Caring and Curing
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Creating a conceptual framework from which to understand nurses' relationship to science has intrigued, and sometimes confounded, several generations of nursing scholars and educators. More recently, however, this question of the nurse-science dynamic has been raised by historians of women, who themselves have puzzled over how to fit nurses and the work they performed into the model of scientific medicine that developed in the nineteenth and twentieth centuries. For the most part, feminist scholars have concluded that until at least the post-World War II years nursing work fell outside the modern paradigm of science. This chapter challenges that conclusion by examining the daily practice of nurses at one large urban hospital in Canada during the 1920s and 1930s. As such, it shifts the historical focus away from the celebrated careers of the elite to examine how contemporary scientific concepts affected the work performed by ordinary nurses on the job. This study of the Winnipeg General Hospital and its graduates during the interwar decades reveals the centrality of science to the workplace experiences of nurses and provides some insights into the relationship between women and science in the twentieth century.

Science and scientific thought have been frequent topics of discussion in the scholarly literature generated within the field of nursing itself, whereas feminist scholarship has only recently taken up this issue. Women's historians have characterized the content of nursing work in two ways. Some authors have emphasized the division of labour between caring and curing: doctors cure, nurses care. This "rigid distinction," claims Margaret Versluisen, was enforced in the late nineteenth century when the medical profession monopolized the "heroic saving of the sick" and nurses were allocated "mundane housekeeping chores." Others have stressed the devaluing of nursing work, which
coincided with the devaluation of women’s work in general. As Canadian scholar Judi Coburn has argued,

a certain class of men . . . took the more prestigious function of “curing” away from women, leaving them with “caring” (often indistinguishable from domestic work).³

According to this approach, the caring part of work should really be seen as domestic drudgery. Nurses were not ladies with the lamp, but domestic servants, performing devalued and demeaning tasks involved with maternal care, albeit in a more elaborate uniform.

A second framework utilized by women’s historians to understand nursing practice links nurses more closely to science by defining nursing as an extension of medical care. Nurses were doctors’ handmaidens, the “physician’s hand.” Within this approach, the 1940s and 1950s are considered critical decades during which many technical skills, such as taking blood pressures and starting intravenous drips, were transferred from doctors—who no longer had the time to perform what were by then fairly routine tasks—to Registered Nurses (RNs); at the same time many domestic duties previously performed by RNs were passed on to other hospital workers such as ward aides, who themselves had only recently been introduced into the health care hierarchy. The 1940s and 1950s are seen as the decades in which the exploitative and oppressive era of apprenticeship training and staffing of hospitals was finally phased out, and when graduate nurses took their rightful place in the curing end of the caring-curing dichotomy.⁴

Nursing historians who share this perspective have been hesitant to claim scientific status for nurses’ work during the years “before the age of miracles.”⁵ For instance, researchers out of Dalhousie University School of Nursing have asked whether nursing work in the interwar decades was “scientific or ‘womanly ministering.’” They concluded that “because of the limited amount of medical knowledge of the 1920s and 1930s” nursing’s “hand’s-on technique . . . would have been considered to have been appropriately scientific for the era.”⁶ According to these authors, the absence of technical apparatus during the interwar decades handicapped the scientific practice of both doctors and nurses alike, thus the “physician’s hands” brought as little science to the bedside as did the physicians. While this analysis correctly identifies the limited range of equipment employed by either doctors or nurses, it conflates scientific theories, upon which modern medical practice rests, with the technological interventions that have characterized post-World War II health care. By failing to seriously examine the theoretical basis of
nurses' work, this second approach, like the first, defines nurses out of the realm of science, at least in the pre-World War II era.

Given these analyses it is not surprising that nursing has been excluded by researchers investigating the larger issue of women's relationship to science. For example, the recent collection of essays edited by Marianne Ainley, *Despite the Odds: Essays on Canadian Women and Science*, considers a wide range of women's "scientific" activity ranging from botany to photography to sociology. Yet, despite this impressive effort at inclusiveness, the collection does not address the largest single group of women who, in the twentieth century, have been most closely involved in scientific pursuits—nurses.

Not all feminist historians have been so willing to dismiss nurses' work as unscientific. Informed by the growing field in social history of medicine, scholars such as Susan Reverby have drawn on the intellectual history generated within nursing itself, and examined nursing efforts to build science into nursing practice. Reverby's 1989 article "A Legitimate Relationship: Nursing, Hospitals and Science in the Twentieth Century" as well as her 1987 monograph *Ordered to Care: The Dilemma of American Nursing* both examine efforts by nursing leaders to come to terms with the scientific component of nursing practice and in doing so the author provides important analytical links between nursing history and that of medicine and science. In dissecting the tensions among service, professionalism, and science, Reverby focuses on the educators and administrators who constituted American nursing’s elite. This chapter builds on Reverby's analysis by exploring the workplace practice of ordinary nurses and the influence that scientific theory and scientific management had on their daily lives. As such, this article complements Meryn Stuart's contribution to this collection. Her paper examines the experiences of public health nurses in Northern Ontario who, as women and outsiders, faced complicated and contradictory demands on the job. Unlike Stuart's study, the focus here is on science rather than gender and region and pertains to nurses training and working in an urban centre, for whom medical practitioners and the medical profession were never far away.

An examination of the work performed on the wards of the Winnipeg General Hospital (WGH) between 1920 and 1939 reveals that science played a larger role in everyday life of nurses than the scholarly literature suggests. Like most North American hospitals of the day, the WGH relied primarily on the labour of student nurses. These students apprenticed on the ward for three years in return for training and certification as Graduate or Registered Nurses. In turn a small staff of RNs
was employed to supervise and instruct students through the various stages of apprenticeship. Although it is true that between 1900 and 1940 the number of RNs on institutional payroll did increase,\textsuperscript{10} it was not until after World War II that improved health care funding transformed hospitals into large employers of not only graduate nurses but also subsidiary workers. Until that time, most institutional care was provided by students being groomed in the many facets of modern nursing, while the majority of graduates took their acquired skills into the private health care market where they provided one-to-one care for individual paying patients.

While hospital employment played a less significant role in the lives of graduate nurses than did private duty work, focusing on the element of institutional practice is nonetheless necessary and important. It was in the hospital that nurses learned the basics of their technique, which they would then carry with them into private duty or public health work.\textsuperscript{11} As well, during the interwar years a growing number of Canadians elected to receive treatment in private hospital wards or pavilions. These paying patients hired private nurses as "specials" to supplement the institution's student labour and as a result private duty nurses increasingly found themselves back in the hospital setting, although they continued to resist full-time staff positions. And finally, because nurses first learned the various elements of nursing practice in the hospital setting, documentation for that phase of their careers is significantly more complete. Not only did institutional staff generate a greater diversity of sources, but institutions themselves have served as important archival repositories for historical records. Thus, this research is based on student notebooks—the red handbooks, small enough to fit in a uniform pocket, in which novices transcribed the mandated steps for each procedure they learned—as well as on school yearbooks, and hospital reports, all housed in the WGH School of Nursing Alumnae Association Archives. Oral interviews conducted with graduates of the WGH School from the interwar years complement the documentary research base. As the following discussion will reveal, the interviews contain vital documentation about the relationship between nursing practice in the private market and the skills learned on the wards of the WGH.\textsuperscript{12}

During their three-year apprenticeship, students learned their repertoire of skills first in the classroom, then on the ward, with the level of responsibility and difficulty increasing as the students advanced.\textsuperscript{13} Supervision was limited, but frequent repetitions of the various routines ensured nurses' mastery of the expedient execution of assigned tasks.
Nurses graduating from their apprenticeship program were expected to be competent in six categories of work.

One area of expertise included administrative tasks such as labeling and storing patients' personal possessions when admitted, charting and recording all patient treatment, medication, and tests, and taking stock of hospital supplies. Nurses were required to print neatly all charts and correspondence and thus the instructors evaluated students' red handbooks and lecture notes as much for neatness as for accurate content.\(^1\) Feedback on 1933 WGH graduate Violet Erickson's first ninety-nine pages indicated that her work was "much improved. Would be neater underlined in red ink. Very Good."\(^2\) Another WGH graduate, Beryl Seeman, did not expect the Nursing Superintendent Kathleen Ellis to have noticed her amongst the large student population. Years later, however, when Seeman had advanced into a supervisory position herself and was reintroduced to Ellis, the latter responded: "I remember you. You had very good printing."\(^3\) The appreciation administrators like Ellis expressed for simple printing skills was somewhat infantilizing, but also was appropriate within the hospital's non-mechanized record-keeping system.

The second set of responsibilities entrusted to hospital apprentices embraced the various diagnostic tests ordered by medical staff. Tests were performed on the ward and then either sent to the laboratory for analysis or results were transcribed directly onto the patients' charts.\(^4\) All tests required that nurses prepare the necessary equipment, complete the proper documentation identifying the type of sample and to whom it belonged, and record results on the correct chart.

The third area of nursing practice, assisting medical and surgical personnel, involved some of the most precise techniques demanded of nursing staff. Nurses were responsible for preparing patients and for assisting doctors in examinations or treatments performed on a ward, or in a specialty service, such as the Operating Room.\(^5\) To facilitate the efficient use of doctors' time, pre- and post-operative examinations, shavings, dressings, dietary regimens and patient services were all assigned to nursing staff. For example, "aspiration," a technique utilized to remove excess fluid from the pleural cavity, required that the assisting nurse paint the injection site with iodine and then drape the patient so that only the treatment area was visible to the doctor. She subsequently tested the equipment, first in the service room and then, once sterilized, again while the doctor was inserting the needle. If all went well neither patient dignity and confidence, nor doctor's time and reputation, were lost.
While these patient services were performed in concert with doctors, other tasks were performed by nurses alone. This fourth category, therapeutic nursing duties, was comprised of the counter-irritants, medications, and numerous enemas, douches and lavages designed to “wash out” various anatomical parts. In this era before the introduction of sulpha drugs, counter-irritants—a range of poultices, packs, stupe, and foment that were placed on the diseased or infected area—were particularly important aspects of nursing practice. For patients on the medical wards, mustard plasters and linseed poultices were commonly prescribed.\(^1{9}\) On either medical or surgical services, real or threatened sites of infection were usually treated with foment.\(^2{0}\) This latter procedure was a particularly labour-intensive one, which entailed placing strips of cloth in a linen holder attached to wooden handles. Nurses lowered everything except the handles into a vat of boiling water and when the fabric was hot enough the nurse carried it to the patient’s bedside, placed the fabric or foment on the infected site, and then covered it with more dry cloths. This might be performed up to three or four times an hour and each time the nurse had to be careful to avoid burning the patient.\(^2{1}\)

Not all nursing responsibilities had direct therapeutic value. The fifth area of practice, the maintenance of the ward and equipment, served the hospital infrastructure. The tasks defined in this category sometimes involved simply cleaning the supply room—a job students on night duty often claimed they were doing when a midnight nap was required—but also included the critical assignment of sterilizing the many medical appliances used in the era before disposable supplies. Rubber gloves for instance had to be soaked in a 2% Lysol solution for twenty minutes, washed, and rinsed with hot then cold water, and finally dropped in boiling water for three minutes.\(^2{2}\) Glass and rubber items each called for a particular regimen for cleaning and storing. If broken or ripped, replacement costs came out of nurses’ small monthly stipend. This equipment was expected to be ready for use when tests, or medical or nursing procedures were undertaken.

In addition to maintaining vital hospital supplies, nurses were also responsible for cleaning and organizing the ward itself. Every day each patient’s bed, nightstand and chair had to be tidied or washed. Following a patient’s discharge a specific routine was followed according to the type of ward and particular case. While nurses themselves were not responsible for laundering bedding, they did have to soak any bloodstained linens before sending them down to the laundry.\(^2{3}\) If the outgoing patient was an “infectious” rather than
"clean" case, a substantially more elaborate procedure was required to sterilize frame, mattress and linens in order to ready that bed for a new occupant.

And finally, nursing work involved the many personal service tasks of bedside care, feeding patients, assisting them with ablutions, and maintaining the cleanliness of bed and patient alike. The skills that constituted this sixth category of nursing practice combined personal and therapeutic functions. For instance, nurses not only assisted patients with morning and evening toilets and with baths but in addition took responsibility for specific cleaning care of external genitals following a urogenital operation to prevent post-procedural infections. Of course, instructions for some procedures stressed gentility and decorum more than therapy. When a female patient was getting into the bathtub, the nurse was to give her physical support, so the patient could not slip or fall, but the nurse was not to emphasize the patient's dependency; "If she is unable to help herself and does not do it, give some excuse and help her." Patient sensitivities were also considered during mealtime. When feeding patients nurses learned that "too full a spoon or one that drips is inexcusable." Some instructions seemed difficult for even a veteran of international affairs to follow. For example, nurses should "never argue with a patient concerning her meals, be diplomatic rather than use force" but at the same time were to be "very strict and give only food that is ordered by doctor." Similarly, nurses were told "do not discuss food with patient," but were also instructed to "try and find out patient's likes and dislikes" and to "encourage patient to masticate food well."

The degree to which students could negotiate these somewhat contradictory directives depended, in part, on where in the hospital they were working. To be fair, retired nurses insisted that treatment did not differ between private and public wards and that all patients received the same care. However it seems clear that standards of gentility were more easily met on private wards wherein an upper-class domestic decor, complete with silver flatware and china dishes, was replicated, and where the patient-nurse ratio was substantially reduced. As one WGH administrator stressed, "the service on the private wards would be generally reflected in the patronage of the Hospital." Of course, catering to private patients created its own frustrations, as nurses' popular culture revealed. The 1923 WGH yearbook included the poem "The Training," which proclaimed:

On private flats she learned to dust,
To wait and smile, as there you must.
While patients tell long tales
On public flats she learned to rush,
On flying feet some cries to hush
While answering distant wails.³⁰

Even if the content of nursing care did not differ between private and public wards the conditions under which care was dispensed certainly did.

Within each of the above six categories two features stand out. The first is that nursing practice in this era must be defined and described as scientific in that it was based on the theoretical understanding and practical application of the germ theory of disease.³¹ From at least 1910 student nurses at the WGH attended lectures on Bacteriology and were instructed in the “Historical Theories of the Disease” beginning with Hippocrates and Galen, up through to Pasteur and Lister.³² The historical and theoretical basis was accompanied by detailed instruction regarding the application of antiseptic and aseptic technique. Antiseptic surgical technique, a system to “fight bacteria already in the wound” developed by Joseph Lister, is the best known of the two.³³ Perhaps more important for nurses in the 1920s and 1930s, however, was aseptic technique, which ensured patients did not acquire any new bacteriologically based afflictions while admitted for whatever health problem they already had. It was particularly important for the public wards of up to forty patients, all of whom were suffering from different problems, and all of whom potentially might introduce new and dangerous diseases into the hospital environment. Medical and nursing attendants alike could be confident that if they followed aseptic technique they would not be a source of cross-infection.

For nurses, aseptic technique demanded repeated applications of soap, water, and to a lesser degree, alcohol. It was also labour-intensive. The procedure for assisting with a surgical incision illustrates that any procedure that created a wound, and therefore a potential site of infection, necessitated the “strictest aseptic technique” from nursing staff.³⁴ The anatomical region to receive the incision first had to be washed with “plenty of hot water and soap” and then a “sterile bundle” of necessary equipment was taken to the bedside on a sterile tray. The nurse then screened the patient, unfolded the bundle and, leaving one corner of the cloth over its contents, transferred with sterile forceps the equipment from the tray to the table. She then draped the patient’s bedding appropriately, scrubbed her own hands for five minutes, returned to the patient and draped the anatomical area with a sterile drawsheet and towels, all the while taking care not to contaminate her
fingers. She scrubbed the anatomical area three times with sponges appended to forceps, first using green soap and water, then ether, then alcohol, and finally applied a sterile towel or dressing and bandaged it in place. By carefully following this procedure nurses created a sterile region in which surgeons made their incision.

To create and preserve aseptic conditions, nurses had to execute the carefully delineated set of steps established for each procedure. The elaborate procedure for administering a hypodermic needle exemplifies this process. Nurses prepared for hypodermic injections by setting up a small tray with the medication, a sterile jar with alcohol and sterile sponges, one jar containing the needles, another with the alcohol and hypodermic syringe, a small bottle of alcohol and one of sterile water, an alcohol lamp and spoon, and matches. The seventeen-step process that follows is worth reproducing in its entirety in order to illustrate the interconnections among the various categories of nursing tasks.

1. Have medication ready
2. Test your needle
3. Place needle with stilette in spoon and cover with water
4. Boil over lamp 2 min
5. Place cover over wick
6. Rinse out barrel of syringe
7. Draw amount of water required into syringe
8. Discard water remaining in spoon
9. Attach needle to syringe and remove stilette
10. Place tablets on spoon and dissolve with water in syringe
11. Draw prepared fluid into syringe, taking up last drop
12. Expel air from syringe
13. Pick up sponge on point of needle and replace tray in cupboard
14. Cleanse the area, make a cushion of flesh and insert quickly
15. Withdraw slightly and insert fluid slowly
16. Withdraw needle quickly, massage area gently with a circular motion
17. Chart time, medication and initials immediately after giving drug, and mark off in order book

This example demonstrates the relationship between the specific therapeutic technique (injecting a medication into a patient) and the regime for non-therapeutic duties (maintenance of wards and equipment). Not only did nurses depend on the aseptic technique of the injection itself, they also relied on the aseptic preparation of basic ward equipment such as jars and water. Thus the step-by-step procedures
involved in the domestic tasks of ward cleaning and maintenance, usually interpreted by historians as evidence of nurses' subordinate domestic status, take on new importance when seen as part of a larger system of asepsis for which nurses were responsible.

The above example also illustrates the second influence of science on nurses' work, that of scientific management brought to science. Pioneered in the late nineteenth century by Frederick Winslow Taylor, scientific management was designed to establish managerial control over industrial production. Taylor and the "efficiency experts" who followed him would study a particular task, break it down into its component parts and then, with the help of their trusty stopwatches, determine the fastest method of performing each part. Scientific management increased employer control over production in several ways. It allowed managers to increase productivity per worker-hour by assigning one small part of production to a worker who would repeat that task throughout his or her shift, and it ensured that employees could be easily trained and therefore easily replaced. Most important perhaps, by dividing conception from execution, scientific management increased employers' knowledge and authority over how goods were made. Appropriating the term "scientific" for a process that was in fact not rooted in any theory of science served to legitimate employers' control over production, which in turn enhanced their position in the struggle over workplace control.

The influence of scientific management on nursing procedures in the interwar period is clearly evident. Each feature of nursing practice was subdivided into its component steps and students were drilled in the precise execution of each step. Conceptual authority over how a particular procedure should be performed remained in the hands of doctors, administrators and educators, while nursing students and staff remained responsible for completing the prescribed tasks according to the standard curriculum. Thus the elaborate delineation of step-by-step execution was provided for duties that did not appear to depend upon a "scientific principle" such as asepsis. For example, bedmaking, a task with which all raw recruits to the WGH would be familiar, was rationalized. Whatever system they had applied to the chore in their own homes, at WGH nurses learned that when stripping a bed, the table and chair had to first be moved away from it. The nurse was then required to place the pillow on the chair with the closed end of the pillowcase towards the door, loosen the linen and fold it in quarters, beginning at the foot of the bed and working up to the head. Similarly detailed
instructions like this were provided for the remaining elements of the bedmaking process.\textsuperscript{38}

The establishment of standardized procedures for such simple tasks obviously served other agendas than those necessitated by scientific theories of disease. The structure and content of nursing work reflected the powerful influence of “scientific” or rationalized production that had proven so successful in the industrial sector.\textsuperscript{39} Even the imagery of the 25- to 40-bed wards, with each bed equidistant, each patient’s table and chair placed right next to their beds, each patient covered in identical bedding, with all blankets tucked tight at the end and sides,\textsuperscript{40} evokes mental images of assembly lines. Not surprisingly hospital vocabulary matched the interior design in its allusions to industrial production. Institutional administrators invoked the language of “efficiency,” “standardization,” and “percent capacity.”\textsuperscript{41} In 1921 WGH Superintendent Stephens included in his annual report “an analysis of the work of the year, that is, what might be called ‘the production sheet’ of the Hospital.”\textsuperscript{42} Like their counterparts in capitalist enterprises of the day, hospital administrators routinized staff procedures in order to effectively and efficiently “produce” healthy patients but also to overcome the questionable reputation that hospitals still had in this era, all while operating on limited budgets.

The reasons that hospital administrators and medical practitioners created and endorsed the rigid, routinized, and rationalized set of nursing procedures are obvious. Rationalization of technique ensured that the small staffs of RNs could supervise the large classes and high turnover of student nurses. As well, the growing number of patients could move in and out of the hospital without getting their charts, their diagnosis, their results, their treatments, their personal possessions or even their babies mixed up or lost. Standardized printing techniques ensured that the modern hospital generated administrative records accounting for patient therapy. Precise procedures for diagnostic tests, for assisting medical staff, and for performing therapeutic nursing duties ensured that the institution promoted its reputation as an appropriate location for medical treatment. The maintenance of ward and equipment ensured that nurses “produced” supplies and equipment that were not purchasable. Bedside nursing enhanced a hospital’s reputation for gentility and decorum, necessary to attract private paying patients. Not only did nurses provide doctors with an inexpensive, skilled and subordinate therapeutic labour force—the physician’s hand as we know it—but more importantly nurses ensured that once patients were admitted to the institution they were safe from possible cross-
infection, and they would leave in better, rather than in worse health. That was, after all, the point.  

Indeed, the nursing staffs of Canadian hospitals during the 1920s and 1930s served their masters well. It is for this reason, perhaps, that feminist historians, committed to critiquing gender asymmetry, have been hesitant to seriously examine nurses’ relationship to science in this era. Nurses may have assisted the medical profession in its quest for scientific therapy, but scientific management ensured that nurses had little or no control over the content of their work. Rationalization was facilitated, as Susan Reverby has shown, by nursing leaders and administrators who embraced scientific management techniques in efforts to consolidate nursing’s position as critical to efficiently run hospitals. But surely rank-and-file practitioners chafed under this oppressive regime and perhaps even engaged in some sort of resistance to what labour historians would see as the deskilling of nurses work? To some degree ordinary nurses did, by leaving institutional work as soon as they graduated. Rejecting the constraints of hospital life did not mean, however, that nurses abandoned the scientifically defined practice they learned there. Evidence from nurses who trained and worked in the interwar decades suggests just the opposite. While some nurses did resent the lack of creativity their education entailed, by and large the women who trained and worked in the 1920s and 1930s accepted and endorsed what they termed their “technique.” Rather than accept nurses’ attitudes as evidence of complicity in their own subordination, or as a reflection of their uncritical acceptance of leaders’ professionalizing strategies, this examination of nurses’ work at the Winnipeg General Hospital argues that while science—both in terms of scientific medicine and scientific management—may have served medical authorities well, it was also used by nurses to define and defend their position in the workplace and the marketplace. Nurses accepted the rituals of their daily practice for several important and revealing reasons.

The specific rituals of their practice empowered nurses to define for themselves what constituted good nursing. Rather than place nurses on one side or the other of the care—cure dichotomy, this definition enabled nurses to integrate caring and curing in daily tasks. Domestic and therapeutic functions were embedded in even the simplest of tasks, such as making a bed. A carefully made bed promoted the uniformity of ward presentation (highly valued by nursing supervisors) and ensured that patients’ looked respectable and properly attended when receiving their medical or familial visitors. But a carefully made bed also prevented patients from acquiring bedsores, a “form of ulcer due to
pressure” which were a cardinal sin in nursing practice. Given the
length of time some patients spent at the hospital and the length of time
patients stayed in bed following hospital procedures, keeping a patient
comfortable was not always easy. Patients might develop bedsores from
“indirect” causes, such as old age or illness, or from “direct” causes such as
“wrinkled bed linen, crumbs, lack of proper care and cleanliness, [and] continued pressure” but in either case “prevention” was the surest
treatment. A carefully made bed, and an evening massage, went a long
way towards preventing bedsores and promoting a good night’s sleep.
Not only did such preventive care aid the patient’s recovery, it also
ensured that nurses did not have to participate in the long and labor-
ious procedures necessary to heal bedsores once they erupted. Thus
given the therapeutic regimes of the day, a well-made bed was central
to pre-empting both unnecessary ailments and the accompanying cura-
tive labour.

Integrating caring and curing was particularly important to
nurses since much of their work entailed performing a number of func-
tions at once. Sometimes this meant temporarily assuming the duties of
medical practitioners, particularly in services such as obstetrics. Under
normal circumstances, nurses assisted interns or private practitioners
to manage the birth, and then provided post-partum care for mother and
child back on the ward, or in the home once the doctor had left. In
both home and hospital, nurses were never certain that medical assis-
tance would arrive on time. For example, at the WGH enemas were
commonly given to parturient women as a natural method to induce
labour, but this often had more rapid effects than predicted. Isabel
Cameron recalled that doctors expected to be in attendance “but mater-
nity work is very uncertain” and deliveries would sometimes occur on
the ward, rather than in the case room, and before medical staff could
be summoned. Even more worrisome were the occasions when
attending physicians failed to arrive to preside over home deliveries.
This temporary assumption of medical duties led some nurses to wish
that more substantive obstetrical training had been provided.

Good technique also included a certain degree of innovation in
order to recreate the appropriate conditions of nursing when providing
home care. Long-time VON staff nurse Florence Paulson carried her
black bag with her at all times. Its contents, including alcohol, forceps,
aprons, and rubber gloves, permitted her to create a small sterile field
within a client’s kitchen and thus execute a specific procedure without
the threat of infection. Improvisation included making needed equip-
ment, since items like Q-tips and gauze pads were not readily available in many rural areas.\textsuperscript{56}

As well, nursing technique included functions that extended beyond that of medical therapy, and indeed extended beyond the life of the patient. Paradoxically, it was the "care of the dead" that integrated all the administrative, therapeutic, and proprietary elements of nursing technique. Immediately after a patient ceased to breath the nurse began an elaborate set of steps designed to ensure the smooth transition of the corpse from the hospital to the morgue or funeral home. The nurse first confirmed her unofficial diagnosis with an intern and then notified the attending physician. Once family members had left the bedside—having been "treated with kindness and courtesy"—the nurse contacted the admitting office to arrange for removal of the body. Assembling the necessary equipment at the bedside "as when giving bath," the attendant straightened the body out on the bed and closed the deceased's eyes. Jewelry was removed and the patient's valuables were listed on the "value card." The nurse washed the body, hands and face, using ether to remove any marks, and then redressed any wounds. The nurse, or the orderly if the deceased was male,\textsuperscript{57} used gauze to pack the body's orifices and to tie the legs together, the jaw shut and the arms crossed. If the patient had died from an infectious disease, Lysol was used to wash the body, and forceps used to pack the orifices. As part of the final toilet, the nurse then inserted any false teeth, lubricated lips and eyelids, and arranged the patient's hair, combing and braiding it or "if in a home do the hair in the usual way." A tag stating the full name, ward, date and cause of death was attached with bandages to the wrist and neck, and the body was wrapped in a clean sheet.

At that point an orderly removed the corpse, and, when the hall was cleared of any living patients, the deceased was removed from the ward with "dignity and respect." The administrative duties of the nurse then continued. The patient's chart was completed with details of the time and cause of death, valuables and value card were sent to the cashier, the list of clothes and any other belongings were sent to the admitting office together with a bundle of any possessions. Thus even in death nurses laboured to ensure the dignity of the patient, guarantee the bureaucratic efficacy of the hospital, maintain aseptic conditions on the ward, defer to the diagnosis of the doctor, and comfort the survivors.\textsuperscript{58} As this example illustrates, the scientific underpinning of nurses' work—the many rituals of good technique—did not place nursing on one side or the other of the caring—curing dichotomy, but rather
science permitted nurses in the early twentieth century to resolve that dichotomy. For nurses caring was curing.

For working nurses, good technique not only facilitated self-definition, it also ensured self-protection. Careful adherence to the many steps involved in each procedure defended nurses against exposure to dangerous diseases. In an era when diseases that we now cure easily were then deadly, nursing technique was particularly important to practitioners providing bedside care. Nurses recognized that the most dangerous patients were those being treated for one affliction but also carrying other undiagnosed diseases. Medical and nursing commentators throughout the interwar decades decried the high frequency of tuberculosis among nursing personnel, while many hospital training schools employed medical and nursing personnel just to treat institutional staff.59 As part of this preventive strategy, students learned that the study of bacteriology was important for both theoretical and practical reasons. Nurses were expected to understand the "habits and characteristics of the organisms . . . [that is,] the living world of germs around us" not only so that attendants could "intelligently follow the progress of the disease" but also so that they could "protect" themselves.60

Students such as Myrtle Crawford learned the value of good technique the hard way. Crawford contracted mumps while nursing a mumps victim at the King George, Winnipeg’s infectious diseases hospital affiliated with the WGH. As she recalled "I'm short and in trying to lift [the woman] I was very close to her and she coughed right in my face." The young apprentice landed in the hospital for two weeks, during which time her supervisor asked if Crawford would consent to being used as part of a teaching clinic. Crawford agreed and shortly thereafter the supervisor brought a group of student nurses "to see this nurse who had gotten mumps." When asked "did you wash your face with soap and water immediately afterwards," Crawford responded that it had not occurred to her, whereupon the supervisor seized the didactic moment and pronounced “so you see it’s your own fault you got these mumps.”61 Retired nurses acknowledged the danger of infectious diseases such as tuberculosis or diphtheria, and often had classmates who fell prey to such ailments, but also credited their good health to good technique.62 For their own protection, nurses embraced scientific explanations for the cause of, and the solution for, communicable diseases.

Nursing technique empowered practitioners in a third way. By providing a clear definition of their job it allowed nurses some grounds
on which to defend themselves against unreasonable demands by doctors, patients, or administrators. Adherence to specific rituals offered nurses one such set of limits with which to resist unfair demands or criticisms. Unlike workers in factory production, personnel in the service sector such as health care workers had to contend not only with supervisors but also with an animate "product," the patient. As Susan Porter Benson has argued in her work on American saleswomen "the two-way interaction between workers and managers became a complex triangle of saleswomen, managers, and customers." If managers and customers "exerted unified pressure" the saleswoman held little workplace authority, "but when she could play one off against the other she could create new space for herself on the job." For nurses, similarly complex workplace relations involving worker (nurse), doctor, patient and administrator demanded an even greater sense of the occupational boundaries and limits.

In the hospital, conflict could and did develop between nurses on the wards and their supervisors, either medical or nursing. The most forceful forms of overt conflict occurred between nurses and unco-operative or unhappy patients. For example, Ingibjorg Gross once received instructions to treat a patient with an infection by applying fomentos to an infected area every fifteen minutes during the night. Gross did so, each time being careful not to wake the patient. The next day the doctor mentioned the fomentos to the patient, who replied that he had received no such treatment. In front of all the other patients, the doctor promptly questioned Cross regarding her alleged negligence. Her defence that she had followed the prescribed treatment was corroborated by the other patients who reported that every time they had woken in the night they had witnessed Gross dutifully applying her fomentos. Somewhat annoyed, the doctor instructed Cross to continue her treatment, but to wake the patient for every procedure. The tactic worked, and Gross recalled that the exhausted recipient of her nocturnal care "begged me to quit . . . he had [learned] his lesson." Negotiating the social relations at the bedside was further complicated by the legal ramifications that other women workers rarely had to consider. For hospital nurses, both patient health and nurse's status could be jeopardized through carelessness, even when executing a simple task such as a fomentation. Beryl Seeman recalled that in spite of the many dangers that steam and boiling water presented she never burned a patient, nor herself. Others were not so lucky and while nurses accepted the occasional minor burns as part of the job, they knew that burning a patient could result in discipline, including suspension. Nurses soon came to realize that the precision expected of students created a margin of error.
that protected nurses once they were expected to assume full responsibility for patient care. Myrtle Crawford concluded “if you learned how to do it perfectly you wouldn’t go too far off if you got careless.”

Once nurses left the hospital school and entered into private practice they were legally responsible for remaining within the parameters of accepted medical and nursing practice. The experience of one graduate nurse exemplifies the delicate position that private duty nurses faced. In June 1937, nurse Mitchell took a job in Gainsboro, Saskatchewan, providing private care for a male heart patient, for whom strychnine had been prescribed. Concerned about the treatment, the nurse wrote to a medical practitioner she knew from her hospital training. The doctor replied with detailed instructions pertaining to the administration of “simple Strych. grain” or a hypodermic injection of strychnine tablets if that served to regulate the pulse. The doctor later refined his prescription and recommended a combination of nitroglycerin, strychnine and digirolas taken orally, and codeine for sleeplessness. Throughout the correspondence the doctor praised the nurse’s “very informative and intelligent” letter, and assured her that “we must depend on the nurse—her judgement and observation, etc.” This correspondence reveals several critical features of doctor-nurse interaction. Certainly, patients and doctors alike relied on nurses to provide intelligent patient care in conditions where access to medical attendance was limited. For nurses working in relatively isolated conditions, medical communication assured the nurse that she was following an appropriate therapeutic regimen particularly when administering such powerful drugs. Most significant, perhaps, written documentation such as the doctor’s letters also offered legal protection should the nurse require it at that time, or in the future.

As scientifically informed technique served to define nurses in the workplace so too did it help distinguish them in the marketplace. Traditional analyses of scientific management have emphasized its significance in “deskilling” artisans and therefore disempowering them vis-à-vis the labour market. In many spheres of secondary production, scientific management ensured that male artisans were replaced by easily replaceable unskilled or semi-skilled workers. On the other hand, women workers came into the world of paid employment from a different direction than did male artisans. Early in the industrialization process, women were defined as low-skilled and were ghettoized in poorly paid and unorganized sectors of production. Thus for female workers, white collar jobs, however rationalized, represented an improvement in status and conditions, especially those jobs that
required mathematical or literary skills.\textsuperscript{70} In fact, for nurses, rationalization of production aided in the delineation of their skills, and in differentiating themselves from their “unskilled” female competition in the household and the community. Science allowed nurses to distinguish themselves ideologically from maternal care giving, which was (is) considered the domain of all women. As Barbara Melosh argues in her critique of nursing professionalism, “as professional leaders strove to distinguish their work from women’s unpaid domestic nursing, they had to dissociate themselves from the sentimental conception of womanly service.”\textsuperscript{71} Beverly Boutilier makes a similar point in her paper “Helpers or Heroines?” Her analysis of the relationship between the National Council of Women and the first generation of graduate nurses demonstrates that in the late nineteenth century the line between the paid work of trained nurses and the unpaid labour of volunteer women was a very fine one. For nurses at the workplace, claims to specific rituals, all in the name of science, helped distinguish trained personnel from the informally or untrained competition in the marketplace.\textsuperscript{72} The careful delineation of what was and was not good nursing was particularly important in the crisis-ridden interwar decades during which nurses struggled daily to win legal and financial recognition of their value.\textsuperscript{73}

In the private market, as in the hospital, the specific rituals of nursing practice represented the expertise that was critical to nurses’ economic and physical survival. For these reasons graduates of the WGH school felt proud of the specific skills that their technique represented, and incorporated that technique into their occupational identity. Student nurses admired their superiors who could perform specific tasks with ease. One WGH graduate recalled that

\begin{quote}
as a probie I used to envy the junior nurses when they would wring these foment because I thought those forceps were kept there by a neat twist of the wrist.\textsuperscript{74}
\end{quote}

Another WGH veteran insisted that she could recall only one post-operative infection, and even then she suspected the surgeon to have been the culprit who “broke” the sterile field of her dressing tray.\textsuperscript{75}

Popular culture created by nurses themselves in the 1920s and 1930s revealed the centrality of science to daily life in the hospital. For example, student yearbooks, produced annually by graduating classes, were filled with humourous references alluding to features of scientific practice. In one edition, a joke entitled “Medical Definitions” reinterpreted the term aseptic to mean “person not believing in anything” and defined toxic as “loquacious.”\textsuperscript{75} More elaborate parodies of hospital life
usually took the form of substantially revised poems or song lyrics. The 1927 Blue and White contained a poem entitled “The Microbe’s Serenade” wherein a “love-lorn microbe met by chance at a swagger bacte-roidal dance” a “bacillian belle.” This “protoplasmic queen” was the “microscopical pride and pet of the biological smartest set” who so impressed her microbile suitor that he asked “What futile scientific term can well describe they many charms?” Pursuing the germ, he “’neath her window often played this Darwin-Huxley serenade” and, declaring his fidelity, assured the subject of his affection that “we’ll sit beneath some fungus growth, till dissolution claims us both.”

In the 1931 yearbook, the poem “The Bacteriological Ball” once again featured personified bacilli. This time a “gay bacillus” held a party in the laboratory, inviting “only the cultured.” Referring to the cellular structure of the various organisms, the poem continued:

The Streptococci took great pains
To eat themselves in graceful chains;
While, somewhat late and two by two,
The Diplococci came in view.

Forgetting the potential dangers,

Each germ engaged himself that night
with never a fear of the phagocyte
It was getting late and some were loaded,
When a jar of formaldehyde exploded

Not surprisingly, the poem ended with

Not one survived, they perished all,
At the nurses’ bacteriological ball.

While nurses’ daily workplace interaction with science most often involved ether, green soap and boiling water, nonetheless laboratories, formaldehyde, and microscopic organisms all emerged as central characters on the pages of student yearbooks.

Like science, the importance of technique in nurses’ daily work was illucidated within occupationally specific popular culture. A poem from the 1923 yearbook was entitled “The Training.” One verse read:

At last she reached the white “O.R.,”
Where patients coming from afar
Endure the surgeon’s knife:
And there she learned to sterilize
And keep her technique in such wise
She might not lose her life.\textsuperscript{79}

Similar themes were echoed in other contributions such as those entitled "Routine" and "Aseptic Technique.\textsuperscript{80} A more elaborate depiction of nurses' practice and the social relations at the bedside was presented in the 1926 yearbook contribution "The Hooting of Dan Mackay." This parody of the poem by Robert Service described the "dangerous D. S. MacKay" and his treatment of nurses in the Operating Room. Because "the staff were all stepping out" a student assumed the role of senior scrub nurse. As the operation proceeded, the "well-masked" attendant was "trembling with fear" but "never batted an eye."

So they hacked and slashed and sliced away, till the deed was almost done;
The surgeon, as usual, roared and raged and abused each nurse but one.
The staff nurse, she just carried on, with her technique no fault could be found.
She doled out retractors and forceps and her knowledge of suture profound.

In spite of the scrub nurses' competent assistance, the cranky doctor flew into a rage when he discovered that the nurse was not a graduate. The student concluded with a defiant tone,

We aren't so wise as you Doctor guys, but strictly between us two,
If you'd only give us a fighting chance, you'd see what we really could do.\textsuperscript{81}

Evidence from nurses in other Winnipeg hospitals and in other regions of Canada suggest that the experiences of nurses at the WGH were not unique.\textsuperscript{82} At Winnipeg's Misericordia General Hospital, graduating nurses also took advantage of their annual publication to boast about their accomplishments but also to speculate about the utility of their education to their futures in private duty. In the process much was revealed about the features of aseptic technique, rationalization, and gentility that nurses were to bring to their work. The poem "Farmyard Sanitation" observed the career of a nurse who "hied to Hick-Town Junction / Soon after graduation." Her introduction to "farm-yard sanitation" included trimming the turkey "with antiseptic shears." Her decision to place the hens on a "rigid diet" resulted in their "laying eggs in mass production," and she went on to "[souse] the sheep in Kresio
Dip" and to sterilize the ducks. However the final verse revealed the private's ultimate success:

A permanent wave in bossy's horn—
With bobby-pins it's twisted;
She's getting quite a boyish form
Now that her tummy's lifted.
The little chicks are always fed
On sanitary worms;
The calves and colts fumigated
To keep them free from germs.
And thoroughly to carry out
Her systematic plan,
Next week with germicidal soap
She'll Scrub the poor hired man.83

These humorous expressions of students' three-year engagement with the germ theory and scientific management reveal the critical intersection of science and nursing practice in defining nurses' workplace experience during the interwar years. Scientific theory of asepsis along with managerial efforts at rationalization combined to define what medical and administrative staffs thought nursing practice should be. But within those parameters, the scientific underpinning of nursing practice also helped nurses create their own standard of quality care while at the same time defend themselves economically, legally, and physically. Feminist historical scholarship, which concludes that "rank and file" nurses in interwar Canada were outside of or marginal to the dominant scientific concepts of the day, fails to capture the essential role those concepts played in nurses' daily lives.

This analysis suggests significant points of revision are needed regarding nurses' place in the history of medicine. Canadian medical historians have been slow to integrate nursing work into studies of health care history, often providing only cursory mention of nursing service before going on to detail administrative structures or medical achievements. Yet close examination of the nursing practice at the Winnipeg General Hospital reveals that nurses were active participants in creating the culture of scientific medicine and, as the largest patient-care workforce in the institution, in establishing the hospital as the dominant location for delivery of health services in twentieth century Canada. If we are to account fully for the particular development of the Canadian health care system, an analysis of nurses' work must be integrated into medical history.84
In challenging the interpretation of nurses as non-scientific care givers, this paper demonstrates that we cannot characterize nurses as merely victims of modern science and modern medicine. This does not mean, however, that Canadian nurses in the 1920s and 1930s can simply be reclaimed as unrecognized women scientists, as another chapter in anthologies such as Ainley’s *Despite the Odds*. Nurses had a fundamentally different relationship to science than did women struggling for equality and recognition in male-dominated fields such as chemistry, botany, or even medicine. Like their counterparts in other scientific pursuits, nurses certainly used science and within the workplace used it to gain an element of control in daily practice. But nurses did not generate new scientific knowledge. Thus in that way they cannot be described as scientific practitioners or scientists. Rather, nurses in Winnipeg, as elsewhere, employed concepts generated by non-nurse researchers and utilized that knowledge under the direction of doctors. In other words, as the “physician’s hand” it could be argued that nurses merely carried out scientific orders, but did not engage critically with scientific knowledge.

Of course, it could also be argued that practitioners in many fields of “science” did not generate scientific knowledge either. Medical science is the most obvious example, wherein general practitioners utilized concepts learned in medical school, but did not critically engage with, or develop additions to, that knowledge. Similar observations could be made about occupations such as pharmacy, physiotherapy or even engineering. However, two critical factors differentiated those practitioners from nurses. First, nurses were not trained in scientific investigation and the pedagogical emphasis on execution and economic efficiency, rather than conceptualization, of various procedures left little time for students to develop scientific research techniques.

Second, once licensed to practice, nurses could not generate scientific knowledge because they were legally barred from doing so. After all, only doctors were entitled to diagnose and prescribe. Indeed, the cornerstone of medical professionalism lay in the medical monopoly over such conceptual rights. Even public health nurses, who have long boasted greater autonomy than their counterparts in other branches of nursing, were reminded in 1919 that when visiting a sick patient “treatments must never be suggested nor opinions advanced. . . . Never commit the error of diagnosing.” This stricture was also a central point of contradiction confronted by the public health nurses studied by Stuart. Realizing the significance of this issue, the 1932 Weir *Survey of Nursing Education in Canada* asked its respondents the contro-
versial question “Do nurses prescribe?” Even if nurses did observe repeatable trends in patient response to their care, such knowledge was illicit since that kind of diagnostic skill was reserved by the medical profession. When nurses did perform medical procedures, like delivering babies when doctors were absent, legal imperatives denied nurses the right to claim not only financial remuneration for that work, but also any intellectual contribution. This then speaks to issues of power and legitimacy more than scientific status. The mind has no sex, but the law did.

Recognizing the gendered nature of women’s legal and social authority over scientific knowledge, some feminist scholars have concluded that because of culturally or biologically determined gender roles women “do science” differently from men. These authors have argued for examining women’s “different voice” and “feminine science.” Yet the specific experiences of nurses suggest that a concept like feminine science must be applied judiciously, for not all women shared the same relationship to scientific authority. Comparisons between nursing and other female occupations seeking social legitimation through science illustrate this point. Domestic science is one such occupation that, in the early twentieth century, embraced scientific discourse by wedding the germ theory with scientific management in order to transform, largely unsuccessfully, the status of domestic labour. Such a comparison highlights the broad social application of the scientific paradigm in the twentieth century and serves as an important reminder of the many uses to which the word “science” has been put.

However, too heavy an emphasis on the ideological power of scientific language detracts from the very different successes women had in achieving social and occupational legitimation through science. Nurses’ experience in the hospital, either as students, staff or special duty attendants, convinced them not just of the discursive importance of science in distinguishing their work from “untrained” care givers in the household, but also of the efficacy of treatment that aseptic technique and adherence to the procedural routines ensured. After all, during the 1920s and 1930s the WGH wards were not ravaged by cross-infections, nor were surgical patients afflicted with post-operative infections. Indeed, hospital administrators and doctors agreed that nurses’ technique “worked.” Thus even if science is best understood as a social and intellectual paradigm, rather than a distinct and documentable body of knowledge, nurses contributed to the development of that paradigm, and to its legitimation, in a way that occupations such as domestic science, or even social science, did not. Nursing practice incorporated
scientific thought but also produced a concrete or material body of
evidence, that is, the ascent of the hospital as a safe and legitimate
venue for health services, which itself was part of the dominant para-
digm of knowledge in this century.

Nurses, therefore, occupied a unique place with respect to
modern science. Neither victims nor unsung heroines, nurses cannot be
categorized as oppressed or liberated by science. This highlights the
importance of creating a conceptual framework for women and science
that can capture the diversity of scientific roles women have assumed in
the past. The historically specific conditions under which different
groups of women interacted with scientific thought need to be explic-
cated before any general statements about women, gender, and science
can be made.

For nurses in the 1920s and 1930s, this means taking into
account the particular dynamics of the workplace. Nursing cannot be
written directly into the existing literature on women and science
because their work was not just about science. As an exclusively female
occupation, nursing practice was premised on other “paradigms”
including socially constructed definitions of feminine nurturing and
female sexual and social respectability. Science was but one, although a
critical one, of the forces that constructed nursing life. Thus in fulfilling
their role as the health care system’s largest patient care workforce,
nurses used science in a manner specific to their relationship to produc-
tion—to their patients. Positioned between doctors and patients, and
between institutional administrators and familial care givers, nurses
were defined by scientific concepts but also invoked these concepts to
define themselves. Required to simultaneously care and cure, nurses in
interwar Canada used scientific knowledge—both in terms of the
contemporary theoretical understanding of infection but also in terms
of the “rational” rituals of technique—to resolve the contradictions
inherent in their daily lives.

Endnotes

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1. For an example of the discussion generated within academic nursing, see Helen K.
Musallam, “2020: Nursing Fifty Years Hence,” in Mary Quayle Innes, ed., Nursing Educa-
tion in a Changing Society (Toronto: University of Toronto Press, 1970). Mussalleem argues that "the body of scientific knowledge of nursing is derived from and based on the principles of the behavioural, biological, and physical sciences" (p. 217).


4. Donna Lynn Smith, "Nursing Practice in Acute Care Hospitals," in Alice Baumgart and Jenniece Larsen, eds., Canadian Nursing Faces the Future: Development and Change (St. Louis, Missouri: C. V. Mosby, Co., 1988), 99. Nora Kelly's Quest for a Profession: The History of the Vancouver General Hospital School of Nursing (Vancouver: Vancouver General Hospital School of Nursing Alumnae Association, 1973) states that "the slowly growing conviction that knowledge and understanding are required even to follow orders competently, and more that it was making but poor use of the nurses' potential abilities to keep her in ignorance, is perhaps the most important theme in the history of nursing education. The expanding knowledge and functions of the nurse and her evolving relationship with the physician and other health workers are the live issues in nursing today" (p. 11).


7. Marianne Gosztonyi Ainley, ed., Dejaie the Odds: Essays on Canadian Women and Science (Montreal: Véhicule Press, 1990). While it is true that a contribution dealing with nursing may not have been available for this collection, nursing is not even mentioned in the introductory essay as an area needing study or even theoretical consideration. Such exclusion is not unusual in the Canadian literature. For example, see Canadian Woman Studies/Les cahiers de la femme 5, 4 (Summer 1984). This issue on "Science and Technology" focuses on women in male-dominated occupations and the struggles for equal education, funding and recognition in those fields. It also includes essays on the effects of technology on women, such as in clerical work.


9. The Winnipeg General Hospital was the city's largest health care institution, which was responsible not only for local citizens, but also for many patients from less well served rural areas of Manitoba, Saskatchewan and western Ontario. The WGH also serviced nursing students from other provincial training schools who were required to work on specific WGH wards in order to have been trained in all the branches of nursing. In addition, students from the WGH completed rotations at the Margaret Scott Mission (for public health nursing training) and at the Municipal Hospitals (for infectious diseases training). Because the WGH played such a pivotal role in nurse education in Manitoba,
and in the region, this study of nursing work at the WGH reflects the broader experiences of nurses at other institutions, and in fact in other Canadian cities. For further discussion of Winnipeg's representativeness as a case study of Canadian nursing in the 1920s and 1930s see Kathryn McPherson, "Skilled Service and Women's Work: Canadian Nursing, 1920-1939" (Ph.D. dissertation, Simon Fraser University, 1990).

10. For example, at the Vancouver General Hospital only six RNs were employed in 1909, 17 in 1919 and 37 by 1939. Kathryn McPherson, "On the Wards: Hospital Nursing in Vancouver, 1900-1950," unpublished paper presented to the B.C. Studies Conference, Victoria, B.C., 1986.

11. Only a small minority of RNs pursued public health nursing. Weir's study concluded that in 1929 only 1,521 of Canada's 18,174 RNs or 8.4% were employed in public health work. Weir also estimated that up to 75% of Canadian nurses worked in private duty. George M. Weir, *Survey of Nursing Education in Canada* (Toronto: University of Toronto Press, 1932), 55-56.

12. The analysis of nursing practice is based primarily on evidence housed in the WGHA Archives, Winnipeg, Manitoba. This research base includes three nurses' notebooks (Furby Thorolfson, *Notebook*, 1924-1927, Winnipeg, Manitoba; Dorothy Nicholson, *Notebook*, 1926-1929, Winnipeg, Manitoba; and Violet Erickson, *Notebook*, 1929-1933, Winnipeg, Manitoba); student lecture notes (Senior Lecture Notes, 1 October 1910 to 16 January 1911; Violet Erickson, *Lecture Notes*, 1929-1933, Winnipeg, Manitoba); and the oral history collection "Nurses and Their Work: Oral Histories of Nursing, 1920-1940." Copies of the tape-recorded interviews are also housed at the Public Archives of Manitoba. Private Collections of Myrtle Bowman (Ruby Bowman, *Notebook*, 1925-1928; Myrtle Bowman, *Notebook*, 1928-1931), Mary Sheperd and Wilma Nichol were also utilized, as well as selected records of the Misericordia School of Nursing Alumnae Association Heritage Room Collection. I have purposely avoided basing my descriptions of nurses' work on educational curriculum guides because of their prescriptive, rather than descriptive, nature.

13. Nurses' Alumnae Annual (1928): 69-73. "Winnipeg General Hospital School of Nursing" (pp. 70-72) lists the "practical experience and theoretical instruction" given as tabulated from the year 1924-25. WGHA Archives. Nurses' oral testimonies and popular culture make frequent references to the various stages of apprenticeship.

14. Samples of lectures notes reveal instructors' initials and occasional comments, as do some of the student notebooks consulted. Erickson, *Lecture Notes*; M. Bowman, *Notebook*.

15. Erickson, *Lecture Notes*.


17. Some procedures, such as samples and smears, were sent to the hospital laboratory for analysis; other tests such as the Wasserman, Dye, Ewald Breakfast, Reigal Meal, and Functional Renal Mosenthal tests were performed on the ward. M. Bowman, *Notebook*; Erickson, *Notebook*; R. Bowman, *Notebook*; Thorolfson, *Notebook*.

18. While most surgical procedures were performed in the operating rooms, some continued to occur on the wards.


21. Seeman, tape recording; see also Mary Duncan, interview by author, tape recording, Winnipeg, Manitoba, 22 June 1987; Violet McMillan, interview by author, tape recording, Winnipeg, Manitoba, 23 June 1987; Vera Chapman interview by author, tape recording, Winnipeg, Manitoba, 2 July 1987.

22. Harriet Pentland, interview by author, tape recording, Winnipeg, Manitoba, 13 June 1986. See also McMillan, tape recording; Thorolfson, Notebook; Erickson, Notebook. If being boiled for sterilization, gloves had to be covered with water and weighted down, dried inside and out, examined for punctures, and unless requiring repair were then powdered and wrapped for transfer to the autoclave. Silk Guyon Catheters were damaged by Lysol or boiling and thus required disinfecting in "Bichloride of Mercury 1-1000 or in Formalin 1/2%" followed by rinsing with sterile cold water before using. Other rubber articles—Mackintoshes, medicine droppers, duodenal, stomach and rectal tubes and catheters—and glassware all demanded specific regimens for cleaning and storing.

23. Pentland, tape recording.

24. Erickson, Notebook, stated that post-operative genital care was required "after urination and defecation following repair of perineum, scraping and washing out of uterus, childbirth and abortion."

25. Ibid.

26. Ibid.

27. McMillan, tape recording; Seeman, tape recording.

28. In 1926 the WGH House Committee allocated $55 per floor to equip the private wards with flat silver. WGH House Committee, Minutes, 4 January 1926, PAM Winnipeg General Hospital. Helen Smith recalled a reduced patient-nurse ratio on private wards, and the china cups in which private patients were served their tea: Helen Smith, interview by author, tape recording, Winnipeg, Manitoba, 3 August 1988. Myrtle Crawford stated that private patients had a choice of menus, and their food trays were set attractively, with cloth tray covers and cloth napkins. Crawford, tape recording.

29. WGH House Committee, Minutes, 22 October 1928.


31. Given the complex debate regarding the changing historical definition and practice of "science," a note of clarification is required here. In "History of Science and History of Medicine," John Harley Warner reminded us that "science always has been a weighted term." Historians of science have viewed the biological sciences as vague and imprecise compared to the "mathematically grounded physical sciences," and believed that medical practice often failed to meet the criteria of scientific enquiry at all. See John Harley Warner, "History of Science and History of Medicine," Proceedings Conference on Critical Problems and Research Frontiers in History of Science and History of Technology (Madison, Wisconsin: History of Science Society, 1991): 395-422. On the other hand, the medical profession did win, in the late nineteenth century, the right to serve as arbiter of scientific knowledge with respect to health care. Whether that right was based on the ideological authority of science or the efficacy of treatment, physicians wielded their social and political power with might. For the purposes of this paper, medical science refers to the body of knowledge developed and employed by the medical profession in the late nineteenth and early twentieth centuries. It is this definition that is used here to measure nurses' engagement with "science" as it was defined in the particular historical epoch.

32. Senior Lecture Notes, 1 October 1910 to 16 January 1911. The emphasis on bacteriology was not unique to the WGH training program. Documentation from nurses in other parts
of North America substantiate this fact. For example, Mary Anderson left her home in North Sydney, Cape Breton, to train as a nurse in New York during the early 1920s. She recalls her bacteriology course and learning how to "catch" bacteria in agar. Mary Anderson, interview with Anne Warren, Vancouver, B.C., February 1989. B.C. Women's History Collection, SFU Archives, Burnaby, B.C.

33. Erickson, Lecture Notes.

34. R. Bowman, Notebook.

35. R. Bowman, Notebook; Thorolfson, Notebook.

36. Ibid.


38. See Thorolfson, Notebook, 1924.

39. During the same period, the experiences of hospital nurses, on and off duty, were also influenced by other models of social organization. One is that of the convent. While rules guiding the behaviour of nurses on and off duty did not entirely cloister the young women enrolled in the various schools, feminine respectability was demanded and parallels to female religious orders were not accidental. At the same time, the regular practice within hospital nursing schools of uniform inspection and standing at attention drew on the military model to instil obedience and discipline. As well, anthropological studies have emphasized the cross-cultural importance of ritual in the healing process. I would like to thank Kathleen McMillan and the members of the Ontario Society for the History of Nursing for bringing this latter point of comparison to my attention.

40. One nurse tells of a patient requiring a doctor's order to sleep with the blankets untucked. McMillan, tape recording.

41. Winnipeg General Hospital, Reports and Accounts, 1920-1939.

42. Winnipeg General Hospital, Reports and Accounts, 1921, 16.

43. Certainly nurses were central to institutional survival, though few historians of medicine have integrated nursing work into their studies or collections.

44. In the 1940s, "the pent-up demand for new [health care] facilities and technology exploded," prompting the federal government to get involved in financing Canadian health services, and hospitals, once peripheral to legitimate care, became the cornerstone of the health care system. George M. Torrance, "Hospitals as Health Factories," in David Gobine, C. D'Arcey, P. K. New and G. M. Torrance, eds., Health and Canadian Society: Sociological Perspectives (Toronto: Fitzhenry and Whiteside, 1981), 257.

45. Reverby, Ordered to Care.

46. Hospital administrators constantly bemoaned the fact that they could not retain RNs in staff positions. Graduates might accept a staff position for a short time, but then quit to seek work in the private health care market.

47. McMillan, tape recording; Erickson, Notebook; Thorolfson, Notebook.

48. McMillan, tape recording. Retired nurses commented frequently on the length of time that parturient women stayed in bed following delivery during the interwar years, and agreed that the more recent trend of having new mothers "up and about" soon after childbirth has been a positive one.

49. R. Bowman, Notebook.
50. Many graduate nurses interviewed insisted that a massage and a cup of hot milk before bed accomplished what sedatives now do for hospital patients.

51. Students also assisted with many home births during their apprenticeship with the Margaret Scott Mission, or the Victorian Order of Nurses (VON). During the 1930s some students were placed with the VON to acquire the home nursing and district nursing experience offered since the 1920s by the Margaret Scott Mission. Chapman, tape recording.

52. Isabel Cameron, interview by author, tape recording, Winnipeg, Manitoba, 1 July 1987.

53. This uncertainty led Cameron's classmate to rephrase the song "we're always blowing bubbles in the air" and sing instead "we're always having babies in the bed." Ibid. For example, Grace Parker was called to attend a birth during her training at the Margaret Scott Mission, only to arrive and discover the woman did not have a doctor. By the time the interns from WGH arrived the baby was born. Grace Parker, interview by author, tape recording, Winnipeg, Manitoba, 25 June 1987.

54. Cameron knew enough to slap a newborn she had just delivered, but that was all she knew. Ibid. Other nurses shared similar experiences. Olive Irwin regretted not receiving better obstetrical instruction when as a VON nurse she had to deliver alone a baby with its umbilical cord wrapped around its neck. Olive Irwin, interview by author, tape recording, Winnipeg, Manitoba, 3 August 1988. See also, Florence Paulson, interview with author, tape recording, 1 July 1987.

55. Paulson, tape recording.

56. James Crampton, "It's Been a Healthy 75 years: Pioneer Public Health Nurses Remember the Old Days," Winnipeg Free Press Weekly, Tuesday, 17 December 1991, 4. This story, based on an interview with retired public health nurses Mary Wilson and Jessie Williamson, includes a photograph of the two women holding one of the public health nurses' black bags, with its contents laid out on a sterile apron.

57. Erickson, Notebook.

58. Erickson, Notebook, R. Bowman, Notebook.


60. Erickson, Lecture Notes.

61. Forrest, "Increase of Tuberculosis Among Nurses."

62. Paulson, tape recording; Anne Ross, interview with author, tape recording, 4 August 1988; Olive Irwin, tape recording.


64. Ingibjorg Cross, tape recording.

65. See for example, Crawford, tape recording.

66. Crawford, tape recording.


68. Dr. Biglow, Letter to W. Mitchell.


72. This was especially true given the early twentieth century efforts to make housework scientific. For a description of the domestic science programs in Canada see Barbara Riley, "Six Saucepans to One: Domestic Science vs the Home in British Columbia, 1900-1930," in Barbara Latham and Roberta Pazdro, eds., Not Just Pin Money (Victoria: Camosun College, 1984).

73. See McPherson, "Skilled Status and Women's Work." See also Coburn, "'I See and Am Silent.'"  

74. Seeman, tape recording.

75. Crawford, tape recording.


77. WGH Blue and White (1931), 61. See also the Misericordia Hospital School of Nursing, Blue and Gold Year Book (1931). Misericordia Hospital School of Nursing Alumnae Association Heritage Room, Winnipeg, Manitoba, 1926, 51.

78. WGH Blue and White (1923), 20.

79. WGH Blue and White (1928).

80. WGH Blue and White (1926), 53.

82. See for example, D. L. Brewster, Student Notebooks, Montreal General Hospital and Montreal Maternity Hospital, circa 1925. McGill University Archives, MG 3084. See also, Toronto General Hospital School of Nursing, Yearbooks, Toronto General Hospital Archives.

83. Ibid., 1931, 25.

84. David Gagan's "A Necessity among Us": The Owen Sound General and Marine Hospital, 1891-1985 (Toronto: University of Toronto Press, 1990) includes some references to nursing work in early chapters of the study, but does not pursue the theme throughout the study. American historian Charles Rosenberg acknowledges nurses' contribution to hospital work stating: "In 1800, as today, nurses were the most important single factor determining ward and room environment." However, he goes on to state that nursing would play only a minor role in his monograph because it was subordinate to the role of the medical profession in shaping the modern hospital. Charles Rosenberg, The Care of Strangers: The Rise of America's Hospital System (New York: Basic Books, Inc., 1987), 9.


86. This, of course, was a primary reason for many nursing educators and leaders to battle for university schools of nursing wherein a discrete body of knowledge could be
developed. According to professionalizing strategy, this was an important element in gaining professional status.


88. George Weir, *Survey of Nursing Education in Canada*.


90. The best known example of this orientation is Elizabeth Fox Keller's *A Feeling for the Organism: The Life and Work of Barbara McClintock* (New York: W. H. Freeman and Company, 1983). The term "different voice" was coined by Carol Gilligan, *In a Different Voice: Psychological Theory and Women's Development* (Cambridge, Mass.: Harvard University Press, 1982). For a review of the various approaches to women and science see Sue V. Rosser, "Feminist Scholarship in the Sciences: Where Are We Now and When Can We Expect a Theoretical Breakthrough?" in Nancy Tuana, ed., *Feminism and Science* (Bloomington: Indiana University Press, 1989).


92. T. Kuhn’s 1970 publication, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press) presented a powerful argument for thinking about science as a paradigm rather than an absolute truth. Kuhn asserted that scientific paradigms are accepted, or rejected and replaced, as the best available explanation for the natural world according to the beliefs and values of the day. As beliefs change so too are new explanatory paradigms of "science" introduced. This has led many historians to emphasize the legitimizing function that science has played, particularly in areas such as medicine. Authors such as Sam Shortt and Colin Howell have claimed that medical professionalization was based on claims of scientific knowledge more than on any proven record of treatment. See S. E. D. Shortt, "Physicians, Science, and Status: Issues in the Professionalization of Anglo-American Medicine in the Nineteenth Century," *Medical History* 27, 1 (1983): 51–68. See also Colin Howell, "Reform and the Monopolistic Impulse: The Professionalization of Medicine in the Nineteenth Century," *Acadiensis* XI, 1 (Autumn 1981): 9–22 and "Elite Doctors and the Development of Scientific Medicine: The Halifax Medical Establishment and 19th Century Medical Professionalism," in Roland, ed., *Health, Disease and Medicine*. 
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