): 109-129.
- Tuchman, Arleen Marcia. *Science Has No Sex: The Life of Marie Zakrzewska, M.D.* U of North Carolina P, 2006.
- Vostral, Walsh Sharra. *Under Wraps: A History of Menstrual Hygiene Technology*. Lexington Books, 2008.
- Walsh, Mary Roth. "Doctors Wanted: No Women Need Apply": *Sexual Barriers in the Medical Profession, 1835-1975*. Yale UP, 1977.
- Warner, John Harley. *The Therapeutic Perspective: Medical Practice, Knowledge, and Identity in America, 1820-1885*. Harvard UP, 1986.

- Warren, Joseph H. *A Practical Treatise on Hernia*. James R. Osgood and Company, 1881.
- Wells, Susan. "Freud's Rat Man and the Case Study: Genre in Three Keys." *New Literary History* 34.2 (2003): 353-366.
- . *Out of the Dead House: Nineteenth-Century Women Physicians and the Writing of Medicine*. U of Wisconsin P, 2001.
- , and Nathan Stormer. "Historical Work in the Discourses of Health and Medicine." *Methodologies for the Rhetoric of Health & Medicine*, edited by Lisa Meloncon and J. Blake Scott, Routledge, 2018, pp. 24-40.
- Wood, George B. *A Treatise on Therapeutics and Pharmacology, or Materia Medica*. J.B. Lippincott & Co., 1856.
- Zschoche, Sue. "Dr. Clarke Revisited: Science, True Womanhood, and Female Collegiate Education." *History of Education Quarterly* 29.4 (1989): 545-569.
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