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**Educated to Death? Women's Higher Education, Reproductive Health, and the Scientific Method
in the United States, 1870-1900.**

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In 1886, Louisa May Alcott published *Jo's Boys* to critical and public acclaim. The final novel in Alcott's bestselling *Little Women* series, *Jo's Boys* recounts the adventures of Jo March and her pupils at a co-educational boarding school in rural New England. In one scene towards the end of the novel, one of Jo's pupils, a "stately girl" named Miss Winthrop, asks her teacher about particularly worrisome rumors regarding the effects of higher education. "The minute we begin to study, people tell us we can't bear it," Miss Winthrop complained. "I've tried the other things, and got so tired I came to college; though my people predict nervous exhaustion and an early death. Do you think there is any danger?"¹ Miss Winthrop's anxiety about the reported health risks incurred by women at school alluded to a heated debate taking place in the pages of medical journals and daily papers in the late nineteenth century.

From 1870-1890, American doctors within the emerging specialization of gynecology positioned themselves at the center of cultural debates about women's education. Gynecologists manipulated social anxiety about shifting demographics and falling birthrates among white middle class Anglo-Saxon Protestant women in order to legitimate their emerging discipline. In doing so, they couched American understandings of infertility in a politics of blame and demonized women for their biological inability to reproduce. Although doctors' conversations about "sterility" primarily took place within the pages of journals published by all-male medical associations, many women engaged in this debate and challenged medical authority in the pages of popular magazines and newspapers. Female doctors, teachers, scholars, women's college administrators, and their male allies employed a wide range of rhetorical and argumentative strategies in their responses to male doctors' unsubstantiated theories. Within the pages of medical journals, public newspapers, and books of their own, women writers provided both

¹ Louisa May Alcott, *Jo's Boys: A Sequel to "Little Men,"* 1949 edition. New York: Grosset & Dunlap, Inc., 1886. 266.

passionate and evidence-based analyses of why girls' education contributed to health and wellbeing rather than detracted from it. In doing so, these women reframed the debate over higher education and sterility into a broader discussion of the failings of patriarchal gender norms and the importance of objective and evidentiary scientific inquiry.

After the Civil War, birth rates dropped among white Protestant families as women gradually stretched the parameters of their role in and outside of the home. The small but growing number of women who sought fulfillment beyond the domestic sphere rejected the idea that female success hinged on the number of children a woman produced. The birth rate among white Protestant middle class families fell considerably as women pursued careers and newly available educational opportunities.² In her introduction to a report issued by the Association of Collegiate Alumnae in 1885, Annie G. Howes, chairman of the association's committee on health statistics, addressed the declining rate of births and marriages among middle class women. A woman with the "the definite conviction that her life may be passed usefully and happily without a husband," wrote Howes, will "naturally hesitate to alter her independent state unless she [...] believes she can best attain the purpose of her being by assuming family cares."³ Howes attested to American women's reimagining of female purpose and their growing assumption that marriage and childbirth should constitute a choice rather than a grudgingly accepted destiny. The vast majority of educational and career opportunities remained reserved for only the most privileged American women. The birth rate among immigrant and African American families became the highest in

² Margaret Marsh and Wanda Ronner. *The Empty Cradle: Infertility in America from Colonial Times to the Present*. Baltimore: The Johns Hopkins University Press, 1996. 75.

³ Annie G. Howes. "Health Statistics of Women College Graduates." Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885.

the country, prompting white male anxiety about the demographic future of their race well before the height of the eugenics movement of the twentieth century.⁴

Although only a small minority of American women pursued higher education in the late nineteenth century, those who did faced reproach from doctors who threateningly portrayed illness and infirmity as the outcomes of women's education. In 1890, approximately two percent of women in the United States went to college.⁵ Even so, amid shifting national demographics and evolving gender roles, women's education received a disproportionate amount of attention in both public and professional spheres. Medical professionals in particular fixated on the controversy surrounding the education of women and girls. In articles in medical journals and magazines and in entire books on the topic, male doctors blamed strenuous academics for an exhaustive array of female health problems. In an 1889 article in the journal *Medical News*, William Goodell, "clinical professor of the diseases of women and children" at the University of Pennsylvania,⁶ warned, "public schools and female colleges are liable to become the hotbeds of forced and sickly girls." By "breaking down the nervous system" of their female students, boarding and public schools, Goodell argued, "breed a host of sickly girls, who swarm in every class of society."⁷ In an entire book devoted to the relationship between education and the "diseases of women," Alexander J.C. Skene, a gynecologist who practiced at the Long Island College Hospital in Brooklyn from 1863 to 1900,⁸ articulated similar concern for the female

⁴ Margaret Marsh and Wanda Ronner. *The Empty Cradle: Infertility in America from Colonial Times to the Present*. Baltimore: The Johns Hopkins University Press, 1996. 77

⁵ Margaret Marsh and Wanda Ronner. *The Empty Cradle: Infertility in America from Colonial Times to the Present*. Baltimore: The Johns Hopkins University Press, 1996. 97.

⁶ "Dr. William Goodell." *British Medical Journal* 2.1768 (1894): 1149.

⁷ William Goodell, et al. "SPECIAL ARTICLE." *Medical News (1882-1905)*, vol. 55, no. 24, 1889, pp. 667. *ProQuest*,

⁸ Kathleen E. Powderly. "Patient Consent and Negotiation in the Brooklyn Gynecological Practice of Alexander J.C. Skene: 1863–1900," *The Journal of Medicine and Philosophy: A Forum for Bioethics and Philosophy of Medicine*, Volume 25, Issue 1, 1 January 2000, pp. 13-14.

nervous system. Schools for girls and women, Skene argued, “over stimulate the brain and nervous system, and, by creating mere excitability without power, arrest development and lay the foundation for ill-health and failure in after life.”⁹ Skene questioned the purpose of an educational system that left its female graduates with poor health and useless facts: “a knowledge of mathematics and astronomy are of little value or comfort to a pale, bloodless girl, who suffers from indigestion and backache.”¹⁰ In statements such as this one, Skene’s concern for college women’s health seems but a thinly veiled critique of the decision to teach girls subjects beyond sewing and cooking. Although Skene, Goodell, and their peers often discussed the symptoms of women’s education in vague terms, referencing general ill health rather than any specific disease as the result of intense academic work, they were particularly interested in the impact of education on female reproductive health.

In both public and professional forums, male doctors adamantly argued that collegiate women’s mental exertion deformed their reproductive organs to such an extent as to render them “sterile.” Public attention directed towards women’s education and the “declining birth rate among what many viewed as the most desirable segments of the population” increased doctors’ willingness to lay exclusive blame for a couple’s childlessness on the wife and encouraged them to imagine connections between what they considered distasteful female behavior and biological infertility.¹¹ In *A popular treatise on the functions and diseases of woman*, Lucien Calvin Warner argued, “sterility is not a natural condition peculiar to certain women, but the result of a

⁹ Alexander J.C. Skene. *Education and Culture as related to the Health and Diseases of Women*. Detroit, Michigan: George S. Davis, 1889, 55.

¹⁰ Alexander J.C. Skene. *Education and Culture as related to the Health and Diseases of Women*. Detroit, Michigan: George S. Davis, 1889, 56.

¹¹ Margarete J. Sandelowski. “Failures of Volition: Female Agency and Infertility in Historical Perspective.” *Signs*, vol. 15, no. 3, 1990, pp. 475–499. JSTOR.

derangement of some of the uterine organs, brought on perhaps by some impropriety of dress, imprudence during menstruation, or other artificial or injurious habits.”¹² Warner thus blamed infertile women for their inability to bear children while simultaneously policing women’s behavior and dress. The pursuit of higher education became one of the many “artificial or injurious habits” doctors linked to infertility. In an article called “Sterility in the Female and its Curability” published in *Medical News* in 1902, Dr. S.L. Kistler enumerated eighteen causes of sterility, including “inactive ovaries” and “arrested development of ovaries and tubes,” of which the last cause listed was “higher education.” Although Kistler expanded on and explained almost every other cause in his list, he made no attempt to justify this last assertion.¹³ In *Medical News* in 1889, William Goodell warned that the educated and “cultured girl of to-day becomes the invalid mother or the barren wife of to-morrow.”¹⁴ Although Goodell, Skene, and Warner concurred in their condemnation of higher education for women, they diverged in their assessment of how exactly college influenced reproductive health. Goodell and Warner believed that education delayed puberty and hindered the development of reproductive organs: Goodell wrote that education of young women impeded “physical and sexual development,”¹⁵ and Skene argued it led to “imperfectly developed” “sexual organs” and “menstrual derangements.”¹⁶ Warner, on the other hand, linked education to premature menstruation: “if the nourishment and development of the physical system is sacrificed to the premature development of the mind,” he

¹² Lucien Calvin Warner. *A Popular Treatise on the Functions and Diseases of Woman*. Syracuse, NY: Truair, Smith & Co., Printers, Stereotypes and Bookbinders, 1873, 264.

¹³ S. L. Kistler. "STERILITY IN THE FEMALE AND ITS CURABILITY." *Medical News* (1882-1905), vol. 81, no. 14, 1902, pp. 643. *ProQuest*,

¹⁴ William Goodell, et al. "SPECIAL ARTICLE." *Medical News* (1882-1905), vol. 55, no. 24, 1889, pp. 667. *ProQuest*,

¹⁵ William Goodell, et al. "SPECIAL ARTICLE." *Medical News* (1882-1905), vol. 55, no. 24, 1889, pp. 667. *ProQuest*,

¹⁶ Alexander J.C. Skene. *Education and Culture as related to the Health and Diseases of Women*. Detroit, Michigan: George S. Davis, 1889, 56.

wrote, “then the body is brought to maturity before its time, and menstruation appears at an age when the system is wholly unfit to sustain so important a function.”¹⁷ This lack of consensus regarding how exactly college caused sterility reveals that, for doctors, condemning women's education proved more important than arriving at evidence-based and science-supported conclusions.

Perhaps the most infamous of the doctors who critiqued women's education for its supposed health risks, Dr. Edward H. Clarke published a widely-read manifesto called *Sex in Education; or, a Fair Chance for Girls* in 1873. In his book, Clarke provided anecdotal evidence of women who “graduated from school or college excellent scholars, but with undeveloped ovaries” and who, upon getting married, realized they were “sterile.”¹⁸ Clarke attributed the sterility of college alumnae to the specific timeframe of higher education and its correlation to the natural period of a woman's sexual development. “The growth of [the uterus and ovaries] occurs during the first few years of a girl's educational life,” Clarke wrote, and “no such extraordinary task [...] is imposed upon the male physique at the same epoch.”¹⁹ Clarke could not imagine that a woman could both develop reproductive organs and study math or literature at the same time. He did not question a girl's ability to learn, but rather her ability to do so “and retain uninjured health and a future secure from neuralgia, uterine disease, hysteria and other derangements of the nervous system, if she follows the same method that boys are trained in.”²⁰ In *The Building of a Brain*, published the following year, Clarke included a letter he had received from a mother whose

¹⁷ Lucien Calvin Warner. *A Popular Treatise on the Functions and Diseases of Woman*. Syracuse, NY: Truair, Smith & Co., Printers, Stereotypes and Bookbinders, 1873, 48.

¹⁸ Edward H. Clarke, *Sex in Education; or, a Fair Chance for Girls*. Boston: James R. Osgood and Company, 1873, 39.

¹⁹ Ibid., 37-38.

²⁰ Ibid., 17-18.

daughter had died in the hope of illustrating “the evil results of inappropriate methods of female education.” The unnamed mother wrote that her daughter Mary, a “remarkably fine and healthy girl” and “the pride of her teachers and joy of her parents,” had “entered an institute for young ladies” and subsequently developed a “remarkable flow whenever she was unwell [menstruating].” As doctors failed to arrive at a diagnosis, Mary became increasingly ill and ultimately died. Her mother, convinced that her daughter’s “disease” had been “brought on by incessant study,” attributed the death to “the system that requires so many hours of study, no matter what the condition of the pupil may be.”²¹ Clarke titled the letter “Educated to Death: A Mother’s Story.” Mary’s story provided Clarke a sensational substantiation of his claim that sending girls to school as they navigated puberty could prove not only detrimental to motherhood but also fatally dangerous.

Doctors’ claims of a direct and causal relationship between college education and female sterility did not go uncontested. Although doctors debated women’s education primarily within exclusively male forums, such as within the pages of medical journals or at conferences put on by all-male medical associations, women of a wide range of professional backgrounds managed to publically and adamantly refute what they deemed unscientific and unsubstantiated claims. The small but growing number of female doctors countered their male peers’ claims with scientific and anecdotal evidence of their own. Mary Dixon-Jones, an innovative and internationally renowned gynecological surgeon when gynecology was still an emerging specialization, published over fifty articles in medical journals over the course of her career.²² In an article published in the medical journal *Times and Register* in 1892, Dixon-Jones wrote, “in

²¹ Clarke, Edward H. *The Building of a Brain*. (Boston: Houghton, Mifflin and Company, 1874). 88-98.

²² Regina Morantz-Sanchez. “Mary Amanda Dixon Jones: Woman Surgeon in a Man’s World.” *The Lancet*, vol. 382, no. 9898, 2013, pp. 1088-9. *ProQuest*.

the twenty-five years I have practiced medicine, I have not seen a case of undeveloped or infantile uterus in a woman with college training [...] except in one instance, and this young woman had, before she commenced her college course, an anteflexed, undeveloped uterus” that was “by no means [...] the result of intellectual labor.”²³ Likewise, Sarah Hackett Stevenson, a professor of physiology in the Woman's Medical College of Chicago and the first woman admitted into the American Medical Association, relied on her experience as a well-respected doctor in her many papers and writings on the subject of women's health.²⁴ Relying on “a thorough scientific analysis of cases,” Stevenson determined that extensive “mental education” contributed to rather than precluded women's reproductive health and “freedom from menstrual suffering.”²⁵ Mary Dixon-Jones and Sarah Hackett Stevenson's experience with patients of their own provided the expertise with which to counter the baseless claims of doctors such as Goodell, Warner, and Clarke.

Administrators and faculty at women's and co-educational institutions shared experience of a different sort in their rebuttals of male doctors' claims that higher education harmed female reproductive health. Laurenus Clark Seelye, the first (male) president of Smith College, wrote extensively on the benefits on women's colleges and higher education more generally. In an article published in 1906, Seelye urged his readers to heed the “abundant testimony that the

²³ Mary Dixon-Jones. “Special Article: Why Women do not Become Mothers, or Causes of Sterility in Woman” *Times and Register (1889-1895)*, vol. 25, no. 6, Aug 06, 1892, pp. 170. *ProQuest*,

²⁴ “SARAH HACKETT STEVENSON.” *Magazine of Western History (1884-1891)*, vol. 13, no. 1, 11, 1890, pp. 112. *ProQuest*.

²⁵ Sarah Hackett Stevenson. *The Physiology of Woman, Embracing Girlhood, Maternity and Mature Age*. Chicago: Fairbanks, Palmer & CO., 1883, 43.

majority of women improve physically as well as mentally during their college course.”²⁶ Mary Dixon-Jones, who taught at Wesleyan Female College and Baltimore Female College before beginning her career as a gynecological surgeon, grounded her conclusions in expertise earned in both the operating room and the classroom.²⁷ Over the course of her “thirteen or fourteen” year tenure as a teacher, Dixon-Jones met “over three thousand young ladies [...] who during the period allotted to sexual development were subjected to continuous ‘severe and laborious intellectual labor;’” and yet of whom not a “single one” gave “any indication that ‘the reproductive organs were not naturally and promptly developed,’ and that ‘their functions were not normally performed.’”²⁸ Successful career women such as Mary Dixon-Jones and Sarah Hackett Stevenson, skilled doctors who ably countered their male colleagues’ biased and pseudoscientific theories, epitomized the empowered female professional white men anxious about evolving gender roles feared so intensely.

Women refuted male doctors’ claims through a wide range of rhetorical strategies; perhaps the most obvious of these arguments constituted the claim that higher education promoted, rather than impeded, a young woman’s health and well-being. Mary Dixon-Jones argued, “mental culture and scholastic training [...] tend to make grander women, mentally and physically,

²⁶ L. Clark Seelye. "The Influence of Education on Marriage and Maternity." *The Independent ... Devoted to the Consideration of Politics, Social and Economic Tendencies, History, Literature, and the Arts (1848-1921)*, vol. 60, no. 2989, Mar 15, 1906, pp. 624. *ProQuest*,

²⁷ “Mary Amanda Dixon Jones.” *Changing the Face of Medicine*. U.S. National Library of Medicine, National Institutes of Health, usa.gov. 3 June 2015, cfmedicine.nlm.nih.gov/physicians/biography_176.html.

²⁸ Mary Dixon-Jones. "Special Article: Why Women do not Become Mothers, or Causes of Sterility in Woman" *Times and Register (1889-1895)*, vol. 25, no. 6, Aug 06, 1892, pp. 170. *ProQuest*.

women who are more capable of bearing healthy, vigorous children.”²⁹ Likewise, Grace A. Preston, a member of the Massachusetts Medical Society and the resident physician at Smith College from 1882 to 1893,³⁰ wrote in the society’s communications journal, “the woman’s college is already becoming a power for the increase of health and happiness.”³¹ Sarah Hackett Stevenson flipped male doctors’ arguments on their heads by linking female reproductive health to the study of traditionally male-dominated academic fields. “Menstrual health is good in proportion to the thoroughness and extent of mental education,” she wrote. While the study of “music and modern languages corresponds with a less degree of health,” women who “have taken the higher studies which include mathematics and Latin, are among the healthiest class.”³² Annie G. Howes, chairman of the Association of Collegiate Alumnae’s Committee on Health Statistics, extended this line of argumentation beyond the realm of reproductive health by advocating for “the healthy mental stimulus of a college training” as the “best” cure for “those nervous diseases to which American women are specially prone.”³³ By directly contradicting their male colleagues, female doctors and researchers demonstrated confidence in their own medical and scholarly expertise, defiance of traditional gender roles, and willingness to confront

²⁹ Mary Dixon-Jones. "Special Article: Why Women do not Become Mothers, or Causes of Sterility in Woman" *Times and Register (1889-1895)*, vol. 25, no. 6, Aug 06, 1892, pp. 170. *ProQuest*,

³⁰ *The Woman's Medical Journal*. Medical Women's National Association (U.S.), Recorder Publishing Company, vol.5, 1896, pp. 159.

³¹ Grace A. Preston et al. "The Influence of College Life on the Health of Women" in *The Influence Of College Life On Health. Massachusetts Medical Society. Medical Communications (1790-1813)* Boston, Jan. 1, 1893; 16. *ProQuest*,

³² Sarah Hackett Stevenson. *The Physiology of Woman, Embracing Girlhood, Maternity and Mature Age*. Chicago: Fairbanks, Palmer & CO., 1883, 59.

³³ Annie G.. "Health Statistics of Women College Graduates." Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885, 7.

the men who, in advocating against women's education, sought to make careers such as their own impossible for future generations of bright young women.

Female writers shifted the debate over education and reproductive health in their favor by using it as an opportunity to criticize the social pressures and expectations placed on women at the end of the nineteenth century. In a volume written in response to Clarke's *Sex in Education* called *No Sex In Education; or, an Equal Chance for Both Boys and Girls*, women's rights advocate and writer Eliza Bisbee Duffey pointed out that women's ill health far predated women's pursuit of higher education. With her characteristically dry humor, Duffey wrote, "in those good old days of our grandmothers and great-grandmothers there were a great many more second, third and fourth wives than there are to-day—that is to say, more women broke down and died from hard physical labor and over-bearing of children and lack of intellectual development than in this age of machinery and female colleges."³⁴ With this statement, Duffey reminded her readers that expanded educational opportunities for female students should be thought of as a sign of modernity and social progress rather than as a sort of public health hazard. Doctor Sarah Hackett Stevenson blamed "insufficient exercise" resulting from rigid gender roles, rather than academic rigor, for young women's poor health. Girls, she wrote, "are taught it is unladylike to romp" and are "prejudiced against exercise all too soon;" the effect of this social prohibition on girls' participation in sports during "formative years" weakened the "bodily powers."³⁵ The doctor also cautioned against features of a traditional girl's upbringing that she considered unhealthy in their own right: "for every case of 'studied to death,' we can produce

³⁴ Eliza Bisbee Duffey. *No Sex In Education; or, an Equal Chance for Both Boys and Girls*. Philadelphia: J. M. Stoddart & Co, 1874, 32.

³⁵ Sarah Hackett Stevenson. *The Physiology of Woman, Embracing Girlhood, Maternity and Mature Age*. Chicago: Fairbanks, Palmer & CO., 1883, 55.

five hundred of 'sewed to death.'"³⁶ Stevenson went on to criticize the constant pressure on women to dress fashionably as a major cause of stress and illness: "Looks, not books, are the murderers of American women."³⁷ Julia Ward Howe, suffragist and author of "The Battle Hymn of the Republic,"³⁸ echoed Steven's condemnation of women's fashion and questioned why education received so much more criticism than dangerous and unhealthy beauty trends: If only "the zeal of the faculty' had directed itself as openly and efficiently against late hours, tight lacing, high-heeled shoes, and the use of nerve stimulants and cosmetics, as it did against the healthful and satisfying pursuit of learning!"³⁹ In an anthology of essays by writers responding to Edward Clarke called *Sex and Education*, Howe argued that fashion wasn't just an inconvenience but a tangible risk to women's physical well-being. The corset, she argued, disabled and restricted "the muscles which should keep the uterus in place," leading to "uterine displacement" and "ill-educated, over-burthened muscles."⁴⁰ By incorporating criticism of gender roles into the debate over women's education and sterility, Howe, Duffey, and Stevenson strategically reframed the conversation and seized a valuable opportunity to voice their frustration with restrictions on women's freedom and agency to a wide audience of readers.

³⁶ Sarah Hackett Stevenson. *The Physiology of Woman, Embracing Girlhood, Maternity and Mature Age*. Chicago: Fairbanks, Palmer & CO., 1883, 62.

³⁷ Sarah Hackett Stevenson. *The Physiology of Woman, Embracing Girlhood, Maternity and Mature Age*. Chicago: Fairbanks, Palmer & CO., 1883, 68-69.

³⁸ The Editors of Encyclopaedia Britannica, "Julia Ward Howe." Encyclopaedia Britannica. Encyclopaedia Britannica, Inc. August 22, 2017. <https://www.britannica.com/biography/Julia-Ward-Howe>

³⁹ "How Is it With the Woman?: Julia Ward Howe Thinks the Woman of To-Day Better Than Her Predecessor: Forward Steps and Higher Education for Woman—Is She Less a Woman Because She Is More a Citizen?—Young Women in College." *The Indianapolis journal*.

(Indianapolis [Ind.]), 17 Nov. 1889. Chronicling America: Historic American Newspapers. Lib. of Congress.

⁴⁰ Julia Ward Howe, ed. *Sex and Education: A Reply to Dr. E.H. Clarke's "Sex in Education."* Boston: Roberts Brothers, 1874, 29.

In stark contrast to male doctors' lack of evidentiary basis for their claims, many of the writers advocating for women's education conducted studies and compiled large amounts of data to support their arguments. Grace A. Preston cited "statistics published in 1885 by the Association of Collegiate Alumnae" demonstrating that in a single class of a college's alumnae, "the eight members who are married are all mothers and are in good health."⁴¹ Thomas Wentworth Higginson compiled statistics regarding the "physical health and condition" of the graduates of Antioch College; of forty-one graduates, thirty were married and twenty-four had produced a combined total of forty-nine children. From this data, Higginson could not imagine "how the most earnest advocate of higher education could ask for a more encouraging exhibit."⁴² The Association of Collegiate Alumnae issued a special report on the "Health Statistics of Women College Graduates" in 1885. The Association issued a series of forty questions to "all graduates of colleges or universities of the United States open to women" and received responses from 705 female alumnae.⁴³ Of the responders, 78 percent claimed to be in excellent or good health and only 17 per cent characterized themselves as "bodily miserable and infirm." Annie G. Howes, chairman of the committee, pointed out that upon entering college 20 percent of these 705 women had suffered from poor health; the four years the women spent in college actually

⁴¹ Grace A. Preston et al. "The Influence of College Life on the Health of Women" in *The Influence Of College Life On Health. Massachusetts Medical Society. Medical Communications (1790-1813)* Boston, Jan. 1, 1893; 16. ProQuest,

⁴² Thomas Wentworth Higginson. "Graduates of Antioch College." In *History of Woman Suffrage, vol. 3: 1876-1885*, edited by Elizabeth Cady Stanton, Susan B. Anthony, and Matilda Joselyn Gage. Rochester, NY: Privately published, 1886. pp. 496-497

⁴³ Annie G. Howes. "Health Statistics of Women College Graduates." Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885, 7.

“detracted from the number of invalids, and can be counted as a positive physical benefaction.”⁴⁴

Regarding the question of sterility, the Association noted that 130 alumnae had had children.

“The exceptional record of good health among these children and their low death rate,” Howes wrote, “are strong evidences that the powers of motherhood have not suffered from college work.”⁴⁵ Howes concluded that the testimony of these 705 alumnae proved that over the course of the college career “instead of a loss there was an absolute gain of physical strength.” She characterized her committee’s study as the first of its kind, noting, “the question of the physical condition of both men and women has heretofore been more a matter of conjecture than research.”⁴⁶ No doubt prepared for the contempt and scorn of patronizing male doctors and readers, female writers armed themselves with data and evidence. In doing so, women such as Annie Howes, Grace Preston, and Julia Ward Howe legitimated their criticisms of men who made baseless claims about education while demonstrating greater commitment to properly conducted scientific inquiry than did their male peers.

Male and female proponents of women’s education explicitly addressed Clarke’s *Sex in Education* in their writing, countering the doctor’s claims point by point and using the book as an opportunity to warn against the dangers of unsubstantiated scientific theory. In a paper read before the Maine Medical Association in 1874, doctor Thomas Albert Foster derided Clarke for

⁴⁴ Annie G. Howes. “Health Statistics of Women College Graduates.” Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885, 9.

⁴⁵ Annie G. Howes. “Health Statistics of Women College Graduates.” Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885, 17.

⁴⁶ Annie G. Howes. “Health Statistics of Women College Graduates.” Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885, 9.

his pseudoscientific approach and obvious bias. Foster deemed *Sex in Education* “a mere scare-crow, much better calculated to frighten anxious mothers and timid, fidgety young ladies, than to impart to the public correct physiological laws.”⁴⁷ Foster incorporated a discussion of the role of bias in scientific research into his critique by acknowledging the power of “preformed opinions” to “warp the minds of good men” and “lead them into erroneous arguments against both philosophy and common sense.”⁴⁸ Foster condemned Clarke’s theory not only for its faulty scientific basis but also for its “disease generating tendency:” Clarke’s “theory of invalidism,” he wrote, would cause such emotional distress as to “increase the nervous derangements and functional diseases of female students twenty-five per cent, in the next ten years.”⁴⁹ To Foster, Clarke’s theories were both wrong and dangerous. Eliza Bisbee Duffey and Thomas Wentworth Higginson echoed Foster’s denunciation of Clarke’s methodology. Duffey reproached Clarke’s decision to ignore “the statistics of such of our colleges as have fairly tried co-education” which “prove conclusively that women can compete with men in a hand-to-hand, unabated contest for education without detriment to their health.”⁵⁰ Higginson criticized Clarke’s reliance on “a few detached cases, whose scientific value is impaired by the absence of all proof whether they stand for few or many” and declared that the “burden of proof lay on those who opposed” women’s education to “collect facts in support of their position.”⁵¹ Just as women’s rights advocates

⁴⁷ Thomas Albert Foster. *Co-education of the Sexes: A Paper Read Before the Maine Medical Association*. Portland, Maine: Stephen Berry, Printer, 1874. 16.

⁴⁸ Thomas Albert Foster. *Co-education of the Sexes: A Paper Read Before the Maine Medical Association*. Portland, Maine: Stephen Berry, Printer, 1874. 4.

⁴⁹ Thomas Albert Foster. *Co-education of the Sexes: A Paper Read Before the Maine Medical Association*. Portland, Maine: Stephen Berry, Printer, 1874. 17.

⁵⁰ Eliza Bisbee Duffey. *No Sex In Education; or, an Equal Chance for Both Boys and Girls*. Philadelphia: J. M. Stoddart & Co, 1874, 60.

⁵¹ Thomas Wentworth Higginson. “Graduates of Antioch College.” In *History of Woman Suffrage, vol. 3: 1876-1885*, edited by Elizabeth Cady Stanton, Susan B. Anthony, and Matilda Joslyn Gage. Rochester, NY: Privately published, 1886. pp. 496-497 .

incorporated critiques of gender norms and patriarchy into their responses to male doctors, scientists and medical professionals used their published replies to Edward Clarke's *Sex in Education* as an opportunity to advance progressive pleas for objective and evidentiary research methodology.

In perhaps their most daring challenge to patriarchal medical consensus, proponents of women's education blamed American couples' sterility and childlessness on men. Laureus Clark Seelye, president of Smith College, attributed the relatively low rates of marriage and childbirth among college alumnae to the many causes that "now lead men in active life to postpone marriage." Women, Seelye explained, could not "take the initiative and seek a husband," and therefore the responsibility for low marriage rates lay with the young men who did not actively court female college graduates.⁵² Annie G. Howes of the Association of Collegiate Alumnae attributed low marriage rates to men who "fail to prefer college women for their wives" and who refuse "to marry a woman who may equal if not exceed them in mental power."⁵³ Although still a minority within the profession, a growing number of doctors, both male and female, investigated the possibility that male disease and disorder contributed to a couple's sterility. In an 1892 article in the medical journal *Times and Register*, a Cincinnati doctor called E.S. McKee noted that although "formerly it was supposed that men were rarely sterile, [...] latterly they have been found to represent a goodly number."⁵⁴ Thomas Albert

⁵² L. Clark Seelye. "The Influence of Education on Marriage and Maternity." *The Independent ...Devoted to the Consideration of Politics, Social and Economic Tendencies, History, Literature, and the Arts (1848-1921)*, vol. 60, no. 2989, Mar 15, 1906, pp. 624. ProQuest,

⁵³ Annie G. Howes. "Health Statistics of Women College Graduates." Report of a Special Committee of the Association of Collegiate Alumnae, Annie G. Howes, Chairman, Together with Statistical Tables Collated by the Massachusetts Bureau of Statistics of Labor. Boston: Wright & Potter Printing Co., State Printers, 1885, 16.

⁵⁴ E.S. McKee. "OBSTETRICS AND GYNECOLOGY." *Times and Register (1889-1895)*, vol. 24, no. 16, Apr 16, 1892, pp. 396. ProQuest.

Foster concurred, writing, “there are many causes of sterility, and it is by no means confined to the female” given that “the generative organs of the husband may be in some way incapable of producing the sperm-cell.”⁵⁵ In an article published in *Transactions of the American Gynecological Society* in 1876, Emil Noeggerath cited latent gonorrhea passed from husbands to their wives as a cause of sterility. The theory proved controversial and was rejected by Noeggerath’s colleagues.⁵⁶ In 1892, an article titled “Sterility in the Male” published in the *Medical and Surgical Reporter* cited Dr. L. Seeligmann’s contention that “azoospermia,” “the most frequent cause of sterility, or rather impotency, in the male,” contributed to “matrimonial sterility.”⁵⁷ Although the tendency to blame women for a couple’s infertility remained dominant in medical circles and persisted into the twentieth and twenty-first centuries, these doctors’ willingness to attribute some of the blame for childlessness to male disorders reflected an important shift in how doctors arrived at conclusions. Instead of basing their claims on personal and societal notions of morality and respectability, some doctors towards the end of the nineteenth century increasingly relied on scientific studies and laboratory work to arrive at conclusions that ran counter to patriarchal medical consensus.

By the time Louisa May Alcott included anxious Miss Winthrop’s question in *Jo’s Boys*, which sold 30,000 copies in its first two months,⁵⁸ the debate over whether higher education harmed the health of young female students had clearly reached beyond the confines of professional circles and into the public arena. Alcott evidently sided with the likes of Eliza

⁵⁵ Thomas Albert Foster. *Co-education of the Sexes: A Paper Read Before the Maine Medical Association*. Portland, Maine: Stephen Berry, Printer, 1874. 14.

⁵⁶ Charles M. McLane. et al. “A Half Century of Sterility 1840-1890.” *Fertility and Sterility*, Volume 20, Issue 6, 863.

⁵⁷ “Sterility in the Male.” *Medical and Surgical Reporter (1858-1898)*, Philadelphia. Vol. 67, Iss. 25, (Dec 17, 1892): 979.

⁵⁸ Gregory Eiselelein and Anne K. Phillips, ed. *The Louisa May Alcott Encyclopedia*. Wesport, Connecticut: Greenwood Press, 2001. 163.

Bisbee Duffey and Julia Ward Howe over doctors such as Edward Clarke. In response to her pupil's question, Jo March reassured the young woman that "it is all nonsense about girls not being able to study as well as boys," and that "wise headwork is a better cure for [...] delicacy than tonics."⁵⁹ Jo and the women writers Alcott clearly admired demonstrated little patience for men who let their antiquated notions about gender roles permeate their scholarship. The women who challenged medical paternalism and patriarchal authority did so at a time when the medical profession's commitment to anecdotal evidence and individual treatment faced pressure from the emerging fields of quantitative studies, epidemiology, and medical statistics.⁶⁰ A debate that began with a few vocal doctors with passionate but largely unsubstantiated claims had grown to incorporate discussions about scientific method, women's rights, and female autonomy in the last thirty years of the nineteenth century.

⁵⁹ Louisa May Alcott, *Jo's Boys: A Sequel to "Little Men,"* 1949 edition. New York: Grosset & Dunlap, Inc., 1886. 266.

⁶⁰ O. B. Sheynin. "On the History of Medical Statistics." *Archive for History of Exact Sciences*, vol. 26, no. 3, 1982, pp. 241–286. JSTOR.

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