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“Local Girls” and “Lab Boys”: Gender, Skill and Medical Laboratories in Nova Scotia in the 1920s and 1930s

IN MAY 1919 MARGARET LOW was hard at work in her Halifax home, patiently cutting histological sections with a microtome, mounting slides and taking them up to Dalhousie University’s Medical School, where students used them in their studies.¹ Low had attended the medical college from 1900 to 1902 although she never completed her medical education. Instead, she worked first in the university’s medical science laboratories and then in Halifax’s Pathological Institute during its formative years between the world wars. For nearly 30 years Low was a dynamic presence among laboratory workers, offering “faithful and efficient service”. She was often responsible for training other women and was remembered by her co-workers as the unquestioned authority in the day-to-day work in the lab. Her value was evident in 1927-28 when, due to the extended absence of the director, Low was responsible for supervising laboratory operations.²

Despite the contributions of Margaret Low and others like her who quietly toiled in hospital and university laboratories and despite the current recognition that laboratories were a significant development in the history of public health, the rise of “scientific medicine” and the modernization of medical education, we know very little about the internal workings of such laboratories or their staff, particularly in the North American context.³ What attention has been given to this area has focused invariably

1 D. Fraser Harris to Dr. A.S. MacKenzie, 6 November 1919, A-573, President’s Office Correspondence, Dalhousie University Archives, [DUA]. The research for this work was funded through a Hannah Institute for the History of Medicine Doctoral Fellowship as a SSHRC doctoral fellowship. I am extremely grateful for the suggestions of the anonymous *Acadiensis* reviewers, those of Shirley Tillotson and members of the faculty-graduate seminar at Dalhousie and the support and encouragement of Michael Cross.

2 For information about Low, see D.J. MacKenzie, “The Origin and Development of a Medical Laboratory Service in Halifax”, *Nova Scotia Medical Bulletin*, 43, 6 (1964), p. 182, Nova Scotia Department of Public Health, Annual Report 1927 in *Journal of the House of Assembly, 1928*. See also “Public Health Annual Report”, 1929.

3 There are stirrings of interest, however, particularly in Quebec. For examples, see Lucie Piché and Nadia Fahmy-Eid, “À la recherche d’un statut professionnel dans le champ paramédical : Le cas de la diététique, de la physiothérapie et de la technologie médicale”, *Revue d’histoire de l’Amérique française*, 45, 3 (1992), pp. 375-401, Nadia Fahmy-Eid and Lucie Piché, “Le savoir négocié : les stratégies des Associations de Technologie Médical, de Physiothérapie et de diététique pour l’accès à une meilleure formation professionnelle (1930-1970)”, *Revue d’histoire de l’Amérique française*, 43, 4 (1990), pp. 509-34. For a broader discussion of health care workers in Quebec, see Nadia Fahmy-Eid, *Femmes, santé et professions : Histoire des diététistes et des physiothérapeutes au Québec et en Ontario, 1930-1980* (Saint-Laurent, 1997) and Aline Charles and Nadia Fahmy-Eid, “La diététique et la physiothérapie face au problème des frontières interprofessionnelles (1950-1980)”, *Revue d’histoire de l’Amérique française*, 47, 3 (hiver 1994), pp. 377-408.

Peter L. Twohig, “‘Local Girls’ and ‘Lab Boys’: Gender, Skill and Medical Laboratories in Nova Scotia in the 1920s and 1930s”, *Acadiensis*, XXXI, 1 (Autumn 2001), pp. 55-75.

on physicians, scientists and researchers. Very rarely has the labour of “laboratory workers”⁴ been acknowledged. These workers were a diverse lot, including university-educated women, young men, medical students and high school graduates pursuing careers as nurses, dietitians, x-ray assistants or volunteers. They performed a variety of tasks, including the processing of clinical samples and public health specimens in addition to assisting in university laboratory classes. In keeping with the disparate background of the workers, the boundaries between the kinds of work they performed were hardly rigid.⁵

This study explores the permeable boundaries and ambiguous identities found within these laboratories – in particular, those at the Pathological Institute and at Dalhousie University. The focus is on the interwar years because this period saw a rapid expansion of laboratory staff at the Pathological Institute in Halifax, as well as in other large provincially-operated laboratories across Canada and in rural hospitals in Nova Scotia. These years also witnessed the establishment of new medical science laboratories at Dalhousie which, in turn, created employment opportunities at the university. Examining these two facilities is appropriate for several reasons. Nova Scotia, like other Canadian provinces, established a public health laboratory in the last decade of the 19th century and, like other jurisdictions, struggled with the pressing health questions of the day, including food and water purity, tuberculosis, diphtheria and other diseases. Nova Scotia, then, is representative of a broader North American trend in laboratory development. But this study also looks beyond the city limits, to the small hospitals, in an effort to understand how laboratories in rural settings were staffed. Indeed, hospital work looks very different from the countryside. Finally, examining the laboratory workforce at Dalhousie University and in hospital settings reveals a diversity that an exclusive focus on health care settings obscures. This approach should help to broaden the social history of health care, while suggesting areas in need of further exploration.

By the 1920s hospitals, public health care and medical education were growing more complex. As a commemorative booklet produced for St. Martha’s Hospital in Antigonish, Nova Scotia during a 1925 fund-raising campaign declared with optimism, “In the hospital alone, can a complete and accurate diagnosis be made. Here alone can be found the X-ray machinery, the laboratories, the individual records so necessary to a useful diagnosis”.⁶ Mary Kinnear, using an appropriate metaphor, has described the Canadian hospital of this period as “a modern, scientific, progressive laboratory” where doctors demonstrated their skill, supported by a variety of other health care workers.⁷ But who were these workers? In Halifax, most

4 For the purpose of this study the term “laboratory worker” has been chosen for those who toiled at the benches because that was what they were. Alternative conceptualizations of these workers, such as “technician” or “technologist” or the more generic “professional”, obscure the diverse experience of those so labelled. In addition, defining these early workers as “techs” implies a degree of professional formation, or at least a common identity, that had not yet been achieved.

5 Laboratories were also found in industry, though this was not a significant employer in the Maritimes. One such employer was Toronto’s Connaught Laboratories, though here again existing histories pay scant attention to the worker at the bench. See, for example, Paul Adolphus Bator, *Within Reach of Everyone: A History of the University of Toronto School of Hygiene and the Connaught Laboratories, Volume 1, 1927 to 1955* (Ottawa, 1990).

6 St. Martha’s Hospital Fund Campaign, “The Story of St. Martha’s Hospital, 1906-1925” [1925], p. 9.

7 Mary Kinnear, *In Subordination: Professional Women, 1870-1970* (Montreal, 1995), p. 107.

laboratory workers found employment either in the Pathological Institute on Morris Street or across the street in the Dalhousie Medical School. The Pathological Institute performed all the clinical laboratory work for the Victoria General Hospital, selected laboratory analyses for hospitals and individual physicians throughout Nova Scotia, and public health work for the province, including testing for diseases such as syphilis, diphtheria and tuberculosis.

The Pathological Institute, opened in March 1914, provided Dalhousie's medical school with substantial new teaching facilities. These were augmented by the addition of laboratory facilities within Dalhousie for histology, physiology and biochemistry. Offering medical students practical laboratory experience addressed one of the key concerns of the report of Abraham Flexner, who had investigated the state of medical education in the United States and Canada, and had severely criticized many schools, including the Halifax Medical School.⁸ By the mid-1920s, through the assistance of American philanthropic agencies, medical education at Dalhousie included a substantial laboratory component. These two settings, the Pathological Institute and the university's medical science laboratories, were indicative of the escalating demand for basic and applied scientific knowledge common in municipalities and medical schools across Canada. But while the two sites emerged during the same period, often with key players sharing an interest in both, the location of the work did matter greatly. The composition of the labour force, definitions of skill, the nature of work and wages paid varied significantly across the two sites, and often in surprising ways.⁹

Dalhousie University was in the process of rebuilding figuratively and literally in the early 1910s. Medical education had only recently been re-integrated into the university, in the wake of the damning Flexner report. And while the Carnegie Corporation (which had funded Flexner) was critical of medical education in Halifax, it also served, together with the Rockefeller Foundation, as a major benefactor of the school's rejuvenation. Together, these agencies provided Dalhousie with a one million dollar gift that spurred the growth of the medical science departments.¹⁰ By the 1920s, physiology, biochemistry and histology were all growing disciplines and routinely employed young men to assist in the laboratories. Characterized as

8 Abraham Flexner, *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching* ([1910] Washington, 1960). For Flexner's evaluation of the Halifax Medical School, see Sheila M. Penney, "'Marked for Slaughter': The Halifax Medical College and the Wrong Kind of Reform, 1868-1910", *Acadiensis*, XIX, 1 (Autumn 1989), pp. 27-51 and T.J. Murray, "The Visit of Abraham Flexner to Halifax Medical College", *Nova Scotia Medical Bulletin*, 64, 2 (June 1985), pp. 34-41.

9 In a similar vein, Bruno Latour has noted the need for specificity during the 19th century: "All kinds of people are being professionalised during the nineteenth century, from bank-tellers to doctors". Similarly, the infrastructure that is developed – the buildings and organizations – is often portrayed as the "institutionalization" of these professions. Latour concludes that "every single discipline is doing the same in the nineteenth century: getting a profession, institutions and buildings. So it is a nineteenth-century feature; it is not specific": Latour, "The costly ghastly kitchen", in Andrew Cunningham and Percy Williams, eds., *The Laboratory Revolution in Medicine* (Cambridge, 1992), pp. 295-96.

10 John G. Reid, "Health, Education, Economy: Philanthropic Foundations in the Atlantic Region in the 1920 and 1930s", *Acadiensis*, XIV, 1 (Autumn 1984), pp. 64-83; P.B. Waite, *The Lives of Dalhousie University, Volume One: Lord Dalhousie's College* (Montreal and Kingston, 1994), pp. 246-47.

“laboratory boys”, they endured low wages, lack of mobility and, ultimately, constraints on their independence.

For example, many of the “laboratory boys” worked for only short periods, earning very modest wages. Charlie Mitchum went to work in the physiology department in the autumn of 1926,¹¹ replacing Samuel Richards. Richards had been hired on a trial basis in September 1925 and worked until the following May when, in keeping with university practice, he was terminated.¹² Mitchum proved to be an exceptional worker, efficient, innovative and a bargain at \$30 a month. Professor Boris Babkin wanted to induce him to stay and asked Dalhousie President A.S. MacKenzie if young Charlie could be employed through the summer, contrary to tradition. MacKenzie telephoned Babkin on 10 May, telling him that Mitchum could be retained “if he could be kept busy”. The young man would spend the summer taking electrocardiograms, filing documents and maintaining animals with fistula. Mitchum worked in the laboratory, including summers, until April 1929.¹³ A series of young men followed. When 17-year-old Charles Livingstone was hired, Dalhousie paid him \$15 from May to July on a probationary basis, due to his age and “immaturity”. He was promised an increase to \$35 if his work was found to be satisfactory, “with assurance of [further] advance if worthy of it”. It did not work out and, in July 1929, Robert John Dempsey replaced him. Dempsey, however, decided to return to school in August and left at the end of the month. There were others: Gregory James in 1929-30 and Daniel Mitchum, who was appointed in the autumn of 1930 and worked in physiology until December 1931.¹⁴

Physiology’s laboratory workers were often in their teens or early twenties, and the work was probably never intended to be more than a temporary position to bridge the gap to full adulthood. Other workers, however, were in search of permanent employment. Many of the men who worked in biochemistry, for example, were seeking something other than a brief period of work.¹⁵ Shortly after receiving his

11 Workers’ names have been changed throughout this paper due to restrictions imposed by both Dalhousie University and the Canadian Society of Laboratory Technologists (CSLT) in exchange for access to closed records. The exceptions are Margaret Low and Dr. Margaret Chase, whose careers were reconstructed using publicly available records. There are many sources that preserve the contribution of laboratory workers, including the records of the Victoria General Hospital, annual reports of health departments, provincial public accounts and records for the Faculty of Medicine in the Dalhousie University Archives. The most important collection for this work are membership files in the CSLT (renamed the Canadian Society of Medical Laboratory Science in 1996) national office in Hamilton, Ontario [CSLT National Office]. I would like to thank Lynn Zehr and Kurt Davis for their assistance during my research in the CSLT national office.

12 B[oris] Babkin to A. Stanley MacKenzie, 9 September 1925; Babkin to MacKenzie, 28 September 1925; Miss Harris to Babkin, 6 January 1926; Babkin to Harris, 30 April 1926, A-606, President’s Office Correspondence, DUA.

13 Babkin to MacKenzie, 4 September 1926; Babkin to MacKenzie, 11 September 1926; Babkin to Miss Harris, 27 September 1926; Babkin to MacKenzie, 1 May 1927; Babkin to MacKenzie, 15 September 1927; E.W.H. Cruickshank to MacKenzie, 13 March 1929; Cruickshank to MacKenzie, 18 April 1929, A-606, President’s Office Correspondence, DUA.

14 Information on all these individuals may be found in A-606, President’s Office Correspondence, DUA. For Livingstone, see Cruickshank to MacKenzie, 18 April 1929 and MacKenzie to Cruickshank, 29 April 1929. For Dempsey, see C.W. Startup to Miss Harper, 3 July 1929 and Startup to Harper, 19 August 1929, A-606, President’s Office Correspondence, DUA.

15 There is no obvious structural explanation why worker turnover would predominate in one laboratory section, while stability would characterize the other. The same university regulations and pay scales

faculty appointment in biochemistry, Dr. E. Gordon Young initiated a search for an aide. Young, who intended to arrive in Halifax early in 1924, asked MacKenzie whether there were laboratory technicians available. MacKenzie replied that it “would depend so much upon the qualifications which *he* must possess”.¹⁶ Young wrote to MacKenzie that there were two “types” of laboratory technicians:

Either a young man of about 20 or a middle aged man with moderate intelligence but without initiative. They can both be trained to be good technicians. I think that I prefer the former. A knowledge of elementary chemistry is desirable but very rare. It is however very essential that the applicant have a useful pair of hands and be naturally careful. In a few months work I can train him in ordinary manipulation.¹⁷

Young’s preference for trainable young men tempers any temptation to explain Dalhousie’s wages exclusively in terms of the youthfulness and transitory nature of the staff. The employment of two biochemistry workers, Stephen Brown and John Grey, reveals that for some workers employment in the medical science laboratories was fraught with frustration, as their personal aspirations conflicted with the constraints of being merely “lab boys”.

Stephen Brown, a young man of about 20, began work in the biochemistry lab in October 1925 at a salary of \$25 a month. By early in the new year, he had proved himself “intelligent, most reliable and teachable”. Despite salary increases (to \$35 a month by September 1926) and satisfaction with the work, Young reported that Brown was “discouraged” and was threatening to leave “unless he can see a living wage and some prospects ahead of him”. Now 21, Brown believed his age and experience warranted a wage of \$45 or \$50 a month. Equally important for Brown was a promise of regular advancement. He had the support of Professor Young, who appreciated his services. Young believed that without Brown there would either be no time for research or a “trained faculty assistant” would be required, presumably a more expensive option. Indeed, it was only the extraordinary capability of Brown that permitted the absence of such an assistant. MacKenzie increased Brown’s wages in March to \$45 per month, to be raised to \$50 when he celebrated his second anniversary. With continued progress through “his industry and improved skill” he could expect \$60. Brown proved industrious and achieved this wage in October 1928, his fourth year in the laboratory. His effort was extraordinary, for Brown often worked on Saturday afternoons and Sunday mornings because of the large class sizes. He also trained himself to blow glass and work metal, thereby saving the university money for

applied to each. Both Young (biochemistry) and Babkin (physiology) had an interest in research and, presumably, in maintaining their staff. Therefore, it is not possible to simply categorize *all* laboratory workers at Dalhousie as sojourners, merely biding their time until a better job appeared. Some workers, such as those in biochemistry, were apparently interested in staying as long as possible.

16 E. Gordon Young to MacKenzie, 3 October 1923 and MacKenzie to Young, 9 November 1923, A-597, President’s Office Correspondence, DUA. The emphasis on the gender, which is mine, may be significant given the evidence that men were to be employed in the biochemistry lab throughout the 1920s and 1930s.

17 Young to MacKenzie, 28 November 1923, A-597, President’s Office Correspondence, DUA.

new apparatus or the employment of craftsmen. Perhaps because of his obvious initiative and a sense of frustration over his low wages, Brown was growing restless. Young reported that Brown felt he should “be getting a living wage at least comparable with the boys of his own age” and that for Young “it would be a severe loss if he were to leave”. Subsequently, Brown resigned in June 1929.¹⁸

He was replaced by another young man, 18-year-old John Grey. Young reported that, like Brown before him, Grey “likes the work and is learning fast”. Young apparently learned from Brown’s resignation and suggested that “from the standpoint of the University it is very essential that he should be contented financially, as good boys are hard to get and hard to train”, while noting that there would be a need to consider further salary increases. President MacKenzie apparently concurred and increased the monthly salary to \$45 in May 1930. He added that “laboratory boys” needed something to “stimulate them to do better work” and suggested that if his work continued to be satisfactory, an increase to \$50 was possible. MacKenzie and Young agreed that the university would never pay a wage “suitable” for a married man, even though they recognized that staff turnover resulted in lost productivity. MacKenzie explained to Young that the university “cannot afford to pay a salary to a laboratory assistant that will keep a married man”. When told this, Grey was “very discouraged”, a disappointment made worse as he was in the midst of preparing for his marriage. But Young’s intervention carried the day, and MacKenzie was persuaded to increase Grey’s salary by another five dollars, effective 1 April 1931, “with the expectation that he will look and find a job” that would provide for him (and presumably his anticipated family). He charged Young to make it clear to Grey that there would be no further increases.¹⁹ In the midst of the Depression, when university finances were tight, the need for fiscal caution was not invoked in the debate.²⁰ Rather, the search for a living wage for John Grey was framed in the language of marriage and the need to support a family. Dalhousie, content to employ “lab boys”, could not contemplate employing family men.

Despite his January 1931 marriage, Grey did not leave the biochemistry department at the end of the academic year, as suggested by MacKenzie. In correspondence with new Dalhousie President Carleton W. Stanley, Young argued that he was “entirely opposed to the policy of starving our laboratory assistants so that it is necessary to train new ones every two or three years with a decreased efficiency in the preparation for classes and a decreased research output on the part of the professor. All this is for a saving of a few hundred dollars a year”.²¹ Stanley promised

18 Young to Professor H.R. Theakston, 24 February 1926; Young to MacKenzie, 26 January 1927; MacKenzie to Young, 2 March 1927; Young to MacKenzie, 14 September 1927; Young to MacKenzie, 28 October 1928; Young to H.L. Harper, 28 June 1929, A-597, President’s Office Correspondence, DUA.

19 Young to Harper, 12 September 1929; Young to Harper, 28 October 1929; MacKenzie to Young, 1 November 1929; Young to MacKenzie, 12 November 1929; MacKenzie to Young, 14 April 1930; Young to Miss H. Joyce Harris, 25 September 1930; Young to MacKenzie, 18 March 1931; MacKenzie to Young, 24 March 1931, A-597, President’s Office Correspondence, DUA.

20 Indeed, in November 1931 there was even talk of closing the faculties of medicine and dentistry. See P.B. Waite, *The Lives of Dalhousie University, Volume Two, 1925-1980: The Old College Transformed* (Montreal and Kingston, 1998), p. 70.

21 Young to Carleton W. Stanley, 6 October 1931, A-597, President’s Office Correspondence, DUA.

to raise the matter at the next executive meeting of the Board of Governors. While there is no recorded response to Young's appeal, a budget dated 29 December 1932 shows that \$780, or \$65 a month, was allocated for a laboratory assistant during 1933-34. Young managed to retain Grey through the rest of the 1930s for \$75 a month, the maximum the university would pay for technical workers.²²

The debate surrounding the wages for the marriage-minded John Grey did not prevent the appointment of another married man. In December 1931 the physiology department hired Albert Hallett, a married man with five children.²³ The appointment of Hallett might have been a direct response to the frequent turnover of technical staff in the physiology department. An equally plausible explanation is that during the depths of the Depression the university considered it more important to hire a married man with children. The historical record offers only that Hallett had "considerable training in hospital technique" and came well recommended. His age, family situation and experience did prompt Professor E.W.H. Cruickshank to ask for a starting salary of \$50 a month. This request was refused. His predecessor had earned only \$45 a month, and only that amount had been budgeted.²⁴ When Cruickshank renewed his request nearly a year later, he noted again that Hallett was married and had a family to support, adding that only Hallett's eldest boy was contributing a wage to the maintenance of the family.²⁵

The medical schools in the 1930s simply could not function without workers such as Brown, Grey or Hallett who worked in the university laboratories.²⁶ The medical science departments were content to employ young men to perform the necessary tasks for the university to conduct both research and teaching. Staff turnover and the loss of productivity did not emerge as significant issues for the university, even with the apparent difficulty professors such as Gordon Young and Boris Babkin had in finding and retaining competent personnel. Research in the university, which would have demanded some stability in the staff, was not yet pre-eminent at Dalhousie.²⁷ While Young may have desired consistency, the administration did not see

22 Young to H.G. Grant, 2 November 1939, A-597, President's Office Correspondence, DUA.

23 See Cruickshank to Stanley, 8 December 1931; Stanley to Cruickshank, 11 December 1931; Cruickshank to Stanley, 21 March 1932; Stanley to Cruickshank, 22 March 1932; Cruickshank to Stanley, 4 October 1932; H.G. Grant to Stanley, 3 June 1937; A-606, President's Office Correspondence, DUA.

24 Cruickshank to the president [Stanley], 8 December 1931 and Stanley to Cruickshank, 11 December 1931, A-606, President's Office Correspondence, DUA.

25 Cruickshank to the president, 4 October 1932, A-606, President's Office Correspondence, DUA. Hallett's eldest son, incidentally, was also employed in the medical school, working for Dr. N.B. Dreyer of the Department of Physiology.

26 In 1931-32, the medical school expended almost \$1,100 for assistants in anatomy, \$750 for biochemistry, \$1,130 for pathology, \$570 for pharmacy and \$573 for physiology. See "Analysis of Medical School Costs", 30 June 1932, A-575, President's Office Correspondence, DUA. Occasionally, "technical assistants" were supported through grants. Donald Maitland of the Department of Anatomy received a grant from the Banting Research Foundation, and he chose to employ his wife, who had experience measuring the size of nuclei and cells. See Donald Maitland to Stanley, 15 November 1931, A-595, President's Office Correspondence, DUA.

27 Waite notes that into the 1950s Dalhousie researchers in science and medicine "had to get along with antiquated equipment" and that "the amount of money and time available for research was meagre": Waite, *Old College Transformed*, p. 179.

expenditures for technical hands as a priority. What professors and administrators did agree upon was that Dalhousie would never pay a wage sufficient to support a married man. Ambitious men, according to Young, would not be attracted to the work. Only young men or those without initiative would submit to the low wages offered. Thus, laboratory workers at Dalhousie were viewed as something other than men supporting families, even if they in fact aspired to married life or already supported children. With laboratory workers so easily replaced and in the absence of a substantial research programme that necessitated the continuity of staff, the university was content to offer low wages and bear the cost of turnover.

While Dalhousie's medical science laboratories were being created and staffed in an effort to modernize medical teaching in the university, the Pathological Institute was hiring and organizing its own labour pool. When it opened in March 1914, W.W. Kenney, the superintendent of the Victoria General Hospital, claimed that "there are few better laboratories in Canada".²⁸ The opening of a newly equipped facility in a rapidly changing context of medical science probably did much to bolster Kenney's claim. But the new facilities did fit a broad pattern of laboratory building by municipal, provincial and federal governments during the late 19th and early 20th centuries.²⁹ New Brunswick joined the trend in 1918 when the provincially-operated Bureau of Laboratories opened in the Saint John General Hospital to service the province, while throughout the Maritimes many hospitals established sparse laboratories through the 1920s capable of performing a narrow range of tests to meet accreditation standards.³⁰ Facilities throughout the region, a growing commitment to public health, a widening array of available tests and an increasing demand from physicians and others combined to create a demand for capable laboratory workers.

Hospital work was very different from that of the university. The earliest hospital laboratory workers were young, like their Dalhousie counterparts, but they were also overwhelmingly women and, perhaps surprisingly, better paid. Wages for the "lab boys" of Dalhousie ranged from \$25 a month for Stephen Brown in 1925 to \$45 for the married Albert Hallett in 1931 and \$65 for John Grey. Margaret Low, who worked in the medical school between 1915 and 1920, received a \$100 annual honorarium.

28 W.W. Kenney to Dr. John A. Hornsby, 28 October 1914, in Victoria General Hospital Letterbook. This important record collection pertaining to the Victoria General Hospital was once held at the Public Archives of Nova Scotia, (RG25 Series B, Section 1) but was recently returned to the Queen Elizabeth II Health Science Centre [QEIIHSC]. See also Kenney to Dr. M.C. Archibald, 29 May 1915, VG Letterbook, QEIIHSC.

29 For Canada, see Paul Adolphus Bator, "Saving Lives on the Wholesale Plan": Public Health Reform in the City of Toronto, 1900 to 1930", Ph.D. thesis, University of Toronto, 1979, Heather MacDougall, *Activists and Advocates: Toronto's Health Department, 1883-1983* (Toronto, 1990), Alan F.J. Artibise, *Winnipeg: A Social History of Urban Growth, 1874-1914* (Montreal, 1975), especially chapter 13 and R.D. Defries, ed., *The Development of Public Health in Canada* (Toronto, 1940).

30 In October 1923, the *Chronicle* heralded the approval of 11 Nova Scotia hospitals by the American College of Surgeons. Among other criteria, hospitals with more than 50 beds had to have "adequate laboratory and x-ray facilities" to make the approved list. See *Chronicle* (Halifax), 23 October 1923. The Pathological Institute's director, A.G. Nicholls, noted that laboratory facilities were necessary for hospitals "to obtain a rating as Class A institutions", though many hospitals continued to send selected work to Halifax for analysis. See A.G. Nicholls to Victoria General Board of Commissioners, 17 July 1926, file 359, Dalhousie University Staff Files, DUA.

While demonstrating, she worked approximately four days a week for two hours a day, in addition to preparing her slides. She would obtain fresh tissues from a butcher, and George Burbridge, a local pharmacist, would supply alcohol. President MacKenzie claimed that Dalhousie “could not put [compensation] on a really proper basis” but could “recognize that we appreciated [Low’s] services”. “Recognition”, of course, did not demand that Dalhousie pay Low a living wage. The honorarium was considered both appropriate and sufficient until the late fall of 1919, when her brother died. With no other family member to support her, Professor D. Fraser Harris acknowledged her financial need. He wrote that “as long as her brother was alive she had an income from him, but at his death that ceased. She is a[t] present doing so much for my department . . . that it is only fair she should get something more than an honorarium”.³¹ Margaret Low, in search of a better wage, went to work at the Pathological Institute when a job became available. She began there in 1920, chiefly to handle the large volume of venereal disease tests, and earned \$70 a month.³² This more than doubled to \$150 a month by the late 1920s. Other workers conducting public health tests earned approximately \$1,000 a year through the 1930s, and by the end of that decade Low was earning \$2,000. By this time the lowest paid worker in the public health section of the Pathological Institute earned at least \$80 a month. In contrast, throughout the 1930s, the best paid of Dalhousie’s “lab boys” commanded only \$75 monthly.³³

There were other differences between university-based laboratories and those situated in hospitals or elsewhere, whether in Halifax or beyond. Whereas the *raison d’être* of the university labs was to teach and facilitate learning, with research a very distant secondary activity, the hospital laboratories throughout the region were primarily concerned with providing accurate information for clinicians. As new tests became available, the work in the laboratory grew. For example, a therapeutic innovation such as insulin treatment had a significant impact on laboratory work. When insulin treatment began in the Saint John General Hospital, the diabetic patients strained the laboratory’s capacity because they required daily examination of their urine for sugar levels. Urinalyses, which had been performed regularly since the Saint

31 Prior to working for Harris, Low did “a great deal of technical work for Professor [A.G.] Nicholls”. Harris complained that he did not have time to prepare the slides for this histology class, and that his “time could be better occupied than with so mechanical a work”. For information about Low’s pay, see Harris to MacKenzie, 27 July 1917, A-605 and MacKenzie to Harris, 27 July 1918, A-573, President’s Office Correspondence, DUA.

32 MacKenzie, “The Origin and Development of a Medical Laboratory Service in Halifax”, p. 182 and “Public Health Annual Report”, 1920-21. The Halifax laboratory introduced Wassermann testing for syphilis in 1915; venereal disease testing then became a significant component of the lab’s work. The provision of federal funding for this work dramatically increased laboratory work across the country. See Jay Cassels, *The Secret Plague: Venereal Disease in Canada, 1838-1939* (Toronto, 1987), pp. 163-9.

33 Information about wages is drawn from Nova Scotia Public Accounts and Public Health Annual Reports. Context is important here. In neighbouring New Brunswick, for example, Cathy Arnold became an “assistant technician” in the Bureau of Laboratories midway through 1936-37, for which she received \$300. By 1943, Arnold was the senior technician in the facility and earned almost \$1000 annually. Wages in the New Brunswick laboratory were less than those paid in Halifax. See “Annual Report of the Bureau of Laboratories”, 1936, within the Annual Report of the Chief Medical Officer to the Minister of Health for New Brunswick.

John lab's inception, increased by 1,100 during 1922-23.³⁴ Similarly, newly identified public health "menaces", such as venereal disease in the late 1910s and 1920s or cancer in the 1930s, prompted new staff and equipment to be added to those laboratory sections dedicated to public health. The provincial public health laboratories in Saint John and Halifax also augmented the work of smaller hospital laboratories by performing selected tests. The large urban laboratories also conducted milk and water testing for various municipalities on a contract basis. The cumulative result of new facilities and an expanded range of tests for both clinical and public health work was a demand for workers capable of taking charge of the laboratory work and performing a narrow range of tests. The rapid expansion of laboratory work through the 1920s led to the presence of workers at the laboratory bench who had different backgrounds and training, and performed different tasks.

In small community hospitals, work in the laboratory was simply added to the duties of the existing labour force. Not surprisingly, nurses were among the earliest laboratory workers, and many rural nurses recalled their laboratory experience in oral histories collected during the 1980s.³⁵ Greta MacPherson was 20 when she entered Glace Bay General Hospital to undertake nurses' training. She had taught school for one year but found it unsatisfactory. The hospital superintendent, Isabel MacNeil, was a neighbour of Greta, and influenced her decision. After graduating, MacPherson began work at Glace Bay General in the summer of 1922 and found herself responsible for x-ray and laboratory work. A staff nurse had performed this work after taking a "short course" in Halifax. The chance to add time in the x-ray and laboratory rooms to an already long list of duties was hardly coveted. Several other young women refused the offer to undertake these tasks, and Nurse MacPherson was likewise not enthused. The young nurse did demonstrate some aptitude for the work, though she worried that these responsibilities would interfere with her nursing work. The superintendent reassured her that there was not much lab work, only straightforward tests such as blood counts and urines, and that the x-rays would not be burdensome. MacPherson recalled that the superintendent "was anxious for me to do this. Nobody would touch it. So I took instruction".³⁶ Staff nursing positions were few, in large part because of the free labour rendered by student nurses, but MacPherson was offered a position doing lab work, x-rays, some nursing and even anaesthesia. MacPherson stated that "to be a nurse-technician, you're a jump ahead of when you've just taken a technician's course because you already know how to handle patients".³⁷

34 *Ibid.*, 1923.

35 This material is drawn from the Barbara Keddy Fonds, Series 18, Social History of Nursing in Nova Scotia in the 1930s, Public Archives of Nova Scotia/Nova Scotia Archives and Records Management [PANS]. All of the interviews used here were conducted by Dr. Keddy. I am grateful to her for permission to cite from this important collection.

36 Interview with Greta MacPherson, 16 March 1983, Keddy Fonds, Series 18, MF160-11, PANS.

37 Interview with Greta MacPherson, 16 March 1983, Keddy Fonds, Series 18, MF160-11, PANS. This example also suggests the need for further research. While the work in x-ray plants cannot be fully developed here, it is dealt with somewhat in my Ph.D thesis, "Organizing the Bench: Medical Laboratory Workers in the Maritimes, 1900-1950", Dalhousie University, 1999, chapter 3. An explicitly comparative work of laboratory work, x-ray work and other hospital work is the topic of my on-going work, funded by a Canadian Institute of Health Research post-doctoral fellowship.

The combined skill-set secured for MacPherson and other nurses precious positions, but their ability to work across services clearly benefited small hospitals, which did not have the patient loads or budgets to justify hiring staff members dedicated for laboratory work. Nurses in community hospitals throughout Nova Scotia were to “do everything, every department of the hospital and fill in”, recalled one nurse, “whether it’s the kitchen . . . even the furnace room . . . and you should know the lab, the x-ray, the pharmacy, the laundry, the whole business. Make yourself aware that you know that you can fill in anywhere if you’re in the hospital. . . . [a] Jack-of-all-trades”.³⁸ Other nurses recounted similar stories. “You were everywhere”, recalled another, “and you could handle anything”.³⁹ Evelyn Purdy, who graduated from the Yarmouth Hospital School of Nursing in 1920, worked on the hospital books for one month, spent a month in the kitchen assisting the cook and undertook x-ray training.⁴⁰ Clearly, hospital superintendents had an expectation that nurses would perform a variety of tasks, yet even the upper reaches of hospital workers were not immune from such demands. A senior member of the Charlottetown Hospital joined the Canadian Society of Laboratory Technologists (CSLT) in 1939.⁴¹ In addition to supervising the laboratory, she also worked in the records and pharmacy departments. She was well-prepared for all these duties, holding certifications as a records librarian, a degree in Pharmacy and an American Society of Clinical Pathologists Medical Technologist (MT) designation for laboratory work. While her education was extraordinary, her work across departments and disciplines, and across the boundaries of hospital work, was more typical.

Although superintendents wanted staff nurses to add the emerging service departments to their list of regular duties, that prospect seemed daunting to some.⁴² A nurse from the Colchester County Hospital in Truro questioned her abilities. She was responsible for routine laboratory work, including blood counts, fecal examinations, urinalyses, sputum, blood groupings and a variety of other tests. Other analyses, such as all the pathology work, serological tests for syphilis and some blood work, were sent to the Pathological Institute in Halifax. In addition to the laboratory work, she also assisted with x-rays and, in her capacity as nurse, was in charge of the operating room. Despite these responsibilities, the nurse was by no means sure of her competence in all these areas. In 1939 she wrote to the CSLT to ask whether there was a one-year course in laboratory technique “for people who already have some knowledge of the subject, but feel that their training and experience is not sufficient”.⁴³ Other nurses refused “opportunities” for additional training or simply did not want to add any tasks to an already busy day.

38 Interview with Clara M. Buffet, 7 October 1982, Keddy Fonds, Series 18, MF160-4, PANS.

39 Interview with Flora K. McDonald, 6 October 1982, Keddy Fonds, Series 18, MF 160-10, PANS.

40 Evangeline R. Pothier, *Mary Ann Watson and the Yarmouth Hospital* ([Yarmouth, 1986]), p. 52.

41 On the history of the CSLT, see Twohig, “Organizing the Bench”, chapter 5.

42 Evidence from the United States suggests that professional leaders believed this work was appropriate and advantageous for nurses. Lavinia Dock, for example, recognized that work in the service departments could alleviate some of the overcrowding characteristic of nursing as early as the 1890s. See Susan Reverby, “‘Neither for the Drawing Room nor the Kitchen’: Private Duty Nursing in Boston, 1873-1920”, in Judith Walzer Leavitt and Ronald L. Numbers, eds., *Sickness and Health in America: Readings in the History of Medicine and Public Health* (Madison, 1997), p. 260.

43 Correspondence Files, CSLT.

As new responsibilities were assumed and old ones relinquished, the content of nursing work, and other work in the hospital, became a matter for discussion. At the heart of the debate was establishing the “boundaries” between these new tasks and older patterns of work.⁴⁴ Negotiating the content of a day’s labour had implications for staffing levels, worker satisfaction and opportunities for advancement and was a key feature of the division of labour in the modern hospital. Nurses responded differently to the mounting demands being placed upon them. While some felt ill-equipped for the new tasks, others were able to use work in the new departments to shape, at least in part, their workday. An illustration from the immediate post-Second World War period makes this clear. Grace Cann returned to nursing in 1946 near her home town of Overton, Nova Scotia. She had been out of nursing for five years and unexpectedly assumed the position of second night supervisor following the death of her husband. She found the night work a strain and had difficulty sleeping during the day, with the noises of downtown Yarmouth filling her room. She eventually found day work at the hospital, rotating through all the wards before finally landing in the laboratory. She worked exclusively in the lab for more than a year before assuming responsibility for the children’s ward. Interestingly, while Cann “took charge” of the ward, she also “helped” with medical records, “did some work in the lab” and dispensed drugs.⁴⁵

The experiences of nurses who worked in laboratories illustrate an important national debate about the scope and content of nursing work, a debate that extended into the 1940s and 1950s. A contributor to *Canadian Nurse* in 1940 considered work as a laboratory technician, in the x-ray department or as a records librarian to be “good fields” for the graduate nurse. In laboratory work, women could escape the demands of patients and physicians alike to a large extent, a freedom that undoubtedly appealed to some. The author ended by noting that nurses were “being shut out more and more from choice positions in the hospital”, concluding that the nurse is “losing out in the hospital because she is not willing to prove that she can do better work than those who are not nurses”.⁴⁶ Certainly the experience of Grace Cann and the many other Nova Scotian nurses who worked in other services, in whole or in part, refutes this assertion.

44 This is an ongoing debate among health care professions. For a recent example from nursing, see Hannah Cooke, “Boundary work in the nursing curriculum: the case of sociology”, *Journal of Advanced Nursing*, 18, 12 (December 1993), pp. 1990-8. The abstract for this article suggests that “boundary work enables a discipline to stake out a claim to its legitimate territory and the resources that go with it. In a practice discipline such as nursing, the boundaries between nursing and supporting subjects, such as sociology and physiology, create problems of transfer of learning”. See Charles and Fahmy-Eid, “La diététique et la physiothérapie”, pp. 377-408.

45 Interview with Grace Cann, 28 June 1982, Keddy Fonds, Series 18, MF160-9, PANS. This interview is erroneously listed as Grace Long in the finding aid to the Keddy Collection.

46 Pearl L. Morrison, “The Nurses in Hospital Administration”, *Canadian Nurse*, 36, 10 (October 1940). In 1941 another author commented that even if small hospitals had an adequate staffing complement for nursing, they could very well lack people in the laboratory and other services. The duties in these new departments inevitably fell to the nurse. See Anne Wright, “Administration in Small Hospitals”, *Canadian Nurse*, 37, 4 (April 1941), p. 230. Kathryn McPherson suggests that for student nurses too a variety of tasks were recounted in student yearbooks, including work in laboratories: Kathryn McPherson, *Bedside Matters: The Transformation of Canadian Nursing, 1900-1990* (Toronto, 1996), p. 109.

Nurses were performing a widening array of tasks in smaller hospitals.⁴⁷

Debates about whether nurses should or should not perform other tasks within the hospital continued in the post-war period. Clearly, the addition of new services in the interwar period had posed challenges to existing hospital workers and placed new demands on them. The emergence of new services, such as laboratories, pharmacies or x-ray plants, also introduced entirely new workers. By the mid-1920s, the Pathological Institute was providing more tests, and physicians and health authorities were making greater use of the laboratory. Through the first decades of the 20th century, the laboratory built a steady clientele and the health department suggested that the lab's equipment and personnel were being "taxed to [the] utmost".⁴⁸ By 1920, the specimen total exceeded 3,300, and it topped 6,200 in 1921.⁴⁹ By the late 1920s, throat swabs, venereal disease smears and cerebro-spinal fluid examinations increased annually by 33, 35 and 60 per cent respectively.⁵⁰ Public health tests, exclusive of routine clinical work, expanded by almost 300 per cent from 1926 to 1931.⁵¹

With the rising demand for laboratory tests, hospital administrators at the Victoria General Hospital and elsewhere recognized the need for some kind of training programme in medical laboratory technique. Many students made their way into the laboratory of Dr. A.G. Nicholls, the director of the Pathological Institute. Usually, Nicholls trained two students at any one time, although requests sometimes exceeded this number.⁵² Although it has been claimed that these individuals were likely high school graduates, with neither university experience nor nursing education, the evidence suggests otherwise.⁵³ Many of the laboratory women had university

47 Sister Catherine Gerard, of the Halifax Infirmary, wrote in 1948 lamenting the decreasing quality of the nursing service. She blamed the expanding opportunity for nurses in government employment and "in those hospital departments which formerly did not require nurses – for example, the x-ray department and laboratories". Gerard clearly believed that such opportunities drained potential staffers at a time of a nursing shortage in Halifax. Gerard also believed that nurses who found their way into the diagnostic services *stopped* nursing altogether. While this was undoubtedly true of some it is a view informed by her work in a large, urban hospital: Catherine Gerard, "We Look at Nursing Service", *Canadian Nurse*, 44 (October 1948), p. 827.

48 "Public Health Annual Report", 1920, p. 16.

49 "Public Health Annual Report", 1921, p. 23. As always, much of the testing resulted from public health efforts in the province. However, in his report, A.G. Nichols wrote that "Part of the increase in the amount of material submitted for examination is due to the opening up of new hospitals and clinics in the Province and the activities of the Massachusetts Halifax Health Commission in Halifax". Comments on the expansion of public health work are found throughout the Department of Public Health Annual Reports. See for example, "Public Health Annual Report", 1924, 1925.

50 "Public Health Annual Report", 1926, p. 22 and 1927, pp. 22-3. It is important to note that this increase was in specimens and not tests and is therefore unrelated to the dual testing of blood samples with both the Wassermann and the Kahn tests. It was estimated that the dual testing did account for over 2,000 tests: "Public Health Annual Report", p. 21.

51 See "Public Health Annual Report", 1931, p. 7. For a five year interval, 1921 to 1926, public health work increased by 11.3 per cent. D.J. MacKenzie suggested that this increase was principally due to venereal disease work and sputum examinations, although he acknowledged that this growth would not continue. He did suggest, however, that the province should be conducting twice as many sputum examinations for tuberculosis in the fight against that disease: "Public Health Annual Report", 1932, p. 22.

52 "Public Health Annual Report", 1923.

53 Dhirendra Verma suggested that "From 1914 to 1922, young women were trained in the laboratory to conduct a few simple tests. There was no definite pattern of training". Verma also suggested that

experience, and nurses were among the earliest students.⁵⁴ Nurses from hospitals throughout the Maritimes typically came to the Institute for a few weeks. All acquired practical education at the bench, and they frequently also received instruction in both laboratory and x-ray work.

Other women received more extensive training. Nicholls reported in 1924 that two women had taken a course of eight months' duration.⁵⁵ A worker from the 1930s recalled that, in addition to nurses, "there were always people who would come in to take the course". This same worker did not feel it was much of a training programme, however. "Usually it was somebody who wanted to get away from home every day. It really wasn't very much of a course. And they helped out you see, they were another body to do things. And they would pick up quite a bit". She also thought that the students were overwhelmingly "local girls". She remembered that "Some were doctor's daughters, or somebody would have an interest or want during the summer something to do or it was a change perhaps from going down to work in a store, or they didn't want to become a nurse or who weren't interested in schoolteaching. So this was a big deal, I suppose. So we always had somebody".⁵⁶ What is clear is that Nicholls was training a variety of workers, including some who were already working in hospitals and others who required more extensive preparation.

Another important source of workers for the Pathological Institute was Dalhousie University. One early addition to the staff was Dr. Margaret Chase. Dr. Chase was appointed as a technician in May 1923 in the Department of Pathology and Bacteriology, and Nicholls wanted her to be recognized as well as an assistant in the Pathological Laboratory.⁵⁷ In correspondence, Nicholls noted that Chase, who had graduated in Medicine the previous day, was "willing to come on a technician's salary, that is \$75.00 per month", for duties in the medical school, the pathology laboratory and museum work! Chase did not labour in the laboratory for long. Her subsequent career took her to the United States, including Philadelphia and New York. Nevertheless, Dr. Chase may be said to be the first female physician to have been employed by the Victoria General Hospital, a distinction traditionally granted to Dr. Eliza Perley Brison.⁵⁸ That a physician would toil in the laboratory as a technician,

"Young high school graduates were chosen by hospitals, shown how to perform various tests in the laboratory, and were appointed permanently as regular laboratory technologists": Dharendra Verma, "Medical Laboratory Technology Instruction in Nova Scotia", M.A. thesis, Saint Mary's University, 1968, pp. 5, 19. While no evidence could be found to refute or substantiate this assertion, it is a reasonable inference that the longer training course was in all likelihood intended for such young women.

54 W.W. Kenney to Dr. W. Eagar, 4 November 1924, VG Letterbook, QEIIHSC.

55 "Public Health Annual Report", October 1923 to September 1924.

56 Interview with Rose Phillips conducted by Peter L. Twohig, 22 April 1996. It is significant that Phillips herself was university educated, and this perhaps coloured her opinion of the training programme. Certainly, the Pathological Institute's course focused on the practical elements of laboratory work and paid little attention to theory.

57 Minutes of the Victoria General Hospital Board of Commissioners (VG Board Minutes), 31 May 1923, QEIIHSC.

58 Nicholls to MacKenzie, 9 May 1923, A-817, President's Office Correspondence, DUA and VG Board Minutes, 31 May 1923; *Nova Scotia Medical Bulletin*, 5, 11 (November 1926), p. 36 and 6, 9 (September 1927), p. 35. For details about Brison and Chase, see Enid Johnson MacLeod, *Petticoat Doctors: The First Forty Years of Women in Medicine at Dalhousie University* (Porter's Lake, N.S., 1990), pp. 49-52 and 90-1. The entry for Chase records nothing of her work in the laboratory, however.

for however short a period, suggests the many obstacles facing women doctors in establishing a practice. Gender shaped the experience of women and shaped it differently from men. Women physicians could be found at work in the “feminine specialties”, which in the 19th century meant obstetrics and gynecology and in the 20th, pediatrics, public health, teaching and counselling.⁵⁹ Certainly, this pattern was apparent among Dalhousie graduates in medicine and serves as an important reminder that gender was deeply embedded in the provision of health care. As health care services expanded through the early decades of the 20th century, hospitals and agencies alike turned to women to fill the new positions, yet even women physicians, who were unquestionably privileged when compared with other women, did not enjoy the same opportunities as their male colleagues.

In addition to Chase, other Dalhousie graduates made their way into the Pathological Institute.⁶⁰ Patricia S. Tingley, who held a B.Sc. with special training in chemistry, joined the laboratory in 1926-27.⁶¹ Peggy Cameron was working on her Bachelor of Arts degree when she began as a “volunteer worker” in the laboratory in June 1929. Following graduation, Cameron took further courses in bacteriology and biology, and in June 1931 she became a full-time technician. Her additional course-work complemented her earlier education in chemistry and biochemistry, making her in the opinion of the director “exceptionally well trained for Public Health Laboratory work”. Another well-trained worker was Mary MacDonald, who was appointed in June 1938. Like Cameron, MacDonald had pursued classes in bacteriology, chemistry and biochemistry, in addition to physiology. And again like Cameron, she had worked as a “voluntary technician at the laboratory for nine months” before her appointment. Other workers brought university experience as well, including Betty Foster (B.Sc.), Katherine Miller (M.Sc.) and Pauline Webster (M.A.). For university-educated women, with few other employment opportunities, work in the Pathological Institute probably had some appeal. It offered an opportunity to use one’s degree or undertake only limited further training; for women the compensation and hours of work were favourable and the work respectable.

University-educated women, nurses and those who undertook specific training staffed Nova Scotia laboratories in the late 1920s and 1930s. There were many paths to the laboratory bench, and evidence from the membership rolls of the Canadian Society of Laboratory Technology confirms this diversity. During the society’s first decade 74 workers from the Maritimes and Newfoundland became CSLT members. Nineteen of the applicants had university degrees, while another 19 had some university education. Fourteen of the members had undertaken laboratory courses of varying length in a hospital. There were also eight applicants who had nursing

59 Regina Markell Morantz-Sanchez, *Sympathy and Science: Women Physicians in American Medicine* (New York, 1985), pp. 61-62.

60 For a broader discussion of the constrained opportunities for women graduating from Dalhousie during this period, see Paul Axelrod, “Moulding the Middle Class: Student Life at Dalhousie University in the 1930s”, *Acadiensis*, XV, 1 (Autumn 1985), pp. 84-122 and Judith Fingard, “Gender and Inequality at Dalhousie: Faculty Women before 1950”, *Dalhousie Review*, 64, 4 (Winter 1984-85), pp. 687-703.

61 Information about these workers can be found in Department of Public Health Annual Reports for the late 1920s and 1930s and has been supplemented with information from the Dalhousie University Student Registers, DUA.

education, while another eight had some other education, including business courses. Twenty-three had no education beyond high school, while 15 had combined educations. The early membership data of this professional society reveals the diversity that was characteristic of laboratory workers and suggests that other aspects of hospital work might be similarly constituted. Such diversity was not a relic of an earlier era, nor was it entirely or quickly eliminated. Moreover this diversity poses a significant challenge to our understandings of hospital work in particular, and health care work more generally. Examinations that focus on occupational groups in isolation obscure the variability that prevailed within the professional societies and, indeed, within modern Canadian hospitals. The small laboratory of interwar hospitals required workers with a knowledge of a range of tests, perhaps in addition to other duties such as dietetics, x-ray technology or nursing. The multi-tasking characteristic of work in smaller hospitals during the interwar period thus contradicted the normative dream of 20th-century health care professions, as each tried to carve out and maintain a sphere of activity in an increasingly crowded and competitive occupational environment.

Work in the laboratory or in other hospital departments or services should not necessarily be viewed as evidence of an individual's unproblematic professional identity. Rather, this issue needs to be historicized, and the ways in which the prevailing diversity was incorporated into the "professional portrait" of the workers must be considered. Clearly, the CSLT, both through pronouncements from the head office and through its national journal, the *Canadian Journal of Medical Technology*, believed that laboratory workers were part of a health care team, with an emphasis on co-operation with and subordination to other interests, including those of hospital administrators, public health planners and physicians.⁶² Laboratory workers, it was presumed, were "only a link in the chain" and "responsibility for action will always rest with the members of the medical profession".⁶³ Physicians were responsible for the intellectual work of reading laboratory results and making diagnoses or case management decisions on the basis of those reports. While many laboratory workers fulfilled a variety of roles within the hospital and combined modalities of work, their duties, rights and responsibilities in all these areas were highly circumscribed. Their place in the hospital hierarchy was entrenched and their working conditions fairly rigid, despite the illusion of option.

The portrait of the "professional" laboratory worker consisted of other critical elements. Employers emphasized "thoroughness" and dedication, with one

62 This is reflected both in the records of the CSLT and in their formal documents. For example, the Code of Ethics was developed in June 1950 as an "outgrowth of a desire to maintain the dignity and the high esteem of the profession of medical technology. It is a guide for the technologist in all professional activities and relationships". In the introduction, it was noted that "medical technology is one of the newer branches of the medical arts and sciences, but it has a worthy role to fulfill. The medical technologist, appreciative of the valuable work done by doctors, nurses and others, should endeavour to co-operate fully with them in the care and healing of the sick". The pledge was modeled on an American document, and new workers pledged "to work harmoniously with my fellow technologists, and others who care for the sick": CSLT Annual General Meetings, 26 June 1950 and 7 June 1954, and CSLT Executive Meeting, 18 May 1952, CSLT National Office.

63 James Miller, "The Characteristics and the Training of the Technologist", *Canadian Journal of Medical Technology*, 1, 2 (1939), p. 42.

commenting that “I have no use at all for the type of assistant who works with his eye on the clock. The laboratory technician must always be prepared to go on till the work is done”.⁶⁴ Another author suggested that “of course, we all like our pay cheques. But the true technician is interested in his work to the extent that the money side of it is of secondary importance. If you haven’t a genuine love for the work itself you aren’t living up to your true capacity as a technician”.⁶⁵ Laboratory workers were not supposed to accrue material benefits for working overtime, nor were they supposed to become ill. A writer in the *Canadian Journal of Medical Technology* suggested in 1939 that absence from work, even for a day, disrupted the work of the laboratory, perhaps a recognition of inadequate staffing levels. To avoid this problem he always told his employees “not to go too often to the movies and in times of epidemics of influenza they should avoid them altogether”. Workers were to avoid trolleys for similar reasons. To preserve one’s health and ensure reliable service to one’s employer, “take plenty of exercise in the fresh air both summer and winter and be wise in your dieting”.⁶⁶

“Skill” completed the emerging professional portrait expounded by the “professionalizers”. Manual dexterity and competence were what counted, and these attributes could not be guaranteed through a university education, noted one writer; only natural ability or experience could ensure this facility.⁶⁷ A worker from Nova Scotia recalled how excited laboratory director D.J. MacKenzie was when he recruited a young woman from St. Francis Xavier University in Antigonish. “She knew all about bacteriology”, recalled the worker. “She came, she might have known her stuff, but she was totally useless. She would get mouthfuls of stuff, and spill things”.⁶⁸ Technicians were to be “neat handed”, and many thought women to be particularly suited to some tasks. There were also exceptions to all these elements. Supposed dexterity made women desirable, but “the young woman whose main object in life is to secure a husband is out of place in the profession”. Also, although women were generally thought to be more nimble, superior workers came in all shapes. One writer cited the example of a “massive bombardier” who could mount incomparable pathological specimens. Although vigour and health were desired, they were not absolutely mandatory. It was a profession where those with “delicate” health could find a home, with one author reminiscing fondly about an Edinburgh “hunchback” who could produce superior microscopic slides of tissue samples.⁶⁹

Behind the artifice of specialized work was a complex milieu of hospital relations. Laboratory workers, in an age when new tests were being added, did not successfully articulate a claim to any body of knowledge, to the labour process in laboratories or to interpretation or use of results. The flexibility that was a feature of many aspects of hospital work was particularly damaging to an emerging labour force. The ambiguity

64 Ibid.

65 Harvey Hall, “Do’s and Don’ts for Technicians”, *Canadian Journal of Medical Technology*, 1, 2 (1939), p. 52.

66 Miller, “Training of the Technologist”, p. 42.

67 Mary W. O’Donnell, “O Pity the Poor Student – Or Should We?” *Canadian Journal of Medical Technology*, 4, 1 (1942), pp. 41-2.

68 Interview with Edna Williams conducted by Peter L. Twohig, 23 April 1996.

69 Miller, “Training of the Technologist”, p. 43.

of laboratory roles essentially meant that laboratory workers were grouped as an undifferentiated mass: either as students, or as those who were labeled “technicians” or as those merely providing “services” ranging from vacation relief to bottle-washing. The fact that individuals could not be distinguished from one another homogenized and effectively devalued laboratory work. What is most striking is how this sharply contrasts with the growing specialization of medicine. Laboratory workers were viewed as interchangeable, while physicians, most of whom were men, were believed to have recognizable and individual skills.⁷⁰

Most germane to the laboratory is the fact that physicians occupied the critical position of laboratory director, and from their position in the socio-cultural network of medicine, valorized the interpretation over the preparation of results. The skill attached to the reading is what was important and shaped how work was organized and rewarded within the hospital. Few women and virtually no laboratory workers shared in this culture. The gendering of skill is a rich historiographic theme,⁷¹ and the two sites studied here, Dalhousie’s medical science laboratories as well as those found in hospitals, confirm this richness. Laboratory work was certainly gendered, but it was gendered differently in the two settings. Both groups of laboratory workers lacked exclusive ownership over their skills. In the case of Dalhousie’s “lab boys”, they were considered replaceable. A new laboratory “boy”, with a little effort, could acquire the necessary abilities. Similarly, with a little training, high school graduates or university women could become competent at basic clinical or public health tests. So too could other hospital workers.

How did laboratory workers, with diverse educations and labour processes, work to create a modern identity that was shared and stable? The short answer is that they did not. The need for workers with adequate training to perform a widening array of tests for an expanding public health system and a growing number of clinicians predated any social recognition of these workers. Gradually (and only generally) were the new workers distinguished from others in the hospital, though the transition was lengthy, highly variable and remained remarkably incomplete. The growth of hospital facilities and the expanding workforce are not evidence of an increasing and linear trend toward specialization. Many hospital employees worked in several services and filled a variety of roles in the modernizing hospital. Local factors, including hospital size, the presence or absence of a nursing school and the clinical load of the hospital (which determined the kind of laboratory tests required) all shaped how laboratories were staffed.⁷²

70 This has been argued for a somewhat later period and in an office setting by Gillian Creese in *Contracting Masculinity: Gender, Class and Race in a White-Collar Union, 1944-94* (Toronto, 1999), p. 94.

71 Cynthia Cockburn, *Brothers: Male Dominance and Technological Change* (London, 1983); Jane Gaskell, “Conceptions of Skill and the Work of Women: Some Historical and Political Issues”, *Atlantis*, 8, 2 (1983), pp. 11-25; Cynthia Cockburn, “The Gendering of Jobs: Workplace Relations and the Reproduction of Sex Segregation”, in Sylvia Walby, ed., *Gender Segregation at Work* (Philadelphia, 1988), pp. 29-42; Joy Parr, “Disaggregating the Sexual Division of Labour: A Transatlantic Case Study”, *Comparative Studies in Society and History*, 30, 3 (1988), pp. 511-33; Joy Parr, *The Gender of Breadwinners: Women, Men, and Change in Two Industrial Towns, 1880-1950* (Toronto, 1990). The best regional study of skill and gender is Shirley Tillotson, “The Operators Along the Coast: A Case Study of the Link Between Gender, Skilled Labour and Social Power, 1900-1930”, *Acadiensis*, XX, 1 (Autumn 1990), pp. 72-88.

72 In Canada, before 1950, it is possible to group workers in the following way: nurses who also conducted laboratory tests; other hospital employees who worked in more than one service; and

While the opportunities for laboratory work in hospitals grew substantially in volume, scope and complexity during the 1920s, the staff was far from homogeneous. The variability of the laboratory workers themselves and the work they performed serve to correct the view that health care workers increasingly specialized over 20th century.⁷³ Evidence from Nova Scotia, the Maritimes and indeed nationally suggests that many workers did not have highly defined and restricted duties. Moreover, in the large laboratories in Halifax and Saint John, workers came from a variety of backgrounds and did not even share a common education. The specialization that is so often touted as a characteristic of the modern hospital is severely complicated by the experience of laboratory workers. This analysis suggests that we need more studies of relationships among workers. Further explication is also necessary regarding the creation of modern identities in this context of multi-tasking and boundary crossing.

One identity factor about which there is no doubt is that gender was a significant force in creating a laboratory workforce for hospitals and public health work. The practice of foisting new duties on an existing labour force (in the case of nurses who worked in the emerging services) or exploiting well-educated university women with few other employment prospects is evidence that confirms much of what is known about women's paid employment. Gender was also central to the casting of the Dalhousie "lab boys", although here it operated much differently. The debate over wages within Dalhousie University often concerned the question of family maintenance. Men were usually thought to be primarily responsible for sustaining families, as in the case of Albert Hallett. Marriage complicated the discourse

dedicated laboratory workers. These classifications were not successive – one did not displace the others. Before 1950 any of these workers could be found in a Canadian hospital, depending on its size, location and clientele. Halifax, for example, had one of the earliest recognized training programmes dedicated to training laboratory technologists, while at the Tuberculosis Hospital, which was practically next door, there was a combined laboratory and x-ray technician. The first list of approved training schools was published in the *Canadian Journal of Medical Technology* in March 1942. The Pathological Institute housed one of the first nine approved courses in Canada. For information on the combined position at the Tuberculosis Hospital, see "News Notes", *Canadian Nurse*, 45, 12 (December 1949), p. 943.

73 Often the emergence of the "modern" hospital, replete with specialized workers, is implied in the structure of hospital histories, which emphasize the development of medical departments or particular services. For examples see H.E. MacDermot, *A History of the Montreal General Hospital* (Montreal, 1950), D. Sclater Lewis, *The Royal Victoria Hospital 1887-1947* (Montreal, 1969), W.G. Cosbie, *The Toronto General Hospital, 1819-1965: A Chronicle* (Toronto, 1975), Irene McDonald, *For the Least of My Brethren: A Centenary History of St. Michael's Hospital* (Toronto, 1992) and Neville Terry, *The Royal Vic: The Story of Montreal's Royal Victoria Hospital, 1894-1994* (Montreal, 1994). Two of the better Canadian examples are David Gagan, *A Necessity Among Us: The Owen Sound General and Marine Hospital, 1891-1985* (Toronto, 1990) and Colin D. Howell, *A Century of Care: A History of the Victoria General Hospital in Halifax, 1887-1987* (Halifax, 1988). For overviews of the genre, see S.E.D. Shortt, "The Canadian Hospital in the Nineteenth Century: An Historiographical Lament", *Journal of Canadian Studies*, 18 (Winter 1983-84), pp. 3-14 and J.T.H. Connor, "Hospital History in Canada and the United States", *Canadian Bulletin of Medical History*, 7 (1990), pp. 93-104. Analytical discussions of specialization may be found in Charles E. Rosenberg, *The Care of Strangers: The Rise of America's Hospital System* (Baltimore, 1995), especially pp. 169-75 and, for a discussion of laboratories, pp. 342-43 and Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York, 1997), pp. 381-8 for the development of 19th-century "specialist" hospitals and pp. 647-8 for 20th-century specialization.

surrounding wages in the Dalhousie laboratories. The university maintained that the work was not suitable for a married man who had a family to support. Moreover, men who worked in the laboratories were thought to be less ambitious than other men. It seemed the university believed that determined men would simply look for more remunerative work, despite the obvious recognition that an effective laboratory worker aided instruction and research. The skill of these workers was not acknowledged either ideologically or financially. The university was willing to bear the cost of frequently training new workers, rather than paying a wage sufficient to retain competent staff. Age, gender roles and a belief about ambition in the capitalist world combined to justify the low wages paid to the support staff in the university. What is interesting is that any justification was proffered at all. For the women across Morris Street in the Pathological Institute, or in New Brunswick's Bureau of Laboratories or elsewhere, no similar explanation was necessary. Nevertheless, their wages were often better than those paid at Dalhousie. Finally, while there were connections between Dalhousie's medical school and the Pathological Institute, including at the most senior levels, there was very little movement of laboratory staff between the two sites.

The laboratory workers of Dalhousie and the Pathological Institute were separated only by a city street, yet they were clearly discrete establishments. This was the case even though the medical school had a direct interest in the Pathological Institute, and the connections between the two facilities frequently traversed the boulevard. Women who graduated from the university often took up employment at the Pathological Institute, but the workers in the Dalhousie labs rarely did. Studying the details of occupational formation in these two settings reveals the ways in which gender operated differently even for similar work. This study serves as a reminder that the gendering of work, and the embedded assumptions about matters such as skill or wages, are highly dependent upon other factors and interests, including the availability of workers, occupational mobility or workers' willingness to retrain or fill multiple roles. Moreover, the case of the laboratory worker also illuminates work in health care in new ways by drawing attention to the permeable boundaries within the division of labour. That nurses were prominent among the early laboratory staff and that there were debates within Canadian nursing about new tasks within hospitals suggests that this is an area in need of further research. How did work in the laboratory and in other services such as physio- or occupational therapy shape nursing (and vice versa) during the inter and post-war period and beyond? The practice of multi-tasking within the hospital seems to have applied to many occupations and is in need of further consideration.

"Profession" is a term that is both bountiful and barren for most historians. Its meaning is elusive and, as a category of analysis, perhaps too elusive to be useful.⁷⁴ There is a need to transcend such portrayals, and to move beyond tired discussions of presumed "professionalization". The identity of laboratory workers was not a stable, bounded and unchanging one. Instead, their work environment was shared, and their membership and daily labour were highly dependent upon context. What this study of

74 Bruno Latour has recently written that "one cannot get much mileage out of" the term, because of the lack of specificity: Latour, "The costly ghastly kitchen", pp. 295-96.

the laboratory suggests is that we need histories of health care that challenge the limits of occupational borders and return to the archives to describe how these workers made their identity and interacted with other workers engaged in similar projects. While “professionalism” stands as the predominant cultural interpretation of health care work in 20th-century Canada, it is an approach that privileges a single identity and often ignores the relationships that existed among health care workers. In many settings occupational identity and the boundaries of work were not tightly drawn and roles for workers remained highly ambiguous and more variable than many accounts assume. Understanding this complexity in the hospital or the university is only the first step towards articulating an identity other than that of “professional” for all workers. It is also a re-orientation that could serve political and symbolic functions in the face of a restructuring health care system and a workforce imbued with messages that it must constantly acquire new skills and training.