MEDICAL CURRICULUM CHANGE AT QUEEN’S-AFFILIATED MEDICAL COLLEGES: 1881 – 1910

By

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Abstract

This study explores the curriculum at Queen’s-affiliated medical colleges, specifically The Royal College of Physicians and Surgeons, Kingston, the Kingston Women’s Medical College, and Queen’s Medical College, from 1881 to 1910, using the textbooks prescribed by these institutions as primary sources. The central question encompasses what factors primarily motivated the curriculum at Queen’s-affiliated medical colleges to change. Within the historiographical scholarship on Queen’s College, this question has not yet been addressed and, to my knowledge, this is the first medical education history to specifically address textbooks as part of a medical school curriculum. During this period, these institutions experienced reorganizational shifts, such as the reunification of Queen’s Medical College with The Royal College of Physicians and Surgeons, Kingston, as well as the introduction and subsequent exclusion of female students. Within this context, this study examines how the forces of scientific innovation and co-education impacted the curriculum during the period under study, as measured by textbook change, specifically in the courses of obstetrics and gynaecology, the theory and practice of medicine, and surgery. To what degree was curriculum in these courses responsive to scientific inventions and discoveries, changing therapeutic practices, and possible gender biases? From 1881 to 1910, innovations such as x-ray and anaesthesia became commonplace within medical practice. Some technologies gained acceptance in the curriculum, while others fell out of favour. This study tracks these scientific discoveries through the textbooks used at Queen’s-affiliated medical colleges in order to demonstrate how the evolving nature of medicine was represented in the curriculum. To address how gender influenced the curriculum, textbooks from the
Kingston Women’s Medical College and The Royal College of Physicians and Surgeons, Kingston, were compared. For two out of the three examined courses, it was found that sections of textbooks discussing various topics at the Kingston Women’s Medical College contained significantly more detail than their corresponding sections within The Royal College’s textbooks. It was speculated that the instructors preferred to teach their female students through textbooks, rather than lectures.
Acknowledgements

Many have contributed to the completion of this study. I wish to thank my academic assistants, Kimberly Mask, Elizabeth Skoll, Nida Noorani, and Sarah Reny, who have aided in my research, retrieval of materials, and typing. I thank my mother, Karen McNutt, whose hard work and dedication inspires me every day. I wish to acknowledge the research help of the staff at the Queen’s University Archives. Without their assistance in gaining access to materials, this work would not have been possible. Most of all, thank you to the members of my thesis committee, Theodore Michael Christou, Jacalyn M. Duffin, and Duncan McDowall, who have offered their invaluable advice throughout the pivotal junctures along the way. Additionally, I wish to thank E. Jane Errington for being part of my examining committee. Finally, I would like to thank the Queen’s community itself for their continued support of my academic pursuits.
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Chapter 1: Introduction

Queen’s-Affiliated Medical Colleges and the Context for Curricular Modification

Educational curriculum may be considered a mutable entity. Historians have located variability in the material taught in a multitude of national educational contexts, from the Ontario public school to the Canadian university. This scholarship has extended to the professional degrees. The literature has foregrounded the balance of theory and practice, while also examining the transition from practical apprenticeships to formal instruction. The history of medical education has, for instance, emphasized the growth of pre-clinical and clinical subjects, which were conducted in the laboratory and at the bedside respectively. This transition entailed an ongoing plethora of curricular modifications. This study will explore these changes in medical teachings within the context of The Royal College of Physicians and Surgeons, Kingston (hereafter referred to as The Royal College), the Kingston Women’s Medical College, and Queen’s Medical College from 1881 through to 1910. During this period, these institutions experienced

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3 Ludmerer, Learning to Heal.


several shifts, such as the introduction and subsequent exclusion of female students, as well as organizational shifts, such as the reunification of Queen’s College with The Royal College. Within this context, this study examined how the forces of scientific innovation and co-education impacted the curriculum from 1881 to 1910, as measured by textbook change.  

**Purposes of Study**

The purpose of this study is to investigate, identify, and document the information from all available sources, thereby illuminating the known, probable, or possible reasons why medical curriculum changes occurred at Queen’s College, and its affiliated colleges, during the period 1881-1910. For the first time in the history of Canadian post-secondary education, in 1880 the Royal College introduced female medical students to Kingston. Widening the scope of view, this period witnessed the expansion of scientific medicine; innovations of the era, such as the advent of germ theory and its practical emphasis on microscopy, became widely used in laboratory sciences. This study explores the manner in which the curriculum, as a result of any of these profound changes, was adapted and modified. Where was curriculum seen to have changed and to what factors are we able to attribute these changes? I hope to contribute to the literature on nineteenth-century post-secondary curriculum and in particular, I will demonstrate how textbooks can be useful sources in illustrating curriculum change over time. The forces of scientific innovation and co-education are identified as important factors impacting curricula, as measured by textbook change.

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6 See Appendix A for a catalogue of the books focused upon in this study.
One rationale for focusing on the years between 1881 and 1910 was that this period was significant both within and outside the field of the history of medicine and medical education. In the context of nineteenth century medical practice, the early 1880s marked the introduction of several discoveries that signified the emergence of medical science: for example, germ theory, bacteriology, vaccines, and x-rays (see Appendix B). 1910 saw the publication of an influential report, Medical Education in the United States and Canada, commonly known as the Flexner Report, by Abraham Flexner from The Carnegie Foundation. Flexner distinguished between medical schools that, he believed, had provided adequate medical education from those that did not, in effect, standardizing medical training. In the aftermath of the report, medical schools were required to conform to an imposed science-based medical curriculum, or close.

More broadly, this period saw expansive urbanization and the standardization of various types of employment as North America assumed its modern urban-industrial shape. Between 1890 and 1920, Montreal and Toronto saw their populations triple as migrating rural dwellers sought work. Simultaneously, professional organizations of engineers, land surveyors, and other professions emerged. For example, in 1887 the Canadian Society of Civil Engineers distinguished engineering as a legitimate profession. With the urban population explosion came the increased need for expanded medical services. Given this context and the growing requirement for professionalism,

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9 Ludmerer, Learning to Heal, 187.
10 R. Douglas Francis, Richard Jones, and Donald B. Smith, Destinies: Canadian History since Confederation, 6th ed. (Toronto: Nelson Education Ltd., 2008), 137.
Medical students at Kingston sought an education in the realm of physic, with all its responsibilities.

Central to this study is the notion of curriculum as socially constructed. In this sense, curriculum acts as a reflection of societal forces and pressures. In defining curriculum, Wilfred Carr commented on the entangled relationship between society and curriculum, stating that curriculum plays an “important social and political role … in initiating pupils into the culture, practices, and social relationships of their society.”

Sharing this view, Walter Feinberg interpreted education’s role as a prism when he remarked, “[a]t the most basic level, the study of education involves an analysis of the process whereby a society reproduces itself over time.” One of the primary ways by which education signifies societal norms, customs, and beliefs is through curriculum. In this study, one of the primary questions is to what degree the medical curriculum replicated the scientific medical knowledge of the late-nineteenth and early-twentieth centuries.

Definitions of Terms

From the outset, it seems appropriate to distinguish between the three institutional bodies under discussion: 1) Queen’s Medical College; 2) Royal College of Physicians and Surgeons, Kingston; and 3) Kingston Women’s Medical College. Queen’s Medical College was an all-male institution inaugurated in 1854. It is still operating today as the co-educational Faculty of Medicine. Queen’s Medical College ceased to exist when The Royal College of Physicians and Surgeons, Kingston claimed autonomy but remained

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affiliated with Queen’s College from 1866 to 1892. The Royal College was inaugurated in reaction to a mandate that required professors who were not in the Faculty of Theology, to pledge allegiance to the Scottish Presbyterian Church, which had sponsored the founding of the college in 1841. The faculty experienced ongoing concerns over funding and leadership, which also contributed to this separation.\textsuperscript{14}

The Kingston Women’s Medical College refers to the college that existed between 1883 and 1895 that admitted female students only. During these years, the Kingston Women’s Medical College and The Royal College of Physicians and Surgeons, Kingston, operated simultaneously. Within the two institutions, a system was devised whereby students from these colleges, each in their separate facilities, were theoretically given the same curriculum and administered the same examinations but, as we shall see, there were curricular differences.\textsuperscript{15} Queen’s-affiliated medical colleges is a collective term used in this study to denote the Queen’s Medical College, Royal College of Physicians and Surgeons, Kingston, and Kingston Women’s Medical College.

Later university calendars from the 1920s until the 1940s referring to the 1880s and 1890s hailed their institution as a bastion of medical co-education.\textsuperscript{16} The term \textit{co-education} usually refers to the instruction or training of both men and women while utilizing the same facilities and curriculum. In a Queen’s College context, the term refers

\textsuperscript{14} Neatby, \textit{Queen’s University Volume 1}, 126-29; Travill, \textit{Medicine at Queen’s}, 74-6, 82-9.

\textsuperscript{15} After examining the academic Calendars of the Kingston Women’s Medical College and The Royal College for the period 1883 to 1895 exclusively, I have discovered congruent course descriptions with variabilities in textbook lists. The sample examinations provided in the academic calendars also attest to the utilization of equivalent curriculums. See, for example, Kingston Women’s Medical College, \textit{1885-6 Third Annual Calendar} (Kingston, ON: The British Whig Steam Printing House, 1885); Queen’s University, \textit{Calendar of The Faculty of Medicine: Thirty-Third Session 1885-1886} (Kingston, ON: The Jackson Press, 1885).

\textsuperscript{16} Queen’s University, \textit{Calendar of The Faculty of Medicine: Seventy-Third Session 1925-26} (Kingston, ON: The Jackson Press, 1925), 12.
to both the years in which the female medical students were integrated with their male counterparts and the years they were segregated in the Kingston Women’s Medical College. Co-education, however, proved to be short-lived at Queen’s College, as after 1895 women were no longer admitted as students, a prohibition that lasted until 1943.

This study will seek to reveal the curriculum as a prescribed and documented rhetoric. In the context of medical education curricula, curriculum theorists David Kern, Patricia Thomas, and Mark Hughes defined curriculum as “a planned educational experience,” continuing to state that, “[t]his definition encompasses a breadth of educational experiences, from one or more sessions on a specific subject to a year-long course, from a clinical rotation or clerkship to an entire training program.” Broadening this definition, we may consider curriculum to be far more than the material taught in a given course of study or program. Three easily discernable facets of a curriculum are: 1) the prescribed curriculum, or curriculum as rhetoric, which is the material intended to be taught in a given course or program; 2) the enacted curriculum, which is the material experienced by the pupils and taught by the instructor; and 3) the hidden curriculum, which is the material not expressly taught but implied through the instructor’s or students’ behaviours and attitudes.

The present study takes its focus the prescribed curriculum, as it is the most accessible. The material intended to be taught can be surmised through examining

17 For a discussion on curriculum as rhetoric, see Christou, Progressive Education, 45.
documentation, such as instructors’ textbook preferences, descriptions of particular courses in the course calendar, and course syllabi. Historians have been less able to describe the enacted and learned curriculum. This curriculum has been characterized as a “dark alleyway,” relying upon direct eye-witness accounts of what was taught or, after reflection, what was learned. This research attempted to access the curriculum as rhetoric in order to detect change and continuity as Queen’s medical education underwent numerous institutional alterations. In the present context, these alterations included The Royal College’s reunification with the broader university and the formation and dissolution of the Kingston Women’s Medical College. This study argues that, in the late-nineteenth and early-twentieth centuries, medical and technological advancements, as well as student gender, motivated curriculum change at Queen’s-affiliated medical colleges.

Context

Relatively few historians have discussed the numerous factors shaping post-secondary curriculum change; still fewer have discussed the topic in relation to medical education. This sparse scholarship has nonetheless illustrated how curriculum modifications emerged as the result of a three-pronged pressure: 1) societal movements; 2) institutional factors; and 3) the innovations of specific individuals. These domains

21 Scholarship of postsecondary curriculum change may be represented by McKillop, Matters of Mind; Andrew Warwick, Masters of Theory: Cambridge and the Rise of Mathematical Physics (Chicago: The University of Chicago Press, 2003). Scholarship of postsecondary medical curriculum change may be represented by Travill, Medicine at Queen’s; Huddle, “Competition and Reform;” Steven J. Peitzman, A New and Untried Course: Woman’s Medical College and Medical College of Pennsylvania, 1850-1998 (New Brunswick, NJ: Rutgers University Press, 2000); Watt and Miller, “Osler’s McGill.”
22 For societal movements affecting curriculum, see Christou, Progressive Education; Christou, “The Complexity of Intellectual Currents,” 677-97. For institutional factors affecting curriculum, see Huddle, “Competition and Reform,” 253; Fabio Rojas, From Black Power to Black Studies: How a Radical Social Movement became an Academic Discipline (Baltimore: The Johns Hopkins University Press, 2007);
may be further broken down into subsections related to medical curriculum; they do not constitute a chronology of curriculum change but rather represent current scholarly debate.

Medical Curriculum Change at Queen’s College and Elsewhere in the Late-Nineteenth and Early-Twentieth Century

1) Societal Movements

Factors that affect nineteenth-century medical curricular change within society include inclinations toward scientific discovery and ideology, the standardization of education, and the resultant reforms to medical education. The mid-to-late-nineteenth century North American medical education climate can be characterized as unsystematic. The proprietary schools, which were institutions where the professors owned the schools and charged tuition on a course-by-course basis, were the dominant form of educational institutions in America. In the United States, this period saw an explosion of proprietary schools, leading to the existence of sixty-four medical schools by 1876. McPhedran characterized proprietary schools as “diploma mills,” where curricular complexity was sacrificed for financial gain. During the same year, Canada had only three medical schools that remain in existence to this day, McGill University, the University of Montreal, and the University of Toronto.

Travill, Medicine at Queen’s. For the innovations of specific faculty members affecting curriculum, see Watt and Miller, “Osler's McGill,” 16-21.
24 Ibid.
25 Ibid., 4.
26 In 1876, there were additional proprietary schools and other institutions that offered instruction in medicine in Canada. Examples include the Toronto School of Medicine and the Upper Canada Medical School. N. Tait McPhedran, Canadian Medical Schools: Two Centuries of Medical History, 1822 to 1992 (Montreal: Harvest House Ltd., 1993), 71-8.
Set apart from these institutions, a few American medical schools, such as Johns Hopkins Medical School, Harvard University, the University of Michigan, and the University of Pennsylvania, offered a complex four-year course of study that was based on a foundation of biomedical sciences for the first two years and clinical practice for the following two years.\(^{27}\) To varying degrees, this new method of conducting medical education was adopted at McGill and Toronto. It should be noted that the University of Montreal did not institute the two-year hospital internship until Flexner’s Report in 1910.\(^ {28}\)

The arrival of scientific medicine, which was medicine rooted in empirical research and governed by standardized codes and procedures, emerged in the late-nineteenth century. Such inventions as the compound microscope were applied to the advancement of medical knowledge.\(^ {29}\) Watt and Miller commented that “it is possible to pinpoint specific moments when changes were made in the curriculum. These range from the introduction of microscopy (1875) to the practical application of sterile procedures in surgery (1877).”\(^ {30}\) At Queen’s University Travill wrote:

Changes in the scientific methodology of medicine did not suddenly occur during the decade or so between the middle 1850s to 1860s. Scientific medicine gradually changed, reaching beyond

\(^{28}\) McPhedran, *Canadian Medical Schools*, 62; Watt and Miller, “Osler’s McGill,” 16-7; In 1867, clinical instruction deteriorated at the University of Toronto when the Toronto General Hospital, which had provided lectures to Toronto’s medical schools, closed. This development prompted students such as William Osler to attend McGill. By 1868, the hospital reopened and the University of Toronto once again benefited from the clinical lectures that were “second to no other in the Dominion.” J. T. H. Connor, *Doing Good: The Life of Toronto’s General Hospital* (Toronto: University of Toronto Press, 2000), 116-9.
causal association between symptoms observed during life and gross macroscopic findings postmortem. Controlled observation, correlation, and classification became the springboard for investigation and experimentation… Medical teaching underwent a parallel shift in emphasis.\textsuperscript{31}

Travill contended that medical innovation necessitated parallel improvements in pedagogy and curriculum in order to ensure that medical professionals were trained in the current knowledge. The knowledge of such medical innovations was transmitted, in part, through textbooks.

The invention of new scientific medical instruments allowed the application of the already well-established connection between anatomical structure and illness. Early in the nineteenth century, important European discoveries, such as René Laennec’s stethoscope with its accompanying \textit{Treatise on Mediate Auscultation} (1819), allowed physicians to investigate their patients' physiological symptoms through anatomy.\textsuperscript{32} In the words of J. B. Nacquart, this discovery “‘proves how useful it will be for science to have physiology… march side by side’ with the clinic and with the study of anatomical change.”\textsuperscript{33} By the 1820s, Laennec’s stethoscope had crossed the Atlantic and was represented in medical textbooks (see Appendix B).\textsuperscript{34}

Historians have traditionally looked to Abraham Flexner’s \textit{Medical Education in the United States and Canada} (1910) as being the birth of the modern scientific medical

\textsuperscript{31} Travill, \textit{Medicine at Queen’s}, 77.
\textsuperscript{32} Laennec’s stethoscope was influenced by Leopold Auenbrugger's percussion technique as a diagnostic tool. On the life of René Laennec and his scientific contributions, see Jacalyn Duffin, \textit{To See with a Better Eye} (Princeton, NJ: Princeton University Press, 1998), 210.
\textsuperscript{33} Ibid.
Despite the biomedical scientific curricular reforms that occurred prior to Flexner’s observations, the report was meant to standardize medical education in North America and put an end to the low quality instruction at proprietary schools. Flexner, a college and high school educator in Louisville, Kentucky, had been commissioned by the Carnegie Foundation to inspect 155 medical schools across the United States and Canada. The goal of his report was to standardize medical education while ensuring that each medical school acquired scientifically-based curricula. Flexner regarded the standards at Johns Hopkins Medical School, founded in 1893, to be those by which all other medical schools should be measured.38

Medical education historian, Kenneth M. Ludmerer contended that Flexner’s educational notions were moulded by the progressive educational philosophies of American educational theorist John Dewey, who emphasized in The School and Society (1899) that a student’s education should be drawn from his or her own experiences and should aim to cultivate scientific intellectual habits of mind.39 In his assertion that the scientific method was more important than the “particular content,” Flexner cited Dewey’s address entitled “Science as Subject-matter and as Method” where he commented, “[s]cience has been taught too much as an accumulation of ready-made material with which students are to be made familiar, not enough as a method of thinking,

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36 Ludmerer, Learning to Heal, 173. For an account of Flexner’s days as a high school teacher, see Bonner, Iconoclast, 32-48.
38 Ludmerer, “Abraham Flexner and Medical Education,” 15; Ludmerer, Learning to Heal, 177.
39 Ludmerer, “Abraham Flexner and Medical Education,” 14; Ludmerer, Learning to Heal, 64, 67.
an attitude of mind, after the pattern of which mental habits are to be transformed." By cultivating these attitudes of mind, physicians would be better equipped to master the scientific-based medicine, the foundation of practice. When Dewey spoke of educational reforms in primary and secondary schools, he advocated for life-long learning and problem-based skill development. Flexner, according to Ludmerer, saw these ideals as a prerequisite for the reformation of the North American medical curriculum.  

2) Institutional Factors

In the late nineteenth century, curriculum was based on not only the societal trends but also on the function of a particular school or post-secondary institution’s organization. An institution’s financial health and organizational structure affected the curriculum. Institutional finances were often a constraining element, as they persistently were at Queen’s. Medical education, with the construction and maintenance of teaching hospitals and laboratories, was an expensive undertaking, especially in a geographically-isolated, small city like Kingston where Queen’s College experienced severe financial constraints in the late-nineteenth century. Even though this circumstance was not the case in Kingston, the lack of a teaching hospital may have had a deleterious effect on medical school curriculum as medical students may have received lesser quality clinical

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instruction. Benefiting from the bequest of its namesake, Johns Hopkins Medical School constructed a first-class teaching hospital where both students and patients prospered.\textsuperscript{43} Early in the twentieth century, clinical conditions at the Kingston General Hospital, by contrast, were unfavourable as funds for construction were needed simply to maintain and expand the existing obligations of the hospital.\textsuperscript{44} Compounding the problem, a large number of private patients would not accept care from student practitioners. Between 1917 and 1918, Queen’s Medical College formulated a nearly-fulfilled proposal to transfer students to the Ottawa Civic Hospital for their clinical experience.\textsuperscript{45} The infrastructure of a teaching hospital and the funds to sustain it were equally vital to the students’ success as the academic organizational units supported a more college-based curriculum.

The pressures were evident in the fragmentation of Queen’s College and led to The Royal College’s greater autonomy in developing its scientific curriculum. Travill commented,

During the summer of 1881, Drs. Sullivan and Fowler were sent to New York to purchase… a Pond’s sphygmograph, a new microscope with pathological and physiological slides, an ophthalmoscope, a laryngoscope, a thermocautery, a Keith’s spray producer… a chemical thermometer, a set for testing urine, and an obstetric manikin.\textsuperscript{46}

Some years earlier, in contrast, when Queen’s Professor of chemistry and natural history, Dr. George Lawson procured six microscopes in 1859, he was reprimanded by Queen’s Medical College trustees for the expenditure.\textsuperscript{47} The establishment of an autonomous

\textsuperscript{43} Ludmerer, \textit{Learning to Heal}, 158.
\textsuperscript{44} Travill, \textit{Medicine at Queen’s}, 227-33.
\textsuperscript{45} Ibid.
\textsuperscript{46} Ibid., 105.
\textsuperscript{47} Ibid., 47.
Royal College enabled the faculty members to pursue their ideals of a scientifically-based curriculum without administrative scrutiny.

Although it did not affect the university curricula directly, government influenced post-secondary affairs to the extent that it accepted or rejected funding proposals and other appeals for financial support. The support offered by the government sustained research and, in turn, instruction. In the late-nineteenth century, the Ontario provincial government handled the University of Toronto’s administration of both the School of Practical Science (the engineering faculty) and the Ontario Agricultural College.48 These funding efforts reflected the government’s and the university’s agreement that the education of future engineers and farmers was vital to the building of the province. In 1902, Queen’s received funds from the Ontario government for the construction of a building to house their School of Mining.49 The establishment of this school was a priority of the government following an 1891 Act that required the formation of province-wide educational institutions for engineering and mining.50 Government funding extended to medicine. Although an 1853 provincial act closed the Faculties of Medicine and Law, the promise of bacteriology and germ theory convinced the Ontario government to re-open and fund the Faculty of Medicine in 1887.51 The new science demonstrated the benefits that the healing art brought to Ontario.

48 The School of Practical Science was established in 1878. The Ontario Agricultural College was affiliated with the University of Toronto in 1887. Martin L. Friedland, The University of Toronto: A History, 2nd ed. (Toronto: University of Toronto Press, 2013), 82, 145.
49 Neatby, Queen’s University, vol. I, 275.
50 Ibid., 217.
3) Individual Innovations

Ludmerer challenged the assumption that Flexner was responsible for the development of medical curriculum beyond the rote learning of medical facts. Ludmerer argued that the intellectual seeds of science-based medicine were planted in the late-nineteenth century.\textsuperscript{52} He located the development of a scientific curriculum to the experience of American Medical Professors, such as Harvard’s Henry Bowditch, and Johns Hopkins’s William Welch. Bowditch, Welch, and other academics had completed postgraduate training in Germany and, upon their return to the United States, sought to emulate the laboratory-based clinicians they had observed in Germany.\textsuperscript{53} A representative of this cadre of medical academics, Canadian Andrew Fernando Holmes attended medical school in Edinburgh, graduating in 1819 and teaching at McGill.\textsuperscript{54} He demonstrated his scientific expertise through his courses in chemistry, botany, pharmacology, and therapeutics. He was the first of the McGill staff to employ the stethoscope in the course of clinical instruction.\textsuperscript{55} Likewise, upon his return in 1903 from postgraduate work abroad, Queen’s Professor James C. Connell introduced a restructuring of the Queen’s curriculum whereby prolonged clinical training was conducted during the third and fourth years of medicine.\textsuperscript{56} With Connell’s support, Queen’s opened a new laboratory building in 1913, a facility devoted to the pursuit of

\textsuperscript{52} Ludmerer, \textit{Learning to Heal}, 78-9, 131-8, 174-5, 202-3. \\
\textsuperscript{53} Ibid., 31. \\
\textsuperscript{55} Ibid. \\
scientifically-based medicine.\textsuperscript{57} The new curriculum required forward-thinking medical scholars to spearhead the drive toward a scientific model of medical education.\textsuperscript{58}

**The History of Women’s Medical Education and Status within Medicine**

Nineteenth-century Canada, like North America as a whole, was a gendered society. In contrast, the sphere of influence available to men encompassed the entire outside world and their possible occupational pursuits were almost endless.\textsuperscript{59} For most of the century, women’s occupational possibilities were limited to domestic affairs.\textsuperscript{60} An exception to this generalization was in the case of nurses. Nursing was thought to be a caring profession, akin to women’s natural motherly instincts.\textsuperscript{61} The role of the nurse required qualities of virtuousness and a selfless dedication to one’s work. As Frederica Wilson, a nurse at the Winnipeg General Hospital, declared in 1906, “look on nursing, especially nursing the poor, as the most Christ-like work a woman can undertake…whatever reason you had for taking up nursing the only motive power is love for your fellowmen and forgetfulness of self in the earnest desire to help others.”\textsuperscript{62} That women were required to be virtuous in their capacities as nurses was exemplified by the fact that “nursing superintendents favoured rural girls as [nursing] candidates not only because of their capacity for hard work, but because they might be more “morally pure”

\textsuperscript{57} Ibid.; Travill, *Medicine at Queen’s*, 199.

\textsuperscript{58} The ambition of constructing a scientifically-based curriculum was aided by the establishment of a veterinary school affiliated with Queen’s from 1895 to 1899. The school emphasized comparative physiology and pathology. Some professors, such as A.P. Knight, were employed at the veterinary school and at The Royal College, simultaneously. It is unclear whether medical students attended any comparative classes. See Thomas W. Dukes, “On the Middle Road: Queen’s University’s Foray into Veterinary and Comparative Medicine,” *The Canadian Veterinary Journal* 48, no. 9 (2007): 947-52.

\textsuperscript{59} McKillop, *Matters of Mind*, 126.

\textsuperscript{60} Ibid.; Francis, Smith, and Jones, *Destinies*, 21.

\textsuperscript{61} Gagan and Gagan, *For Patients of Moderate Means*, 134-5.

\textsuperscript{62} Ibid., 135.
than their urban sisters.”63 These female characteristics were contrasted with the qualities of intelligence and physical robustness that were associated with male doctors.64 Still, Canadian women in Kingston, Ontario, attempted to become doctors.65

One of the primary changes that occurred in Queen’s medical education during the period 1881 to 1910 was the integration of women students. In the summer of 1880, The Royal College made an experimental attempt to integrate women into their pre-existing all-male medical school with the admission of Elizabeth Smith, Alice McGillivray, and Elizabeth Beatty. The following October these first women, who had been admitted under the integration model, were denied enrolment due to administrative delays.66 The summer session of 1881 was cancelled for women due to low admissions. Finally, in October 1881 the College agreed to continue the cohort’s medical education. During the 1882-83 academic year, the women medical students faced harsh discrimination from both students and faculty and were forced to withdraw.67 The experimental integration of women at the male-dominated college had ended abruptly, without result, in 1883, due to protests from both students and faculty.68

63 Ibid., 136.
65 From 1886 until 1974, The Kingston General Hospital maintained a nursing training school. For more information on the training school, see Katherine Connell Crothers, With Tender Loving Care: A Short Story of the K.G.H. Nursing School (Kingston, ON: Kingston General Hospital, 1973), 9-101. For a critical view of this school, see James Michael Wishart, “Producing Nurses: Nursing Training in the Age of Rationalisation at Kingston General Hospital, 1924-1939” (PhD diss., Queen’s University, 1997), ProQuest Dissertations Publishing (MQ20713). For the professionalization of nursing and an account of the Mack School which was inaugurated in 1874 in St. Catharines, Ontario, see Lynn Kirkwood, “Enough But Not Too Much: Nursing Education in English Language Canada (1874-2000),” in On All Frontiers: Four Centuries of Canadian Nursing, ed. Christina Bates, Dianne Dodd, and Nicole Rousseau (Ottawa, ON: University of Ottawa Press, 2005), 184-96.
66 Travill, Medicine at Queen’s, 127.
67 McPhedran, Canadian Medical Schools, 105-6, 139; Also see Elizabeth Smith, ‘A Woman with a Purpose:’ The Diaries of Elizabeth Smith 1872-1884, ed. Veronica Strong-Boag (Toronto: University of Toronto Press, 1980); Travill, Medicine at Queen’s, 127-36.
68 Ibid.
Given these failures, the notion of separate facilities for men and women’s medical training was born, an idea more in keeping with nineteenth-century notions of segregated gender spheres of competence. On October 2, 1883, the Kingston Women’s Medical College opened its doors to a cohort of eleven female students. American women, such as Elizabeth Blackwell, had proved that women were capable of practising medicine and who, along with Canadians Emily Stowe and Jennie Trout who, for lack of a national alternative, had studied in the United States. Despite its early struggles, the Kingston Women’s Medical College, along with its counterpart at the University of Toronto, was at the forefront of Canadian schools admitting women into medical education. The Daily British Whig reiterated the college’s sentiment when it stated that “facilities should be given to females for obtaining a thorough medical education similar to those so abundantly provided for men; and that Canadian women should not be obliged to go to the United States or Britain to obtain such education.” This conviction led to the success of the Kingston Women’s Medical College over the course of its first five years. The college was disestablished after the 1894-95 academic year due to low enrolment, staffing problems, and the proximity of similar institutions in Toronto and

69 Travill, Medicine at Queen's, 143.
71 McPhedran, Canadian Medical Schools, 106.
72 “Female College,” Daily British Whig, 9 June 1883, as cited in Travill, Medicine at Queen’s, 137.
Montreal. 73 Montreal was home to Bishop’s Medical School where women were admitted in 1890. 74

Queen’s College had questioned the prevailing gendered notion of medical education but co-education would stall for four decades after the 1895 closing of the Kingston Women’s Medical College, until the 1942-43 academic year. 75 Meanwhile, the University of Toronto and Bishop’s Medical School maintained a commitment to female medical education and benefited from the closing of the Kingston Women’s Medical College. With their increased enrolment, the University of Toronto opened separate facilities for women in 1883 and fully integrated women in 1906. 76 Referring to the years 1910 to 1940, R. D. Gidney and W. P. J. Millar testified to the predominance of women medical students at the University of Toronto since it was the only institution in Ontario accepting women during this period. 77

Women’s medical education in the Canadian context did not exist in a vacuum. 78 These educational pursuits had their share of detractors. As early as 1869, an editorial in the Buffalo Medical Journal expressing an American view commented that, “[i]f I were to plan with malicious hate the greatest curse I could conceive for women, if I would estrange them from the protection of women, and make them as far as possible loathsome

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73 Travill, Medicine at Queen’s, 146.
75 Cataudella, “When Women Came to Queen’s,” 575-6; McPhedran, Canadian Medical Schools, 106.
76 McPhedran, Canadian Medical Schools, 77-8. Also see Carlotta Hacker, The Indomitable Lady Doctors (Toronto: Clarke, Irwin & Co. Ltd., 1974).
78 For an account of the international women’s quest for medical education, see Thomas Neville Bonner, To The Ends of the Earth: Women’s Search for Education in Medicine (Cambridge, MA: Harvard University Press, 1992).
and disgusting to man, I would favor the so called [sic] reform which proposed to make
doctors of them.”\textsuperscript{79} Despite such views, medical education for women advanced.

Pioneering schools included the Boston Female Medical College, inaugurated in 1848,
and the Women’s Medical College of Pennsylvania, inaugurated in 1850.\textsuperscript{80} By the turn of
the century, the variety of institutions open for women seeking admittance to medical
schools had significantly widened. In his 1910 report, Abraham Flexner noted that,

No woman desiring an education in medicine is under any disability in finding a school to which
she may gain admittance. Her choice is free and varied. She will find schools of every grade
accessible: the Johns Hopkins, if she has an academic degree; Cornell, if she has three-fourths of
one; Rush and the state universities, if she prefers the combined six years’ course; Toronto on the
basis of a high school education; Meridian, Mississippi, if she has had no definable education at
all.\textsuperscript{81}

Demonstrating to the reader his sincerity, Flexner declared that “[w]oman has so apparent
a function in certain medical specialties and seemingly so assured a place in general
medicine… [that their] sex was predestined to an early success in medicine.”\textsuperscript{82} Women
had indeed made great strides in their quest for gaining the right to study medicine, but
this advancement did not prevent the attitudes of some individuals who continued to bar
their access.

\textbf{Religion and Physic: Presbyterian Influence on Queen’s College during the Late-
Nineteenth Century}

One factor that distinguished Queen’s College from other institutions of higher
education in the province of Ontario was its distinctly Presbyterian roots. Alarmed at the
opening of Catholic universities, such as Victoria College in 1837, not to mention the
establishment of the ‘godless’ secular University of Toronto in 1850, Protestant

\textsuperscript{79} Cited in Thomas Woody, \textit{A History of Women’s Education in the United States: Volume II} (New York:
\textsuperscript{80} Justin, “The Entry of Women into Medicine in America,” accessed July 26, 2014.
\textsuperscript{81} Flexner, \textit{Medical Education in the United States and Canada}, 178.
\textsuperscript{82} Ibid.
denominations sought to establish a university to act in counterbalance. In part, Queen’s Medical College and its students’ entry into medicine was borne out of its Presbyterian denominational proclivities, such as a commitment to public service. In 1854, a group of Toronto’s Upper Canada School of Medicine students, disgruntled over the school’s mandatory signing of the Thirty-Nine Articles of the Church of England, sought admission to Queen’s Medical College. Medicine, in the Presbyterian context, was integral to the preservation of, what Howard Miller termed, the social union. This union was indebted to the preservation of “the general will and common good” of the congregation. Health and medicine were logical extensions of this responsibility. This broad calling of the Presbyterians to act as social meliorists and custodians of the societal welfare of their communities, according to Miller, stemmed from a notion that bridged church and society, an “organic unity.” George Monro Grant, principal of Queen’s College from 1877 to 1902, was emblematic of the Presbyterianism of the institution and, in particular, the bond between the spiritual and the secular.

During the period under discussion, Grant was omnipresent in the administrative affairs of Queen’s College. He was a Presbyterian minister, which fulfilled the requirements for principalship, who was firm in his conviction of the union between the sciences and religion. By combining the sacred with the secular, Grant’s objective for the institution was “to produce graduates who would build the growing country in a spirit of

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83 Travill, *Medicine at Queen’s*, 12-3.
84 Ibid., 15-6.
86 Ibid., 5-6.
87 Ibid., 6-7. Miller cites the seventeenth-century reign of William and Mary, when Presbyterianism became codified as a state religion, as an example of when an “organic union” was fulfilled.
dedicated service rather than material gain.”\textsuperscript{88} In return for this service, Grant expected the unwavering devotion of the Presbyterian Church and its followers to be bestowed upon Queen’s. “The church,” Grant wrote, “in accepting Queen’s … meant to preserve, cherish, and honour her. Her special friends, in insisting upon the maintenance of her integrity … meant to develop and strengthen her in every department.”\textsuperscript{89} In his administrative role, Grant saw himself as the bridge to Queen’s College’s modernization. To facilitate this modernization, Grant insisted that, despite the incongruence between faith and scientific fact, “the truth is one even as God is one.”\textsuperscript{90} With this conviction, Queen’s College experienced rapid growth in its scientific departments. The preservation of a medical faculty was key to upholding the university’s covenant to the Presbyterian community and the wider society.\textsuperscript{91} Grant was deeply interested in the affairs of The Royal College, perhaps because the medical profession exemplified his altruistic ideals.\textsuperscript{92} While the institution had operated as a separate faculty when he was appointed principal, Grant successfully reunited the faculty with its parent institution in 1892.\textsuperscript{93} With this reunification, Grant was reassured of the continuing “peculiarly happy” relationship between Queen’s and its medical college, gratified with the fact that the college’s authority over its doctors had been restored.\textsuperscript{94} This was, however, to be a twilight


\textsuperscript{89} William Lawson Grant and Frederick Hamilton, George Monro Grant (Toronto: Morang & Co. Ltd., 1905), 208.

\textsuperscript{90} Donald Barry Mack, “George Munro Grant: Evangelical Prophet” (PhD diss., Queen’s University, 1992), 208.

\textsuperscript{91} This commitment was illustrated in the founding of The Faculty of Applied Science in 1893, which was precipitated by a need to train engineers to assist in “build[ing] Canada.” Queen’s Encyclopedia, s.v. Engineering and Applied Science, Faculty of, accessed on January 31, 2016, http://www.queensu.ca/encyclopedia/e/engineering-and-applied-science-faculty.

\textsuperscript{92} McKillop, Matters of Mind, 75.

\textsuperscript{93} Mack, George Monro Grant, 208.

\textsuperscript{94} Travill, Medicine at Queen’s, 96. For an account of Grant’s worry that the lack of a medical school would be detrimental to Queen’s status as a national university, see ibid., 98.
relationship since, by the end of the first decade of the twentieth century, the Ontario government would insist that Queen’s detach from its explicit religious affiliation.95

Data Collection and Analysis

This study will explore the curriculum for obstetrics and gynaecology, the theory and practice of medicine, and surgery at Queen’s-affiliated medical colleges and, when applicable, The Royal College and the Kingston Women’s Medical College. In order to be categorized as an available subject, a course textbook must be identified and accessible. An intriguing question for this study was whether the movement toward a more scientific-based medical curriculum was reflected in nineteenth-century Queen’s-affiliated medical colleges as seen elsewhere in Canada and in the United States.96

The sources examined here are primarily the textbooks employed in the courses and calendars obtained through the University Archives and the Stauffer Arts and Science Library at Queen’s University. The medical textbooks recommended in the calendars served as a mirror of the curriculum available to medical students. These texts were obtained through Bracken Health Sciences Library at Queen’s University and through Interlibrary Loan services.97 For the purposes of this study, the adoption and/or deletion of a new textbook will stand as a signifier of curricular change as the examinations were

95 Neatby, Queen’s University, Vol. I, 252.
96 For scientific innovations in the Canadian medical school curriculum, see Hanaway and Cruess, McGill Medicine, Volume I, 66, 68-71; Joseph Hanaway, Richard Cruess, and James Darragh, McGill Medicine: Volume II 1885-1936 (Kingston, ON: McGill-Queen’s University Press, 2006), 3, 6-9, 47-48; W. Stewart Wallace, A History of the University of Toronto: 1827-1927 (Toronto: The University of Toronto Press, 1927), 211. For scientific innovations in the American Medical School curriculum, see Ludmerer, Learning to Heal, 29-38; Numbers, The Education of American Physicians, 14-5; Peitzman, A New and Untried Course, 75-7.
a direct reflection of textbook material.\textsuperscript{98} The removal of a textbook has signified that the textbook was not found on the recommended textbook list provided in the Calendars. The textbook lists were published in the Queen’s University medical Calendars that now reside in Queen’s University Archives. The textbook changes that occurred in the subjects of obstetrics and gynecology, the theory and practice of medicine, and surgery were numerically tabulated. The data was collected from both the men and women’s medical faculties for the entire period. Due to constraints, I have discussed 23.9\% of the textbooks introduced in these three subjects during the period 1881 to 1910. Every effort was made to select textbooks representative of the early, middle, and late years of the 29 year span. Some of the textbooks not included in this study are Charles Jewett’s \textit{The Practice Obstetrics by American Authors} (1899), James M. Anders’ \textit{A Textbook of the Practice of Medicine} (1898), and Charles Locke Scudder’s \textit{The Treatment of Fractures} (1901).\textsuperscript{99} I investigated the rapidity with which new textbooks, such as that of William Osler, were embraced by Queen’s-affiliated medical colleges. Osler was the best known physician of his time and his textbook became the most popular textbook of the era. It was translated into at least six different languages.\textsuperscript{100} To the best of my knowledge this is the first study of the history of medical education using assigned textbooks as the primary source.

Ongoing curriculum revisions were noted, such as any variations in the discussed topics, the medical procedures used, and the explanatory descriptions of anatomy and/or

\textsuperscript{98} Jacalyn Duffin, personal communication, October 8th, 2014.
physiology. This technique of considering the curriculum over time offered the advantage of observing how a single course of study changed in an era of considerable institutional flux. In analyzing the data, caution was used to avoid ascribing any curriculum change to a specific cause until it was detected and described. To evaluate the impact of medical advancements on curriculum, secondary literature was relied upon in analyzing the state of contemporary medical knowledge in determining whether the courses reflected the current understanding of the late-nineteenth century.

Another major theme of this study’s methodology has been a comparison between men and women’s textbooks at The Royal College and the Kingston Women’s Medical College respectively. In the three subjects examined, it was found that the women’s textbooks were more detailed than the men’s. Due to a paucity of sources documenting this phenomenon, only tentative explanations for discrepancies can be offered.

Although the scope of this study encompasses the entire medical school curriculum from 1881 to 1910, necessity dictates that this discussion be limited to those courses of study that exhibited the greatest modifications. Chapter one situates this study within the histories of medical education, the local histories of Queen’s University, and the past of post-secondary education in general. Chapter two reviews the relevant historiography on the history of post-secondary education, particularly medical schools, the history of medical epistemology, and the integration of women into medicine as both students and practitioners. It relies on secondary sources to ‘fill in the gaps’ of the historical record. Chapter three elucidates the motivations for textbook modifications within obstetrics and gynaecology. This discipline, which was one of the few branches of medicine deemed acceptable for women, saw an explosion of new scientific information.
and techniques during the late-nineteenth century.\textsuperscript{101} As for surgery in Chapter five, the innovations included antisepsis and aseptic techniques and the use of anaesthetics during labour.

Chapter four details changes in textbooks of the theory and practice of medicine. The analysis focuses on the impact of the influential 1892 textbook by Canadian physician Sir William Osler, among others. Chapter five analyzes the surgery curriculum. This chapter also highlights the developments of antisepsis and asepsis, as well as anaesthesia, as depicted in surgery textbooks. Chapter six reviews the findings of this study and attempts to measure the relative contributions of factors such as the atmosphere of scientific advancements and student demographics. This conclusion attempts to surmise the proportional weights that we can allocate to these considerations when evaluating the educational initiatives of Queen’s-affiliated medical colleges through curriculum.

\textsuperscript{101} Bonner, \textit{To The Ends of the Earth}, 75; Mitchinson, \textit{The Nature of Their Bodies}, 29.
Chapter 2: Historiography

Integrating Medical Education, Medical History, Textbooks, and Queen’s University: 1881-1910

The medical curriculum changes at Queen’s-affiliated medical colleges reflects numerous historiographical trends. This study draws upon the literature of scholars who have explored post-secondary education in Canada and beyond, the history of hospitals as sites for medical instruction, as well as the history of medical epistemology. The research endeavours to interrogate contemporary medical textbooks, as a lens through which to view this literature. The general trends culled from my historiographic survey have included the late-nineteenth century tendency toward specialization within medical curricula, the establishment of women’s colleges, the legitimization of empiricism and positivism within medical culture, and the increasing emphasis on clinical investigation as the cornerstone of medical education and practice. For purposes of comparison, this study is informed by the histories of medical schools affiliated with Canadian universities; currently there are seventeen but, at the time of the period under study, there were nine. Crucially, these themes persist independent of student gender. This chapter locates these trends in the context of Queen’s-affiliated medical colleges.

Queen’s University

Queen’s University has had a long history since it first opened its doors in 1842.¹ In her comprehensive chronological survey of its first seventy-six years, Hilda Neatby emphasized many factors that influenced Queen's curriculum.² She foregrounded the

² Since its foundation in 1841 until 1912, the institution now known as Queen’s University was named Queen’s College. For a chronicle of the time period, see Neatby, Queen’s University, vol. I, 11-254.
influence of individuals, such as Principal George Monro Grant and philosophy Professor John Watson, among other faculty members and administrators, in contouring the shape and content of curriculum at their institution.¹ In this schema, medicine was one of many disciplines vying for the increasingly limited funds provided by the college.² This period witnessed increasing anxieties over the future of the college in Kingston, amid rumors of its relocation to a more metropolitan area, such as Toronto.³ Neatby limited her narrative surrounding the medical school to infrastructure concerns, such as the building allocations of the Medical Building (now the Old Medical Building) and Summerhill, as well as institutional structural changes, such as the establishment of “The Royal College” and the Kingston Women’s Medical College.⁴ She did not discuss curricular or pedagogical groundings beyond the institution’s strong Presbyterian orientation.

Frederick W. Gibson chronicled the history of Queen’s University from 1917 to 1961. According to Gibson, this period saw an intense focus on the physical building and the fundraising necessary to support the institution’s unfolding. Concerning the Faculty of Medicine, Gibson highlighted efforts to improve the medical curriculum through the modernization of infrastructure, in particular the Kingston General Hospital.⁵ Under the leadership of Dean James C. Connell, the hospital and university, for instance, expanded their microbiological facilities, enabling the development of preventative medicine and public health.⁶ The goal of the hospital expansion was Connell’s objective to improve

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¹ For Grant’s impact on the curriculum in general, see ibid., 155, 164, 183, 220. For further information on Grant, see McKillop, *Matters of Mind*, 50-51.
² Neatby, *Queen’s University*, vol. I, 65-66, 176, 258. For further information on Queen’s financial troubles, see McKillop, *Matters of Mind*, 33-34.
⁴ For building concerns, see ibid., 73, 155, 275. For The Royal College of Physicians & Surgeons, see ibid., 128-9, 201, 212. For the Kingston’s Women’s Medical College, see ibid., 213-4, 216-7.
⁵ Gibson, *Queen’s University: Volume II*, 19, 30-2.
⁶ Ibid., 19, 33.
clinical and scientific instruction.\(^9\) In his lengthy discussion of funding hospital renovations, Gibson commented that in 1921 the Ontario provincial government “respond[ed] to the submission of Queen’s and Kingston General Hospital with a promise of a capital grant of $400,000 to be spread over a five year period, and it also made a grant of $125,000 towards a new heating plant for the joint use of the university and the hospital, each of which contributed $80,000 to the final costs.”\(^10\) Like Neatby, Gibson concentrated on the importance of the built environment in curricular development. The focus on the infrastructure of education, though insightful, neglects the curriculum.

Historian A. B. McKillop used a wider lens to explore the evolution of universities in Ontario. *Matters of Mind* concentrates on the establishment of the University of Toronto and its amalgamation with the various colleges in its surroundings. McKillop was motivated by the absence of a modern comprehensive study of the University of Toronto, the “official” provincial university with a monopoly on provincial government funding.\(^11\) A severe constraint was placed on the funding available to Queen’s University. McKillop’s discussion of medicine in Kingston is similar to Neatby’s insofar as it revolved around the instructional bodies of the colleges and the politics that shaped their structure. A major theme of his book was the struggle between religious and secular universities. McKillop presented a detailed discussion on the theological dispute between The Royal College and Queen’s College. While providing excellent background to the period under discussion, McKillop offered some intriguing insights into the political nature of the Ontario University curricular development and

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\(^9\) Ibid.
\(^10\) Ibid., 30-4. Esp. 33.
content. The late-nineteenth century was a period of considerable labour unrest in Ontario. In conflict with these circumstances, the Queen’s Department of History curriculum, according to McKillop, adopted a “heavily constitutional nature.” He wrote,

Lectures were given on ‘The Development of Monarchy’ and ‘The British Constitution,’ and textbooks such as William Stubbs’s *Constitutional History of England*, E.A. Freeman’s *Growth of the English Constitution*, and J.G. Bourinot’s *Constitution of Canada* were in use… by the 1880s. But it concerned some by that decade that such works, descriptive and celebratory, did not directly address themselves to current social and political problems.

Notwithstanding the relatively apolitical status of medical instruction, McKillop provided an example of how non-educational factors influenced curriculum.

**The History of Medical Education at Queen’s and Elsewhere**

Queen's University’s history spanning a century-and-a-half is tracked through several important works. Queen’s medical historian A. A. Travill detailed the events that transpired at the Kingston Medical Colleges in the late-nineteenth and early-twentieth centuries.

[He] recounts the first half of [the Queen’s University Medical College’s] story: the foundation of the faculty and its first twelve years; its autonomous existence; the 26-year affiliation of the Royal College of Physicians and Surgeons of Kingston (the Royal) with Queen’s University; the short-lived but highly successful experiment in women’s medical education at the “Royal” and the Kingston Women’s Medical College (the first founded in Canada).

Within this focus, Travill provided excellent insights and chronology of the Queen’s medical curriculum, relying on the medical school calendars, Queen’s Senate Minutes, and the notebooks of Queen’s student Elizabeth Smith, to depict the character of the curriculum at The Royal College, the Kingston Women’s Medical College, and Queen’s Medical College. Travill concluded that the Queen’s curriculum was based on contemporary science and clinical practice; however, he did not examine the textbooks.

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12 Ibid., 193.
13 Ibid.
14 Travill, *Medicine at Queen’s*, xii.
15 Ibid., 101-2.
on which the curriculum and examinations were based. Instead, Travill found evidence of the scientific basis through faculty, in, for example, the ambitions of physiology professor and chair of biology A.P. Knight, who insisted that “advances in science and technology were incorporated into basic science teaching.”

Medical education historian N. Tait McPhedran, writing in 1993, offered a chronological profile on the history of Canadian medical schools. Although McPhedran devoted only twelve pages to Queen’s University, for which he relied on a single interview with A. A. Travill and on Travill’s book, McPhedran placed Queen’s within the history of university and other medical educational institutions within Canada. McPhedran avoided the curriculum content of all the institutions that he examined and offered only an overview of Queen’s chronology.

Focusing on the University of Toronto, Martin L. Friedland rendered an overview of the institution’s history from 1826 when a charter was obtained for King’s College, the university’s forerunner, to the present time. Friedland’s discussion centered on infrastructure development and the achievements of individual faculty members for improving the status and prestige of the university. For example, the establishment of the School of Practical Science in 1878 and the affiliation of the Ontario Agricultural College with the University of Toronto in 1887 represented academic and institutional growth. Similarly, Friedland detailed the research of Frederick Banting and Charles Best as they discovered insulin in J. J. R. Macleod’s university laboratory. Banting’s and Best’s

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16 Travill, *Medicine at Queen’s*, 166.
17 See McPhedran, *Canadian Medical Schools*.
18 Friedland, *The University of Toronto*, ix-xlvi, 3.
19 Ibid., 53, 145.
discovery brought the University of Toronto prestige for biochemistry. These two themes of institutional growth and individual achievements were reflected in Friedland’s discussion of the Medical Faculty.

Following its closure in 1853, the University of Toronto’s Medical Faculty was re-established in 1887. The closure of the faculty was predicated on a provincial legislative act that left the training of professionals in law and medicine up to the organized societies in their respective fields. Friedland characterized the period following the faculty’s reopening as one of institutional growth: the Toronto School of Medicine and the Trinity College Medical School were absorbed into its new medical school. He depicted the reborn Faculty of Medicine as an educational institution in the midst of a climate where a scientifically-based curriculum was becoming a priority. As he noted, “[m]any students who wanted a more scientific medical education were attending schools outside the province, such as Michigan and McGill. The great medical educator William Osler, for example, had left Toronto School of Medicine after two years to complete his studies at McGill”. Friedland did not elaborate on the curricular additions that the faculty implemented in order to acquire these improvements.

Focusing on the province of Ontario, Charles M. Godfrey chronicled the developments in medical practice during the nineteenth and early-twentieth centuries. Godfrey’s survey included discussions of medical education. Concerning Queen’s College specifically, his remarks were limited to the founding of the institution, the

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20 Ibid., 285-91.
21 This act did not prevent the University of Toronto from examining candidates for licensing exams. Ibid., 40, 126.
22 Ibid., 129, 135-6.
23 Ibid., 128.
biography and unique characteristics of select faculty members who were involved in the inaugural sessions of the college, the financial difficulties encountered when the medical college dissociated from Queen’s College to become The Royal College, and the impulse of Queen’s students to join the American Civil War.\textsuperscript{24} Absent from this analysis was any reference to curricula or textbooks.

In chronicling the history of McGill University’s Faculty of Medicine, Joseph Hanaway and Richard Cruess endeavour, in their first volume, “to trace the evolving philosophy of medical teaching at McGill from the Edinburgh tradition of authoritative didacticism with passive student involvement to more education in science and a concern with efficient teaching.”\textsuperscript{25} Hanaway and Cruess highlighted “the role of the student in his own education in a learning-while-doing environment rather than solely in the lecture room.”\textsuperscript{26} Their somewhat Whiggish interpretation of the increasingly scientific curriculum, documented the clinical and laboratory curriculum.\textsuperscript{27} They consistently attributed curriculum change to individual faculty members, among them William Osler, George Ross, and Francis John Shephard. Under the tutelage of these leaders, they argue, McGill’s medical curriculum was brought into the modern era of laboratory and clinical sciences.\textsuperscript{28} This interpretation tends to underestimate the impact of other factors in curricular reform, such as a fostering infrastructure or targeted donations.\textsuperscript{29}

In the second volume of their consideration of the history of McGill’s medical faculty, Hanaway, Cruess, and James Darragh explored developments from 1885 until

\textsuperscript{25} Hanaway and Cruess, \textit{McGill Medicine: Volume I}, xviii.
\textsuperscript{26} Ibid.
\textsuperscript{27} For an outline of William Osler’s course in microscopy, see ibid., 70-1.
\textsuperscript{28} Ibid., chapter 4.
\textsuperscript{29} Ibid., 65-6.
1936. The early years of this period saw stagnation in curricular development due to the unwillingness of professors to modify their courses. Notwithstanding the stagnation, Osler’s course in the Institutes of Medicine, upon his 1884 departure to Philadelphia, was divided into three disciplines, histology, pathology, and physiology. A McGill University medical degree was completed in four years. Lecture and clinical courses took place throughout the entire year including the summer months. The curriculum consisted of “medicine, surgery, venereal disease, ophthalmology, laryngology, and gynecology and diseases of children, the skin, and the nervous system.” McGill responded to the demanding and complex curriculum of the era; however, as in volume one, Hanaway, Cruess, and Darragh kept their focus on infrastructure and on individuals who developed research and pedagogical expertise. Absent from this survey too was an exploration of curriculum content or materials, including textbooks.

Ian Carr and Robert E. Beamish chronicled the trajectory of medical history in Manitoba during the nineteenth and twentieth centuries. Their discussion of the Manitoba Medical College was, for the most part, limited to biographical sketches of the students and faculty. The pedagogical attributes and contributions of Professors James Kerr and Henry Havelock Chown were showcased, with little attention paid to the curriculum. Intriguingly, Carr and Beamish explored their college’s examinations, in order to establish the curriculum’s rigorous nature. For example, on the 1899 examinations “the

31 Ibid. The fact that Osler’s course was separated into three subjects is testament to the growing medical base of knowledge in McGill’s curriculum, due to scientific innovation.
32 Ibid.
33 Ibid., 7.
34 For an example of a biographical sketch, specifically that of student Gordon Fahrni, see Ian Carr and Robert E. Beamish, *Manitoba Medicine: A Brief History* (Winnipeg: The University of Manitoba Press, 1999), 53.
35 Ibid., 27.
questions often related to infectious disease or to disease caused by bacteria, and imply a considerable knowledge of surgical treatment and the treatment of the complications of childbirth.”  

36 This evidence corresponded well with the observation that, in 1904 the Manitoba Medical College attracted faculty members “bacteriologist Gordon Bell, physiologist Swale Vincent, [and] botanist Reginald Buller.”  

37 The physiology course taught by Vincent comprised “long hours of lectures and practical laboratories in which the students reproduced famous physiological experiments on muscle twitching and cardiac action using kymographs and smoked drums.”  

38 Such actions testified to their impulse to build a modern scientific medical school that was similar to the one established at Queen’s and McGill before them.

Kenneth M. Ludmerer’s Learning to Heal (1985) detailed the transformation of the training of American physicians from the multiplicity of proprietary schools in the 1880s to the establishment of a clinical science-based curriculum and, early in the twentieth century, on the erection of teaching hospitals. Throughout his study, Ludmerer sought to dispel the notion that Abraham Flexner’s 1910 Report had a catalytic effect on medical school education, arguing that many of the reforms for a clinical basis in medical education had been enacted prior to Flexner’s recommendations.  

39 Although Ludmerer’s topic was curricular in nature, his interest was in the broad-based structural changes that had transformed medical education into its present-day multi-year programs that emphasize scientific foundations.  

40 He briefly examined efforts to standardize medical

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36 Ibid., 54.
37 Ibid., 55.
38 Ibid.
39 Ludmerer, Learning to Heal, 7.
40 See, for example, ibid., 191-206.
curricula, but he did not consider the impact of standardized curricula on individual courses or textbooks. Nevertheless, he did explain how Flexner’s Report resulted in reduced opportunities for the medical education of women and African-Americans. Flexner had confronted “a heterogeneous system of medical education; [his Report] insisted on a homogeneous system in which all schools were university schools.” ⁴¹ Most institutions that admitted female and black pupils were proprietary schools and did not conform to this model.

Ludmerer continued his investigation with *Time to Heal* (1999), which extends the examination of American medical education from Flexner’s Report until the close of the twentieth century. He chronicled the curricular developments in both undergraduate studies and graduate specialties. His central theme was the establishment of teaching hospitals as the locus of medical education and the accompanying creation of the ‘university medical centre,’ which was an amalgamation of a university’s medical school with one or more teaching hospitals. Other themes included the increased capacity for medical schools to engage in research through the establishment of endowments, as well as national and state funding, and the abundance of medical knowledge, resulting in a complex curriculum that required physicians to specialize. ⁴² Ludmerer illustrated the trajectory of the increasingly complex educative framework that students encountered in their pursuance of medical degrees.

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⁴¹ Ibid., 182.
Representing the historiography detailing women’s entry into medicine, Steven J. Peitzman explored the curricular development of the Woman’s Medical College of Pennsylvania, one of the first institutions to offer instruction to women in 1850. In the early years, the women’s medical college was in competition with the men’s. Peitzman argued, his study “stress[ed] the College’s early efforts to emulate (or even surpass) the offerings of the strongest “male” medical schools, so that opponents of the medical women’s movement would not be able to equate women’s medical education with irregular or inferior training.” These ambitions were demonstrated with the 1896 introduction of bacteriology, a discipline that emphasized the new laboratory science that was prevalent in the era. This emphasis was bolstered with the appointment of faculty member Lydia Rabinowitsch whose research with the eminent German physician Robert Koch proclaimed her laboratory expertise. With this appointment, among others, the Woman’s Medical College of Pennsylvania aimed to compensate for any future constraints levied upon it due to gender. Many other studies examine individual American medical schools and several articles track women’s medical education. I have not examined them all, but this survey shows that close study of curriculum and its changes through analysis of assigned textbooks has not been a major preoccupation of historians of medical education.

The History of Hospitals

Ludmerer argued that the late-nineteenth and early-twentieth century hospital was a location for teaching and learning, as well as a beacon for scientific and technological

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44 Ibid., 76-7. Along with its notoriety in the laboratory, the Woman’s Medical College of Pennsylvania saw expertise in the clinical subjects of obstetrics and gynaecology and preventative medicine. See ibid., 81-3.
advancements. In these institutions the importance of connecting teaching and clinical work became apparent as medicine became more sophisticated. As the hospital began to occupy an important role in medical education during the period 1881 to 1910, it is deemed appropriate for this study to consider the history of these institutions, the most relevant being the Kingston General Hospital (hereafter referred to as the KGH). To this end, Margaret Angus chronicled the trajectory of healthcare prior to the founding of the hospital in 1845 until the planning of a new health sciences building in 1972. Throughout her account, Angus emphasized the vital role that the KGH played in the instruction of medical students, as well as the willingness of the hospital to accept new technology.

Angus noted that, since its inaugural year of 1855, Queen’s medical students were taught at the KGH. From the onset, clinical experience was a component of Queen’s medical education.

The KGH staff and the faculty of Queen’s-affiliated medical colleges constituted an interconnected elite. They were often the same individuals. For example by 1896, Professors K. N. Fenwick, T. R. Dupuis, James Third, W. T. Connell, and A. P Knight, were among the staff at the KGH while simultaneously holding their academic positions at Queen’s. With the hospital as an integral component of medical education at Queen’s-affiliated medical colleges and intimately connected with the faculty, administrative decisions at the KGH often directly impacted students’ educational experiences. In 1891, for instance, the hospital’s Board of Trustees decided to “restrict…

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46 Clinical medicine was a course conducted at the KGH. Margaret Angus was an amateur historian hired to write the history of KGH. Margaret Angus, *Kingston General Hospital: A Social and Institutional History* (Montreal: McGill-Queens University Press, 1973), 31.
the number of days for clinical lectures on medicine, surgery, and gynaecology and for students going through the wards to three, instead of five, days a week.” With this limitation, the textbooks and the theoretical aspects of the curriculum became more important.

Angus explored how the KGH and, by extension, Queen’s-affiliated medical colleges responded to new knowledge and innovations in medical science and technology. For example, she commented that the KGH was among the first hospitals in Canada to use x-ray technology, citing the contributions and enthusiasm of James Third. Responding to the new developments of germ theory and antisepsis and asepsis techniques, Angus discussed the opening of the Doran Building, a separate facility for parturient women designed to combat puerperal fever. While benefiting patients, x-ray technology and the opening of the Doran building offered medical students the opportunity to use the latest technology in a clinical setting. Overall Angus provided a comprehensive overview of the KGH in its many roles, both medically and educationally.

Founded in 1829, the Toronto General Hospital strove to offer its patients the best and most technologically advanced medical care. In his investigation of its history, J. T. H. Connor offered “a biography of an institution” where, throughout its three parts, he described the hospital’s “physical changes and portray[ed] those people most involved with it: patients and those who cared for them.” Connor stated that the hospital served

48 Ibid., 68.
51 Connor, Doing Good, 16.
52 Ibid., 9.
as a “barometer” in measuring the social and political forces that impacted Toronto, Ontario, and Canada as a whole.\textsuperscript{53}

In considering the impact of the Toronto General Hospital on medical education, Connor emphasized that it had always been a teaching hospital. In doing so, he limited his focus to the establishment and maintenance of the hospital as a facility for clinical instruction under both the initial apprenticeship educational models and those of the medical schools. He contended that “[s]ince the early 1830s the hospital had assisted in the training of medical students, who walked the wards and learned from their medical masters as ‘apprentices.’ This tradition of bedside learning continued while medical leaders sought more structured methods of teaching.”\textsuperscript{54}

As the requirements for becoming a medical practitioner shifted from apprenticeship to medical schools, in 1844 the Toronto General Hospital became the location for the University of King’s College’s clinical courses.\textsuperscript{55} The arrangement brought prestige upon the hospital as it came to be regarded as a teaching hospital similar to its European counterparts.\textsuperscript{56} Over the subsequent decades, while various educational institutions vied for control over the city’s medical education, the hospital’s university affiliation lasted “for only nine years, between 1844 and 1853,” with only eight students graduating from King’s College.\textsuperscript{57} The fact that the Toronto General Hospital was not affiliated with a medical school did not prevent the hospital from offering clinical instruction and lectures to students within the city’s medical schools. However, the

\textsuperscript{53} Ibid., 3, 11.
\textsuperscript{54} Ibid., 62-3.
\textsuperscript{55} Ibid., 63-5.
\textsuperscript{56} Ibid., 65. European teaching hospitals included London’s Guy’s Hospital, founded in 1721.
\textsuperscript{57} Ibid., 68.
instruction was more in the form of didactic lectures rather than experiential training. The
*Canadian Journal of Medical Science* complained that the students were “‘too much
lecture[d] too [sic], and too little taught.’”

Connor did not discuss what topics were included in the clinical instruction. In 1906, the union between the hospital and medical education was revived when the University of Toronto President Joseph Flavelle and the Ontario Premier James P. Whitney once again successfully integrated the hospital with a medical school. As part of the new deal, the University of Toronto emphasized clinical instruction.

Connor characterized the Toronto General Hospital as the locus of technological complexities and scientific knowledge. He highlighted the acceptance of new developments, such as sterile operative techniques, x-ray technology, and the introduction of ambulance services. Connor captured the excitement for x-ray technology in his citation of a *Globe* editorial that claimed x-rays would “‘awaken a popular interest such as has greeted no invention of recent years.’” This enthusiasm was reflected in the textbooks used at Queen’s-affiliated medical colleges.

In contrast with the complexity and technological sophistication of metropolitan hospitals such as the Toronto General were histories of medical institutions elsewhere in Ontario. Offering a portrait of one such institution, David Gagan surveyed the existence of the Owen Sound General and Marine Hospital since its opening in 1893. Influenced by what Gagan called “the social history of medicine,” he stated his intentions to use the

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58 Ibid., 137.
59 Ibid., 170.
60 Ibid., 128-31. Prior to ambulance services, horse-drawn carriages were used to transport the sick to the hospital.
61 Ibid., 131.
hospital as an exemplar of “the historical relationship between those who required health care and those who provided it, not just between patients and their physician, but… between the changing health care needs of whole communities and societies.”\textsuperscript{62} The majority of the book was centered on the hospital, its administration, and staff, with sparse discussions of patients. Medical education was limited to the nursing school; no medical school used the General and Marine Hospital as a teaching facility.\textsuperscript{63} The nursing school opened in 1901 and Gagan pointed to the attraction of free labour as the primary reason for its establishment.\textsuperscript{64} Their curriculum was “devised by the medical staff, who also served as the instructors in obstetrics, gynecology, pediatrics, surgery, anatomy and physiology, medicine, and hygiene.”\textsuperscript{65} Gagan did not discuss the nursing curriculum in detail and did not refer to any of the textbooks used.

Technologically, the Owen Sound General and Marine Hospital was slow to integrate the innovations of the era. For example, in 1909 the hospital board was discontented with the nursing matron, one of the main instructors at the nursing school, because of her inability “to carry out… up-to-date scientific surgical techniques or to teach her nurses the same, especially the principles of antiseptic surgery, with the result that her nurse trainees were deemed by the physicians to be unfit for employment at the G&M [the General and Marine Hospital] or anywhere else.”\textsuperscript{66} Likewise, it was not until 1922 that the first x-ray machine was installed at the hospital.\textsuperscript{67} Significantly, the

\textsuperscript{62} David Gagan, ‘A Necessity Among Us:’ The Owen Sound General and Marine Hospital, 1891-1985 (Toronto: University of Toronto Press, 1990), xi.
\textsuperscript{63} Ibid., 14.
\textsuperscript{64} Ibid., 46-7.
\textsuperscript{65} Ibid., 47.
\textsuperscript{66} Ibid., 49.
\textsuperscript{67} Prior to the installation of the x-ray machine at the hospital, in 1917 it was used by photographer John James. Ibid., 69.
modernization that did take place at the hospital, Gagan attributed to the education of the physicians, specifically those trained at the University of Toronto. Just months after the initial installation of the x-ray machine, the hospital developed an x-ray department.

Gagan noted that this accomplishment was due to the fact that two-thirds of the department physicians graduated from the University of Toronto’s Faculty of Medicine. There, physicians had “learned their craft in a setting where the linkages between the theoretical and clinical aspects of medical teaching and research were particularly strong and where modern symbiosis between physicians and hospitals first developed in Canada.” Still, the slow diffusion of technology into the small-town hospital offers a reminder of the regional disparity for medical technology within Ontario.

Expanding our gaze from one semi-urban hospital to the national experience, David and Rosemary Gagan tracked the Canadian development of the municipal hospital over the late-nineteenth and early-twentieth centuries. Exhibiting once again the qualities of the social history of medicine, Gagan and Gagan demonstrated that it was the hospitals’ personnel that characterized each institution. A dominant theme of the book was the economics of hospital management. During the period 1890 to 1950, the hospital was transformed from an institution that relied on paying patients to an instrument serving a free-for-all healthcare system. Hospital care was particularly expensive due to its increasing specialization and technology. The rapidity with which specialism and technology advanced, the authors argued, was limited due to the inability of medical

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68 Ibid., 69-70.
69 Ibid., 70.
70 Gagan and Gagan, *For Patients of Moderate Means*, x.
71 Ibid., 53, 180-8.
72 Ibid., 36.
schools to create and provide adequate and up-to-date training. They stated with regard to
the new science and study of x-ray, “[t]he difficulty was that “roentgenology” or
“skiagraphy” (radiology) was not yet a widely accepted field of professional education,
and there were few centres where advanced training was available, none in North
America before 1913.”73 Gagan and Gagan continued with regard to the educational
deficiencies that impacted hospitals, “[b]oth the Vancouver General and the Owen Sound
General and Marine were typical of hospitals that, after trying unsuccessfully to recruit a
trained skiagrapher [radiologist], sponsored a general practitioner for specialized study,
who then returned as the resident radiologist, usually on a fee-sharing arrangement with
the hospital.”74 The early introduction of the technology at Kingston and in the
curriculum at Queen’s Medical College demonstrates that Queen’s kept up with the
emerging innovations.

Similar to the approach of Gagan and Gagan, Charles E. Rosenberg charted the
ascendancy of the American hospital. He chronicled the developments of hospitals as
institutions since their humble beginnings in the eighteenth century when only New York
and Philadelphia could be said to have hospitals in the modern sense of the term.75
Rosenberg’s endeavour was national in scope, although most of the hospitals he
discussed were located in the northeastern American states. His themes included the
transition of the hospital from a charity to a profiting enterprise, the innovations of
scientific medicine and medical specialisms, and medical education. According to
Rosenberg, medical education had always been an element in the American hospital’s

73 Ibid., 33.
74 Ibid., 33.
75 Rosenberg, The Care of Strangers, 4.
role in society.\textsuperscript{76} Under the apprenticeship system, physicians who held hospital appointments designated the ward’s charity cases as “clinical material.”\textsuperscript{77} As the format of medical education transitioned from apprenticeships to the formal education offered by medical schools, Rosenberg discussed the quest of institutions to locate adequate clinical facilities. The importance of experiential instruction and the need for students to keep up-to-date with medical scientific advancements necessitated their coordination with hospitals. Rosenberg related the interconnection between these two imperatives when he stated that “[t]he introduction of physical diagnosis, of diagnostic tools such as the ophthalmoscope, otoscope, and laryngoscope, and the greater role of surgery cumulatively underlined the need to learn medicine in small groups at the patient’s bedside, in the operating theatre, and in the clinical laboratory.”\textsuperscript{78} Along with the course textbooks, clinical experience was a facet by which medical students became acquainted with the advancing technologically complex medical world.

In 1989, Rosemary Stevens highlighted the trajectory of twentieth-century American hospitals. Her book’s central tension was the hospitals’ often conflicting roles as both a charity site, its traditional responsibility to act as a home for the sick and destitute, and the hospital as a business that offered medical care for a price.\textsuperscript{79} In the struggle over which model would characterize the twentieth-century hospital, the business paradigm prevailed. With regard to how a large urban hospital was conducive to operating as a business, Stevens contended that “[t]his model of a regional hospital or “hospital city,” however rational in theory, was unappealing to the average private

\textsuperscript{76} Ibid., 190.
\textsuperscript{77} Ibid., 190-1.
\textsuperscript{78} Ibid., 191.
\textsuperscript{79} Stevens, \textit{In Sickness and in Wealth}, 17-51.
charitable institution, with its vested local network of doctors and charity-givers.”80 She continued, “[t]he success of the pay system – and, of course, of hospital medicine itself – gave the charitable hospital freedom to grow as an autonomous institution.”81 In America, the charitable and the business philosophies of medical care were not to be reconciled. Stevens offered few details on the hospitals’ role in the educational realm other than highlighting the development of the first internship programs.82 Hospital interns were often assigned to treat indigent patients who became “the medical schools’ “teaching material.””83 Stevens interpreted the potential for the substandard medical treatment of the poor as symptomatic of the social stratification of hospital care, product of the business model. Medical education became interconnected with the marketization of health. With her depiction of the economic landscape of medicine, Stevens reminds us that medicine must be patient-focused, with an eye on what populations are or are not being served by medicine.

Medical Epistemology and Ideas

Curricular materials, such as textbooks and student lecture notes, were a means by which textbook authors conveyed their ideological perspectives. Investigating the transmission of medical knowledge, John Harley Warner explored the spread of Parisian clinical epistemology to the United States through the education of American postgraduate students. Among the main vehicles for communicating this French epistemology were the medical textbooks and lectures emanating from American

80 Ibid., 39.
81 Ibid.
82 The American Medical Association Council on Medical Education published the first list of acceptable internships in 1917. Ibid., 65-7.
83 Ibid., 10.
At the root of this epistemology was the debate over which was the superior approach to new knowledge: empiricism, whereby knowledge is gained through the direct experience of medical practice and clinical instruction, or systems of physiology. Warner suggested that, over the course of the 1820s through to the 1860s, this debate was won decisively by the progenitors of Parisian empirical clinical science. He argued:

For the diverse group of Americans who counted themselves as disciples of the Paris School, empiricism and antirationalism [sic]… represented the message and significance of the Paris School, and it was under the banner of empirical truth that they launched their crusade for reform. By the end of the antebellum period the campaign had been remarkably successful in transforming American medical ideas, practices, and… epistemology.

Although textbooks imply system or rote-learning, the texts foregrounded here, many of them American, emphasized the importance of clinical study, in addition to theory, in the education of physicians. Obstetrics and gynaecology, medicine, and surgery were taught in a didactic manner; they were accompanied with the expectation of active-student learning through the practice of new skills. The majority of the texts assumed a clinical component to the course of instruction.

Alternatives to western medicine were active in Canada. In the chronicling of the status of professions in Ontario, such as lawyers, engineers, dentists, church ministers, as well as physicians, R. D. Gidney and W. P. J. Millar detailed the physicians’ struggle to establish themselves as professionals, distinguishing the expertise of the regular physician from practitioners of alternative homeopathy and Thomsonian therapeutics.

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85 For a discussion on empiricism, see Warner, *Against the Spirit*, chapter 7.
87 For an example of a textbook that relied on the prospect of clinical instruction, see Holmes, *A System of Surgery*, vol. I.
According to Gidney and Millar, central to the physicians’ quest for legitimization was an education built on scientific precepts. The site where physicians were to acquire the scientific basis for medicine was the university, which conferred upon its graduates a higher status than those graduating from proprietary schools. Gidney and Millar contended that pre-clinical science “won its place in the medical curriculum not least because it conferred a new degree of cultural authority, not merely upon the researcher but on the medical profession as a whole.” With this interpretation, the “scientific turn” embedded within medical culture and, by extension, medical curricula had far-reaching implications for the profession’s epistemological position as custodian of knowledge. By the end of the nineteenth century, regular physicians’ professional organizations insisted on medical degrees based on scientific and clinical foundations and they rejected those individuals with lesser qualifications.

The historiography of specialization has intersected with the themes explored in this study. In his comparative analysis of France, Germany, the United States, and Britain, George Weisz characterized regulations regarding specialization as being in a state of flux in the late-nineteenth and early-twentieth centuries. Weisz argued that the legitimization of distinct fields of medicine for the purposes of teaching and research was crucial to the motivating factors of specialist constructions. The degree to which these specialties were accepted within the medical profession varied according to nation. For
example, specialties were, to some degree, welcomed in France and Germany but were largely rejected in Britain.94 Contributing to the growth of medical specialties internationally, Weisz pointed to the expansion of medical research, the influence of “national medical associations,” and the public belief in medicine, among other factors.95 The expansion of research, which led to an explosion and compartmentalization of medical knowledge, was evidenced throughout the medical textbooks at Queen’s-affiliated medical colleges.

Ronald L. Numbers compiled essays written by noted historians on the development of late-nineteenth and early-twentieth century American medical school courses as they reflected medical specializations. These disciplines were constructed through their relationship to practice. Numbers and his authors highlighted the experiential aspects of medical education, as well as the increased scientific nature of curricula during the mid-to-late-nineteenth century. In his survey of internal medicine education, Edward C. Atwater commented that “[t]he hospital provided the laboratory for systematic clinical training, and the appearance of this institution was one of the prerequisites to any major change in the clinical curriculum.”96 Atwater’s conflation of the scientific laboratory with the hospital is noteworthy as it demonstrates that both the laboratory and hospital were equally able to provide medical students with the necessary experience. The clinical laboratory, a hybrid between these settings, further proved

94 For France, see ibid., xxi, 3-25, esp. 21-4. For Germany, see ibid., 51, 87. For Britain, see ibid., 29-34.
95 Ibid., 227-9.
science’s applicability to medicine and provided students with the necessary experience to become effective clinical and scientific practitioners.\footnote{For the history of the clinical laboratory, see Gagan and Gagan, \textit{For Patients of Moderate Means}, 31-2, 113; Howell, \textit{Technology in the Hospital}, 223-4; Rosenberg, \textit{The Care of Strangers}, 154-161.}

The genre of microhistory constituted an important source for this study, as it addressed the impact of larger societal trends on the lives of individuals and communities. Jacalyn Duffin, for instance, demonstrated how the progression of medical knowledge affected the practice of one nineteenth-century rural physician James Miles Langstaff. From the then tiny village of Richmond Hill, Ontario, Langstaff’s education resembled that of his contemporaries in mid-nineteenth-century North America. After a stint at John Rolph’s Toronto School of Medicine, in 1844 he enrolled at Guy’s Hospital in London, England.\footnote{Jacalyn Duffin, \textit{Langstaff: A Nineteenth-Century Medical Life} (Toronto: University of Toronto Press, 1993), 18-9. Langstaff’s post-graduate work was a requirement for licensers, given that the Upper Canada Medical Board would not license Rolph’s students, either for political reasons or because Rolph ran a proprietary school. Langstaff sought an education in Europe. See ibid., 16, 18. Many of his contemporaries who, owing to the poor quality of education in North America, also completed their education on the European continent. For an example of physicians training in Europe, see the biographical sketches of John Stephenson, Andrew Fernando Holmes, and Duncan Campbell MacCallum, in Hanaway and Cruess, \textit{McGill Medicine: Volume I}, 145-7, 148-9, 163-4. This phenomenon extended to American physicians. See Ludmerer, \textit{Learning to Heal}, 49. See also Warner, \textit{Against the Spirit of System}.}

Duffin cautioned that Langstaff’s experience cannot speak for the broader medical community.\footnote{Duffin, \textit{Langstaff}, 7.} Notwithstanding her cautions, Duffin’s biography provides a unique depiction of the application of medical knowledge at the level of the individual physician. Her analysis is particularly relevant as the Queen’s medical curriculum, specifically the theory and practice of medicine, was concerned with medical practice.\footnote{For a discussion on the curricular developments of internal medicine, or the theory and practice of medicine, in nineteenth-century United States, see Numbers, \textit{The Education of American Physicians}, 143-174.} The manner in which physicians practised would allow one to juxtapose the curriculum of 1881 with
what physicians encountered in clinical life. For example, to what extent did the medical curriculum advocate for, or condemn, bloodletting? It should be noted that Langstaff’s life overlaps only nine years into the period encompassed by this study.

Accompanying a greater emphasis on the scientific approach was a trend toward a positivistic paradigm in medical discourses. Positivism emphasised that, through measurement and the accumulation of facts, truth may be known.\textsuperscript{101} Positivistic perspectives were evident as medical epistemology shifted from an individualized conception of physiology and anatomy to an organismic view of disease that stressed the similarities with human internal and external functions and structures. Regarding the changes that occurred in American medicine between 1820 and 1880, John Harley Warner wrote,

Through the mid-nineteenth century professional identity was based on proper behavior and on a medical theory that stressed the principle of specificity, the notion that treatment had to be matched to the idiosyncratic characteristics of individual patients and their environments. During the last third of the century a new conception of professional identity, defined by allegiance to knowledge generated and validated by experimental science and characterized by universalized diagnostic and therapeutic categories, was clearly in ascendance.\textsuperscript{102}

According to Warner, measurable indicators delineated between the diseased and the “natural” or “normal.”\textsuperscript{103} For example, he contended that “quantification and graphical representation of such variables as temperature, pulse rate, and respiration rate, together with the quantitative assay of, for example, the chemical composition of urine, became common methods of tracking the course of disease.”\textsuperscript{104} Given Warner’s contention that positivistic ideology was active in the beginning of the period under study, the extent to


\textsuperscript{102} Warner, \textit{The Therapeutic Perspective}, 1.

\textsuperscript{103} Ibid., 87.

\textsuperscript{104} Ibid.
which positivism was seen in the Queen’s-affiliated medical college’s curriculum assumed a particular focus in my research.

As Warner pointed out, albeit contemplating an earlier period and specifically referring to the therapeutic field, medical ideas in therapeutics differed, ranging from, what he called, the “conservative” to the “progressive.”\footnote{Ibid., 162.} Warner reminded us of the disconnect between the medical theory, as displayed in the textbooks, and what occurred in the classroom or the physician’s practice.\footnote{Ibid., 170-1.} He illustrated the gap between theory and application when he commented, “[n]ot only did textbooks cling in principle to therapies that had declined in actual practice, but they also were generally slow in taking up innovations.”\footnote{Ibid., 171.} Here, Warner has reminded us of the link between medical theory and clinical practice.

The Use of Textbooks as a Prism of the History of Education

Within the historiography, scholars have turned to textbooks, which have been generally interpreted as indicators of pedagogical practice or as a means by which to gage the popularity of an idea or ideology. Within the domain of mathematical physics at Cambridge University in the early-nineteenth century, Andrew Warwick contended that the newly introduced mathematical textbooks were vital for summarizing or demystifying the more opaque material found within contemporaneous mathematics treatises.\footnote{Warwick, \textit{Masters of Theory}, 147, 151.} In the transition from the oral to paper-based mode of instruction, textbooks and written examinations greatly expanded the Cambridge curriculum. As Warwick explains, the final examination paper for the graduating class of 1845,
[C]ontained only eight questions, none of which could be tackled without an advanced knowledge of one of either algebra, mechanics, integral equations, the wave theory of light, potential theory, the calculus of variations, differential geometry, or the mathematical theory of thermo-optics. This enormous increase in technical competence was generated by the new paper-based pedagogical economy, which had developed in Cambridge over the first third of the nineteenth century. In the vanguard of this training revolution were private tutors… but we should also note the important role played by new textbooks.  

Another example of textbooks used as primary historical sources is in the assessment of the relative popularity of certain medical ideas. Referring to the nineteenth century, Wendy Mitchinson investigated the relationship between women and medicine. In this relationship, female patients were held in a subordinate role, as “[p]erceptions of women’s proper role in society influenced the medical care provided them.”  

Mitchinson focused on medical textbooks as testaments to prevalent attitudes toward women. She wrote, “textbooks… were authoritative in that they represented the accepted wisdom of the profession.” For example, when commenting on the male physicians’ attitudes toward the extension of the profession to females, Mitchinson cited Theodore Thomas’s *Practical Treatise on the Diseases of Women* (1868), where Thomas stated that “[w]omen… had little place in medicine and certainly not in the new specialty of gynaecology.” Her underlying assumption was that textbook opinions were not merely those of individual writers but represented the views of many. Such assertions may give too much importance to the influence of textbook authors.  

The textbooks used at Queen’s Medical College and its affiliated institutions could have been used for the preparation of high school students interested in pursuing medicine. In his survey of Ontario’s medical history, Charles M. Godfrey noted that the

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109 Ibid., 151.
111 Ibid., 365.
112 Ibid.
113 Ibid., 27.
governing association, the College of Physicians and Surgeons of Ontario, recommended that prospective medical students were to use textbooks to prepare for their matriculation examinations.\textsuperscript{114} Godfrey did not explain whether the College of Physicians and Surgeons of Ontario’s recommendations were made in consultation with medical schools.

**Conclusion**

This scholarship has foregrounded several historiographical trends:

1) the literature on the history of medical education that emphasized the advancement of scientific-based knowledge in curricula and applied in hospitals;

2) the histories of postsecondary education illuminating the impact of infrastructure and individuals on determining and fulfilling the responsibilities of teaching and research;

3) the course materials such as textbooks that have occasionally been used to explore the prevalence of an idea or a practice in society, but not to detail courses of study through time.

Considering the literature surveyed in these historiographic studies, this study is intended to “fill in the gaps” left by historians who have discussed the period under study. Within this literature, university infrastructure was prioritized over the content of medical school curriculum. In investigating the impact of textbooks on curriculum change, this study investigates the role of publications in exploring faculty members’ attitudes to changing scientific foundations.

\textsuperscript{114} Godfrey, *Medicine for Ontario*, 220-1.
Chapter 3

The Changing Curricula of Obstetrics and Gynaecology Courses at Queen’s-Affiliated Medical Colleges

Among the medical disciplines of the period studied, obstetrics and gynaecology underwent the most profound changes, altering not only its scientific aspects, but also who was permitted to be its practitioners. In a Queen’s context, obstetrics and gynaecology curricula, along with its counterpart courses of the theory and practice of medicine, and surgery exhibited the most changes in the Kingston Women’s College, The Royal College, and Queen’s Medical College’s (hereinafter Queen’s-affiliated medical colleges). During the period under study, the Obstetrics curriculum saw 75 curriculum changes: 39 textbooks were added and 36 were removed (see Appendix A and Figure 1 on page 57). Clearly, it was in considerable flux.

Definitions and Scope of Obstetrics and Gynaecology

Within Anglo-American medical practice, the nomenclature that produced obstetrics and gynaecology depended upon the medicalization of women’s health, particularly childbirth. Obstetrics constituted the discipline concerned with pregnancy and childbirth, while gynaecology was devoted to female reproductive systems and diseases. Concerning obstetrics, its medicalization involved the modification of the culture of parturition, or pregnancy, from the women’s to the men’s domain. It warranted a demarcation between when childbirth ceased to be natural and when it required

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1 In the period under study, this course was known as obstetrics, with gynaecology appearing in the 1897-98 academic term.

Figure 1. Selected obstetrics and gynaecology textbooks at Queen’s-affiliated medical colleges from 1881 to 1910.\(^3\)

intervention. For centuries, women had been the primary assistants to the parturient in the birthing process. Family, friends, and neighbours, many of whom had themselves given birth, drew on their experiences of the lying-in room to offer comfort and confidence. This birthing party very often included a local midwife who may have been unpaid or offered various compensations for their services.

The transition of midwifery from the sphere of women to that of men was observed in various locations and eras in Canadian history. For example, in the late-seventeenth century, childbirth in Catholic New France was the exclusive domain of nun midwives. Midwifery remained in the hands of these women despite pressure from male Catholic priests to attend births. Gradually, however, men were integrated into the

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4 For the introduction of male physicians into the birthing room, with their increased capacity to deal with obstetric complications, see Leavitt, *Brought to Bed*, 36-63; Adrian Wilson, *The Making of Man-Midwifery: Childbirth in England, 1660-1770* (London: University College London Press, 1995).
6 Lying-in was a term to denote pregnancy in general and giving birth in particular. It was commonly used in Britain and North America where maternity hospitals and hospitals for women were referred to as Lying-In Hospitals. Mitchinson, *The Nature of Their Bodies*, 51. For the communal aspects of mid-nineteenth-century childbirth, see Leavitt, *Brought to Bed*, 13-35. See also Edward Shorter, *A History of Women’s Bodies* (New York: Basic Books, 1982).
8 Hélène Laforce, *Histoire de la sage-femme dans la région de Québec* (Saint-Pierre, QC: Institut Québécois de Recherche sur la Culture), 51.
9 As part of their ongoing mission to ensure the conversion of all inhabitants of New France, male Catholic priests wanted to convert, all infants born in the colony, through baptism. However, this imperative was often impossible in cases where the infant died before a baptism could be performed. There was, therefore, a conflict of values between the necessity to keep the birthing arena female and the Church’s obligation to ensure the infant’s salvation. As a solution to this difficulty, in 1671 the Catholic Church established the
birthing process. Hélène Laforce argued that this integration was partly due to the men’s participation in “l’ondoïement,” a simplified version of baptism that laypersons were permitted to perform. Eventually, the birthing procedure became a communal activity, acceptable to the participation of both genders.¹⁰

Within Ontario, two movements went hand-in-hand: the aspiration for midwifery to go under the control of man-midwives or, as they increasingly became known, obstetricians, and moving the birthing location from the home to the hospital. The professional practice of midwifery declined when, in effect, it became illegal in Canada West. In 1865, midwifery lost its exempt status for licensure.¹¹ Despite efforts to acquire licensing provisions from the government, all such endeavours were in vain.¹² The illegal nature of midwifery resulted in the likelihood that a woman’s delivery was in a hospital rather than in her home.¹³ Hospitals had once been viewed as locations of filth and licentiousness.¹⁴ But when midwifery was outlawed, parturient patients were admitted into the hospital, in part due to a lack of an alternative.

Elsewhere, male practitioners began to assume man-midwifery roles in the eighteenth century. Theodore Cianfrani acknowledged that “[o]bstetrics, as practiced [sic] by physicians rather than midwives, is a young specialty; it is only in recent times

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¹⁰ Laforce, Histoire de la Sage-Femme, 53.
¹² Ibid.
¹⁴ With regard to the conditions in the late-nineteenth century Ontario hospital, Jo Oppenheimer contended that “some members of the [hospital] staff… evidently took full advantage of the patients’ brandy and whisky allowance.” Patients feared that the hospital would subject them to experimentation. Ibid.
that men have taken over the practice of midwifery.” Doctors who engaged in man-midwifery may have been motivated by the notion that they held expertise by virtue of their education. Although some eminent British physicians and surgeons thought it a waste of a medical man’s time and knowledge, gaining ground was the perception that pregnancy was a condition that required medical intervention and was not simply a natural process. The textbooks used at Queen’s-affiliated medical colleges referred to childbirth as natural, while emphasizing that the birthing process could quickly turn pathological. This was the spirit in which the science of obstetrics was developed. The world of the midwife, traditional and female, clashed with the male physician’s aim to transform obstetrics, rescuing women and infants with science.

Women as Practitioners: Midwives and Doctors

The involvement of men as attendants in childbirth did not completely displace midwives. Referring to nineteenth-century America, medical historian Judith Walzer

15 Cianfrani, A Short History, v. Judith Walzer Leavitt estimated that it was not until 1900 that 50 percent of births in the United States were attended by male physicians. Leavitt, Brought to Bed, as cited in Duffin, Langstaff, 180. In mid-nineteenth century Canada, it was not uncommon for a single physician to attend to a significant number of births. In her study of James Miles Langstaff, a Richmond Hill-area physician, Jacalyn Duffin estimated that, in the 1870s and 80s, Langstaff delivered close to 70 percent of the vicinity’s born population. Ibid. This statistic may indicate that there was a relative lack of physicians practising obstetrics in this area of rural Ontario.


18 Francis H. Ramsbotham emphasized the naturalness of childbirth but he insisted on the physician’s attendance in the birthing room, their standing by from the commencement of labor to the expulsion of the placenta. Ramsbotham, The Principles and Practice of Obstetric Medicine and Surgery, 126-7.

Leavitt situated midwives as the primary care providers to parturients, pregnant women, with the obstetrician or general practitioner being available should an emergency arise. Given that midwives’ had experience in the birthing room, some suggested that women’s medical care should continue to be entrusted to women. This impulse led to a movement toward women’s medical education.

There were many who clung to the patriarchal view that a woman’s place was in the home and not in the medical school or hospital dissection room. It was thought that medical knowledge would denature the femininity of women. In 1883, the Kingston newspaper publication *The British Whig* published the following editorial on the inclusion of women at The Royal College,

> We should be sorry indeed… to know that Canadian maidens, or matrons… were so dead to that modesty which is woman’s chief charm, as to sit unmoved side by side with young men, and listen to lectures on obstetrics or anatomy, witnessing the experiments of one or the experiments in the other…. To think of disclosing the human form divine, over which humanity bides us throw a veil of decency, or of having the most sacred of feminine mysteries freely discussed before a mixed class of young men and young women is not only shocking, but is disgusting and degrading.

In her historical analysis of the article, Carlotta Hacker commented that “there is no doubt that [the sentiment of the editorial] represented a prevalent attitude.”

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21 Leavitt, *Brought to Bed*, 110-5. Although women were excluded from specialist practices, they were thought to be particularly adept at pediatric care. Hospitals such as the New York Infirmary for Women and Children were established by women specifically for the employment of female physicians. Sydney A. Halpern, *American Pediatrics: The Social Dynamics of Professionalism, 1880-1980* (Berkeley: University of California Press, 1988), 44, 180 note 35; Tuchman, “Situating Gender, 34-57.


24 *The British Whig*, Jan. 6, 1883, as cited in Ibid.

use of the word ‘prevalent’ is a strong characterization, possibly unwarranted without further evidence. However, its publication indicated the presence of like opinions. In the late-nineteenth century, male-dominated public opinion claimed that women did not have the constitution for the mental strain involved in attaining the education and conducting a practice.26

Substantiating this opinion, some medical doctors objected to offering women any form of higher education. Harvard Professor Edward H. Clarke of Materia Medica (the nineteenth-century term for pharmacy) believed that the pubescent female body could not cope with the burden of conducting two processes at the same time. He stated,

Nature has reserved the catamenial week for the process of ovulation, and for the development and perfectation [sic] of the reproductive system. Previously to the age of eighteen or twenty, opportunity must be periodically allowed for the accomplishment of this task. Both muscular and brain labor must be remitted enough to yield sufficient force for the work.27

Focusing on pathological themes, Clarke reported that, when educated, “females in whom the special [reproductive] mechanism… remained germinal, - undeveloped. It seemed to have been aborted. They graduated from school or college excellent scholars, but with undeveloped ovaries. Later they married, and were sterile.”28 Although it was criticized by many of his contemporaries, Clarke’s view was used to justify the continued gender segregation of post-secondary education.29 The Sanitary Journal proclaimed that “proper and complete sexual development will be seriously interfered with and actual disease will

26 Mitchinson, The Nature of Their Bodies, 29.
27 Edward H. Clarke, Sex in Education; or, A Fair Chance for the Girls (Boston: James R. Osgood & Co. 1873), 41-2. Also see Mitchinson, The Nature of Their Bodies, 83-4.
28 Clarke, Sex in Education, 39.
be likely to follow; and the fresh blooming, and promising girl will be blighted at the very threshold of womanhood.”

Similarly Dr. William Goodell’s 1880 text *Lessons in Gynecology* suggested that women’s primary role was maternal and any activity that diverted a woman from her role was deleterious to her health. As a woman begins her education, he wrote, “her periods begin to trouble her and become painful. She develops leucorrhoea and this is followed by bladder problems. She becomes exhausted and hysterical.” Accordingly, the *Canada Lancet* reprinted excerpts of Goodell’s warnings. Many Canadian medical schools employed Goodell’s textbook. A search of prominent Canadian university library catalogues revealed that it is still in circulation at McGill University and Western University, formally the University of Western Ontario. For the years covered in the present study, this text was not prescribed by the Queen’s Medical College or affiliated institutions.

The views concerning women’s educational limitations were applied directly to the study of medicine. It was thought that anatomy in the dissection room, with its use of cadavers, would be particularly abhorrent to women. Elizabeth Smith, one of the first female medical students admitted to The Royal College in 1880, commented on the

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30 Mitchinson, *The Nature of Their Bodies*, 84.
dissecting room as being “the chamber of horror” and she was not sorry, at the end of the
day, “[to] leave that ‘cadaver’ or its abiding place.”\textsuperscript{35} While the Kingston Women’s
Medical College operated from 1883 until its closing in 1895, there lingered an
atmosphere of considerable doubt as to the value of co-education. Perhaps co-education
could be accepted gradually as it was in Ireland. One Irish male medical student
commented, “the first lady student was received in silence in the Dissecting Room, we
thought it was no place for women, but as she was good natured, we gradually accepted
her as a chum and passed no remarks.”\textsuperscript{36} Queen’s medical education was co-educational
until 1895 when women’s education discontinued due to low enrollment.

\textbf{Issues in Obstetrics and Gynaecology: Science, Specialism, and Curricula}

The period 1881 to 1910 saw the codification of positivistic rationalism within
medical discourses and curricula.\textsuperscript{37} Originally developed by Auguste Comte, positivism
was an early-nineteenth-century philosophy that glorified facts and quantification as the
representatives of truth.\textsuperscript{38} In 1825, P.C.A. Louis developed numerical medicine, which
applied statistical methods to health and disease.\textsuperscript{39} Using these statistics, he was able to
correlate the age and gender of 2000 tuberculosis patients, and their symptoms, with
mortality.\textsuperscript{40} This mode of analyzing and displaying medical information promoted the
trust in medical science to grow in popularity.\textsuperscript{41} Increasingly, the focus on facts and

\textsuperscript{35} Smith, ‘A Woman with a Purpose,’ 170, 186.
\textsuperscript{36} William Hunter, as cited in Kelly, “Anatomy Dissections,” 473.
\textsuperscript{37} The search for positivistic fact began in the late-eighteenth century and the first-third of the nineteenth
century. Most notably, physiologists such as François Xavier Bichat attempted to measure the qualities of
2nd ed. (Toronto: University of Toronto Press, 2010), 50-3.
\textsuperscript{38} In medicine, the philosophy of positivism was associated with the rising interest in empiricism and
\textsuperscript{39} Ibid., 78.
\textsuperscript{40} Ibid.
\textsuperscript{41} Warner, \textit{Against the Spirit of System}, 169.
statistics, with their accompanying charts and graphs, acted as indicators of the patients’ physical conditions and gradually appeared in textbooks.

Despite Cianfrani’s contention that gynaecology was developed in the 1860s, since ancient times women’s diseases and treatments were a topic of discussion. At the end of the fifth century or the beginning of the fourth century BC, Hippocrates had written on the subject. Subsequently in the first and second century AD, Galen of Pergamon wrote commentaries on the Hippocratic works. Setting the formation of gynaecology in the 1860s, Cianfrani was likely referring to the modern sense of the discipline that emerged from surgery as its own specialty. Was gynaecology an autonomous field of study, or could it have been subsumed under obstetrics or another branch of medical practice? Physicians often practised more than one specialty, combining gynaecology with other disciplines, occasionally with obstetrics but also with pediatrics or general practice among others.

In 1897, gynaecology became a separate course at Queen’s Medical College. Up until then, obstetrics textbooks included gynaecological material. Obstetrics and gynaecology remained separate but related disciplines until 1925. These disciplines were discussed under the same heading in each edition of the Queen’s medical calendar.

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42 Cianfrani, *A Short History*, v.
45 Weisz, *Divide and Conquer*, 205.
46 Ibid., 205.
47 The Courses of Instruction section in the 1924-25 Calendar has separate headings for gynaecology and obstetrics. Queen’s University, Kingston, Canada, *Calendar of the Faculty of Medicine: Seventy-Second Session, 1924-1925* (Kingston, ON: The Jackson Press, 1924), 55, 59.
Written assessments combined the subjects during the fourth year of medical study. Gynaecological topics continued to be discussed in the obstetrics textbooks. Kenneth N. Fenwick’s *Manual of Obstetrics, Gynaecology and Pediatrics* (1889) discussed obstetrics, gynaecology, pediatrics, and diseases of the chest in one volume.

Before detailing the precise curricular changes, a few notes regarding course content and nomenclature are required. There were no gynaecology courses during the first 16 years of the study period; the subject was subsumed under the obstetrics course. In 1897, separate courses in gynaecology were introduced, signifying the subject’s autonomy from other medical specialities. Despite gynaecology’s association with obstetrics, gynaecological topics were often subsumed in the disciplines of general surgery or internal medicine. For example, the second volume of T. Holmes’s three-volume text, *A System of Surgery*, which was employed by The Royal College in 1881-82 and the Kingston Women’s Medical College from 1884-95, had a section on “Surgical Diseases of Women.” This section included “Cancer of the Uterus in Reference to Surgical Treatment,” “Surgical Measures in Extra-Uterine Pregnancy,” “Organic Diseases of the Ovary,” and “Caesarian Section.” There was also a section on “Diseases of the Breast.”

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48 See, for example, the 1911-12 Queen’s Medical College Calendar that states, “[t]here are separate courses in Obstetrics for third and fourth year students. Gynaecology is studied in the fourth year.” Queen’s University Faculty of Medicine, *Annual Calendar: Fifty-Eighth Session, 1911-1912* (Kingston, ON: The Jackson Press, 1911), 36. An examination schedule can be seen on page 8 of the Calendar. It is unclear whether obstetrics and gynaecology was offered and tested as separate courses at other medical schools.

49 Another common use of curricular nomenclature was to refer to obstetrics and gynaecological courses as diseases of women and children. Diseases of women and children was taught at McGill Medical School where they also provided clinical training. Hanaway, Cruess and Darragh, *McGill Medicine: Volume II*, 8.


gynaecology had an equal claim as a component of medicine. Significantly, obstetrics and gynaecology were not united as a single course in the period under study.

**Facts and Observations in Obstetrics Texts**

At The Royal College, the deletion of Francis H. Ramsbotham’s textbook, *The Principles and Practice of Obstetric Medicine and Surgery in Reference to the Parturition* (1867), was the first curricular change of note between 1881 and 1910. Francis Ramsbotham was the son of a noted obstetrician and textbook writer. His text was in use at The Royal College during the 1881-82 academic year, but records are not available for 1882-83 and the text was not used in 1883-84 (see Appendix A). He published several editions of his textbook, the last being in 1867, one year before his death. Based on Ramsbotham’s extensive experience, this textbook was a step-by-step procedural manual, organized by theme. He actively engaged in a myriad of debates within the obstetrics field and did not hesitate to admit when an aspect of practice was beyond his expertise. As it was published in 1867, his textbook was relatively outdated when it was used in 1881-82 and was probably deleted from The Royal College’s required reading list for that reason. Ramsbotham’s discussion of the Caesarean section was a case in point. In 1867, Caesarean sections resulting in the death of the mother or child, or both, were common. Based on his extensive experience, he stated that, in the British context, “out of… seventy operations,” Ramsbotham recited from memory that there were “only seven or eight instances of perfect recovery.”

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54 Mitchinson estimated that the Caesarean section mortality rate in Britain prior to 1860 was 70% maternal and 56% fetal. Mitchinson, *The Nature of their Bodies*, 217. For additional information on Britain’s high Caesarean section mortality, see Loudon, *Death in Childbirth*, 133-43.
William Playfair’s *A Treatise on the Science and Practice of Midwifery* replaced Ramsbotham. Offering positivistic statistics, Playfair’s text was used at The Royal College until 1889. Regarding the mortality of Caesarean sections in Britain, Playfair recalled that out of 118 operations, “about one in five” newborns survived the birth.\(^{56}\) He bolstered the statistics by tallying the number of infants who perished and categorizing them by length of life. Out of 20 cases, “2 died in a few moments, 1 lived four hours, 1 nine days, 1 seven months, and 1 seven and a half months… [and] one-half of the children were dead when removed from the six women who recovered in the past ten years.”\(^{57}\) Although these descriptions provide an accurate depiction of the high mortality rate, Playfair’s reliance on numbers as an indicator of the facts testified to the growing positivistic culture.\(^{58}\) By discontinuing Ramsbotham’s text while continuing with Playfair’s text, The Royal College adopted a more positivistic viewpoint, favouring “facts,” rather than the author’s experiences.

**Technology in Obstetrics: Anesthetics in Labour**

Another reason Ramsbotham’s textbook may have been excluded from The Royal College’s curriculum was the administration of anesthetics during labour. The use of anesthetics such as chloroform and ether was first used during childbirth in 1847 and gained popularity in 1853 when Queen Victoria was administered chloroform with the birth of Leopold.\(^{59}\) Ramsbotham, echoing the views of his contemporaries, was

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56 For a discussion on positivism, see p. 51 and 63 of this study. Playfair, *A Treatise on the Science and Practice of Midwifery*, 509.
57 Ibid., 508.
58 Positivism was seen in the hospitals’ growing dependence on clinical hospitals’ measurement and their symbolized records and forms. Record-keeping models were made implicit in the hospitals’ day-to-day duties. For the nineteenth and early-twentieth-century development of hospital records and their importance to hospital administration, see Connor, *Doing Good*, 81-164; Howell, *Technology in the Hospital*, 42-8.
vigorously opposed to the use of these medications in childbirth, arguing that their effects suspended uterine contraction.\textsuperscript{60} He contended that “I strenuously opposed their introduction into obstetric practice, at least in ordinary cases of labour; conscientiously believing that the hazard incurred was far more than equivalent to the advantage gained; and I should undoubtedly continue to do so in any case.”\textsuperscript{61} He continued,

\begin{quote}
It must be kept in mind that, when employed in natural labour, anesthetics are not had recourse to for the sake of saving life, nor for the purpose of relieving pathological pain dependent on a morbid cause, but merely to remove the physiological pain, which is superadded to a natural and healthy function, and which, except where the case has been protracted much beyond what prudence and proper treatment would permit, seldom or never inflicts any injury upon the system.\textsuperscript{62}
\end{quote}

To Ramsbotham, pain resulting from labour was “natural” pain, different from pain where “suffering depends on a diseased or deranged condition of the part affected; and the ultimate as well as the present distress which it occasions is generally in proportion to its intensity.”\textsuperscript{63} The potential benefits of painless birth failed to outweigh the risks of mania, decreased uterine action, or death.\textsuperscript{64}

In contrast, Playfair presented a more accepting view of anaesthesia in obstetrics. In the intervening period between Ramsbotham’s writing in 1867 and Playfair’s publication in 1880, physicians had proven that chloroform could cause hemorrhage.\textsuperscript{65} Despite this finding, Playfair depicted the benefits of these medications as a foregone conclusion. According to his textbook, anaesthetics during labour were “so universal that no argument is required to establish its being a perfectly legitimate means of assuaging

\begin{footnotesize}
\textsuperscript{60} As early as 1848, Walter Channing commissioned a survey of physicians’ opinions on the use of anesthesia during childbirth. Although the vast majority were in favor of anaesthetics, some found them injurious. Contemporary with Ramsbotham’s views, popular maternity self-help publications warned against anesthesia during labour, except in cases of ‘lingering labour.’ Ibid., 28-30; P. B. Saur, Maternity: A Book for Every Wife and Mother (Chicago: L. P. Miller, 1889), 228-30.
\textsuperscript{62} Ibid., 173.
\textsuperscript{63} Ibid., 174.
\textsuperscript{64} Ibid., 177, 182, 188.
\textsuperscript{65} Wolf, Deliver Me from Pain, 29; Playfair, A Treatise on the Science, 291.
\end{footnotesize}
the sufferings of childbirth."\(^\text{66}\) In Playfair’s treatise, the risks were acknowledged but minimized, although he did warn against the use of chloroform due to the increased risk of post-partum hemorrhage.\(^\text{67}\) Where chloroform was used, he encouraged “another medical man [in operative cases] because the giving of chloroform to the surgical degree requires the undivided attention of the administrator, and no man can do this and operate at the same time.”\(^\text{68}\) Despite these cautions, Playfair commented, “as the [infant’s] head distends the perineum, and the pains get very strong and forcing, [chloroform] may be given more freely and to the extent of inducing even complete insensibility just before the child is born.”\(^\text{69}\) Playfair offered this advice, ignoring the reports of deaths associated with the medication.\(^\text{70}\) Attitudes toward anesthetics during labour became more positive, leaving little room for Ramsbotham’s ‘outdated’ warnings.

Despite the perceived drawbacks, Ramsbotham’s text had displayed several characteristics of early specialization. He emphasised the importance of qualification, justifying the obstetrics’ expertise in assisting with parturition or pregnancy. As he proclaimed regarding the necessity for obstetrics education,

Is it of no importance that [obstetrics] should be determined by an educated, intelligent, and practical man — Is it right that questions of such vital interest should be left to the decision of one but partially qualified to answer them?— And can we suppose that any person can form a proper estimate of the powers with which nature is endowed, to surmount the impediments, and overcome the dangers, that occasionally embarrass parturition, unless he have the opportunity continually before him of watching her operations in the more ordinary cases?\(^\text{71}\)

\(^{67}\) Ibid., 288.
\(^{68}\) Ibid., 291.
\(^{69}\) Ibid.
\(^{70}\) For reports of deaths due to the use of chloroform during childbirth, see Robert Barnes, “Further Observations on the Employment of Chloroform in Parturition,” *The Lancet* 51, no. 1286 (1848): 444; Robert Barnes, “Anesthesia in Natural Parturition: With an Analysis of Twenty-Seven Cases where Chloroform was Administered by Dr. Sachs in the Berlin Lying-In Hospital,” *The Lancet* 56, no. 1403 (1850): 83. For the accounts of two deaths, in the Canadian context, that were directly attributed to the use of chloroform, see Charles G. Roland, “The First Death from Chloroform at the Toronto General Hospital,” *Canadian Anaesthetists’ Society Journal* 11, no. 4 (1964): 437-9.
Midwifery in mid-nineteenth century Britain was in a crisis over who was the most qualified to manage the birthing process -- the general practitioner, the local midwife, or the new obstetrics specialist. Such statements as the one above testify to the importance of obstetrics teaching and practice, a responsibility not to be taken lightly. Espousing this responsibility, The Royal College, by way of Ramsbotham’s text, participated in the establishment of obstetrics as a distinct field.

**Antisepsis and Asepsis in Obstetrics and Gynaecology**

For the purposes of this discussion, antiseptic techniques connote procedures that were meant to eradicate microbial bacteria and disinfect, while aseptic techniques were procedures that prevented bacteria from contaminating an area. Although aseptic, or sterile procedures, including the increased ventilation of procedure rooms, began to be understood through the work of Charles White and Ignaz Philipp Semmelweis, obstetrics and gynaecology was still practised without sterile gloves. While antiseptic spray was used in the operating chamber, disinfectant was not applied directly on the parturient woman. By the early twentieth-century, sanitary techniques were increasingly accepted in the field. For example, Mitchinson commented on the intense focus on cleanliness and sterility in Canadian child deliveries. The technology of asepsis in obstetrical and

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72 This crisis has been dealt with extensively by numerous historians. See, for example, Loudon, *Medical Care and the General Practitioner*, Loudon, *Death in Childbirth*; Weisz, *Divide and Conquer*, 29; Wilson, *The Making of Man-Midwifery*.


74 White was an eighteenth-century-English physician and founder of obstetrics. Semmelweiss was a nineteenth-century Hungarian physician who pioneered antiseptic procedures. Cianfrani, *A Short History*, 264.

75 Ibid., 314-6.

76 Mitchinson, *Giving Birth in Canada*, 181-3. Jacalyn Duffin’s account of Richmond Hill physician James Miles Langstaff revealed that the rate of puerperal fever could greatly vary. For example, Duffin noted that, between February and April 1872, four women succumbed to puerperal fever. After 1875, however, the following twenty-seven months saw only one such death. Duffin, *Langstaff*, 203. In the British context,
gynaecological procedures carried the promise of lowering maternal and fetal death rates. Although not directly related to obstetrics, the importance of asepsis may be measured by the fact that, in 1897 the subject of bacteriology was introduced into the Queen’s curriculum. Bacteriology emphasized, along with the practical sanitary science, a microbial disease genesis and disease prevention. The bacteriology textbook of faculty member W. T. Connell was used in the curriculum at Queen’s Medical College from the 1900-01 through to the 1919-20 academic years. His textbook included the topics of “clinical microscopy and diagnosis of urine, blood, gastric contents, faeces, exudates, and transudates.” Analyses of these secretions extended to the manner in which bacteria from them were transferred from one person to another. An understanding of these pathologies and disease preventative measures, in an era before antibiotics, was essential to prevent fatalities, especially during pregnancy. Bacteriology offered an example of the rapidity with which new sciences were incorporated into the curriculum. As safer techniques were discovered and applied to obstetrics, they were emphasized within the curriculum at Queen’s Medical College.

Reuben Peterson’s *The Practice of Obstetrics* (1907), which was introduced into the Queen’s curriculum for the 1908-09 academic year, provided a clear example of

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Irvine Loudon, when referring to the maternal mortality rate from puerperal fever, stated that, “between 1847 and 1903, 93,342 deaths... were recorded in England and Wales, and this is almost certainly an underestimate of the true total. In 1874, the worst year... on record since death registration began, out of a total of 5,927 maternal, 3,108 (52 per cent) were registered as being due to puerperal fever.” Loudon, *Death in Childbirth*, 49.

77 Similar courses were developed at the University of Toronto in the 1890s. These additions enabled the medical school to raise tuition, offsetting the costs of equipment. The advancements led to the Faculty of Medicine’s reopening in 1887, following a 34 year closure. Duffin, “What Goes Around, Comes Around,” 53-4. Travill, *Medicine at Queen’s*, 188-9.

78 Ibid., 188. Queen’s University, Kingston, Canada, *Calendar of the Faculty of Medicine: Sixty-Seventh Session, 1919-1920* (Kingston, ON: The Jackson Press, 1919), 59. Connell’s textbook was absent from the bacteriology curriculum in the 1920-21 Calendar. Queen’s University, Kingston, Canada, *Calendar of the Faculty of Medicine: Sixty-Eighth Session, 1920-1921* (Kingston, ON: The Jackson Press, 1920), 62.

79 Ibid., 189.
aseptic procedures (see Appendix A). While detailing the preparation of the environment where obstetric operations were to take place, Montgomery A. Crockett, a contributor of Paterson’s textbook, emphasized that sterile conduct was a vital component of ensuring the safety of patients, commenting,

For many years obstetrics followed medical rather than surgical lines until the triumphs of asepsis in other fields encouraged the obstetrician to devise bolder measures for the relief of emergencies and complications, so that to-day the surgical trend in midwifery is pronounced and, in order to practice this specialty, one must be an operator and thoroughly acquainted with surgical principles.80

The publication of Peterson’s textbook and its integration within the Queen’s curriculum coincided with an attempt by the Queen’s medical faculty to improve their students’ knowledge of the relatively new science of bacteriology, along with basic laboratory skills.

Germ theory, the idea that bacteria were capable of causing disease and possibly death, was a new concept. Given this fact, the notion that invisible organisms precipitated sickness was not universally accepted, particularly in the field of obstetrics.81 In the 1840s, Ignaz Philipp Semmelweis showed that doctors could transfer disease between patients, causing the spread of puerperal fever, a deadly bacterial infection affecting women during or following childbirth.82 In 1865, Joseph Lister, a nineteenth-century British physician who pioneered antiseptic procedures, discussed the need for antiseptic surgery.83 Still, sterile procedures developed gradually through the nineteenth and into

82 Cianfrani, A Short History, 307.
83 Ibid., 313.
the twentieth century and began to register in the way that medicine was taught in Kingston.\textsuperscript{84}

Announcing a new summer course in clinical microscopy and diagnosis, James Third, Superintendent and attending physician at Kingston General Hospital and Queen’s Professor, commented in a 1907 \textit{Queen’s Medical Quarterly} article,\textsuperscript{85}

During the past fifteen years, the science of medicine has been progressing with extraordinary rapidity. Suspicions and half-truths of even a decade ago, are now arranged on the side of facts. The progress has been most marked, perhaps, in our knowledge of the causation of disease, and especially of the acute infectious disease. This has led to a better system of therapeutics and the advance has thus been general…. We recognize the fact that ninety-six per cent of the graduates settle down as general practitioners and we endeavour to fit them for their life work….\textsuperscript{86}

Although Third’s comment encompassed medical science in general, physicians had been aware that infections, such as puerperal fever, were deadly and frequently seen in practice.\textsuperscript{87} A greater understanding of bacteriology promoted an increased practical knowledge concerning the risks of infection.

With the susceptibility of pregnant women to infection in mind, the previously cited Montgomery Crockett’s description of pre-operative procedures emphasized the establishment of safe operating conditions. The degree to which patients were in contact with non-sterile surfaces and instruments was reduced. He detailed the use of “[a] large Kelly pad,” which was employed “to place between the patient’s buttocks to conduct

\textsuperscript{84} Ibid., 108-13.
\textsuperscript{85} Coincidently, 1907 was also the year of Peterson’s textbook publication and the book was integrated into the Queen’s curriculum the following academic year.
\textsuperscript{86} Angus, \textit{Kingston General Hospital}, 93.
\textsuperscript{87} Although exact statistics for the early decades of the twentieth century could not be found, a 1927 \textit{Canadian Medical Association Journal} study estimated that puerperal fever accounted for 27 to 33 per cent of all maternal deaths in Canada. Mitchinson, \textit{Giving Birth in Canada}, 267; Helen MacMurchy, “Maternal Mortality in Canada,” \textit{The Canadian Medical Association Journal} 17, no. 12 (1927): 1435. The proportion of individuals who succumbed to this infection 20 years earlier undoubtedly matched or surpassed this statistic.
fluids into a pail at the foot of the table.” He added that “[t]his pad must be sterilized by boiling and covered with a clean towel.”

With the understanding that infection was to be minimized, Queen’s textbooks such as Peterson’s highlighted the establishment of a sterile environment. Of note, Crockett had discussed the aseptic procedures in a home-delivery setting. This may have indicated that, in the first decade of the twentieth century, a significant proportion of North Americans preferred homebirths over hospital deliveries. The adoption of Peterson’s text represented Queen’s efforts to bring a new science to an old obstetrical arena.

A sterile environment was important in the clinical practice at Kingston General Hospital’s Doran Building, which opened in 1894. The Doran Building served both educational and practical purposes. The 1894-95 calendar stated that “the class will be admitted in sections to see the operations in the Doran Building.” The Kingston General Hospital Board of Governors had stated that the purpose of the Doran Building was to provide facilities “for women and children in recognition of persons requiring special care and particularly maternity patients requiring protection against contagion.” Although this statement refers to “contagion” in general terms, the Governors were

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88 Crockett, “Preparations for Obstetric Operations,” 873.
89 Ibid.
90 This finding is surprising given that, as Mitchinson contended, hospital births were becoming prevalent while home births waned in popularity due to the fact that physicians in the twentieth century were increasingly taught to view obstetrics as pathological rather than natural conditions. Mitchinson, Giving Birth in Canada, 51-3.
92 Queen’s University, Faculty of Medicine, Annual Calendar: Forty-First Session 1894-95 (Kingston, ON: British Whig Office, 1894), 14.
93 Kingston General Hospital Archives, Board of Governors Fonds, Report to the Board of Governors to be considered at a Special Meeting March 23, 1893, as cited in ibid.
concerned with the containment of puerperal fever.\textsuperscript{94} The features of the Doran Building that were designed to mitigate the spread of puerperal fever included self-contained pavilion units with their own heating and ventilation systems and kitchens separate from the hospital’s general population.\textsuperscript{95} This design was appropriate according to the popular miasma theory of disease, which contended that ‘air’ was the principal medium for the transmission of disease.\textsuperscript{96} Fenwick dictated aseptic procedures at the Doran Building. Before every delivery he insisted that every patient “thoroughly wash [the] abdomen [area]… with green soap and warm water, and follow with Lysol solution 1-200 and cover… with a dry sterile pad.”\textsuperscript{97} In both theory and practice, Queen’s faculty members demonstrated their commitment to aseptic procedures.

**Obstetrics Textbooks in the Women’s Medical College**

Published in 1889, the *Manual of Obstetrics, Gynaecology and Pediatrics* by Kenneth N. Fenwick was employed at the Kingston’s Women’s Medical College in the 1892-93 and 1893-94 academic years and thus provides an excellent mirror of the tensions in how childbirth was taught (see Appendix A). Educated in Great Britain as well as in Kingston, Fenwick was officially a Professor of Physiology, Bacteriology, and Institutes of Medicine, but he also taught Obstetrics and Pathology.\textsuperscript{98} He served at The Royal College and the Women’s College from the early 1880s until his untimely death.

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\textsuperscript{94} The Doran Building was constructed on the recommendation of K.N. Fenwick who was guided by antiseptic principles to prevent puerperal fever. Ibid., 222-3.
\textsuperscript{95} Ibid., 223.
\textsuperscript{96} Ibid.
\textsuperscript{97} Low, “The Role of the Doran Building,” 224.
\textsuperscript{98} Fenwick began teaching scientific and clinical courses at The Royal College in 1881 and obstetrics in 1885. James A. Low, “Kenneth Neander Fenwick,” Queen’s University School of Medicine: Department of Obstetrics & Gynaecology, accessed on September 6, 2015, \url{http://obgyn.queensu.ca/home/history/fenwick}; Angus, *Kingston General Hospital*, 51; M. Daria Haust, Howard D. Steele, and Paul N. Manley, “The Early History of Pathology at Queen’s University and Her Teaching Hospitals (until 1966),” TSpace, accessed on August 17, 2015, \url{http://hdl.handle.net/1807/17621}; Travill, *Medicine at Queens*, 106.
from blood poisoning in 1896. Although Fenwick was a faculty member of both the Kingston Women’s Medical College and The Royal College, this textbook was recommended for the women’s college only. Fenwick was not alone in his instructing at both colleges. Upon his appointment as president and dean of the Kingston Women’s Medical College, The Royal College’s professor of obstetrics Michael Lavell recommended the hiring of many of his fellow faculty members, including C. Irwin, Michael Sullivan, and Alfred Sales Oliver. Having these common faculty members among the two medical colleges strengthened ties between The Royal College and the Kingston Women’s Medical College.

One prevailing characteristic of Fenwick’s publication was its brevity. It contained only 277 pages, while other contemporary textbooks often exceeded 500 pages. Fenwick addressed three, very distinct bodies of knowledge. He admitted that his text was meant as supplementary, rather than definitive, stating “the work does not pretend to originality, nor does it aim at supplanting the larger text books [sic] on the subject which are not always within the reach of every medical student.” The effect was that less attention was afforded basic procedures or pathologic complications. For example, Fenwick’s section on multiple pregnancies such as twins, or triplets, accounted

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99 Fenwick was active throughout the 1880s. See Angus, Kingston General Hospital, 61, 68, 73. For Fenwick’s death, see ibid., 75.
100 Lavell continued serving as professor of obstetrics at the Kingston Women’s Medical College. Irwin taught medical jurisprudence and sanitary science at The Royal College and assumed the role of professor of anatomy at the Kingston Women’s Medical College. Sullivan taught surgery at both colleges, while Oliver taught materia medica (pharmacology). Interestingly, upon the resignation of Lavell, Alice McGillivray was appointed professor of obstetrics and gynaecology at the Kingston Women’s College only. Travill, Medicine at Queen’s, 103-6, 140, 144.
101 Playfair’s 1880 text comprised 674 pages. Ramsbotham’s 1867 Treatise was considerably larger with 1010 pages and appendices. See Playfair, Science and Practice of Midwifery; Ramsbotham, The Principles and Practice of Obstetric Medicine and Surgery.
for less than two pages (575 words); his treatment included diagnosis and management of labour.\(^{103}\) Only three sentences (75 words) were devoted to the very serious complication of ‘locking’ where the first born of multiple births impedes the subsequent births.\(^{104}\) Since locking was a relatively rare condition, this brevity cannot be explained by the perception that its treatment was common knowledge.\(^{105}\)

In contrast, Playfair discussed multiple births for eight pages (approximately 3566 words), covering various abnormalities such as foot presentations and “double monsters,” or foetuses that exhibit conjoining and other deformities.\(^{106}\) Playfair was unable to provide a remedy for the “locking” complication, citing that it was impossible to “lay down any positive rules for their management, which must be governed… by the circumstances of each individual case.” Such occurrences were most common in cases where “twins are contained in a common amniotic cavity, or in which [the two] sacs have burst simultaneously.”\(^{107}\) Playfair’s informative account contrasted with that of Fenwick’s, whose sole comment on the diagnosis and treatment of ‘locking’ consisted of a single piece of advice: in cases where a body part of the second child presents with the head of the first child, the body part should be “pushed up as far as possible until the head has completely engaged in the pelvis.”\(^{108}\)

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\(^{103}\) Ibid., 73-4.
\(^{104}\) Ibid., 74.
\(^{106}\) Playfair, Science and Practice of Midwifery, 359-67. For Playfair’s consideration of “double monsters,” see ibid., 363-5.
\(^{107}\) Ibid., 360-1.
Considering that Fenwick meant his text to be a supplementary to the other textbooks at the Kingston Women’s Medical College, he intended that those other textbooks would form the basis of the obstetrics curriculum. Galabin’s *A Manual of Midwifery* (1893) and Edis’s *Diseases of Women* (1882) were also used while Fenwick was a faculty member at the women’s college. Medical students, therefore, had an ample supply of literature for their instruction. Fenwick’s fragmentary text may have provided reinforcement as a rudimentary synopsis of material already elaborated upon in the other textbooks. Was the reinforcement intended to compensate for Fenwick’s reduced instructional time to female medical students?

In January, 1883, when separate classes were established for women at The Royal College, Elizabeth Smith complained of Fenwick’s inadequate teaching. She stated in her diary, “Dr. Fenwick ostensibly gives us separate lectures but on no day does he give us more than twenty minutes sometimes so rapidly & incoherently that we could not possibly take it down.” Fenwick’s abbreviated lectures may have stemmed from his views concerning the education of women. Echoing Edward Clarke’s sentiments, Fenwick stated that, while women were being educated:

> [M]ost of the time is taken up in sedentary study... This very application leads to excessive development of the nervous system resulting in precocious talent, refined taste and vivacity, but at the same time developing morbid impressibility, feebleness of muscular system, [and] excessive uterine and ovarian congestion.

Considering these views, it may be hypothesized that Fenwick found it unpleasant to instruct female pupils and so reverted to the remedial text.

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110 Smith, ‘*A Woman with a Purpose,*’ 288.
112 Fenwick caused controversy when, during a physiology lecture, he compared the high-pitched nature of the female voice to that of an ape. Travill, *Medicine at Queen’s*, 129.
Conclusion

Between 1881 and 1910, obstetrics textbooks at Queen’s-affiliated medical colleges underwent profound changes. Their style, which was initially characterized by anecdotes and the author’s personal observations, increasingly relied on facts in a more positivistic vein by 1910. This change reflected a movement toward medicine as an objective science. During the existence of the Kingston Women’s Medical College, the assigning of an additional textbook in obstetrics may have reflected an unwillingness to lecture female students. This period saw new attitudes concerning the technologies of anaesthetics during labour and aseptic procedures during birth. On the whole, the modifications displayed in these obstetrics textbooks reflected an increasing movement toward a scientific curriculum that illustrated contemporary medical practice.
Chapter 4

The Theory and Practice of Medicine: Textbooks Used to Teach Medical Students the Diagnosis and Treatment of Disease in Kingston

Medical degrees obtained in Kingston between 1881 and 1910 were professional degrees. Faculties associated with Queen’s-affiliated medical colleges expected their graduating students to establish medical practices.¹ The Royal College and Queen’s Medical College demonstrated the expectation, in a variety of ways, that their students would be practising medicine. In the 1880s, the course Calendars noted the locations where their alumni practised. The emphasis on practicality was evident throughout the curriculum at The Royal College, the Kingston Women’s Medical College, and Queen’s Medical College. The theory and practice of medicine course, which was taught at all three Queen’s-affiliated medical education institutions, was expressly geared toward the diagnosis and treatment of disease in patients within a hospital or medical practice.² The course provided students with clinical skills and the knowledge of physiological and pathological processes. Mirroring the practice of medicine of its time, the curriculum, as represented by the textbooks used within the theory and practice of medicine, was not static. Shifting epistemologies and technologies, as well as attitudes toward both of these transient entities, influenced the course. There were 38 textbook changes (22 textbooks

¹ For example, see Queen’s University, Faculty of Medicine and Royal College of Physicians & Surgeons Annual Calendar, Forty-Ninth Session, 1902-1903 (Kingston, ON: The Jackson Press, 1902), 55–7. New courses in bacteriology and microscopy were introduced to the curriculum as they were deemed beneficial to the practising physician. See Angus, Kingston General Hospital, 93.
² The theory and practice of medicine was the title used for this course over the entire period under study. This course should not be confused with institutes of medicine, which consisted largely of physiology, the science of human body processes. For the history of nineteenth-century physiology as a medical course, see John Harley Warner, “Physiology,” in The Education of American Physicians: Historical Essays, ed. Ronald L. Numbers (Berkeley: University of California Press, 1980), 48–72. Warner did not refer to the physiology courses as institutes of medicine. Notwithstanding this distinction, the theory and practice of medicine included aspects of anatomy and physiology, most often in relation to disease.
were added and 16 were removed) in the theory and practice of medicine course during the period under study (see Appendix A and Figure 2 on page 82). In some cases, these curricular modifications reflected the development of a new therapeutic method, while others reflected an altered understanding of pathology. Throughout these curricular changes, the impulse toward new science was apparent. As with the discipline of obstetrics, increased positivism appeared in the recommended textbooks, adding to the impression that medicine constituted a growing foundation of unassailable yet mutable scientific facts. Similarly, changes in medical practice dictated modifications as Queen’s-affiliated medical colleges endeavoured to keep pace with the evolving state of the medical diagnosis and treatment of disease. New diagnostic tools were introduced, such as x-rays discovered by Wilhelm Conrad Röntgen in 1895; Kingston was likely the first Canadian city to make use of the new rays.\(^3\) A measure of the excitement over the x-ray machine in Canada was captured in an article from the *Globe* that stated that x-rays would “awaken a popular interest such as has greeted no invention of recent years.”\(^4\) These new features of practice were reflected in the textbooks used in the theory and practice of medicine course, in particular the modernization of medical techniques. Because this course covered all diseases, in comparing textbooks, I will focus on key changes in specific areas: bloodletting, the influence of Sir William Osler’s Principles

\(^3\) For the use of x-rays in Kingston with efforts of James Third to expand the clinical application of x-rays, see Hayter, “Making Sense of Shadows,” 1249-56. Despite his great accomplishments, in 1918 while he was an administrator. Tarnishing his future reputation, Third voted to ban black students from enrolling in the university. Jacalyn Duffin, “The Queen’s Jews: Religion, Race, and Change in Twentieth-Century Canada,” *Canadian Journal of History* 49, no. 3 (2014): 373-4.

\(^4\) ‘The Cathode Photography,’ *Globe*, February 11, 1896, 4, as cited in Connor, *Doing Good*, 131. X-rays were certainly put to use promptly in Kingston when, in June 1896, the Kingston General Hospital acquired an x-ray machine with the assistance of Superintendent James Third. Angus, *Kingston General Hospital*, 76. For the effect of the x-ray machine in the early twentieth-century American hospital, see Howell, *Technology in the Hospital*, 103-32.
and Practice of Medicine, and x-ray technology.

**Figure 2.** Selected theory and practice of medicine textbooks at Queen's-affiliated medical colleges from 1881 to 1910. Please note that Osler’s textbook timeline includes both of his editions.\(^5\)

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The Contexts of Medicine: Nosology, Disease, and Alternative Medicine

The primary purpose of the theory and practice of medicine course was the prevention, diagnosis, and treatment of disease. In order to become effective practitioners, physicians were required to conduct an analytical study of disease, both acute and chronic. These preoccupations were hardly new to the medical discipline. The Greek physician and medical theorist Hippocrates (460–377 BC) had distinguished between fevers accompanied by rashes and fevers without rashes. This categorization was a precursor to eighteenth-century nosology that classified disease based on the patient’s symptoms. Nosology was developed by eighteenth-century scientists and physicians, such as Carolus Linnaeus, François Boissier de Sauvages, William Cullen, and Philippe Pinel. It involved elaborate genealogical “trees” and nomenclatures where diseases were given Latin names based on symptoms. Nineteenth-century textbooks could be read as inheriting this focus on symptomology in order to categorize diseases.

The textbooks explored in this study adhered to the notion that a patient’s symptoms characterized and classified the condition, even when diagnostic testing enabled physicians to identify a distinct anatomical or physiological lesion. For example, when describing a condition known as “colic,” physician Hale White wrote that it was “a sharp, sudden pain, having its… [origin] either in the pelvis of the kidney, ureter, gall-bladder, biliary ducts, or intestine; hence we speak of renal, biliary, or intestinal colic”

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6 As discussed in Chapter 3, positivism may be defined as “a philosophy of knowledge preoccupied with observation” and quantification. Duffin, History of Medicine, 50.

7 Duffin, History of Medicine, 73; Zimmerman & Veith, Great Ideas in the History of Surgery, 14.

8 The implication of nosology was that a patient could not have a disease without experiencing symptoms, a circumstance that shifted with the advent of the x-ray machine and other diagnostic testing. Ibid.

9 Along with contributing to the naming of diseases, Linnaeus was the developer of the taxonomic nomenclature system of naming living organisms (the use of genus, order, and phylum), which is still used today in biological sciences. Duffin, History of Medicine, 75.
These words appeared in the text of Thomas Clifford Allbutt, included in the Queen’s Medical College curriculum from the 1900-01 through to the 1907-08 academic years. White added, “we must remember that to say a patient is suffering from colic is not a diagnosis. For a diagnosis the cause of the pain must be discovered.” Despite this caveat, the fact that the editor Thomas Clifford Allbutt, and the medical establishment in general, thought to characterize a disease by its symptoms establishes nosological predispositions. The medicine taught at the medical colleges in Kingston represented one iteration of medical epistemology – allopathy. Allopathic medicine is a collective term to denote conventional healing, as opposed to that practised in various minority medical philosophies. The allopathic perspective was defined in opposition to other medical perspectives such as Thomsonianism and homeopathy, a prominent alternative to orthodox medicine from the 1820s until the death of its founder, Samuel Thomson in 1843. Thomsonianism was a medical doctrine stating that all disease was caused from cold. Their practitioners served a population who, for a variety of reasons such as finances, geographic proximity, or choice, did not seek ‘conventionally-trained’

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11 Ibid., 728.
12 For nosology, see herein page 83.
13 For a discussion on alternative medical sects including Thomsonianism and homeopathic medicine and how they influenced the professionalization and practice of ‘regular’ medicine, see Warner, The Therapeutic Perspective. For the growth of alternative medical sects within Ontario, see Connor, “Minority Medicine in Ontario.” For a discussion on homeopathy, see Harris L. Coulter, Divided Legacy: The Conflict Between Homoeopathy and the American Medical Association, 2nd ed. (Richmond, CA: North Atlantic Books, 1982).
physicians. To some degree, Thomsonianism and other minority medicines, such as homeopathy, were popular with several alternative medical colleges that were established in the mid-western United States during the early-nineteenth century; they also influenced medical orthodoxy. Thomsonianism emphasized the use of botanical remedies, such as, Indian tobacco that were intended to retain the patient’s natural heat. Warner argued that the competition between minority medicines, including Thomsonianism and homeopathy, discouraged allopathic physicians from administering the popular massive doses of medications of the early-nineteenth century.

Although Thomsonianism found considerable support in the United States, Connor indicated that this doctrine did not receive widespread support in Ontario, despite their publications. Allopathic physicians protested against the Thomsonians notwithstanding their commonalities. For example, both Thomsonian and allopathic physicians believed in the vital importance of regulating digestion, particularly the

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15 Connor suggested that, by assuming that individuals sought alternative practitioners only in the absence of a regular physician, historians denied agency to those who would have chosen to seek medical aid from alternative practitioners. Conner, “Minority Medicine in Ontario,” 61. For an example of scholarship that assumed individuals sought alternative practitioners only in the absence of nearby allopathic physicians, see R. G. Guest, “The Great Patent Medicine Fraud,” Applied Therapeutics 8, no. 5 (1966): 461.

16 For the history of the Thomsonian Physio-Medical College of Cincinnati, Ohio, founded in 1839, and other similar institutions, see John S. Haller, Jr., Kindly Medicine: Physio-Medicalism in America, 1836-1911 (Kent, Ohio: The Kent State University Press, 1997), esp. 25-44. Eclecticism, a medical philosophy that combined elements of Thomsonianism and allopathy, influenced the medical landscape in Ontario in the mid-to-late-nineteenth-century. Connor, “”A Sort of Felo-de-se,”” 503-27.


19 The true estimate of the unpopularity of Thomsonianism in Ontario was most likely lower than Connor suggested as he included under the Thomsonian banner those who were ambiguously termed “root doctors.” He ascribed its unpopularity to various factors, notably the lack of post offices in the province, leading to the unavailability of pamphlets through its mailing campaign. See ibid., 272-4, 276-82.

bowels, to ensure the health of the patient.\textsuperscript{21} Despite their similarities, little credence was given to alternative medicine at medical institutions, including Queen’s Medical College.

An Out-Of-Date Practice?: Bloodletting in the Textbooks of Queen’s-Affiliated Medical Colleges

The allopathic therapy of bloodletting, or venesection, was an element of treatment since its introduction in ancient times.\textsuperscript{22} Its popularity was, to a large degree, owed to the advocacy of the first-century Greek physician Galen of Pergamon and the notion of the four humors (blood, phlegm, yellow bile, and black bile). This doctrine held that disease resulted from an excess of one of the four humors, resulting in an imbalance.\textsuperscript{23} Greek physicians believed that blood contained all four humors and it was vital to the regulating process. Under this theory, bloodletting provided “a method for directly manipulating or correcting the conditions which could be traced to any humor. In particular, it was believed to be effective against conditions arising from plethora, the accumulation of too much of the vital humor from overeating, too little exercise, dissipation, and just living.”\textsuperscript{24} In the nineteenth century, physicians began to revive the ancient practice, even though there was scientific experimentation that doubted its

\textsuperscript{21} Ibid., 270. In textbooks used at The Royal and Queen’s Medical College, attention to the bowels was often emphasized and enemas were prescribed for a variety of ailments, particularly those of the abdominal region. For examples, see Roberts, \textit{A Handbook of the Theory and Practice of Medicine}, 6th ed., 609, 636; J. R. Stocker, “Sea-Sickness,” in vol. III of \textit{A System of Medicine by Many Authors}, ed. Thomas Clifford Allbutt (London: MacMillan and Co. Ltd., 1897), 449, 450, 453, 455.
\textsuperscript{22} Bloodletting involved three techniques, venesection, cupping, and leeching. Venesection consisted of wrapping a tourniquet around the arm and opening the vein with a knife, a practice analogous to modern day phlebotomy. In cupping, “[a] cup was heated by dropping burning material into it, its lip was greased, and the cup was then inverted over a scarified point on the skin. The cup developed suction as the burning material consumed the oxygen, and blood or pus was drawn through the skin opening.” Leeching entailed placing bloodsucking worms on the body. Roderick E. McGrew, \textit{Encyclopedia of Medical History} (New York: McGraw-Hill Book Co., 1985), 33.
\textsuperscript{23} Ibid., 33, 131.
\textsuperscript{24} Ibid., 33.
therapeutic value. Austin Flint’s A Treatise on the Principles and Practice of Medicine: Designed for the Use of Practitioners and Students of Medicine (1881), a textbook used at the Kingston Women’s Medical College, demonstrated an awareness of its limitations when it stated that, “in the larger number of cases of lobar pneumonitis, bloodletting does harm.” Flint defended the moderate application of this practice, commenting that “it may nevertheless do good in a small number of cases.”

Whether these scientific findings resulted in a decrease of bloodletting in the practices of physicians remains unclear. Duffin reported that, according to accounts in the daybooks of James Miles Langstaff (1825-89) of Richmond Hill, Ontario, the country doctor participated in bloodletting, primarily through venesection and cupping. Langstaff’s use of venesection declined, while his use of cupping increased. He drew less and less amounts of blood as his career progressed over the 40 years of his practice from 1849-89. The textbooks early in the period under study rendered bloodletting as a treatment in a negative light, conceiving the practice as having little value. As the twentieth century dawned, textbook writers admitted that bloodletting had some moderate

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25 For example, in the 1860s P.C.A. Louis, using the numerical statistical method, disproved the benefits of bloodletting using leeches for pneumonia patients. Marianna Karamanou and Georges Androutsos, “Apport de la «méthode numérique » de Pierre-Charles-Alexandre Louis (1787-1872) Dans les maladies de poitrine,” La Presse Médicale 40, no. 4 (2011): 429; Duffin, Langstaff, 77-8. Louis was a pioneer in the epidemiological use of statistics. He used group comparisons to demonstrate that patients who were bled earlier in their illnesses had a higher mortality rate than those who, he presumed, were bled after their illnesses had dissipated. Alfredo Morabia, “Pierre-Charles-Alexandre Louis and the Evaluation of Bloodletting,” Journal of the Royal Society of Medicine 99, no. 3 (2006): 158-60.
26 By stating the comparative ineffectiveness of bloodletting, Flint was in accordance with Louis. Flint did not cite Louis. Flint, A Treatise on the Principles and Practice of Medicine, 111.
27 Ibid.
28 It should be noted that leeching was a therapy that Langstaff rarely used, largely due to the fact that, in Canada, leeches were difficult to obtain. Langstaff practised bloodletting in cases of fever, puerperal or otherwise. It is interesting to note that venesection was used in a case of pneumonia, indicating that either Langstaff was not aware, at the time, that it was ineffective, or that there was an ongoing debate surrounding its effectiveness. Duffin, Langstaff, 78-9, 205.
29 Ibid., 78-9.
value as a treatment, depending on the nature of the condition. In defending bloodletting, physicians distinguished their practice from that of predecessors, claiming it had evolved into a modern and humane method of therapeutics.

Despite the revival of bloodletting in the mid-nineteenth century, by the 1880s the practice was discouraged, according to the textbooks used at The Royal College in Kingston. Frederick T. Roberts’s *A Handbook of the Theory and Practice of Medicine* (1885) seemed to disdain the practice, while also regretting its passing. In his section devoted to the “[r]emoval of blood,” Roberts stated that “[bloodletting] was in times past the great remedy for inflammation, but at the present day the tendency is to go to the opposite extreme, and to ignore blood-letting altogether.”

He continued, “[i]f performed at all, it should be had [sic] recourse to [sic] at an early period, before inflammatory products have accumulated to any extent.”

Notwithstanding this discouragement, Roberts added “[l]ocal blood-letting is frequently most serviceable, and there can be no doubt that it is not made use of to the extent which it deserves.” Roberts justified local bloodletting, explaining that “the general bulk of the blood is not materially diminished, or the patient injured in any appreciable degree.” In other words, when resorting to bloodletting, it should be in moderate quantities and not be the drastic venesection if the past that leads to fainting.

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30 Roberts dissuaded the would-be physicians from performing bloodletting during the treatment of various conditions. For the treatment of smallpox, Roberts remarked that “[v]enesection is never called for,” even though he advised the application of “a few leeches” in order to counteract the effect of inflammation. Frederick T. Roberts, *A Handbook of the Theory and Practice of Medicine*, 9th ed. (London: H. K. Lewis, 1894), 58, 163-4.

31 Ibid., 70.

32 Ibid., 58-9.

33 Ibid., 59.

34 Warner detailed the declining rate of bloodletting since the 1820s, remarking that patients were bled in less quantities in the 1880s than in the late-eighteenth century. Warner, *The Therapeutic Perspective*, 96-7.
The early-twentieth century texts made similar statements about bloodletting. In Allbutt’s text, Frederick Treves recommended bloodletting as an effective treatment for acute peritonitis. He stated that “robust forms of localised peritonitis blood-letting is attended with admirable results. In perityphlitis [a localized inflammation of the connective tissue between the cecum and appendix, now called appendicitis]…, the application of half-a-dozen leeches often acts with magical effect.” In his justification for the bloodletting treatment, Treves differentiated ‘modern bloodletting’ from the manner in which the technique had been practised in the past. He remarked:

It is no longer likely to be used in the unreasoning and mechanical fashion of bygone days… In the older accounts of the treatment of peritonitis by bleeding no good appears to have followed in cases in which the inflammation was diffused, except, perhaps, in some examples due to injury. On theoretical grounds this is precisely what would be expected.

The extent to which bloodletting was practiced in Kingston, or the relative importance that Queen’s medical faculty placed on bloodletting, is unclear. The fact that such ambivalent defences of bloodletting existed in a recommended textbook suggests that instructors advised their students that bloodletting remained a therapeutic option in moderate amounts. Even though these references remained, bloodletting was a therapy in decline.

Sir William Osler’s Principles and Practice of Medicine: “The Most Durable and Influential Textbook of its Time”

The key characteristic of allopathic medicine is its scientific basis. In the late-nineteenth century, there was a concerted effort to improve the scientific basis of

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35 In 1902, a few years after the writing of this passage, he took out the appendix of King Edward VII just before his coronation. Duffin, History of Medicine, 266.


37 Ibid.
medicine, and textbooks played a major part.\textsuperscript{38} In this sense, the emblematic modern textbook was Sir William Osler’s \textit{The Principles and Practice of Medicine: Designed for the Use of Practitioners and Students of Medicine}. The first edition of this textbook was published in 1892 (see Appendix A).\textsuperscript{39} According to William G. Rothstein, it became “the standard text in [internal medicine].”\textsuperscript{40} Jacalyn Duffin characterized the treatise as “the most durable and influential text book of its time.”\textsuperscript{41} Testifying to its longevity within the Queen’s curriculum, this textbook was required reading since its publication and continuing well beyond the period under study (see Appendix A).\textsuperscript{42} It was a quintessential positivist document, a bid to systematize medical knowledge. The best known physician and medical author of his era, Canadian-born Osler held faculty positions at McGill University, the University of Pennsylvania, Johns Hopkins University, and Oxford.\textsuperscript{43} Somewhat paradoxically for a textbook writer, Osler emphasized the importance of observation and first-hand experience as an instructional tool. He stated, “[t]he whole art of medicine is in observation… to educate the eye to see,

\textsuperscript{38} For the advancement of medical science and the impact on medical schools, see A. McGehee Harvey, \textit{Science at the Bedside: Clinical Research in American Medicine, 1905-1945} (Baltimore: The Johns Hopkins University Press, 1981). For a definition of allopathic medicine, see herein p. 81.

\textsuperscript{39} Osler’s textbook was introduced at Queen’s Medical College during the 1892-93 academic year and remained in use to the end of the period under study. His text was also used at the Kingston Women’s Medical College during the 1892-93 and 1893-94 academic years.

\textsuperscript{40} Exploring medical education, practice, and research, Rothstein investigated how clinical and nonclinical medical training was linked to the physician’s daily routines. Through this analysis, he achieved his objective of investigating “when and how changes occurred in medical schools and examine[d] their consequences.” Rothstein, \textit{American Medical Schools}, vii, 108. A measure of the textbook’s importance is gauged by the fact that the various editions were translated into Spanish, Portuguese, French, German, Russian, and Chinese. For additional information on Osler’s textbook, see Philip W. Leon, \textit{Sir William Osler: Medical Humanist} (Westminster, MD: Heritage Books, Inc., 2007), x-xi.

\textsuperscript{41} Duffin, \textit{History of Medicine}, 85.

\textsuperscript{42} In deeming Osler’s textbook as required reading, Queen’s Medical College joined the Manitoba Medical College in recognizing the importance of Osler’s work. Carr and Beamish, \textit{Manitoba Medicine}, 27.

the ear to hear and the finger to feel.”⁴⁴ These ideals were foremost in Osler’s mind in his capacities as educator and clinician.

Commenting on his development of medical clerkships, Osler advocated for the opportunity of practical experience throughout the student’s medical schooling. He wrote that, in order to allow the student to attend the practical experience, it was important to “take him [sic] from the lecture-room, take him from the amphitheater, - put him in the out-patient department - put him in the wards.”⁴⁵ In this way, students became “part of [the] machinery… an essential part of the work of the wards.”⁴⁶ He continued that “the amphitheatre clinic, the ward and dispensary classes, are but… substitutes for a system which makes the medical student… help in the work of the hospital as part of its human machinery.”⁴⁷ Largely because he espoused such ideals, Osler’s view of medical instruction was essential to the construction of the hospital clinic as a locus for clinical education; it consolidated his influence as a founder of Johns Hopkins Medical School and, by extension, on the ideals of Abraham Flexner.⁴⁸ Osler’s textbook fostered clinical skills and provided a thorough reference to the scientific literature, reducing the need for medical lectures.⁴⁹ In all editions of Osler’s text, clinical experience was a learning imperative. However, it is unclear as to how his textbook was used at the Kingston

⁴⁵ William Osler, “On the Need for a Radical Reform in our Methods of Teaching Senior Students,” Medical News 82 (1903): 49-50, as cited in Ibid.
⁴⁷ Ibid.
⁴⁸ Although hospital departments that were devoted to various specialties were already established, Osler’s internal medicine clinics were among the first to establish hierarchical structures within clinics where both interns and medical students learned and contributed to patient care. Lewellys F. Barker, “Osler as Chief of a Medical Clinic,” in Sir William Osler, BART: Brief Tributes to his Personality, Influence and Public Service (Baltimore, MD: The John Hopkins Press, 1920), 19-31.
⁴⁹ Rothstein, American Medical Schools, 108.
medical education institutions. Clinical opportunities were slow to develop in Kingston. From the 1860s to the 1880s, lectures were often didactic. Prolonged exposure to patients was limited to one house surgeon who was nominated yearly. In this period, students regularly complained that there was a lack of opportunities for gaining bedside experiences.

Unique in the field of medical literature, Osler’s textbook combined pathological facts and statistics with documented case histories of the patients he had personally attended. Earlier, some other textbooks had included aspects of either of these two elements. For example, obstetrics textbook authors used anecdotal case histories to illustrate the complications of pregnancy and delivery. Likewise, earlier textbooks concerning the theory and practice of medicine concentrated on the anatomical and pathological characteristics of diseases. Osler’s textbook attempted to strike a balance between the two elements. Exemplifying the pathological bent, Osler offered observations regarding the severity of rising temperatures in scarlet fever patients: “[t]he fever, which sets in with such suddenness and intensity, may reach 105° or even 106°. It persists with slight morning remissions, gradually declining with the disappearance of the rash.” Accompanying these statements was a line graph that depicted the trend of

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50 Travill, *Medicine at Queen’s*, 108-9. For an 1860 controversy over the nomination of house surgeon Alfred Sales Oliver, see Travill, *Medicine at Queen’s*, 60-2. For the life of Oliver, see Angus, *Kingston General Hospital*, 37, 51-83. In 1892 clinical instruction became available in the wards of Hotel Dieu. See Travill, *Medicine at Queen’s*, 165. Despite the availability of these facilities, in 1919 Queen’s Medical College debated whether to transfer the clinical aspect of its medical doctor program to the Ottawa Civic Hospital as Kingston had an insufficient patient base. See ibid., 227-33.
53 For an example of the pathological emphasis in the theory and practice of medicine textbooks prior to Osler’s publication, see Roberts, *A Handbook of the Theory and Practice of Medicine*, 6th ed., 169-70.
54 Osler, *The Principles and Practice of Medicine*, 70.
temperatures over a number of days, based on Adolf von Strümpell’s “normal scarlet fever curve” (see Appendix A). Osler’s implementation of visual representations of information such as graphs was innovative. Prior to the 1892 publication of Osler’s treatise, none of the textbooks in my study made extensive use of graphs or charts, with the exception of von Strümpell’s text. Graphs, such as the ones Osler provided, allowed the would-be physician to form an empirically-derived expectation regarding the progression of the disease or condition.

Osler combined the visual representations of diagnostic and statistical information with his personal observations and the case histories of his patients. Previous textbooks relied narrowly on one specific case to serve as examples of conditions. Their discussions emphasized pathology as the primary focus, with case histories as secondary.

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55 Von Strümpell’s textbook was required reading at the Kingston Women’s Medical College in 1893-94, the last academic school year of the institution’s existence. The text was not recommended at The Royal College. Von Strümpell, A Text-Book of Medicine, 36. For Von Strümpell’s graph in Osler’s textbook, see Osler, The Principles and Practice of Medicine, 70.

56 Von Strümpell’s textbook was an English translation of a German text. Von Strümpell assisted in establishing neurology as a medical discipline and he was first to recognize such conditions as “Bechterew disease (ankylosing spondylitis), primary lateral sclerosis, hereditary spastic paraplegia, and [the neurological symptoms of] syphilis.” For von Strümpell’s life and accomplishments, see Birk Engmann, Armin Wagner, and Holger Steinberg, “Adolf von Strümpell: A Key Yet Neglected Protagonist of Neurology,” Journal of Neurology 259, no. 10 (2012): 2211-20, esp. 2211. In the late-nineteenth century, medicine in Germany had advanced in the clinical and medical science disciplines and German physicians were adept in using clinical values such as blood pressure and pulse as indicators of disease or wellness. For the advancements of German medicine, see Ludmerer, Learning to Heal, 29-38; Warner, Against the Spirit of System, 291-329. The textbooks examined prior to Osler’s 1892 treatise very occasionally used visual representations to demonstrate the pathological characteristics of disease. For examples of graphs prior to Osler’s publication, see Bartholow, A Treatise of the Practice of Medicine, 351-2, 372, 694-5, 698, 708, 710, 737, 840. The Bartholow text was required reading at The Royal College during the 1883-84, 1890-91, and 1891-92 academic years, as well as at the Kingston Women’s Medical College from the 1884-85 through to the 1888-89 academic years and at Queen’s Medical College during the 1892-93 and 1893-94 academic years. For charts prior to Osler’s publication, see Roberts, A Handbook of the Theory and Practice of Medicine, 234-7, 259-60, 804; Reynolds, ed., A System of Medicine, 49, 180, 184, 205, 233, 237, 240, 365-6, 476-86, 489. Roberts’ textbook was used at The Royal College from the 1883-84 through to the 1891-92 academic years, and at the Queen’s Medical College during the 1892-93 academic year and from the 1894-95 through to the 1899-1900 academic years. His textbook was not used at the Kingston Women’s Medical College. Although there were a considerable number of charts in Reynolds’s textbook, these charts were disproportionately concentrated on discussions of pneumonia and rheumatic pericarditis. Interestingly, this textbook was employed for only one year at The Royal College, during the 1881-82 academic year.
Bartholow’s treatise, for example, used no case histories in discussions of acute gastritis, ileo-colitis, and amyloid liver. Similarly, Reynolds did not include case histories for “acute laryngitis” or “brown induration of the lung.” In contrast, Osler embedded his observations with the detailed symptoms characteristic of a malady. The purpose of his narratives was to give medical students a notion of what would follow in the usual progression of a disease. For example, Osler’s famous discussion of pneumonia is a narrative typical of this type of case history.

In this pneumonia case, Osler stated that “a patient was admitted into the Philadelphia hospital on the evening of the seventh day after a chill, in which he had been seen by one of [Osler’s] assistants, who had ordered him to go to a hospital.” In the following, Osler focused on the patient’s clinical values, remarking that “his temperature was 105° and his pulse above 120… the following morning – the eighth day [of the illness] – the crisis occurred, and at ward class his temperature was below 98°.” Fortunately for Osler’s patient, “he entered upon a rapid convalescence,” although “[t]he entire lower lobe of the right side was found involved.” In his description, Osler combined the Hippocratic conception of the critical days with the positivistic element of quantification to illustrate the observable aspects of the condition. This case history was not only an exemplar of a typical patient with lobar pneumonia, but it served to

57 Acute gastritis is the inflammation of the stomach lining. Ileo-colitis is a subtype of Crohn’s disease, which inflames the ileum and colon. An amyloid liver refers to the build-up of abnormal proteins in the liver. Bartholow, A Treatise of the Practice of Medicine, 24-7, 73-5, 177-81.
58 Acute laryngitis is the inflammation of the larynx and vocal chords. Brown induration of the lung is the discoloration of the lungs due to heart disease. Reynolds, A System of Medicine, 17-22, 274-7.
59 Osler, The Principles and Practices of Medicine, 134.
60 A salient feature of Osler’s treatise was his reliance on measurements as diagnostic tools to guide treatment. Far more than other textbooks studied, his textbook highlighted the importance of diagnostic values obtained through observing the patient. Ibid.
61 Ibid.
demonstrate “the favoring circumstances of good nursing and careful diet, the experience of many physicians in different lands has shown that pneumonia runs its course in a definite time.” In this way, the case histories were combined with pathological finding in order to dictate the treatment.

The Inside Story: The X-Ray in Textbooks Employed by Queen’s-Affiliated Medical Colleges

Following Röntgen’s invention of the x-ray machine in December 1895, one might have expected that this technology would have been promptly incorporated into the medical textbooks. Given the popular media’s generally positive response to the x-ray, medical elites and the public might have accepted the new technology as another step toward perpetually advancing scientific development. Notwithstanding the popular enthusiasm, two years after its invention, x-ray technology was absent from the theory and practice of medicine textbooks. In 1897 article, the previously mentioned Frederick Treves did not refer to x-rays in the diagnosis of enteroptosis, or visceroptosis, a condition that involves the downward displacement of the organs of abdomen. Perhaps the omission was due to the perception that the primary use of the ‘Röntgen ray’ was for

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62 Ibid.
63 Following Röntgen’s discovery, magazines and newspapers proclaimed “the photography of the invisible,” a success. They published x-ray images, allowing the pictures to reach a wider audience and testifying to the public’s appetite for, and wonder of, the new technology. In popular literature, x-ray technology was often demonstrated as a “horrendous invention,” sparking both captivation and fear. Novels such as Röntgen’s Curse depicted the x-ray as an alienating force that dehumanized individuals. For the public’s response to x-rays, see Howell, Technology in the Hospital, 135-6, 138-9. Queen’s Medical College faculty knew the benefits of x-ray as early as October, 1896, when, in the first volume and issue of the Kingston Medical Quarterly, D. E. Mundell recognized its importance in the diagnosis of tubercular disease. See D. E. Mundell, “Some Diseases of Bone,” Kingston Medical Quarterly 1, no. 1 (1896): 5-10, esp. 7-9.
surgical, rather than medical, applications. The cautious sentiment may have stemmed from failed attempts in using the x-ray for the detection of medical abnormalities.\textsuperscript{65}

In 1900, Queen’s Professor James Third stated that “[t]he Röntgen ray [sic] as an aid to surgical diagnosis is no longer questioned; fractures and dislocations are easily diagnosed; foreign bodies and necrotic areas of bone readily located.”\textsuperscript{66} He contended, however, that “[m]uch – too much we fear – has been claimed for the X ray as a means of diagnosis of calculi – biliary, renal and vesical. Our results with biliary calculi thus far have been absolutely negative, our efforts many.”\textsuperscript{67} Despite Third’s disappointment with the inability of x-ray to assist in the diagnosis of biliary and renal disease, he was optimistic about the detection of tuberculosis. He stated that, “[w]hen… we focus the X ray on the field of tuberculosis the achievements already won cannot but broaden our views and strengthen our hopes…. Here, the aid given by the Röntgen ray [sic] is invaluable.”\textsuperscript{68} At a time of uncertainty over when to use or refrain from using this technology, Treves’s article focused on the symptoms that were perceptible to the patient, rather than using such symptoms to guide diagnostic testing as we would today.

For example, in his 1897 description of visceroptosis, or the “general downward displacement or dropping” of abdominal organs, Treves offered a typical case: a woman experienced “certain asthenic symptoms, general depression, and ill-health. The patient becomes an invalid, and is unfit for any exertion. She is readily tired, and is very liable to fainting, and is only comfortable when lying down. There is a sense of "weight" in the

\textsuperscript{65} James Third, “The Roentgen Ray: Early Diagnosis of Tubercular and Other Lesions,” \textit{Kingston Medical Quarterly} 4, no. 2 (1900): 99.
\textsuperscript{66} Ibid. See also Hayter, “Making Sense of Shadows,” 1249-56.
\textsuperscript{67} Third, “The Roentgen Ray,” 99.
\textsuperscript{68} Ibid., 101.
abdomen, and of a sickening "dragging."**69 These observations were not without their value. Attention to these symptoms allowed the physician to use observational skills to render a tentative diagnosis before resorting to other diagnostic testing. Alternatively, the article’s audience may have been the country physician who was some distance away from the nearest x-ray machine. However, the absence of the mere mention of the x-ray machine remains curiously noteworthy. Despite the incorporation of Allbutt’s textbook, *A System of Medicine* (1897), into the curriculum at Queen’s Medical College, Kingston’s first x-ray exposure was conducted in February 1896, just months after its invention.⁷⁰ Allbutt’s text was the first reference that could be found to x-ray technology in textbooks used at Queen’s-affiliated medical colleges. There is the possibility that, given Third’s comments, the faculty considered the x-ray of little use for certain conditions. Pedagogically speaking, perhaps the faculty thought the operation of the x-ray machine could be expounded upon through clinical instruction and other means. There is also the possibility that publishing delays meant that the 1897 article could not be revised in time to incorporate a technology that was less than two years old. As technology improved, the Röntgen rays increasingly became a component of the examined textbooks.

In contrast with other textbooks of the late-nineteenth century, references to the use of x-rays in the diagnoses of patients began to appear more regularly in the early-twentieth century. In this respect, the 1903 edition of Osler’s textbook was among the first to mention this innovation. For example, when diagnosing nephrolithiasis, or kidney stones, along with his detailing the usual clinical signs such as haematuria, or blood in the urine, Osler acknowledged that “[t]he Röntgen rays are becoming of more and more

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**69 Evidently, women were thought to be especially vulnerable to enteroptosis. Treves, “Enteroptosis,” 591. ⁷⁰ Ibid., 587-97; Hayter, “Making Sense of Shadows,” 1250.
value in determining the presence and position of a stone.” This inclusion indicated that the range of x-ray medical applications had expanded from detecting fractures to assisting physicians with medical diagnoses; the ‘photography of the invisible’ could detect not only injury, but also disease.

Seven years earlier in 1896, New York physician Leopold Stieglitz was the first to use x-ray technology for the purpose of detecting kidney stones. Osler’s recognition of the x-ray machine as a diagnostic tool may not have precipitated an increase in its clinical applications, coming after the fact, but its inclusion in his fifth edition signified medical orthodoxy’s acceptance of the technology. Osler’s attention to the x-ray did not yet extend to the diagnosis of lobar pneumonia. He directed physicians to rely on “external characters, the sputa, and the physical signs,” rather than x-rays, in rendering a pneumonia diagnosis. Much like James Third, Osler saw the x-ray as having diagnostic value in some conditions, but not for others.

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71. Despite the availability of a wide range of types of urine analyses in the time period, Osler seemed to have detected haematuria strictly by observation and without the use of a microscope or chemical test. For more information on urine analyses, see Howell, Technology in the Hospital, 69-102; Osler, The Principles and Practice of Medicine, 5th ed., 895.

72. The vast majority of the late-nineteenth and early-twentieth-century medical literature surrounding the use of x-rays highlighted its application of the technology in the detection of foreign bodies and bone abnormalities, emphasizing its surgical over its medical uses. Howell, Technology in the Hospital, 104. For additional information on the impact of the x-ray on twentieth-century society, see Bettyann Holtzmann Kevles, Naked to the Bone: Medical Imaging in the Twentieth Century (New Brunswick, NJ: Rutgers University Press, 1997), 33-45.

73. Ibid., 128.

74. Howell argued that the increased conversation and publicity surrounding the x-ray machine and its diagnostic use did not result in an increase of clinical applications in physicians’ practices or hospitals. Ibid., 104.

75. Osler, The Principles and Practice of Medicine, 5th ed., 132.
The Theory and Practice of Medicine Textbooks at the Kingston Women’s Medical College

Along with curricular modifications across time, there were differences between the theory and practice of medicine textbooks used in the Kingston Women’s Medical College and those used at The Royal College. Comparing the textbook lists for these colleges, three that were required reading at the Kingston Women’s Medical College but not prescribed for their male counterparts at The Royal College. They were texts written or edited by Austin Flint, Charles Hilton Fagge, and Adolf von Strümpell (see Appendix A). At the Kingston Women’s Medical College, Flint’s text was in use during the 1884-85 academic year and from the 1889-90 through to the 1891-92 academic years. Fagge’s treatise was used from the 1889-90 through to the 1891-92 academic years (see Appendix A). Due to the closing of the women’s institution, the use of von Strümpell’s text was limited to its publication year of 1893.

In Chapter 3, I observed that obstetrics textbooks read exclusively at the Kingston Women’s Medical College were generally longer and more detailed than those studied at The Royal College male institution. To explain this finding, I wondered if the predominantly male faculty decided to refrain from lecturing female students, preferring instead to rely on detailed textbooks. When the same analytics were applied to the theory and practice of medicine course, the results were not so straightforward. Obstetrics textbooks in both schools were, on the whole, shorter than those in the theory and practice of medicine. In the former discipline, the average page count was 700, while in

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76 Fagge, The Principles and Practice of Medicine; Flint, A Treatise of the Principles and Practice of Medicine; Von Strümpell, A Textbook of Medicine.
77 For a comparison of the obstetrics textbooks used at the Kingston Women’s Medical College and The Royal College, see herein Chapter 3, 57-60.
the latter, the average length of a textbook was over 1000 pages. The discrepancy between the textbooks in the two subjects was largely owing to the perforce that the theory and practice of medicine was a voluminous and complex study of all diseases and their pathologies. Given this circumstance, the textbook page lengths of various sections covering diseases were nearly equivalent. For example, concerning gout -- a disease caused by an excess of uric acid in the blood that induces pain and inflammation in joints -- Roberts’s discussion (used for male students) comprised 11 pages (approximate 4372 words), while Fagge’s (used for females) comprised 13 (8098 words).78

In comparing articles on constipation, Roberts’s 1885 textbook comprised almost four pages (1465 words), while Fagge’s discussion comprised four full pages (2205 words).79 The difference between the textbooks used at the Kingston Women’s Medical College and The Royal College was the degree to which graphs, charts, and illustrations were rendered and referred to in the text. Within Fagge’s 1,142 pages, there was a total absence of such visuals, whereas Roberts’s textbook contained 51.80 The absence of visuals in Fagge’s text contributed to its density, allowing an increased number of words to be distributed per page. Even though the number of pages concerned with various diseases was comparable, the lack of visuals compensates for the reduced page count. In general, just as for obstetrics, the textbooks used at the Kingston Women’s Medical College contained more textual detail than those of their male counterparts, suggesting

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78 Fagge, The Principles and Practice of Medicine, 797-809; Roberts, A Handbook of the Theory and Practice of Medicine, 6th ed., 273-85.
79 Fagge’s and Roberts’s textbooks were used during the same period at the Kingston Women’s Medical College and The Royal College, respectively. This circumstance renders these textbooks comparable. Fagge, The Principles and Practice of Medicine, 375-8; Roberts, A Handbook of the Theory and Practice of Medicine, 6th ed., 626-30.
80 For examples of illustrations of the fatty degeneration of nerve-fibres, cardiograms, and uric acid crystals, see Roberts, A Handbook of the Theory and Practice of Medicine, 6th ed., 66, 485, 738, respectively.
once again that instruction offered to women may have relied on textbooks to a greater
degree than the instruction offered to men.81

Conclusion

From 1881 to 1910, the theory and practice of medicine course underwent
profound changes. As the goal of the course was to prepare students for entering their
fields of practice, these changes mirrored alterations that took place within the medical
practice itself. In the practice of medicine, these alterations involved the decrease in the
popularity of the ancient yet still practiced therapy of bloodletting. As with obstetrics, a
movement toward a positivistic science of medicine appeared in the textbooks. Osler,
with his combination of pathology and case histories, led the way with “the most durable
and influential textbook of its time.”82 Osler used graphs, charts, and other illustrations,
an element largely absent from earlier textbooks, especially those used at the Kingston
Women’s Medical College. X-ray technology was incorporated into the texts and, despite
some hesitancy regarding the applicability of its use, awareness of the technology grew.

Driving the changes in the curriculum of the theory and practice of medicine at Queen’s-
affiliated medical colleges was an attempt to keep pace with evolving medical practices
and to rely on positivist scientific medicine as it began its transformative rise.

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81 Similar to Fagge’s textbook, Flint’s text did not contain any graphs, charts, or illustrations. On this
account, perhaps the anomaly was the English translation of von Strümpell’s German text that included 119
illustrations and graphs. Von Strümpell’s text was used only in the final year of the Kingston Women’s
Medical College’s existence.

82 Duffin, History of Medicine, 85. Historians have occasionally criticized Osler’s text for neglecting the
elements of prognosis and therapeutics. For the lack of prognostication in Osler’s text, compared with the
publications of earlier writers, see Luke E. Demaitre, “The Art and Science of Prognostication in Early
University Medicine,” Bulletin of the History of Medicine 77, no. 4 (2003): 766. For a characterization of
William Osler (1849-1919): His Opinion of Modern Therapeutics,” Scottish Medical Journal 50, no. 1
Chapter 5

Surgery Textbooks in the Mutable Curriculum at Queen’s-Affiliated Medical Colleges, 1881-1910

In the late-nineteenth and early-twentieth centuries, the theory and practice of medicine course at Queen’s-affiliated medical colleges contained material vital to the would-be practitioner, instructing medical students on common, and rare diseases, linking them to the pharmacopeia. The goal of these texts was to offer the most up-to-date and comprehensive version of medical knowledge.\(^1\) As complete as a text may have been, such as William Osler’s *The Theory and Practice of Medicine* (1892), this knowledge represented the medical and not the surgical branch of the healing art.

The surgical curriculum displayed many changes over the years under study. There were 55 textbook changes to the curriculum (34 textbooks were introduced and 21 were deleted) (see Appendix A and Figure 3 on page 103). Taken together, these alterations reflected the evolving nature of the surgical practice. New sanitary procedures ushered in possibilities for surgical technique. Nahrwold and Kernahan noted that, “[a]fter the general adoption of antisepsis and asepsis, the scope of surgery expanded rapidly between 1880 and 1910.”\(^2\) Following these adoptions, “[b]etween 1880 and 1890, approximately 100 new operations were described.”\(^3\) Aiding the expansion of surgical practice, operative procedures became more precise with the technologies of anaesthesia and x-rays. For example, the x-ray was instrumental in the earlier detection of gastric

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\(^1\) Golden, *A History of William Osler’s The Principles and Practice of Medicine*, xii.


lesions associated with stomach cancer. The textbooks and curricula adapted to mirror these new realities.

![Selected surgery textbooks at Queen's-affiliated medical Colleges from 1881 to 1910. Please note that Holmes’s textbook timeline includes all of his volumes. Please note that Walshham’s textbook timeline includes both of his editions.]

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Figure 3. Selected surgery textbooks at Queen's-affiliated medical Colleges from 1881 to 1910. Please note that Holmes’s textbook timeline includes all of his volumes. Please note that Walshham’s textbook timeline includes both of his editions.

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What is Surgery?: Divisions, Curricula, and Specialization

The Oxford English Dictionary defines surgery as “[t]he art or practice of treating injuries, deformities, and other disorders by manual operation or instrumental appliances,” dating the origin of the term to 1400. Surgery, strictly speaking, focused on abnormalities within the body requiring a manual intervention, or an operative procedure.

What topics were discussed in the surgical discipline at Queen’s-affiliated medical colleges? Since surgery had long been a professional practice distinct from medicine, the answer to this question included both the evolving nature of the maladies and the surgical purview.

The primary role of the surgeon was, as it is today, to remove an offending structure in the body, or to correct a body-part that was not fulfilling its function.

Referring to the treatment of general inflammation, Samuel D. Gross stated,

> The duty of the surgeon [was] to get rid of [the diseased or injured part of the body] if he can; the ball, the calculus, the splinter of wood, the dead piece of bone, and the carious tooth, are promptly extracted. Irritating ingesta are dislodged by emetics; offending feces by purgatives; worms by anthelmintics. The mortified toe is amputated; the compressed gum lanced; the suppurating felon freely laid open. Light is excluded from the inflamed eye; noise from the suffering ear; cold from the shivering surface.

Gross did not limit the surgeon’s vocational responsibility to that of the knife. Rather, he implored the would-be surgeon to concern himself with his patients’ general health, particularly their bodily secretions. “The correction of the secretions,” he noted, “is a matter of primary importance in every case of irritation, whether local or constitutional.”

In drawing attention to secretions in cases of inflammation, Gross highlighted those of “the stomach, bowels, liver, and uterus, and they should… always be objects of special

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7 Ibid., 48.
8 Ibid.
consideration.” For Gross, the patients’ general health during surgical procedures was important and he asked surgeons to monitor their patients’ conditions.

A vast expansion of surgical practices took place during the period under study. Surgery in the nineteenth century was characterized by historians, and contemporaries alike, as abounding with unnecessary, invasive operative procedures. Increasingly risky surgical procedures, particularly on the abdomen, were attempted, often with deadly results. In 1909, physician Henry B. Luhn suggested that surgical progress had been, in reality, a detriment to the overall patients’ safety. He noted that doctors, due to their overconfidence, caused “... much harm... to surgery... as they realize that they can operate with very little danger to the patient’s life, and they operate with little idea of what they intend doing; and, further, their experience is so limited that they are not really capable of recognizing a pathologic condition when they see it.” Luhn’s remarks were a direct criticism of surgical education. An anonymous critic wrote the following account of a newly graduated student.

His ostensible mission in life is to heal the sick; but having had little or no actual training in therapeutics, and less in surgery, naturally finds himself nonplussed... Perhaps for years if his preliminary education has been faulty or insufficient, he is forced to cultivate a pompous, overbearing demeanour, the better to hide his ignorance and cloak his oft-recurring blunders [ellipses in original].

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9 Ibid.
10 For example, T. H. Pennington correlated the development of antisepsis in 1878 to a vast increase of osteotomies, “the section, of surgical fracture, of a bone with or without the removal of osseous tissue. Its objective is the elimination or mitigation of deformity.” T. H. Pennington, “Osteotomy as an Indicator of Antiseptic Surgical Practice,” Medical History 38, no. 2 (1994): 180.
11 The degrees of unnecessary and risky surgery in America were graphically depicted in Norman Barnesby’s sensationalist manuscript Medical Chaos and Crime (1910). One of the primary causes for the poor state of surgery was the lack of adequate training for surgeons in hospitals and medical schools, a difficulty that was largely resolved by the establishment of state medical licencing boards. For more details on the reaction to Barnesby, see Kernahan, “A Condition of Development,” 380-1. Ann Dally, Women under the Knife: A History of Surgery (New York: Routledge, 1992), 191-8.
12 Dally, Women under the Knife, 1-3.
13 Cited in ibid., 192.
14 Ibid.
In the Canadian context, the prevalence of abdominal surgery for women is well known. Exploring the case of ovariectomy, the removal of one or both ovaries, Wendy Mitchinson chronicled the rise in popularity of the procedure. Since the advent of germ theory and sanitary techniques, surgeries of all types were safer and, therefore, there was an increase of procedures performed. Throughout Canada, the number of ovariectomies increased. Mitchinson commented that “the Victoria General Hospital in Halifax reported 3 ovariectomies performed in 1894 and 24 in 1899. The Royal Victoria Hospital in Montreal in 1895 reported 4 ovariectomies performed in the surgical department and 14 single and 27 double salpingo-oophorectomies [an operation for the removal of ovaries and Fallopian tubes] in the gynaecological division.” What makes one now doubt the necessity of these operations is the contemporary lack of knowledge of the function of ovaries. Nevertheless, with safer surgical techniques, ovariectomy was popular.

Specialization and sub-specialization played an important role in delineating the contours of modern surgery. Medical historian and surgeon Peter J. Kernahan characterized the period beginning in the 1880s as a time of growing surgical knowledge and vigorous technical development, leading to the fragmentation, or sub-specialization, of general surgical practice. This situation rendered the textbooks on general surgery a complex endeavour as authors distinguished between what topics were essential and what

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17 Mitchinson, *The Nature of Their Bodies*, 266.
Medical Curriculum Change At Queen’s Medical Colleges

topics could be rendered with more precision in a specialized treatise (see Appendix A).\textsuperscript{19} Sometimes the decision as to what topics would be better rendered in a specialized treatise was simplified with the invention of sophisticated devices, such as the ophthalmoscope, which led to the development of the ophthalmology specialty.

Developed in 1851, the ophthalmoscope enabled practitioners to examine the inner eye, or fundus, which allowed for the diagnosis and treatment of a variety of eye conditions. Surgical specializations were included in the textbooks of the period under study. Separate sections were created denoting specific and general fields, such as military, orthopedic, and “special” surgeries (see Appendix A).\textsuperscript{20} The field of general surgery delineated the basic principles for the treatment of injury, including the processes of treating inflammation, hypertrophy, amputations, wounds, and tumours, along with basic bandaging techniques.\textsuperscript{21} By and large, the textbooks recommended at Queen’s-affiliated medical colleges entailed 1) the principles of general surgery, 2) a discussion of various diseases and conditions organized by physiological systems, and 3) a description of surgical remedies for these maladies.

\textsuperscript{19} Weisz, \textit{Divide and Conquer}, 211. W. Fairlie Clarke, in his surgical text, predicated his section on eye diseases with the remark that he would limit his discussion to “the commoner and more superficial affections of the organ, such as are met with in general surgical practice, without alluding to those deeper diseases which are revealed by the ophthalmoscope,” in order to separate the disciplines of general surgery and ophthalmology. Clarke, \textit{A Manual of the Practice of Surgery}, 224. Clarke’s text was used at The Royal College from the 1884-85 through to the 1886-87 academic years. Significantly, this text was not used at the Kingston Women’s Medical College.

\textsuperscript{20} Samuel D. Gross, in his \textit{System of Surgery}, divided the content under the headings “General Surgery” and “Special Surgery; or, Diseases and Injuries of Particular Organs, Textures, and Regions.” Gross’s textbook was used at The Royal College in the 1881-82 academic year and at the Kingston Women’s Medical College from the 1884-85 through to the 1888-89 academic years. Gross, \textit{System of Surgery}. Weisz discussed ocular, orthopedic, and urological surgical specialties in his examination of medical specialization. Crucial to the construction of these specialities was the development of new techniques, the mastery of which differentiated the specialists from the general surgeons. Weisz, \textit{Divide and Conquer}, 4, 123, 131, 197-8.

**Medicine and Surgery Textbooks: A Unity Between the Disciplines?**

That the divide between surgery and medicine proved to be a bridgeable gulf was proven in practice by the career of Brockville, Ontario, surgeon Archibald E. Malloch. Malloch’s recorded cases of 1869 display the diversity of illnesses that he treated and demonstrate the blurred boundaries between medicine and surgery. While Malloch was a surgeon, he was often called to cases that were better suited to the practice of a medical practitioner. He encountered incidents of trichiniasis, or roundworm, “gluteal abscess,” cardiac disease, and “chancroid ulcer,” a by-product of syphilis, and gangrene. Some of these conditions, most notably gluteal abscess and chancroid ulcers, required surgical intervention. Others were more ambiguous. It is unclear as to what the surgical remedy might have been for cardiac disease as the majority of modern cardiac surgical interventions did not emerge until the mid-twentieth century. Medical Historian, Charles G. Roland did not explain how Malloch treated cardiac disease; he may have used bloodletting and palliative medications advocated by others. Notwithstanding these non-interventionist remedies, Roland’s account of Malloch’s cases pointed to the variety of illnesses and conditions that surgeons encountered and treated, whether they required surgical or non-surgical interventions. The diversity of Malloch’s practice may be illustrated by a case where he was called to a man who was suffering from “fits.” Upon observing the man was drunk, Malloch poured three buckets of water over him and pronounced him “cured.” The fact that such a ‘difficulty’ was attended by a surgeon

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23 It was not until the 1950s and 60s that significant cardiac surgery was attempted and performed. Rene G. Favaloro, “Landmarks in the Development of Coronary Artery Bypass Surgery,” Circulation 98, no. 5 (1998): 467.
demonstrated that a surgeon’s responsibilities went far beyond his duties at the operating table.

As the example of Malloch illustrates, medicine and surgery were closely linked. In fact, the two previously separate disciplines had been united in the early-nineteenth century in post-revolutionary France. Erwin H. Ackerknecht revealed that several surgeons made significant contributions in internal medicine, while internal medicine specialists advanced surgery. In the Canadian context, in 1862 McGill University’s Faculty of Medicine combined the doctorate of medicine degree with a master of surgery degree; and still does. For their part, the surgical textbooks at Queen’s-affiliated medical colleges included many conditions for which there was a medical rather than a surgical solution. For example, W. Fairlie Clarke’s in his *Manual of the Practice of Surgery* (1882), commented on the treatment of hysteria, noting “[i]t generally comes under the notice of the physician, but it is necessary that the surgeon should be aware of its manifestations, or it may betray him into serious errors of practice.”

Other medical ailments in surgery textbooks included delirium traumaticum, hysteria and hypochondriasis, and hydrophobia, or human rabies (see Appendix C).  

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25 Prior to the nineteenth century, physicians and surgeons were separate professions, especially in Europe. Kernahan, “Franklin Martin and the Standardization of American Surgery.” Kernahan contended that, in the American case, “[b]ecause the strict British division between physicians and surgeons did not exist in America, there was no pre-existing framework in which to fit surgical specialization. All doctors were licensed as both physicians and surgeons [italics in original].” Kernahan, “A Condition of Development,” 378.  
29 It should be noted that there was no treatment for hydrophobia, either in the nineteenth century or to-date. *A Dictionary of Public Health* (Oxford University Press, 2007), s.v. “Rabies,” accessed on January 7, 2016,
Although one can see how these conditions affected surgical practices, they did not require surgical operations. Textbooks authored by William Johnson Walsham and Warren Stone Bickham, published in 1903 and 1904 respectively, omitted these conditions (see Appendix A). Bickham’s text was in use at Queen’s Medical College during the 1906-07 academic year and remained a component of the curriculum at the end of the period studied. Walsham’s text was employed at The Royal College from the 1888-89 through to its closing in the 1891-92 academic year. Walsham’s textbook continued to be in use at Queen’s Medical College during the 1892-93 through to the 1902-03 academic year and reintroduced in 1904-05. Medical historian and physician Peter C. English contended that since the 1890s, physiological surgery techniques started to appear and dominate surgical textbooks. Physiological surgery focused on the manner in which a patient’s body functioned in order to dictate the operative techniques a surgeon would employ using, for example, the results of a kidney function test to guide operative procedures. With the new focus on physiological surgery, operative procedures became much more precise and complex, resulting in the elimination from textbooks of those conditions that did not strictly have a surgical recourse. The textbooks used at Queen-affiliated medical colleges maintained a separation between the medical and the surgical disciplines.


30 Bickham, Operative Surgery; Walsham, Surgery, 6th ed.; Walsham, Surgery, 8th ed.

Bloodletting and X-ray in Queen’s Curriculum

Bloodletting for medical conditions was discussed in the previous chapter, but it also formed part of surgical practice. In most surgical textbooks, the section devoted to bloodletting was more detailed than their counterparts in medicine. Samuel D. Gross’s 1866 *System of Surgery: Pathological, Diagnostic, Therapeutic and Operative* provided an illustrative example.\(^{32}\) Gross devoted nine pages of his treatise to the “Abstraction of Blood.”\(^{33}\) In this section, he provided a step-by-step procedure for the various modes of bloodletting, including scarification, leeching, cupping, and venesection.\(^{34}\) Gross connected each mode of bloodletting with the treatment of various conditions, noting the regularity by which the procedure was to be performed. For example, Gross stated that scarification should be used “chiefly in conjunctivitis, tonsillitis, erysipelas and irritable ulcers, and may be repeated once a day, or once every other day, according to the exigencies of the case.”\(^{35}\) He suggested that leeching was “applicable to a great variety of affections, and is perhaps more frequently employed than any other mode of topical bleeding.”\(^{36}\) Such detailed consideration of bloodletting indicated that the surgeon rather than the doctor saw more cases where bloodletting was required.\(^{37}\)

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\(^{32}\) Gross, *System of Surgery*.

\(^{33}\) Ibid., 448-57.

\(^{34}\) According to Oxford’s *Concise Medical Dictionary*, scarification is defined as “the process of making a series of shallow cuts or scratches in the skin to allow a substance to penetrate the body.” This process was used extensively in the vaccination of smallpox during the initial campaign in the early nineteenth century. *Concise Medical Dictionary* (Oxford University Press, 2007), s.v. “Scarification,” accessed on January 7, 2016, http://www.oxfordreference.com.proxy.queensu.ca/view/10.1093/acref/9780199687817.001.0001/acref-9780199687817-e-9036.


\(^{36}\) Ibid.

\(^{37}\) As Christopher Lawrence commented, “on a day-to-day basis the taking of blood and the dressing of leg ulcers were, as Irvine Loudon has shown, the staple of most eighteenth-century surgical incomes.” Christopher Lawrence, “Democratic, Divine and Heroic: The History and Historiography of Surgery,” in *Medical Theory, Surgical Practice: Studies in the History of Surgery*, ed. Christopher Lawrence (New York: Routledge, 1992), 10. In the treatment of leg ulcers, eighteenth-century surgeons regularly employed
The x-ray machine played an important role in surgical practice. This technology allowed surgeons to accurately diagnose injured areas of the body, such as fractures. However, as medical historian Joel Howell stated, “there were voices that [were] skeptical for some time about the value of the x ray [sic] for patient care.” Despite the hesitation, some faculty at Queen’s Medical College, such as James Third, readily saw the applications of x-rays, especially in surgical practice. Reflecting this recognition, the surgical textbooks used at Queen’s Medical College favoured the new technology, sooner than their medical counterparts. For example, in 1887, surgeon and textbook writer William Johnson Walsham published the first edition of Surgery: Its Theory and Practice; it was recommended at the Queen’s Medical College from 1888-89 through to the 1902-03 academic years, and during the 1904-05 academic year (see Appendix A).

Recall x-rays were discovered in later 1895. In the sixth edition of his textbook of 1897, Walsham recommended that “[i]n doubtful cases of fracture much aid may often be obtained by means of the x rays [sic].”

Walsham indicated that, in cases of advanced bone disease, the x-ray could be utilized as a helpful diagnostic tool before attempting “[a]rthrectomy or erasion of joints.” Similarly, in the second edition of his textbook published in 1904, Warren Stone Bickham advised that, in cases of cranial gunshot wounds, “[the bullet] may… be located by means of x-ray shadows taken in two directions.”

38 Howell, Technology in the Hospital, 107; Stevens, In Sickness and in Wealth, 35.
39 Howell, Technology in the Hospital, 107.
41 Ibid., 251.
42 Bickham, Operative Surgery, 494.
exploration of medical and surgical textbooks revealed that the application of x-rays was thought of as surgical rather than medical.

At the end of the period considered, x-ray radiation began to be thought of as not merely a diagnostic tool, but also a curative treatment. In his *Text-Book of Minor Surgery* (1908), Edward Milton Foote advised, “using the X-ray for the destruction of an epithelioma, the surrounding skin should be protected, and the length of exposure, distance from the tube, etc., should be carefully noted at each treatment. In beginning treatment it is well to err on the side of safety, so that the exposure should be brief, and three days should elapse between treatments.” The caution expressed by Foote to limit exposure pointed to the novelty of radiation therapy, upholding the Hippocratic Oath not to harm patients by subjecting them to a relatively new and potentially dangerous course of treatment.

Notwithstanding the use of x-ray as therapy, Foote did not neglect the diagnostic uses of x-ray. Regarding the detection and treatment of foreign bodies in the trachea, he remarked that the excision of the foreign body “will, of course, not be attempted unless the body has been exactly located by means of the X-ray.” By the end of the period examined, in both medicine and surgery, the multi-purposes of the x-ray had become a component of standard practice. Given the centrality of this technology, it became necessary for the students at Queen’s Medical College to inculcate the precise nature and uses of this medium.

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41 Foote, *A Text-Book of Minor Surgery*, 104. Foote’s textbook was in use at Queen’s Medical College during the 1908-09 academic school year, and remained a component of the curriculum until the end of the period studied.

44 Ibid., 118.
Anaesthetics and Surgery: A More Comfortable Procedure?

The discovery of anaesthetics transformed surgical practice. These drugs, such as ether in 1846 and chloroform in 1847, improved the safety of surgery as a procedure could be performed without the patient suffering pain or disturbing the surgeon. Given that these medications were relatively recent in the period under study, all textbooks displayed an open enthusiasm for the wonder of anaesthetics. A measure of the pervasive excitement may be gleaned from Robert Druitt (1814-1883), who entered practice well before the advent of anaesthesia. Ether, he stated in his text used at Queen’s “was employed in every variety of surgical operation, from the Caesarian section… down to tooth-drawing; and in all kinds of painful examination or manipulation;… it was employed to tranquilize the insane, to detect feigned disease, and to diminish the sufferings incidental to parturition” (see Appendix A).

Turning to chloroform, Druitt suggested that this medication was beneficial in special circumstances. For example,

> In the case of children [italic in original], many things can be done nicely with chloroform, which could be but most ill done, if at all, without it. Take… the case of wounds of the eyelids or eyebrows…. By a little chloroform, not merely the pain and fright of the injury, and the severe smarting caused by the needle, but the struggles also, which render quickness and nicety of adaption impossible, are done away with.

Druitt’s enthusiasm was modulated by caution. While he recommended chloroform, he warned against administering too large a dose. He cautioned that, “even a small quantity too rapidly inhaled, and insufficiently diluted with air, may be dangerous.”

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46 Druitt’s text was employed at The Royal College during the 1881-82 academic year and from the 1884-85 through to the 1886-87 academic years and at the Kingston Women’s Medical College from the 1884-85 through to the 1888-89 academic years. Druitt, Modern Surgery, 587-8.
47 Ibid., 593.
48 Ibid., 590. See also Roland, “The First Death from Chloroform,” 437-9.
was a significant topic of conversation among Queen’s professors and their contemporaries. On June 13, 1898, Queen’s Medical College Professor and Kingston General Hospital Superintendent William Canniff read a paper before the Kingston Medical and Surgical Society on “the principles of [a]naesthesia with special reference to [e]ther.” Likewise, Queen’s Medical College Professor of ophthalmology and otolaryngology (ear, nose, and throat), and later Dean, J.C. Connell elaborated upon his experiences. Although we do not know the content of ensuing discussions, these faculty members were most likely debating the merits and pitfalls of administering anaesthetics.

The concerns surrounding anaesthetic over-dosages became more pronounced as the twentieth century approached. Surgeon and medical author Frederick W. Hewitt, in his article published in Frederick Treves’s 1898 treatise, devoted one-third of his discussion to general anaesthesia, denoting the “difficulties, accidents, and dangers of general anaesthesia” and dividing these abnormalities by anatomical systems. The side effects of anaesthesia could damage many organs. For example, Hewitt, like Druitt before him, in advising the would-be practitioner against the evils of anaesthetic overdose wrote, “[p]aralytic cessation of respiration is most commonly due to an over-dose of the anaesthetic.” Physicians were now aware, the administration of anaesthetics was dangerous and they must proceed with caution.

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49 The Kingston Medical and Surgical Society was an organization of Kingston medical professionals who may or may not have had an association with Queen’s Medical College. The society was established on June 8, 1896. Kingston Medical and Surgical Society Minutes, 13 June 1898, Box 10, Volume 17, Medical Faculty 1184a, Queen’s University Archives, Queen’s University Libraries.


51 Ibid., 283-4.
Antisepsis and Asepsis in Queen’s Surgical Curriculum

One innovation that the practice of surgery had to grapple with was the establishment of antiseptic and aseptic procedures. Working in tandem in 1874 at Fergus, Ontario, surgeons Abraham Groves and John Wishart were among the first medical practitioners to follow aseptic techniques in Canada, implementing sterile instruments during a laparotomy procedure.\(^\text{52}\) Intended for the prevention of disease and decontamination, respectively, antiseptic and aseptic procedures were gradually accepted over the period under study. At McGill in 1882, it was these procedures, along with developments in anaesthesiology, which led to separation and specialization between the medical and surgical departments, developments that constricted the practice of the general physician and surgeon.\(^\text{53}\)

The need for such procedures was established through the nineteenth-century efforts of physicians/scientists Ignaz Semmelweis and Joseph Lister, who had linked infections to intrusion of the external factors (dirt, cadaveric particles, and germs), sometimes on the hands of caregivers.\(^\text{54}\) Aseptic techniques extended to the design of


operating rooms. Opening in 1895, the Fenwick Operating Theatre at the Kingston General Hospital offered the latest in sanitation. Among the features of the room were “numerous sets of hand wash basins, glass instrument tables, a water sterilizer, and a modern operating table.” Since the Kingston General Hospital was a clinical site for The Royal College and for the subsequent Queen’s Medical College, medical students encountered aseptic techniques.

From a surgical standpoint, one of the most important developments was the manufacturing and use of surgical rubber gloves in operative procedures. Since their invention in 1889, surgical gloves were slowly adopted into the operating room, evolving from those worn before and after surgeries to those integral in the standard surgical equipment armamentarium. Surgical historian Thomas Schlich argued that their reluctant adoption should not be interpreted as an indicator that the medical establishment was slow to realize the necessity of adopting antiseptic and aseptic procedures. He contended that scientists/physicians were developing competing answers to the problem of infection, such as an antiseptic spray. Schlich’s statement is not to deny the existing

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56 Despite the availability of rubber gloves in 1889, it was not until 1896 that rubber gloves were used regularly among surgeons, nurses, and other attendants. According to Thomas Schlich, “[i]n an article for the Transactions of the American Surgical Association in 1899, Theodor Kocher recommended not touching “any infective fluids or septic matters with our hands” and suggested surgeons “wear gloves before and between the time of our operations.”” Oddly, Kocher did not suggest wearing gloves during operations. Thomas Schlich, “Why Were Surgical Gloves Not Used Earlier?,” Lancet 386, no. 10000 (2015), 1234.

57 Ibid., 1235. MacDougall, “Canniff, William.” The first surgical gloves were not devised with patient safety in mind but rather for the hand protection of Caroline Hampton Halsted, who suffered from dermatitis. Hampton Halsted was a nurse at the Johns Hopkins Hospital and wife of the notable surgeon, William Halsted. S. Robert Lathan, “Caroline Hampton
opinions of those who doubted the value of antiseptic and aseptic procedures. Notable among these sceptics was mid-nineteenth-century Canadian surgeon William Canniff from the Belleville area in Ontario. Somewhat ironically, Canniff was one of the first health officers in Upper Canada. Throughout the early part of the period examined, antiseptic and aseptic protocols were much debated.\(^{58}\) This debate was observed in only some of the textbooks utilized at Queen’s-affiliated medical colleges.

From the outset of the period considered, antiseptic and aseptic procedures were emphasized in the textbooks examined. The vital importance of sterility was emphasized by textbook authors. In his *Manual of the Practice of Surgery* (1882), W. Fairlie Clarke declared that “[t]he present practice [of using antiseptic dressings] is characterised by great simplicity, and by a studious regard to cleanliness.”\(^{59}\) For him, the goal of applying dressings, and “modern surgery” in general, was “to reduce suppuration [infections] to a minimum, and, whenever it is possible, to get rid of it altogether.”\(^{60}\) To accomplish this task, he recommended that carbolic acid, sulphurous acid, or chloride of zinc be applied to the bodies of patients before surgery.\(^{61}\) Clarke added that, whichever compound the surgeon chose to use, “it is of the first importance that [it] should be brought thoroughly and continuously into contact with the wound.”\(^{62}\)

When infection did occur, Clarke did not hesitate to advocate for antiseptic measures. To combat infections, the application of antiseptic dressings was the remedy of choice. Clarke recommended that, “[i]f the suppuration is excessive, the wound should be

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\(^{58}\) Ibid.; Howell, *Technology in the Hospital*, 65.


\(^{60}\) Ibid.

\(^{61}\) Ibid.

\(^{62}\) Ibid.
bathed or syringed with an astringent lotion, or dressed with lint dipped in it.”\textsuperscript{63} He added, “[i]f the neighbourhood of the wound becomes red, swollen, and painful, if there are the signs of inflammation, then we must apply a poultice or a bladder of ice; whichever is found to give the patient most relief will be best for the wound.”\textsuperscript{64} In addition to sanitary bandages, Clarke recognized the importance of natural elements in the healing process, commenting that “[c]old seems to act by constricting the vessels, so as to diminish the quantity of blood in the part, and by absorbing the heat that is generated; while, at the same time, it relieves pain by deadening the sensibility of the nerves.”\textsuperscript{65}

The exposure to cold made the patient’s body appear to be less infected. This now erroneous observation stemmed from the accurate observation that cold provoked reduction in redness, pain, and swelling that characterize inflammation, and was construed as a sign of symptom abatement. Clarke’s acknowledgement of the anti-inflammatory properties of ice and other cold substances stood as a testament that the battle against inflammation and infection did not rely solely upon the newest medical knowledge and technology. But it is important to note that his book was published in the year that Robert Koch identified the bacterial cause of tuberculosis, providing the first description of a human disease caused by a microbe, consolidating bacteriology, and launching germ theory as a medical dogma.

Antiseptic and aseptic procedures also played a vital role in the curriculum at the Kingston Women’s Medical College where T. Holmes’s \textit{A System of Surgery} (1881) was

\begin{itemize}
\item \textsuperscript{63} Ibid., 372.
\item \textsuperscript{64} Ibid., 371.
\item \textsuperscript{65} Ibid.
\end{itemize}
used. The book devoted considerable attention to administering antiseptic dressings when explaining the treatment of various injuries. Directing the treatment of abscesses, Holmes Coote, a contributing author in 1881, explained, “[a] piece of rag, dipped in a solution of carbolic acid and oil, serves as an antiseptic curtain, under cover of which the abscess is evacuated by free incisions. Over this is laid the antiseptic paste, to guard against decomposition occurring in the stream of pus that flows out beneath it; the dressings are changed daily till the sinus has closed.”

Likewise and in the same year, Carsten Holthouse exhibited great faith in antiseptic solutions and in fledging germ theory when he remarked, “[c]arbolic acid, from its destructive influence on low forms of life, is the most powerful antiseptic with which we are acquainted, and hence the most proper dressing for wounds.” In his article, Holthouse displayed a basic understanding of bacteriology, a science in the developing stages during the 1870s and 80s. Holthouse explained,

> All the local inflammatory mischief and general febrile disturbance which follow severe injuries, are due to the irritating and poisoning influence of decomposing blood or sloughs … [t]his decomposition is owing to the presence of minute organisms suspended in the air … [t]o prevent this decomposition, with its attendant evils, it is necessary to apply as a dressing to wounds, some material capable of destroying the life of the floating particles.

At the beginning of the twentieth century, it is noteworthy that antiseptic and aseptic procedures had become so commonplace that, in his treatment of contusions of the abdomen, Foote’s consideration of sanitary techniques was restricted to, “[i]f the skin

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66 “The bacteriology boom of the 1880s” proved to be fruitful for medical education in Toronto as the benefits of the new science brought renewed governmental support to the university. Duffin, “What Goes Around, Comes Around,” 54.


69 This is a noteworthy quotation because it offered an account of germs before the theory was fully developed. Ibid.; Ludmerer, *Learning to Heal*, 76-7.

is broken a light, moist, antiseptic dressing should be applied.” The student’s ability to apply a dressing was, by this time, a foregone conclusion. Similarly, a virtual absence of instruction on antiseptic or aseptic procedures in Bickham’s 1904 text, in relation to operations upon the arteries, amputations, excisions, anal fistula, and perineal bladder drainage. Given the great emphasis on antiseptic and aseptic procedures in earlier textbooks, this curriculum may have expected and taken for granted the fact that students would have already known of such procedures.

One other possible explanation of why these methods were increasingly deemphasized through time was that these topics were well-covered elsewhere in the medical students’ studies. In the 1897-98 academic year, Queen’s Medical College introduced a new course in “Pathological and Bacteriological Technique,” taught by noted Queen’s alumni Professor Walter T. Connell. With its laboratory component, this course fulfilled one of George Munro Grant’s goals for the medical school. With the establishment of a course that explored antiseptic and aseptic processes from a scientific basis, there may have been no need to review these fundamental elements in the surgical course.

A Comparison of the Kingston Women’s Medical College’s and The Royal College’s Surgical Curricula

By and large, the Kingston Women’s Medical College and its counterpart, The Royal College, used similar surgical textbooks. However, some texts were unique to only

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72 For the lack of reference to antiseptic and aseptic procedures, see Bickham, *Operative Surgery*, 25, 259, 398, 757, 892, respectively. While no direct reference is made to these procedures, in the case of “operations upon the arteries,” Bickham remarked “[n]o form of drainage is used in clean cases. A simple gauze and cotton dressing, held in place by a bandage, completes the dressing.” Ibid., 25.
73 Travill, *Medicine at Queen’s*, 170.
one of the institutions. *A System of Surgery, Theory and Practical: In Treatises by Various Authors* (1881), edited by T. Holmes, stood as a representative example of a text used primarily at the Kingston Women’s Medical College (see Appendix A). Published in 1881, it was in use briefly at The Royal College in the 1881-82 and possibly the 1882-83 academic years (see Appendix A). In contrast, it was in use at the Kingston Women’s Medical College for its entire duration. This circumstance invites the question, why was Holmes’s textbook appropriate for the women’s college and not for the men’s? Considering the evident effort to ensure that textbook lists were similar for both academic bodies, as students of both sexes faced the same examinations, this imbalance seems odd.

One possible explanation, although not evident in the textbooks at Queen’s-affiliated medical colleges, may have been the faculty’s desire to protect the supposed virtues of the female pupil. Historians, such as Wendy Mitchinson, commented on the predominately male Victorian fear that women were somehow unfit to enter the medical field. During the brief period of the integration of men and women at The Royal College, Queen’s physiology Professor K.N. Fenwick claimed that the presence of women in his classes forced him to omit some details from his lectures that he would have otherwise included. Whatever their prevalence, these attitudes found no expression in Holmes’s textbook that spared no details when it depicted, for example, a syphilitic sore on the penis. Medicine was not for the timid. The administration and faculty at the Kingston Women’s Medical College, including female faculty member and alumnae of

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75 What occurred in the 1882-83 academic year is not known due to the lack of records.
76 Mitchinson, *The Nature of Their Bodies*, 27.
78 See Holmes, *A System of Surgery*, vol. I, Fig. 6-7.
The Royal College Dr. Alice Skimmen McGillivray, had a vested interest in ensuring that graduates were able to fulfill the requirements of a practicing physician.\(^79\)

I compared Holmes’s textbooks used for women’s education, with a contemporary counterpart by W. Fairlie Clarke, *A Manual of the Practice of Surgery* (1882), employed at The Royal College from 1882 to 1888 (see Appendix A).\(^80\) The relative length of each section was considerably longer in Holmes’s than in Clarke’s text. For example, Holmes’ section on anaesthetics was twenty-nine pages (approximately 31197 words), while Clarke’s section spans 3 (approximately 1306 words). Holmes’s discussion on gunshot wounds comprised seventy-eight pages (approximately 63858 words); Clarke offers a mere 5 (approximately 1796 words).\(^81\) Taking into account the various emphases an author placed on one subject over another, Holmes presented more detailed descriptions than Clarke. For example, for the treatment of a hemorrhage resulting from a gunshot wound to the chest, Holmes wrote in part,

> When blood has accumulated in any large quantity, and the patient is so much oppressed as to threatent suffocation, all coverings must be removed, and the blood be permitted to escape by the wound; the wound should even be enlarged… to facilitate its escape. If the effused blood… cannot be thus evacuated, and the patient be in danger of suffocation, then paracentesis must be resorted to.

> The extensive early bleedings… are now rarely practiced by English surgeons. Should the patient survive, [it] appears to interrupt afterwards the process of adhesion between the pleural surfaces, and to arrest the steps which might otherwise be taken by nature… leads… into a condition favorable for gangrene, or encourages the formation of… purulent effusions.…\(^82\)

This explanation contrasted with Clarke’s brevity on the same topic, in its entirety.

> If it seems probable that internal haemorrhage is going on it has been recommended to bleed the patient to syncope [fainting], in the hope of promoting the formation of a clot. But this plan of

\(^79\) Travill, *Medicine at Queen’s*, 144.  
\(^80\) Clarke’s textbook was not used at the Kingston Women’s Medical College.  
\(^82\) Thomas Longmore, “Gunshot Wounds,” 491.
treatment is open to question. If outward haemorrhage is going on there will be no necessity for venesection. The external application of cold, or the internal administration of styptics will assist in arresting the flow of blood.83

Subtopics in Holmes’s anaesthetics chapter included “[c]ircumstances calling for artificial respiration or for tracheotomy” and “modes of death,” for example, respiratory and cardiac paralysis; Clarke mentions these aspects only in passing. It should be recognized that, in neither the men’s nor the women’s course of study, were the aforementioned textbooks the sole texts consulted.

The men’s and women’s colleges both recommended multiple texts for their surgery courses, possibly arising from the expectation that a deficiency in one text could be mitigated by explanations in another. The explanatory nature of Holmes’s three-volume textbook, when compared with Clarke’s, may have indicated that the teaching of surgery courses placed more emphasis on Holmes’s textbook at the women’s school than at its male counterpart. As noted in Chapter 3, Elizabeth Smith, one of Queen’s first female medical students, commented in her diary about the professors’ reluctance to lecture female students, “Dr. Fenwick… gives us separate lectures but on no day does he give us more than twenty minutes sometimes so rapidly & incoherently that we could not possibly take it down.”84 Once again, this reluctance to adequately lecture the female students may have led to the incorporation of Holmes's lengthier textbooks to supply comprehensive explanations.

Conclusion

In this chapter, we have seen that innovations within surgical practice influenced, by and large, surgical curricula within Queen’s-affiliated medical colleges. Whether it

84 Smith, ‘*A Woman with a Purpose*’, 288. See also Chapter 3, page 75.
was the innovation of x-ray, the awareness of the dangers associated with anaesthetics, or the decline in bloodletting as a therapy, surgical curricula were modified according to the forces of practice. Within these scientifically influenced curricula, instructors at the Kingston Women’s Medical College may have been hesitant to fully instruct their pupils, leading to the discrepancy between the Kingston Women’s Medical College’s curriculum and that of The Royal College. Notwithstanding these developments, the maturation of surgical curriculum at Queen’s-affiliated medical colleges was led by the scientific practice of surgery; the surgical practice dictated the education of its future practitioners.
Chapter 6

Medical Textbooks as a Vector for Examining the Curricula at Queen’s-Affiliated Medical Colleges

Exploring the years 1881 to 1910, this study has foregrounded the three clinical disciplines of obstetrics and gynaecology, the theory and practice of medicine, and surgery at Queen’s-affiliated medical colleges, using the textbooks of the time to track curricular changes. As demonstrated by the sources from these three disciplines, the medical student of the late-nineteenth and early-twentieth centuries confronted a mutable curriculum that was influenced by the decline of bloodletting as a therapy, the extension of antiseptic and aseptic procedures, as well as, anaesthesia and the discovery of the x-ray machine, among other scientific and technological innovations. The rate at which a textbook subsumed scientific innovations within its pages represented the larger societal movement toward their acceptance into the medical practice.

The effects of the growing abundance of scientific medical knowledge were widespread. With the new scientific knowledge, North America and Europe saw many specializations, such as obstetrics and gynaecology and bacteriology.1 The textbooks that were used at Queen’s-affiliated medical colleges responded to the new innovations of scientists and physicians in medicine, from the advent of antiseptic and aseptic procedures, to the development of bacteriology and the recognition of x-rays as both diagnostic and therapeutic tools. Even though x-rays were used as early as 1896 in

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1 Weisz argued that it was the abundance of scientific knowledge, along with the need for pedagogical divisions in medical knowledge during the training of physicians that led to the increase of specializations. For medical specializations in the United States, see Weisz, Divide and Conquer, 63-83, 127-47. Canada was not represented in Weisz’s Divide and Conquer study. See also George Weisz, “The Emergence of Medical Specialization in the Nineteenth Century,” Bulletin of the History of Medicine 77, no. 3 (2003): 536-75.
Kingston, textbooks under study demonstrate the gradual acceptance of x-ray technology for any problems beyond injuries to bones.\(^2\) By the early-twentieth century, x-ray technology enjoyed a wide range of uses and by the end of the period under study, it was an ingrained facet of the medical armamentarium in the theory and practice of medicine course textbooks. In the first decade, Queen’s Medical College professor James Third gave several demonstrations of x-ray technology and radiation therapy.\(^3\) Subsequently, textbooks omitted detailed explanations of x-ray technology; perhaps the faculty preferred to demonstrate the x-ray, rather than have students read about it. Possibly it was so pervasive that explanations were deemed unnecessary.

Meanwhile, Queen’s-affiliated medical colleges were conducting an experiment with the integration of women into medicine. Students at The Royal College and the newly inaugurated Kingston Women’s Medical College had theoretically identical curricula. However, their required reading lists showed that some textbooks differed between schools. An analysis of these textbooks revealed that those at the women’s college were considerably longer than those at the men’s, in numbers of pages words. For example, the section on surgery for gunshot wounds was 35 times longer at the women’s college than at the men’s. One possible explanation for this difference may be that the male faculty members at the Kingston Women’s Medical College were reluctant to lecture women students. Elizabeth Smith’s diary offered a testament to this observation.\(^4\)

\(^2\) Hayter, “Making Sense of Shadows,” 1249-56.
\(^3\) Ibid., 1255.
\(^4\) Regarding the physiology lectures, Smith remarked that “Dr. Fenwick ostensibly gives us separate lectures but on no day does he give us more than twenty minutes sometimes so rapidly & incoherently that we could not possibly take it down.” Smith, ‘A Woman with a Purpose’, 288.
Concerning the obstetrics and gynaecology textbooks, the period under study witnessed an increased belief in positivistic facts and statistics with details on antiseptic and aseptic procedures geared toward the prevention of puerperal fever. The same concerns were reflected in architecture when, in 1894, the Doran building was constructed as a sterile facility for parturient women. This period also saw the further development of anaesthetics during labour, first proposed in the 1840s. Once again, the textbooks used at the Kingston Women’s Medical College contained more elaboration than those of their counterpart, The Royal College.

In the late-nineteenth and early-twentieth centuries, the theory and practice of medicine course at Queen’s-affiliated medical colleges focused on the symptomatology of both common and rare diseases, as well as the armamentarium of pharmaceuticals used to treat these conditions. Through these textbooks, the trajectory of various technologies was observed as they rose and fell in popularity. In the period under study, the utility of the once-common therapy of bloodletting was in decline, leading to its disappearance from the medical books by the end of the period under study. By the early-twentieth century, visual representation of clinical findings, such as charts and graphs, began to appear. For example, William Osler’s influential textbook *The Principles and Practices of Medicine* provided many visual representations. In medicine too, the x-ray machine as a diagnostic tool was gradually accepted as a beneficial guide to patient care. Finally, textbooks used at the Women’s Medical College contained fewer charts and graphs and more explanation than those at The Royal College. Once again I suggest that the faculty

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at the Kingston Women’s Medical College relied to a greater degree on the textbooks than The Royal College.

An examination of the surgery textbooks reveals the changing nature of surgical practice and the possible gendered nature of surgical education. Although the chief purpose of surgical textbooks was to explain operative procedures, several medical conditions were also discussed; for example, hypochondriasis. By the turn of the twentieth century, however, surgical texts deleted some medical conditions. The surgical textbooks contained extensive explanations of bloodletting, indicating that, despite its ineffectiveness, it remained a therapeutic option. Likewise, the textbooks recommended the use of the x-ray for a variety of conditions, demonstrating that the technology was more readily and quickly accepted by surgeons than in medicine. Upon their initiation, anesthetic drugs had rapidly been accepted as improving the safety of surgery. By the turn of the twentieth century, however, textbook writers warned of anesthetic complications that could provoke death. A less controversial advance, antiseptic and aseptic techniques gradually became so commonplace that, by the first decade of the twentieth century, textbook writers did not bother to explain dressings. Returning to the gender dimension, it was found that sections of textbooks discussing various topics at the Kingston Women’s Medical College were significantly longer than their corresponding sections within The Royal College’s textbooks. For the third time, then, it seems that Kingston Women’s Medical College relied on textbooks to a greater degree than The Royal College.
Future Research

This investigation suggests some avenues for future research. For practical reasons, historical studies must have temporal limitations. This study spanning the years 1881 to 1910, examined the state of education immediately prior to the influential Flexner Report. The Flexner Report prompted the closing of several proprietary medical schools that did not offer adequate medical training. Several other medical schools altered their curricula to conform with Flexner’s recommendations. Queen’s Medical College did not receive Flexner’s harshest assessments; still, the faculty felt his criticisms of them were unjust. Yet they strove to improve the quality of the education they offered. Flexner’s criticisms of Queen’s Medical College were mainly with regard to his opinion that Kingston was too small to support the necessary teaching hospital.

Regarding the clinical experience at Queen’s Medical College, Flexner remarked that “[t]he clinical facilities are limited. The school relies mainly on the adjoining Kingston General Hospital, in which its faculty practically constitutes the staff. The average number of beds available is 80.” He concluded, “[t]he opportunities for out-patient work are too slight.” A comparison of this study with the curriculum at Queen’s-affiliated medical colleges after Flexner’s Report would demonstrate the impact (or lack of impact) of his Report on the institution. Did it result in an increased focus on clinical experience? Were any new technologies purchased or developed in the wake of his findings? Did it result in more scientific or positivistic elements in the curriculum? Finding answers to

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8 Ibid., 21.
9 For Flexner’s evaluation of Queen’s University, see Flexner, Medical Education in the United States and Canada, 322. For Queen’s Medical College’s response to Flexner’s Report, see Travill, Medicine at Queen’s, 198; Anthony Sanfilippo, “Towards Higher Ideals... Reflections on our Current and our First Accreditation Experience,” The Undergraduate School of Medicine Blog, April 13, 2015, http://meds.queensu.ca/blog/undergraduate/?p=2083.
these questions would allow a fuller assessment of Flexner’s impact on medical curricula. As a measure of the Canadian response to Flexner’s Report, Jacalyn Duffin suggested that the scholarly debate that Flexner generated after the publication of his findings assisted in the founding of the Canadian Medical Association Journal (CMAJ).

Future research would benefit from focusing on the practice of medicine in the greater Kingston area as a whole, rather than noted academics. What effect did Kingston’s practising physicians have on the curriculum being taught at Queen’s-affiliated medical colleges? Judging from the list of the residence locations of Queen’s graduates listed in the medical Calendars, several of these physicians remained in the vicinity of their alma mater. The contributions of alumnae, such as Alice McGillivray and Elizabeth Smith-Shortt, have been well-documented, but undoubtedly there are others of note. Possible sources for this type of research include the minutes of medical societies where faculty members and community physicians interacted, or collections of physician daybooks.

A comparison of the use of medical textbooks and, by extension, medical curricula at, for example, McGill University, Dalhousie University, and Queen’s-affiliated medical colleges would investigate the variety or consistency of medical training in Canada. What effects did textbook differences have on their respective curricula and institutional cultures, and vice versa? Comparative studies could also be

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11 Queen’s University, Faculty of Medicine, Forty-Ninth Session, 55-7.
12 For the contributions of Alice Skimmen McGillivray, see Travill, Medicine at Queen’s, 104, 124, 127, 144-5.
13 An example of a medical society worthy of exploration is the Kingston Medical and Surgical Society. For records of this society, see Minutes, Kingston Medical and Surgical Society, box 10, vol. 17, Medical Faculty 1184a, Queen’s University Archives, Queen’s University Libraries, Kingston, ON.
conducted across borders, contrasting institutions of similar stature such as Queen’s Medical College and the Women’s Medical College of Pennsylvania.¹⁴ To what degree were these schools united in their common interests of technologies such as antisepsis and asepsis procedures and the administration of anaesthetics?

One of the primary lines of inquiry motivating this study has been to identify the forces that influenced the modification of the medical curricula at Queen’s-affiliated medical colleges. Both scientific innovation and the gender of students at the Kingston Women’s Medical College were considered possible catalytic factors. A question related to this identification was the degree to which each of these factors contributed to curricula change. Although the question defies exact quantification, it was apparent that the impact of scientific innovation on medical curricula was enormous and far outweighed any possible curricular modifications due to the faculty’s unwillingness to lecture women. Scientific innovations exerted more influence on the curriculum at Queen’s-affiliated medical colleges than student gender. The gender of the students did not alter the imperative that each individual was expected to master a required body of knowledge for admittance into the medical profession. They wrote the same examinations, and the faculty believed that women could become valued medical practitioners, despite the views of individual members.

Considering the forces upon the curriculum of Queen’s-affiliated medical colleges, such as scientific innovation and gender, was not to deny the influence of localized factors, such as the individual preferences of professors who might favor one

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¹⁴ The Women’s Medical College of Pennsylvania was established in 1850. Similar to Queen’s-affiliated medical colleges in Kingston, in the 1880s this institution integrated many advancements to their curriculum, including bacteriology. See Peitzman, A New and Untried Course, esp. 1, 73-94.
textbook over another. Such favouritism did occur, for the obstetrics and gynecology course during the 1892-93 and 1893-94 academic years at the Kingston Women’s Medical College, Kenneth N. Fenwick used the textbook that he himself had authored. Other than Fenwick’s example, favouritism, if it existed, cannot be discerned in the historical records.

Notwithstanding the possibility that professors may have had preferences that dictated what textbooks would be used, scientific innovation was likely the dominant factor in the faculty’s selecting or altering the publications from which the curriculum would be drawn. Queen’s-affiliated medical colleges had a responsibility to ensure that their students had the most up-to-date knowledge in medical diagnostics and therapeutics. This imperative was the prime motivation for the establishment of several courses of study, and it was the impetus for the addition of a new course in bacteriology, clinical microscopy and diagnosis.\(^\text{15}\) If faculty members had decisive influence over the curriculum, one might expect a change of textbooks in each case where a faculty member was hired. Contrary to these expectations, when faculty member Alice McGillivray assumed her role as Professor of obstetrics and gynecology in 1885, she did not revise the

list of prescribed textbooks. At the Kingston Women’s Medical College in the 1885-86 academic year, the year of McGillivray’s appointment, Alfred Galabin’s *A Manual of Midwifery* was introduced into the curriculum. Both William Leishman’s textbook, *A System of Midwifery: Including the Diseases of Pregnancy and the Puerperal State*, and T. Gaillard Thomas’s textbook, *A Practical Treatise of the Diseases of Women*, were discontinued. William Playfair’s *A Treatise on the Science and Practice of Midwifery* remained in use. It should be noted that there is no way of knowing if McGillivray’s preferences were the primary reasons for the curriculum changes. These textbooks may have been chosen simply because they represented the best scientific medical knowledge of the day. No doubt, the up-to-date nature of the text played a part.

This study contributes to the scholarship, specifically at Queen’s-affiliated medical colleges, on the historical development of medical education, including corroborating the work of others and forging new ground for historical research. Kenneth M. Ludmerer has argued that the seeds of scientific innovation in American medical education were planted long before the Flexner Report (1910) and its subsequent reforms. The present research locates Queen’s-affiliated medical colleges at the forefront of the new scientific technology, on par with McGill University’s Faculty of Medicine. By 1910 and Flexner’s Report, Queen’s Medical College was a sophisticated, up-to-date institution, despite moderate clinical deficiencies.

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16 Travill, *Medicine at Queen’s*, 144.
17 Ludmerer, *Learning to Heal*, 100. For literature arguing that the Flexner Report (1910) was the beginning of the inclusion of significant scientific developments in medical education, see Bonner, *Iconoclast*, esp. xiv.
18 For scientific developments at McGill’s Faculty of Medicine, see Hanaway and Cruess, *McGill Medicine: Volume I*; Hanaway, Cruess, and Darragh, *McGill Medicine: Volume II*. 
If scientific innovation and co-education were important factors that shaped the curriculum at Queen’s-affiliated medical colleges during the period 1881 to 1910, these factors had differing legacies. While the scientific innovations and discoveries affected medical education and, indeed, medicine up to the present era, women’s medical education ceased after the 1893-94 academic year with the closing of the Kingston Women’s Medical College. The institution did not resume co-educational training until the mid-1940s. At that time, the institution was malleable, similar to the era under study, bending under the pressure of increasing social, if not technological, change.

In addition to confirming Ludmerer’s findings, this study highlights the benefits of the use of textbooks as a lens through which to examine curriculum. In the absence of direct primary sources, such as eyewitness accounts chronicling what took place in the classrooms, an exploration of the required reading textbooks provides a window through which to view the epistemological framework surrounding the curriculum content. Admittedly, the historian must be wary of inferring that the topics elaborated upon in a particular textbook bore a direct correlation to those elaborated upon in the classroom. Despite this caution and in the absence of other evidence, this historical study of textbooks illuminates the “dark alleyway” of curriculum.

19 Cataudella, “When Women Came to Queen’s,” 575-6.
Medical Curriculum Change At Queen’s Medical Colleges

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Appendix A

A List of Selected Textbooks Employed at Queen’s-Affiliated Medical Colleges, 1881-1910

This table represents the textbooks analyzed in the three clinical disciplines of obstetrics and gynaecology, medicine, and surgery that were the main focus of this study. Basic science textbooks, such as required readings for anatomy, physiology, pharmacology, toxicology, and bacteriology, as well as medical jurisprudence are not included. Please note that the textbooks appearing in this chart represent the primary source material used during this period of study and do not include every edition of these textbooks that may have been employed at Queen’s-affiliated Medical Colleges.

<table>
<thead>
<tr>
<th>Author</th>
<th>Book Title</th>
<th>Date</th>
<th>Publication Company</th>
<th>Publication Location</th>
<th>Edition/Volume</th>
<th>Year of Use and College</th>
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<tr>
<td>Allbutt, Thomas</td>
<td><em>A System of Medicine by Many Authors</em></td>
<td>1897</td>
<td>MacMillan and Co. Ltd.</td>
<td>London, England</td>
<td>Vol. III</td>
<td>1900-08 at Queen’s Medical College.</td>
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<tr>
<td>Bartholow, Roberts</td>
<td><em>A Treatise of the Practice of Medicine: For the Use of Students and Practitioners</em></td>
<td>1882</td>
<td>D. Appleton and Co.</td>
<td>New York, New York</td>
<td>3rd ed.</td>
<td>1890-92 at The Royal College. 1892-94 at Queen’s Medical College. 1884-89 at Kingston Women’s Medical College.</td>
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<tr>
<td>Hare, Hobart</td>
<td><em>A Textbook of the Practice of Medicine for Students and Practitioners</em></td>
<td>1905</td>
<td>Henry C. Lea’s Son &amp; Co.</td>
<td>New York, New York</td>
<td>1st ed.</td>
<td>1906-11 at Queen’s Medical College</td>
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<td>Osler, William</td>
<td><em>The Principles and Practice of Medicine: Designed for the Use of Practitioners and Students of Medicine</em></td>
<td>1892</td>
<td>D. Appleton and Co.</td>
<td>New York, New York</td>
<td>1st ed.</td>
<td>1892-1911 at Queen’s Medical College. 1892-94 at Kingston Women’s Medical College.</td>
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<td>Author</td>
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Number of Canadian published textbooks: 1  
Number of U.S. published textbooks: 17  
Number of British published textbooks: 6

The analyzed textbooks in obstetrics and gynaecology, the theory and practice of medicine, and surgery represent 25.0%, 60.0%, and 24.2%, respectively, of the total textbook count in each discipline.  
From 1881 to 1910, the recommended textbooks for the entire medical school curriculum, including obstetrics and gynaecology, the theory and practice of medicine, and surgery, and the basic science and clinical medicine courses of anatomy, physiology, pharmacology, toxicology, and bacteriology, as well as medical jurisprudence, totalled 318; 76 (23.9%) of these 318 textbooks were recommended for obstetrics and gynaecology, the theory and practice of medicine, and surgery, and 24 (7.5%) were analyzed in this study.²

¹ For the purposes of this calculation, multiple editions or volumes of the same textbook were counted as one textbook, except for Osler’s *Principles and Practice of Medicine*.  
² The total number of recommended textbooks for obstetrics and gynaecology comprised 8.8% of the entire medical school curriculum; the total number for the theory and practice of medicine comprised 4.7% and the total number for surgery comprised 10.4%. Please note that the 318 textbooks included all textbooks for the period 1881 to 1910, an era of many course introductions.
## Appendix B

### Inventions and Discoveries of Selected Technologies

<table>
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<tr>
<th>Date</th>
<th>Discovery</th>
<th>Inventor/Discoverer</th>
<th>Textbook Citations Author, Title</th>
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<td>1628¹</td>
<td>Physiological Research (heart)</td>
<td>William Harvey</td>
<td>Holmes (ed.), <em>System of Surgery, Vol. II</em></td>
<td>284-6</td>
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<td>1818³</td>
<td>Stethoscope</td>
<td>T. R. H. Laennec</td>
<td>Reynolds (ed.), <em>A System of Medicine</em></td>
<td>563-4, 583</td>
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<td>1829⁵</td>
<td>Laryngoscope</td>
<td>Benjamin Guy Babington</td>
<td>Reynolds (ed.), <em>A System of Medicine</em></td>
<td>18-21, 43</td>
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<td>1830⁷</td>
<td>Compound Microscope</td>
<td>Donné/Addison</td>
<td>Reynolds (ed.), <em>A System of Medicine</em></td>
<td>708</td>
<td>1880⁸</td>
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<td>1847¹³</td>
<td>Chloroform</td>
<td>James Young Simpson</td>
<td>Druitt, <em>The Principles and Practice of Modern Surgery</em></td>
<td>584-601</td>
<td>1867¹⁴</td>
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<td>1851¹⁵</td>
<td>Ophthalmoscope</td>
<td>Hermann von Helmholtz</td>
<td>Holmes (ed.), <em>System of Surgery, Vol. II</em></td>
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<td>Date</td>
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<td>1866&lt;sup&gt;19&lt;/sup&gt;</td>
<td>Clinical Thermometer</td>
<td>Thomas Clifford Allbutt</td>
<td>Flint, <em>A Treatise on the Principles and Practice of Medicine</em></td>
<td>99-100</td>
<td>1881&lt;sup&gt;20&lt;/sup&gt;</td>
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<tr>
<td>1867/1880s&lt;sup&gt;21&lt;/sup&gt;</td>
<td>Germ Theory</td>
<td>Joseph Lister/Louis Pasteur/Robert Koch</td>
<td>Flint, <em>A Treatise on the Principles and Practice of Medicine</em></td>
<td>1040</td>
<td>1881&lt;sup&gt;22&lt;/sup&gt;</td>
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<tr>
<td>1881&lt;sup&gt;23&lt;/sup&gt;</td>
<td>Sphygmomanometer</td>
<td>Von Basch</td>
<td>Hare, <em>A Textbook of the Practice of Medicine</em></td>
<td>521</td>
<td>1905&lt;sup&gt;24&lt;/sup&gt;</td>
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<tr>
<td>1889&lt;sup&gt;25&lt;/sup&gt;</td>
<td>Rubber Gloves</td>
<td>William Halsted</td>
<td>Foote, <em>Minor Surgery</em></td>
<td>222</td>
<td>1908&lt;sup&gt;26&lt;/sup&gt;</td>
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<tr>
<td>1890&lt;sup&gt;27&lt;/sup&gt;</td>
<td>Diphtheria Vaccine</td>
<td>Emil von Behring</td>
<td>Osler, <em>The Principles and Practice of Medicine</em></td>
<td>157</td>
<td>1903&lt;sup&gt;28&lt;/sup&gt;</td>
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<tr>
<td>1895&lt;sup&gt;29&lt;/sup&gt;</td>
<td>X-ray</td>
<td>Wilhelm Conrad Röntgen</td>
<td>Osler, <em>The Principles and Practice of Medicine</em></td>
<td>895</td>
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</table>
Endnotes for Appendix B

8. Microscopic examinations were evident throughout the medical textbooks of the 1880s. For example, C. Hilton Fagge referred to microscopic specimens while discussing the inflammation of heart valves. C. Hilton Fagge, “Disease of the Valves of the Heart,” in vol. II of *A System of Medicine*, ed. J. Russell Reynolds (Philadelphia: Henry C. Lea’s Son & Co., 1880), 708.
13. Ibid.
15. Weisz, *Divide and Conquer*, 211.
18. In this example, Ramsbotham used cell theory to explain the formulation of the placenta. Ramsbotham, *The Principles and Practice of Obstetric Medicine and Surgery*, 69.
Appendix C

Conditions Discussed in Medical and Surgical Textbooks

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