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x  
x  
x Herb.

ROYAL BOTANIC GARDENS  
H2005/01448  
26  
KEW

*L. chloranthus*. Presl  
*Anticlaea glauca* Kunth

HERBARIUM  
1867  
HOOKERIANUM

*β major* Hook. & Arn.

*Ligadennis elegans*  
June 1829 Murray Bay

Quebec  
47° 41' N  
70° 10' W

Coll. Mrs. Shepherd

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# Scientia Canadensis

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**On the cover / en couverture:** *Zigadenus elegans* (now *Anticlea elegans*, mountain death camas), collected by Harriet Sheppard, June 1829, at Murray Bay. Herbarium of the Royal Botanic Gardens, Kew. Photo Agriculture & Agri-Food Canada.

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Manuscripts articles may be written in English or French, and should not exceed 10,000 words. Please consult with the editor regarding word-limits for other types of content such as research notes, forums or roundtables. All manuscripts should contain the following elements:

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- Author name(s)
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Please use Times Roman 12-point text and double-space the text using a page set to Word's "normal" margins. Graphics, tables, and figures are welcome: please note their recommended position in the body of the text (e.g. "Insert figure 1 here"), but please do not insert images into the manuscript. Save and attach all images as separate files. Images may be saved as JPG files. Line drawings or other vector-type images should be saved and submitted as EPS files. Please do not submit images in or as a Word file.

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- Les adresses électroniques des auteurs
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# Collecting with “botanical friends”: Four Women in Colonial Quebec and Newfoundland

Ann Shteir and Jacques Cayouette

**Abstract:** *Four women from the British colonial elite in Quebec and Newfoundland were among the more than 120 contributors to William Jackson Hooker’s *Flora Boreali-Americana* (1829-40), an imperial project to assemble information about plants from across British North America. Letters that Christian Ramsay (Lady Dalhousie), Anne Mary Perceval, Harriet Sheppard, and Mary Brenton wrote to Hooker during the 1820s and 1830s show their interest in collecting Canadian plants — native orchids, ferns, weeds, bog plants — as well as their zeal for sharing knowledge and communicating their findings among friends and across borders. Along with other archival materials now available, the letters are a record of work by women in botanical discovery. By making visible the friendships, networks, and social and cultural practices that brought the women into Hooker’s project, the letters enlarge and enrich the history of science in Canada.*

**Résumé :** *Parmi plus de 120 collaborateurs au projet de *Flora Boreali-Americana* (1829-1840) du botaniste William Jackson Hooker figurent quatre femmes de l’élite coloniale britannique de Québec et de Terre-Neuve, collaboratrices au projet de flore de l’Amérique du Nord britannique. La correspondance de Christian Ramsay (Lady Dalhousie), Anne Mary Perceval, Harriet Sheppard et Mary Brenton avec Hooker durant les années 1820 et 1830, illustre bien leur intérêt à récolter des plantes du Canada — orchidées indigènes, fougères et plantes introduites et de tourbières — et leur zèle à transmettre leurs connaissances et leurs trouvailles à leurs amis et au-delà des frontières. Ces lettres, combinées aux autres documents d’archives maintenant disponibles, témoignent de la contribution de ces femmes à la découverte botanique. Tout en révélant les amitiés, les réseaux et les pratiques sociales et culturelles de ces femmes au projet de Hooker, cette correspondance unique élargit et enrichit l’histoire des sciences au Canada.*

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**Keywords:** Botany, women, correspondence, networks, British North America, William Jackson Hooker, Lady Dalhousie, Anne Mary Perceval, Harriet Sheppard, Mary Brenton, Quebec, Newfoundland

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WHILE THE HISTORY OF BOTANY HAS LONG BEEN CHRONICLED as knowledge gathered and organized about plants, it also reflects friendships, networks, and practices that over the centuries made it possible to study plants instrumentally by locating, assembling, and transporting them across borders, continents, and oceans. This article uses archival material to showcase four elite women in Quebec City and St. John’s, Newfoundland, who collected plants for the *Flora Boreali-Americana*; or *the Botany of the Northern Parts of British North America* (1829-40, hereafter referred to as *Flora Boreali-Americana*), a British imperial

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publication initiated and developed by William Jackson Hooker, then professor of botany at the University of Glasgow, later to become the first Director of the Royal Botanic Gardens, Kew. Letters to Hooker from Christian Broun Ramsay (Lady Dalhousie), Anne Mary Perceval, Harriet Sheppard, and Mary Brenton in the *Director's Correspondence* at Kew abound in material for reconstructing the circumstances of their work during the 1820s and 1830s. They collected for Empire and for personal satisfactions having to do with friendship, family, curiosity, and zeal for knowledge, and in so doing participated in knowledge activities in early British colonial Canada. In relationships of mutuality, they contributed to Hooker's project, and he cultivated and rewarded them for work that had cultural cachet and public scientific value.

Compared to the iconic Canadian historical figure of Catharine Parr Traill, the emigrant naturalist and writer,<sup>1</sup> William Hooker's four women botanical collectors have had limited visibility in Canadian histories of science and history more generally.<sup>2</sup> Reasons for this are not difficult to discern. Botany developed as a discipline in the mid-nineteenth century with university-based learning and the founding of formal societies,<sup>3</sup> and hierarchies of knowledge as well as ideas about gender often gave women and men differential access to intellectual activities. Nor can traces of Hooker's female botanical collectors be found in histories of women in pre-Confederation Canada where scholarly emphases have been on pioneers and settlers arriving from Britain and on conditions for them as labouring women.<sup>4</sup> By contrast, the women involved in Hooker's project were elite women, a social class less studied in recent years. Furthermore, only one of the four women remained in Canada and “became” Canadian; the other three left the colonies and returned “home” to Britain. Yet, their stories belong to women's history in the pre-Confederation period of Canadian history as well.

Botanical work in early nineteenth-century Canada was shaped by practices of collecting and exchanging plants, by networks that brought enthusiasts into contact with one another to share knowledge and sources of specimens, and by publications that itemized plants in a given area. William Jackson Hooker's *Flora Boreali-Americana* contains descriptions of approximately 5,000 plants found in locations that ranged from Newfoundland and Labrador on the far eastern coast of North America westward to Quebec, the Rockies, British Columbia, part of the western coast of the United States, and up into Hudson Bay and other locations in the Arctic. Published “Under the Authority of the Right Honourable the Secretary of State for Colonial Affairs,”<sup>5</sup> it is expansive in geography and also in its assertions of power. Hooker did not himself collect the massive amount of material in this 500-page work, but he initiated the project, and assiduously solicited botanical specimens through his trans-Atlantic and colonial contacts.<sup>6</sup> Hooker cites the names of more than 120 government officials, military officers, plant hunters, and naturalists who sent him plants, or whose publications, collections, and botanical expertise he had access to. Foremost among these were John Richardson and Thomas

Drummond, who travelled on John Franklin's Arctic expeditions, and David Douglas, who collected in western Canada and northwestern parts of America under sponsorship from the Horticultural Society of London, and who are cited more than 500 times each.<sup>7</sup> Another group of contributors consists of the four women who are the focus of this study and who collected plants for him in Quebec and Newfoundland. Together they are cited nearly 450 times as sources of information about specific plants. They stand out because they are the only women cited in this work. They also stand out because their citations derive from collecting work that Hooker commissioned specifically for the *Flora Boreali-Americana*.

At that time, the nature that surrounded pioneers and imperial sojourners in British North America was compelling to botanical as well as aesthetic eyes, as it had been to explorers, travellers, and settlers in Canada in earlier centuries. Writers and artists gave first-hand accounts of the thundering waters, dark woods, and rapturous expanses in the landscapes of Canada, and visitors filled scrapbooks, diaries, and albums with drawings and paintings of the novel colours of maple leaves and indigenous plants. Hooker's *Flora Boreali-Americana* was of a piece with other nineteenth-century ventures that aimed to "capture" these wonders visually and textually. It is no small matter, however, to collect specimens for submission to a Flora. Once found, specimens must be prepared and sent to a botanist for study and identification. Living plants are excellent for such purposes, but dried specimens work best, particularly when they are properly pressed, packaged, and shipped under conditions that do not wet and rot the parcels. Hooker provided encouragement to potential collectors as well as specific guidance for this in correspondence and publications. His *Directions for Collecting and Preserving Plants in Foreign Countries: On Preserving Plants for a Hortus Siccus* (1828), for example, sets out details about how to use papers and boards so as "to preserve specimens of plants in such a manner that the moisture may be quickly absorbed, the colours as much as possible preserved, and such a degree of pressure given to them, as that they may not curl up in the act of drying." Hooker recommends "brown paper for coarse plants, and blotting-paper for the more delicate kinds," and describes how to create a travelling press.<sup>8</sup> Through personal correspondence and publications, William Hooker encouraged thousands of people to botanize on behalf of Empire. Writing about correspondence networks in nineteenth-century British natural history, Anne Secord has analysed the intricacies of social class that brought people together and shaped their working relationships. Personal contacts and introductions by friends were essential, she wrote, as was "the elaborate etiquette of polite society" that would "enable one to know who to trust."<sup>9</sup> Social networks were a key bridge between botanical culture and botanical science in colonial Canada as elsewhere. Hooker was the recipient of work done on his behalf and at his invitation. In turn, he cultivated participants, conveyed a sense of their importance to his project, and taught them skills.

William Hooker dedicated the *Flora Boreali-Americana* to the expeditions by John Franklin and John Richardson to “the Polar Seas” and refers on the title page to their having collected plants “under circumstances of singular difficulties, Hardship, & Danger.” Hardship was a reality of some botanical collecting, part of the experience for which some prospective collectors diligently prepared. During a visit to Hooker’s family in 1817, botanist John Lindley is said to have practiced for the potential hardship of plant-collecting expeditions abroad by sleeping on the floor.<sup>10</sup> Lindley thus exemplifies one facet of the “scientific masculinity” now being explored in gendered norms, spaces, and metaphors across the history of science.<sup>11</sup> Hooker’s women contributors put a different face on this work. Their collecting activities took them at times into challenging habitats, but their field science was generally more domestic than the rigorous expeditionary exploits recorded by other contributors to Hooker’s *Flora*.

At that time, Quebec City in Lower Canada was the administrative centre for the British provinces in eastern North America, a garrison community, and a place to manifest Britain’s cultural and political imprint. Three of the women contributors to the *Flora Boreali-Americana* were sojourners on imperial assignments. Anne Mary Perceval (1790-1876) came from London as a newlywed in 1810 when her husband was appointed as His Majesty’s Director of Customs for the Port of Quebec. Christian Broun Ramsay, Countess of Dalhousie (1786-1839) lived in Quebec, Sorel, and Montreal from 1820 through 1828, when her husband was Governor-General of the British Provinces in North America, following his posting in Halifax as lieutenant governor of Nova Scotia. Harriet Sheppard (1786-1858) came to Quebec as the daughter of a prosperous Loyalist family and married a gentleman-merchant; they stayed and became “Canadians.” The fourth woman, Mary Brenton (1792-1884), was in Newfoundland as a sojourner from the later 1820s into the later 1830s when her father served as a judge on the newly-formed Supreme Court of the British colony.

Out of friendships and through family ties, Hooker’s four female correspondents in British North America contributed to the growth and circulation of botanical knowledge. Their work is part of a larger history of women as natural-history collectors, but particularly characteristic of eighteenth- and nineteenth-century British and British colonial culture, when people across a broad range of social classes collected plants, ferns, seaweeds, insects, shells, and fossils and participated in practices of natural history.<sup>12</sup> Like their British counterparts, Dalhousie, Perceval, Sheppard, and Brenton took part in forms of public and private botany that included attending sessions of a local scientific society, corresponding and conversing with others interested in science, and collecting plants on outings with family and friends. Botanical practices forged informal links in a “new” land, but at the same time anchored these women in familial and genteel activities in Britain. The letters from these “Canadian” women to Hooker demonstrate that sociability, friendship, family, intellectual activity, and links to home came together in a cultural recipe that

benefitted colonial, and imperial, science and also benefitted the women who took part. Like any recipe, however, individual differences make for special flavour.

### **Lady Dalhousie: “The new and the rare”**

Botany was a keen interest for Christian Broun Ramsay (1786-1839), the Countess of Dalhousie, with the British Empire affording her opportunities to collect in Canada, where she was resident from 1816 to 1828, and later in India and surrounding areas. Specimens collected by Lady Dalhousie are held in botanical gardens and herbaria worldwide.<sup>13</sup> Her contributions from British North America are cited in entries in Hooker’s *Flora Boreali-Americana* for 48 native vascular plants, including orchids, shrubs, and a few weeds. Herbaria, plant lists, journal entries, and archival materials from the 1820s document her work for Hooker. Lady Dalhousie’s letters to Hooker in the *Director’s Correspondence* at Kew offer glimpses of an aristocratic woman who avidly cultivated botanical knowledge and developed field experience and botanical know-how.

Lady Dalhousie arrived in British North America in 1816 as the mother of three young sons and wife of senior colonial administrator George Ramsay (1770-1838), the Ninth Earl of Dalhousie. The patrician Lord Dalhousie stepped into a British colony on the brink of change. Unable to weather the tumultuous political climate in Lower Canada of the 1820s, he was recalled in 1828.<sup>14</sup> His initiatives and patronage, however, led to the foundation of scientific and educational institutions in British North America, including the institution that became Dalhousie University, and the Literary and Historical Society of Quebec, a learned society intended to enshrine British values and cultural practices. Studious in manner, Lord Dalhousie built up a substantial personal library in Quebec, and botany books were prominent among these.<sup>15</sup>

Lady Dalhousie shared Lord Dalhousie’s official and intellectual life as well as opportunities that came with service to King and Country. She often travelled along on his annual tours of inspection in Upper and Lower Canada, visiting Niagara Falls in the summer of 1819, for example. As a social and cultural presence in both formal and informal ways, she entertained local elites, attended theatricals, and presided at balls and other events in the social calendars of Halifax and Quebec. In Halifax, Lord and Lady Dalhousie and family lived in Government House, described as “a recently built, stately Palladian residence boasting refined architecture, vast receiving rooms, and even a ballroom, making it similar to English country houses of that era.”<sup>16</sup> In Quebec City, their official residence was the Chateau St. Louis, in the upper town, a stately but dilapidated structure that housed government offices, public spaces, and their private family quarters.<sup>17</sup> Lord and Lady Dalhousie’s home of choice, however, was their summer residence in Sorel, a town situated south-east of Montreal with a large English and Loyalist population dating back to the 1780s.<sup>18</sup> There and in Quebec City they socialized with British military and administrative elites in grand houses and on the grounds of fine estates.

Moving beyond official terrains, Lady Dalhousie pursued focussed studies of the natural world. Her schooling likely had included attention to both polite accomplishments and activities in popular and fashionable sciences of the time.<sup>19</sup> During the summer of 1818, Lord Dalhousie recorded in his journal that “Lady D.” (as he called her) and a friend were happily involved in “their reading & studies in Chemistry and Mineralogy.”<sup>20</sup> Her lifelong special interest, shared with her husband, was in plants, she with an orientation to horticulture and botany, and he to horticulture and agriculture. Scholar Deborah Reid has found pages in Lady Dalhousie’s journal that are “interlaced with specimens of ferns, flowers, foliage and insects.”<sup>21</sup> Lady Dalhousie’s special attention went to plants that might be “new and rare,” or “new and strange,” meaning, that is, to her British eye. “Borders and plots for American plants” were among the features of the gardens at Dalhousie Castle, their home estate near Edinburgh, and the Dalhousies kept this in mind when collecting plants in Canada.<sup>22</sup> They planned to develop a “botanic garden” (to be called “The King’s Gardens”) on an island in the St. Lawrence that would be the largest “collection of American plants (in cultivation) on this side of the Atlantic,”<sup>23</sup> but the plan encountered political stumbling blocks and did not come to fruition.<sup>24</sup> Working on her own and with like-minded friends and family, Lady Dalhousie collected plants during the spring and summer months of the year. Her collecting sites on spacious estates differed from the perilous geographies of many other plant collectors, and family members joined in these activities. A charming entry in Lord Dalhousie’s journal for June 8, 1823, tells of Lady Dalhousie collecting wildflowers with their 13-year old niece; they are, he writes, “daily out in search, and daily also return with some new treasure found, then fly to the pressing Board, or to Botanical Books to ascertain the plant found.”<sup>25</sup>

Lady Dalhousie’s approach to nature was empirical and material as she sought to identify, systematically arrange, and catalogue plants she collected. Their library in Quebec gave her access to key botanical publications, among them *Flora Americae Septentrionalis* (1813; ed. 2, 1816) by Frederick Pursh, a German botanist who collected plants in the United States and Upper and Lower Canada, and had contact with many botanists. The Dalhousies owned a copy of the second edition of Pursh’s *Flora*, and Lady Dalhousie relied on it extensively.<sup>26</sup> She used Pursh’s *Flora* to catalogue and arrange approximately 328 plants found on botanizing forays in Sorel and the Montreal area in 1823, for example; a number of plants among those were rare in Quebec at that time.<sup>27</sup> In 1827, Lady Dalhousie gave the Literary and Historical Society of Quebec nearly 400 “Canadian plants,” some collected at Sorel, and a catalogue of them was published in 1829 in the inaugural volume of the Society’s *Transactions*.<sup>28</sup> That catalogue too followed Pursh’s sequence of specimens and used most of his names. The list of plants in that publication, including ferns, orchids, introduced species, and a considerable number of plants such as grasses and sedges that are difficult to identify, are evidence of the scope of Lady Dalhousie’s interests and skills as a collector. Another example of her

skills is a still-extant collection of nearly 300 specimens dating from June 1826 through August 1828 that were assembled mostly by Lady Dalhousie from Sorel and locations around Quebec City, the Ottawa River, and the Gaspé area. Now housed in the herbarium of the Royal Botanical Gardens, Hamilton, this collection consists of native and naturalized species that have been mounted, identified according to Pursh's *Flora*, and labelled with locality data. According to botanist James Pringle, Lady Dalhousie's identifications are "remarkably accurate."<sup>29</sup> The collection, purchased in the mid-1990s from descendants of the Dalhousie family, contains specimens of Canadian plants that are among the oldest in the Canadian herbaria, and its acquisition therefore represents a repatriation of Canadian botanical heritage. Botanists currently are scanning and curating the specimens to make them available for future generations to encounter this example of early nineteenth-century collecting and learn about plants that formed part of the Canadian landscape at that time.

Lady Dalhousie's standing as a plant collector in British North America was already established before William Jackson Hooker sought her help for the *Flora Boreali-Americana*. An application having been made to "her Ladyship for Canadian plants," she sent him in 1823 "some boxes well stored with botanical rarities, especially Orchidæ, from the vicinity of Montreal."<sup>30</sup> He described Lady Dalhousie to Arctic explorer John Richardson as "a very zealous botanist"<sup>31</sup> and, in a major essay "On the Botany of America" published in 1825, placed her in the "first rank" of "individuals who are industriously engaged in furthering the Flora of [Canada]."<sup>32</sup> A letter from Lady Dalhousie to Hooker from Quebec in late 1825 is a window onto his requests and her efforts and aspirations as a collector on his behalf. The Dalhousies had returned to Quebec after a leave-of-absence in England and Scotland, and she wrote, "I fear that I have a very small & imperfect collection of plants to send this autumn. We did not reach Canada till the end of Sept: too late to attempt drying any specimens." She would like to have had dried specimens to send to Hooker, but regrets this less because her friend "Mrs. Perceval has sent a large collection gathered by herself and her children." She is able, however, to send "the roots etc etc" of living plants, among them "various orchidæ" and "violas," and hopes that "some new or at least rare species" may be among them.<sup>33</sup> Lady Dalhousie's interest in sending Hooker "rare" plants is evident from the number of entries for rare plants in Quebec that are listed in the catalogues, records, and herbarium specimens associated with her. One example is the rare *Ranunculus rhomboideus* (prairie buttercup) that was found on Île Ste-Hélène, new to Quebec then, but now extirpated. [Fig. 1]

Lady Dalhousie's commitment to collecting plants continued after the Dalhousies left Canada in 1828 and travelled to India, where Lord Dalhousie served as governor-in-chief of the British army. She amassed hundreds of specimens of plants there, with ferns and orchids notably among them, and shipped large collections to Hooker. Her letters to Hooker have a vivacity and attention to detail that thrum with a sense of adventure, particularly when



**Figure 1:** *Ranunculus rhomboideus*, (prairie buttercup), found in herbarium of Christian Ramsay, Lady Dalhousie, and collected on Île Ste-Hélène, May 8, [? 1824], new to Quebec then, but now extirpated. Courtesy of the herbarium of The Royal Botanic Garden Edinburgh.

describing various circumstances under which she botanized. She wrote, for example: “We went into the River Ganges, 700 miles in boats & afterwards marched 800 miles thro’ the great plains of India. But daily removals & being mounted 16 feet above the ground on an Elephant are not circumstances favorable for botanizing.”<sup>34</sup> Across her years in Britain’s imperial colonies, Lady Dalhousie collected plants, and knew how to call upon help in her botanical work. A journal entry from her time in India lists books about botanical terminology, plant physiology, and Indian flora that she read during 1830,<sup>35</sup> all likely books that the Dalhousies carried with them to India as part of their working library. She did not claim more botanical knowledge than she believed that she had, however. Reflecting on plants she saw in India, she wrote “You can scarcely even imagine the extreme confusion caused to a mere ‘tyro’ & unknowing Dabbler in Botany such as I am by being plunged at once into an extremely new & unknown vegetation — when all is strange it is some time before one tree can be distinguished from another.”<sup>36</sup> That she felt overwhelmed is not surprising; her bafflement and hesitation would have been shared with other collectors in new landscapes as they encountered dramatically unfamiliar vegetation. Yet, while she developed a considerable knowledge base, she also was aware of her own limitations and never referred to herself as a “botanist.”

Lady Dalhousie’s trajectory as a botanical collector went from the genteel work of an elite woman in colonial Nova Scotia and Quebec to the achievements of a botanical traveller in colonial terrains farther afield. Botanists both cultivated and acknowledged her contributions, and Hooker inscribed a volume of *Curtis’s Botanical Magazine* to Lady Dalhousie to honour her “essential service to botany by her extensive collections, and by the introduction of many interesting species to the gardens of this country.”<sup>37</sup> In later years she is said to have found considerable “solace” in “botanical work and friendships.”<sup>38</sup> Still involved in collecting, still organizing specimens, still committed to botanical work, she announced her next project in a letter to Hooker from Dalhousie Castle in 1833, and invited his assistance: “When time allows, I intend to arrange all the ferns I have collected in the four quarters of the globe, in one book. I shall esteem it a most particular favor if you will permit me to send them to you & ask you to write wt. a pencil their correct specific names.” She signed her letter, as she always did across the correspondence, “Believe me dear Sir very truly yrs/ CBDalhousie”<sup>39</sup>

### **Anne Mary Perceval: Networking, Pedagogy, and Canadian Plants**

Given the dynamics of collecting, it is not surprising that William Hooker, looking for people to help on his *Flora*, wrote in early 1825 to the English gentlewoman Anne Mary Perceval in Quebec City. “Mrs. Perceval,” as she was known, was both a substantial botanical collector and an enthusiastic networker on behalf of botany. She is cited more than 150 times in Hooker’s *Flora Boreali-Americana* for a wide range of specimens that she collected from across Lower Canada, especially from the area of Quebec City, including familiar native plants,

plants introduced into cultivation, garden escapes, ferns, rare species, and orchids. Specimens from her plant collecting are found in American herbaria in Philadelphia, New York, West Chester, and Charleston, and internationally in herbaria in Paris and London. Specimens from her personal herbarium are in Canada, in the Vascular Plant herbarium of the Ottawa Research and Development Centre, Agriculture and Agri-Food Canada, Ottawa (DAO).<sup>40</sup>

Anne Mary Perceval (1790-1876) lived for nearly two decades at the heart of the colonial elite in British North America. Her husband, Michael Henry Perceval, held positions in the British imperial civil service, and they named their home and estate overlooking the St. Lawrence River “Spencer Wood” for his father, British Prime Minister Spencer Perceval. A watercolour of Spencer Wood from that time shows a British villa in an English-style landscape park with grand views and a verdant and tranquil expanse of old maples, red oaks, and elms,<sup>41</sup> representing well what John Crowley has termed the “[v]isual appropriation of Quebec for the British global landscape.”<sup>42</sup> Anne Mary Perceval’s setting was geographical, imperial, and social. The eldest daughter of a wealthy London merchant and alderman, she brought social fluency and a sense of occasion with her to Quebec City when she arrived as a newlywed in 1810.<sup>43</sup> In Quebec the Percevals were a focal point for entertainment and cultural life, known for their elegant receptions and grand dinners as well as for informal weekly “at homes” with dancing and music. Their routines of polite and genteel sociability mirrored those of British gentlewomen in York and other colonial centres in Upper Canada, where British immigrants were establishing themselves through similar social rituals and entertainments.<sup>44</sup> Along with such public responsibilities, Anne Mary Perceval was the mother of ten children born during her years in Quebec City, and domestic life would have been busy with their education and well-being. Contemporary accounts tell of the “highly cultivated minds” of the “accomplished” Perceval family, and Anne Mary Perceval herself, an “*élégante châtelaine*,” was remembered for her “refined and cordial manners” and skill in languages.<sup>45</sup>

There is every reason to expect that interest in plants and the natural world came with Anne Mary Perceval to colonial Quebec, and that engagement in botany connected her to Britain, home, and family. The grounds of the Perceval estate provided opportunity and resources for observing and studying plants that were new to British eyes. From all accounts an ebullient person who pursued her own interests, Mrs. Perceval crossed borders in her botanical practices and personal outreach, and established links to botanists in several American cities. She corresponded, for example, with botanist John Torrey in New York, requested specimens of mosses, and sent him a number of plants she collected in Canada.<sup>46</sup> She and “some of her botanical friends” signed on as subscribers to Torrey’s *Flora of the Northern and Middle States* (1824). She wrote that, as the mother of “a numerous family which necessarily occupies much of her time,” she “much fears her botanical knowledge will be found too limited to be of any essential service to Dr. Torrey; but the little she possesses is

entirely at his disposal.” At that time, she was giving considerable attention to Cryptogams, labouring for the most part “without either Guide or specimen,” and having difficulties with the Fungi “from the circumstance of not knowing how to preserve them best.”<sup>47</sup> It was Torrey who recommended Mrs. Perceval to Hooker as “a lady of fortune who is an excellent botanist” who “could be of use to you in communicating dried plants,”<sup>48</sup> and the correspondence between Mrs. Perceval and William Hooker was soon underway. By June 1825 she was not only sending Hooker a shipment of plants, but also arranging for a shipment collected by a friend to be transported by another vessel, “in the hope that one or the other will reach you in safety.”<sup>49</sup>

Mrs. Perceval considered herself the pupil of Frederick Pursh, whose *Flora Americae Septentrionalis* inspired her not only as a collector but also as a teacher to her own children. Pursh had arranged the material in his *Flora* so as to facilitate the study of botany — “this lovely science” — by audiences that included “the young beginner,”<sup>50</sup> and pedagogical dimensions of his book would have appealed to Mrs. Perceval. She would have been acquainted with popular instructional books of that time, perhaps even from her own youth, that used a family-based format of conversations between a mother and her children for early stages of learning about botany and other topics in natural history.<sup>51</sup> Her children in turn provided specific impetus to her botanical interests. Anne Mary Perceval wrote in her first letter to Hooker that she welcomed the opportunity to give her children “the honor of contributing by their exertions (how small soever) to your very able labours,” but stated that “being without aid, our advances are perhaps but slow.”<sup>52</sup> Hooker quickly, and wisely, rose to the occasion and sent Mrs. Perceval a copy of his *Botanical Illustrations* (1822), a book he had prepared to accompany his lectures to entry-level students at the University of Glasgow.<sup>53</sup> She and her children were, she wrote several months later, “quite delighted in being thought worthy of a place in your remembrance, and very highly prize the Botanical Illustrations you so obligingly sent them: as do also many of my young botanical Friends in this part of the world.”<sup>54</sup> She went on to express interest in having six further copies of Hooker’s book to pass on to others, and by so doing positioned herself as a “go-between” in the communication of knowledge.<sup>55</sup> Hooker and Perceval both understood that books, attention, and encouragement could shape an audience for botanical activities and promote interest within a potential workforce.

Three long letters sent to Hooker in 1825 and 1826 show Perceval to have been not only an attentive mother but also an accomplished networker and assiduous plant collector. In content and tone, the letters portray a socially skilled woman who desires knowledge and knows how to initiate and facilitate botanical work for herself and her social circle. During her time in Quebec she brought other players into work on Hooker’s behalf, and became the linchpin for the Quebec end of the *Flora Boreali-Americana*. As she wrote to Hooker: “I have friends scattered about in every direction — Some I can exhort, some command, some entreat and some supplicate ... Mr. and Mrs. Sheppard will

take care of Quebec, Lady Dalhousie of Sorel & Montreal, and I of all they leave.”<sup>56</sup> Tasks were apportioned and Hooker’s inventory of plants from British North America was enlarged as a result of her labours. She would like to have offered Hooker greater geographical reach than she was able to attain, however: “I beg and solicit friends in Upper Canada to make collections for me, but alas one excuse or the other is always presented ... The fact is there is no Botanist to apply to, and without a certain portion of knowledge and a little enthusiasm, what can be expected.”<sup>57</sup>

In 1825-26, Mrs. Perceval reported to Hooker that she had been in Philadelphia, a hub of transatlantic natural history at that time, “where, for the advantage of my children and my own health I am induced to pass the Winter.”<sup>58</sup> There she met botanist Lewis von Schweinitz (1780-1830) and gave or sent him specimens of Canadian plants, including *Pterospora andromedea* (pinedrops), a rare plant she collected under pine trees at Spencer Wood.<sup>59</sup> During that time she likely also met William Darlington, physician, botanical collector and correspondent, and also a member of the American Congress, who was studying the plants of his area west of Philadelphia.<sup>60</sup> In 1826, Mrs. Perceval gave Darlington a bulky leather-bound album entitled “Specimens of Canadian Plants,” containing 189 plants collected during the summer of 1823.<sup>61</sup> The majority of the specimens are native plants such as trilliums, violas, and anemones from around Quebec City, but the album also includes introduced plants and garden escapes, along with botanically difficult groups, ferns and fern allies, orchids, and rare species.<sup>62</sup> Mrs. Perceval’s album opens with a specimen of *Gentiana saponaria* (now revised to *Gentiana andrewsii*, Andrew’s bottle gentian) collected at Sorel by Lady Dalhousie, the ranking “first lady” of Britain’s North American colonies. After that, plants in the first half of the album are arranged in a kind of chronological order by their time of flowering, with specimens dating from May 20 to October 31, 1823. A plant is affixed to the front side of each page in the album, with the botanical name and Linnaean category shown in Mrs. Perceval’s handwriting on the facing page, along with the date and place of collection. The native plant *Erythronium Dens Canis* (now *Erythronium americanum*) (yellow trout lily), for example, was collected at Spencer Wood on May 20, 1823. [Fig. 2] Among the introduced plants, *Vicia sativa*, better identified as *Vicia angustifolia* (narrow-leaved vetch), is of special interest to botanists because it seems to represent the first record of this introduced species in North America, or at least in Canada.

Anne Mary Perceval’s presentation of Canadian plants illustrates her participation in cultures of science and natural history at a time when plants from across the expanse of British North America were potentially “new” to botanists, and when few floristic works had been published about “Canada.” The album was an initiative by an elite British woman to contribute to knowledge about nature in the British colony where she found herself by circumstances of history and empire. The album was also a call for reciprocity, perhaps an exchange, as part of a relationship between Anne Mary Perceval and Darlington



**Figure 2:** Facing pages from Anne Mary Perceval's Album "Specimens of Canadian Plants," 1826, showing specimen of *Erythronium dens canis* (now *Erythronium americanum*, yellow trout lily). The William Darlington Herbarium, West Chester, PA; photo AAFC.

and other American botanists that could well have developed into future projects for herself and others. But Mrs. Perceval's sojourn in British North America came to an end in 1828 when she was widowed unexpectedly, and the care and schooling of her children shaped her activities thereafter. While some botanical service to Hooker continued in later decades,<sup>63</sup> there is no evidence of on-going botanical collecting. Nevertheless, Anne Mary Perceval's contributions enrich the picture of early nineteenth-century botanical practices. As a networker, she was a conduit for cross-border communication, from Pursh and on to Torrey and Hooker, in Philadelphia and likely in other locations still to be identified. As a collector, she contributed plants to herbaria that continue to be of interest to botanists. Bifurcations that developed during the 19<sup>th</sup> century between polite and specialist activities in nature study do not sufficiently capture the botanical intentions and collecting practices of Anne Mary Perceval and the other women in early nineteenth-century British North America who worked on behalf of Hooker's project.

#### **Harriet Sheppard: "Botanical ardor" and Difficult Plants**

When Anne Mary Perceval embarked on helping William Hooker, she took special pride in bringing Harriet Sheppard and her husband, William Sheppard, to his notice. Perceval, in a letter to Hooker in October 1825, wrote "I there acknowledge to have done you more real service than it is possible my offerings could but avail — He, being remarkable for his Science, She, for her extreme

patience and accuracy. To them I now resign the department of Quebec.”<sup>64</sup> During the 1820s and 30s Harriet Sheppard was a substantial collector of plants and natural history specimens. She is cited in 144 entries in the *Flora Boreali-Americana* and likely contributed many more specimens than those.<sup>65</sup> Harriet Sheppard sent Hooker specimens of wildflowers, weeds and shrubs, orchids, grasses, and ferns, as well as marine plants, lichens, and trees from locations that included Quebec City, St. Foy, Lachine, Murray Bay, Port au Persil, and the Île d’Orléans, as well as the grounds of her own home. Harriet Sheppard’s overall profile as a collector is slimmer than the known collections and plant lists of Lady Dalhousie and Anne Mary Perceval, in part because she suffered “the total loss of her Books and Museum” when fire destroyed the Sheppard’s house in Quebec in 1842.<sup>66</sup> She was probably the most botanically adept of Hooker’s four women contributors, however. Nearly 20% of her specimens cited in Hooker’s *Flora* are what botanists consider “difficult plants” (such as *Aster* and *Solidago*) because of the challenges of distinguishing differences among species. Like Anne Mary Perceval, she was a significant conduit for botanical knowledge, and shared with Hooker and John Torrey plants that Frederick Pursh had collected in Lower Canada, especially in Anticosti, and perhaps other parts of Canada.<sup>67</sup> Furthermore, she was involved in the institutional cultures of botany and natural history that developed in colonial Quebec, and published several papers that demonstrate her research interests.

Harriet Campbell Sheppard (1786-1858) belonged to a Loyalist family that moved to Nova Scotia after the American Revolution, and then to Quebec in 1790 where her father prospered in the timber trade. She married William Sheppard (1784-1867), who arrived from England as a young man, became a businessman also involved in timber, and played important roles in civic and intellectual life in colonial Quebec.<sup>68</sup> Unlike the other women in this story, Harriet Sheppard remained in Canada, and she and her husband raised their children in Quebec. Historians of women in science have developed the category of the “creative couple” to designate those who worked together — as husband and wife or father and daughter, for example — in pursuit of knowledge of nature.<sup>69</sup> Harriet and William Sheppard shared interests in botany and natural history. Both sent plants to botanists, and their names appear as contributors of specimens not only to Hooker’s *Flora Boreali-Americana* but also to John Torrey and Asa Gray’s *Flora of North America* (1838-43). Both also communicated findings in papers and publications.

For many years the Sheppards lived in Sillery, Quebec, adjacent to Anne Mary Perceval and family, and collected plants there with botanical friends. Their estate, “Woodfield,” consisted of house and grounds, a conservatory, and, in the words of a nineteenth-century Quebec local historian, “a rising lawn of good extent, interspersed with venerable oaks and pine, giving the whole a striking and pleasing aspect.”<sup>70</sup> Woodfield appears, for example, as a locality in Mrs. Perceval’s album of “Canadian Plants” for specimens collected during the spring and summer months of 1823. Harriet Sheppard’s path into Hooker’s

project was, therefore, through the same elite colonial British networks that later brought Mary Brenton and plants of Newfoundland and Labrador into the history of botanical collecting in nineteenth-century Canada.

The flavour of Harriet Sheppard's botanizing can be found in her one extant letter to Hooker. Dating likely from October 1829, the letter details her knowledge, and exemplifies what she herself labelled her "botanical ardor."<sup>71</sup> In the summer of 1829, she wrote that she and her children had spent three weeks at Murray Bay in Charlevoix, "the fashionable bathing place" that year. Their object "was not Botany (but health)," but "we made [botany] our constant amusement and employment while there." Harriet Sheppard uses vocabulary of "amusement," "strolling," and "rambling" from the polite culture of botany to describe her activities to Hooker. Yet, much like Anne Mary Perceval, she shows herself to be a pedagogically inclined botanical mother for whom plant collecting and identification were part of family practices. Their location that summer on the north side of the St. Lawrence put them on the saltwater shores of the river, and Harriet Sheppard describes the different topographies that she and the children traversed, first along the shore, then inland "up hill and down dale through swamp and over cliff," and along to the Black River. They collected swamp flowers, seaweeds, and shells, and Sheppard itemizes 18 specimens they found, along with four zoological specimens. They were disappointed, she wrote, in not being able to fill Hooker's request for *Hydrastis canadensis*, a perennial herb in the buttercup family now known as goldenseal, which was not to be found in Lower Canada. However, "on climbing the first hill we found the ground for a considerable space carpeted with nothing but *Marchantia polymorpha* (common liverwort). We afterwards found *Epigaea repens* (trailing arbutus), *Goodyera pubescens* (misidentified for *Goodyera repens* [dwarf rattlesnake-plantain]), *Neotia cernua* (misidentified for *Spiranthes romanzoffiana* [hooded ladies'-tresses]), and abundance of *Pyrola uniflora* (one-flowered wintergreen, now *Moneses uniflora*)." They also came upon "the pretty little *Campanula rotundifolia*" (harebell) and *Pysum* [sic] *maritimum* (beach pea, now *Lathyrus japonicus*). One finding from their collecting foray at Murray Bay in the summer of 1829 was a grass-like plant with clusters of flowers resembling lilies that she referred to as *Zigadenus elegans*. Now named *Anticlea elegans* (a poisonous plant known as "mountain death camas"), the actual specimen that Harriet Sheppard collected is extant as a piece of the material history of botany and housed in the herbarium of the Royal Botanic Gardens at Kew. [Fig. 3]

Harriet Sheppard's letter clearly demonstrates her familiarity with botanical practices of her day. She names plants with facility, principally according to the descriptions and identifications found in Pursh's *Flora Americae Septentrionalis*. She sought to preserve the plants that she and her children found, and was aware of instructions that Hooker circulated to collectors. They had gathered three specimens of algae at the shore but were "very unsuccessful" in pressing them, she explained, "perhaps owing to our not having immersed them in fresh water. We had omitted to take your 'Directions' with us and so paid for



**Figure 3:** *Zigadenus elegans* (now *Anticlea elegans*, mountain death camas), collected by Harriet Sheppard, June 1829, at Murray Bay. Herbarium of the Royal Botanic Gardens, Kew; photo AAFC.

our carelessness.”<sup>72</sup> Harriet Sheppard’s letter to Hooker also reflects her interest in reporting on possible first sightings of plants. She remarks, for example, on having seen “*Physalis lanceolata* (large false ground-cherry, now *Leucophysalis grandiflora*) and *Arenaria lateriflora* (grave sandwort, now *Moehringia lateriflora*), neither of which are to be found near Quebec.” Since many of the plants she lists grow only along the saltwater shores of the St. Lawrence eastward of Quebec City, maritime specimens such as *Mertensia maritima* (oysterleaf), *Ligusticum scoticum* (Scotch lovage), and *Lathyrus japonicus* would indeed have been new to her. She collected at least nine species that are still considered rare, including *Leucophysalis grandiflora*. References to her “delight,” and to being “pleased” about finding plants that were “new to us” show Harriet Sheppard’s emotive connection to this work.

In addition to botanical work, Harriet Sheppard was a collector of natural history specimens, and a skilled observer of shells. The letter to Hooker reports that, returning home from their excursion via the shore, they also gathered seaweed and marine animals. She itemizes *Echinus* (sea urchin), *Buccinum* (whelk), and *Crepidula* (slipper shell, a marine gastropod), as well as “an animal which our guide called a Montre de Mer, it was, I think, a phorcymia of Dr. Lamarck.”<sup>73</sup> Harriet Sheppard used Lamarck’s taxonomic system in a paper she presented about shells found near Quebec City, and added remarks based in her own observations. She would like to have been able to identify some species of shells as “new” or “rare,” but was cautious about making such claims, it being “almost impossible to decide without figures, or very elaborate descriptions, neither of which are to be had.”<sup>74</sup> Scholar Karen Stanworth finds in Harriet Sheppard a strong intelligence at work on knotty matters in scientific description and classification, and a readiness to question and challenge “the accepted authority of contemporary scientists.”<sup>75</sup>

During the 1820s, Harriet and William Sheppard shared involvement in learned societies in Quebec that promoted new knowledge about nature. The institutional nexus of the Literary and Historical Society of Quebec, established under Lord Dalhousie’s patronage in 1824, gave them each an initial forum for communicating results of their own research. William Sheppard published “Observations on the American plants described by Charlevoix” and “Notes on some of the plants of Lower Canada” in *Transactions of the Literary and Historical Society of Quebec*.<sup>76</sup> Harriet Sheppard’s paper about shells appeared there as well, along with a paper she wrote about Canadian songbirds.<sup>77</sup> The topics of these articles were characteristic of early nineteenth-century British natural history, but the backstory to the Literary and Historical Society of Quebec as the sponsoring institution casts light on changes in Quebec at that time. William Sheppard welcomed and supported the establishment of the Literary and Historical Society of Quebec from its beginning, but disagreed with membership policies that made access possible only for wealthy English men of Quebec’s British community. He affiliated more with the new professional class in Quebec, both anglophone and francophone, and in 1827 took a central

role in forming the Society for the Encouragement of Sciences and the Arts. This new group was more democratic in its membership policy, specifically welcoming women into membership, and its rules and orders were in both English and French.<sup>78</sup> Harriet Sheppard presented her paper about shells to this Society, where it was awarded a silver medal. William Sheppard’s role in shaping the Society for the Encouragement of Sciences and the Arts illustrates rising cultural and political tensions in Quebec from the 1820s onward. In this regard, work by the Sheppards in botany and natural history represents their political and intellectual investment in Quebec as its own entity rather than as a colony with an exclusive and exclusionary British identity.

Harriet Sheppard brought knowledge and studious habits to her work on botany and natural history. She benefitted from having friends, a supportive husband, and other excellent contacts in colonial social circles of learning and aspiration in early nineteenth-century Quebec. In 1864, William Sheppard was invited to speak at the Annual Conversazione of the Montreal Natural History Society as “one of the pioneers of Natural History in this country,” and to reflect on “the state of natural history and of its progress in Canada during the previous half century.”<sup>79</sup> In the midst of citing key figures and institutions in this history, Sheppard offered poignant evidence of botanical networks in earlier decades. Addressing the “ladies” in attendance at the 1864 meeting, he encouraged them to contribute to knowledge of plants: “What will you not succeed on attaining,” he declared, “when you set your hearts on its accomplishment, as the example of the Countess Dalhousie will show. This lady became an accomplished botanist, and was an indefatigable collector of plants.” Sheppard praised Lady Dalhousie for her success in “imbuing her lady friends with a love of botany,” and then brought Harriet Sheppard into his account—but without speaking her name. While some of Lady Dalhousie’s “lady friends” “made marked advances in this branch of natural history,” there was “particularly one, who subsequently sent many specimens of Canadian plants to Sir Jackson Hooker, to assist him in the compilation of his great work the *Plants of British North America*, in which her name is duly recorded as a contributor.”<sup>80</sup> Sheppard’s allusion to Harriet Sheppard is clear in hindsight, but what can explain the reluctance to name Harriet Sheppard directly?

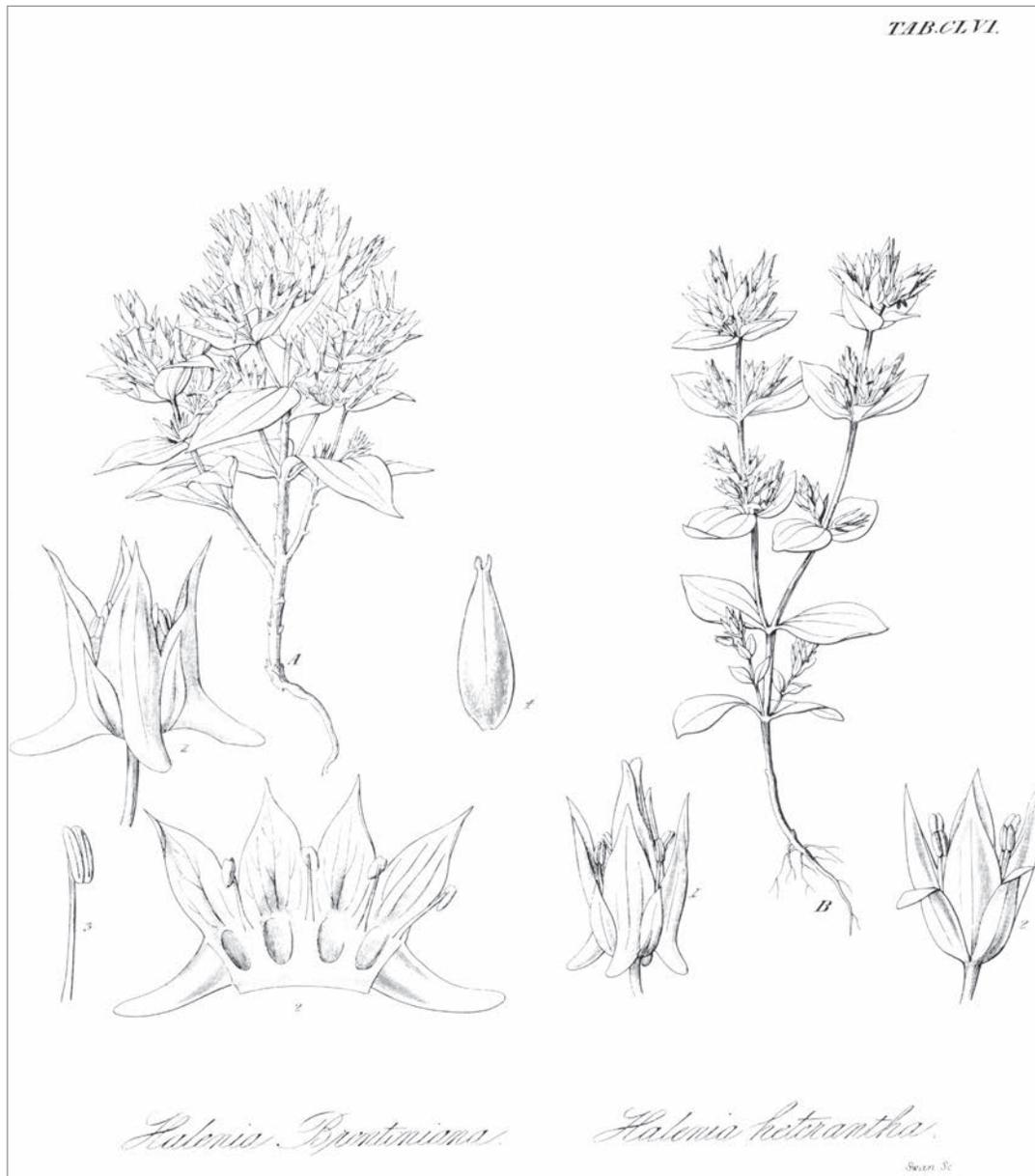
### **Mary Brenton: Bog Mould and Material Practices in Newfoundland**

When William Hooker remarked to Lady Dalhousie in late 1829 that he was looking for contributors to his flora from the eastern parts of British North America, she suggested that he “make an official application” through Lord Dalhousie, in his capacity as Governor-General, to the Governors of New Brunswick and Newfoundland.<sup>81</sup> British Imperial networks in Quebec eventually led Hooker to Mary Brenton, a willing and zealous recruit, who became “Hooker’s principal source of specimens” from Newfoundland and Labrador.<sup>82</sup> Mary Brenton’s work as a collector across the years 1830-1838 is recorded in letters to Hooker that, like those written by Lady Dalhousie, Anne

Mary Perceval, and Harriet Sheppard, give texture to practices in the study of nature in early nineteenth-century Canada. Her letters also detail the materiality of her work as a collector. Mary Brenton is cited in 102 entries in Hooker's *Flora Boreali-Americana* for ferns, sedges, grasses, and other vascular plants, both native and introduced. While most of the Brenton citations are for general plants of boreal areas, about 20% of her contributions were collected from bogs and fens; *Empetrum nigrum* (black crowberry), for example, is a small evergreen creeping shrub found widely in Newfoundland in bogs and on barrens and sea cliffs. Hooker also cites several rare or unknown plants that Brenton found, among them *Halenia brentoniana* (now *Halenia deflexa* subsp. *brentoniana*), known as American spurred gentian, a new species in the Gentian family that was named for Mary Brenton and is the type specimen for this plant. [Fig. 4] Another new species of *Halenia* found by Mary Brenton in Newfoundland is *Halenia heterantha* (no known English name; now *Halenia deflexa* subsp. *deflexa*).

Mary Brenton (1791-1884) arrived in the British colony of Newfoundland in 1827 and lived in St. John's with her parents as an elite imperial sojourner until 1838. Her father, Edward Brabazon Brenton, came from a distinguished Loyalist family and had a career as a senior colonial judge and administrator in Halifax, Quebec, and London before being named Colonial Secretary to the Governor of Newfoundland, and later a Justice of the Newfoundland Supreme Court.<sup>83</sup> Mary Brenton's privileged world is apparent from a household inventory at their departure that included a "Grand Pianoforte" and mahogany furniture to fill many rooms, along with "a pew in the established church," and a share in the St. John's Library.<sup>84</sup> Her life of colonial comforts was far removed from the experiences of women in Newfoundland who laboured in the fishery or other paid work in aide of family economies.<sup>85</sup> During those years, Mary Brenton likely participated in the routines and seasonal festivities of elite circles around the governor of Newfoundland, Thomas Cochrane, who "was fond of ceremony and preferred good living."<sup>86</sup> Her specific access to plant collecting came about when the British colonial government of Newfoundland established a system of circuit courts in 1826 to bring "greater civil authority to the outports," and judges like Edward Brenton were given authority in district affairs. Mary Brenton had opportunity to travel with her father in the course of his circuit court duties, perhaps in "the 'colonial vessel,' on which [Governor Thomas Cochrane] and the judges could coast in style through the outports."<sup>87</sup> She collected plants for Hooker along the way.

Mary Brenton's first letter to Hooker accompanied a shipment of plants to him in September 1830. Her searches, she wrote, "have been confined to the immediate neighbourhood of St. John's," but she has no doubt, "that the interior of the Island abounds with many beautiful Plants and some very curious ones on the Coast. The summer is so short and Vegetation so rapid, that without the greatest attention many flowers bloom and die, unnoticed." With apology and self-effacement, and using the formality of a third-person reference to



**Figure 4:** *Halenia Brentoniana* (now *Halenia deflexa* subsp. *brentoniana*. American spurred gentian), and *Halenia heterantha* (now *Halenia deflexa* subsp. *deflexa*). Mary Brenton discovered these new species in the Gentian family in Newfoundland, and one was named in her honour. Plate CLVI in William Jackson Hooker, *Flora Boreali-Americana*, 1829-1840.

herself, she explains that “[t]he Collector of these Plants regrets, that from not being a Botanist, she has been unable to give all the Botanical names and but few of the Vernacular, nor could she gain any information from the Natives of the Place.”<sup>88</sup> Many of the letters that follow have the same gendered tonality of regret for what Mary Brenton does not know and cannot send. Yet, as she writes in that opening letter, she “hopes to do better next year,”<sup>89</sup> and her persistence echoes across the correspondence.

Mary Brenton seems to have had little involvement with plant collecting before being recruited for Hooker's project. To be sure, during her early years in Halifax, the British imprint on genteel life across the British transatlantic world would have brought plants and flowers into her activities.<sup>90</sup> Moreover, when her father's career took them to England during the years 1815-25, Mary Brenton was "home" at a time when British books and magazines provided a rich seedbed for learning about plants. But general cultural interest in plants does not by itself create an effective plant collector. In this case, William Hooker became Mary Brenton's mentor, and she his ready pupil. Early nineteenth-century botanists developed textual and visual ways to cultivate observational skills for plant study and popular science,<sup>91</sup> and Hooker embodied those motivations and strategies well. As a pedagogue and coach, he took the opportunity more than once to provide Mary Brenton with material that would facilitate her work on his behalf. For example, he sent her the first fascicles of Margaret Roscoe's *Floral Illustrations of the Seasons* (1829), a publication to "encourage a taste for botanical pursuits," especially among women.<sup>92</sup> Coloured engravings of plants in Roscoe's book are arranged by season of flowering, and information about each specimen includes how to grow "some of the most Beautiful, Hardy, and Rare Herbaceous Plants Cultivated in the Flower Garden." The illustrations feature plants introduced into England by travellers and collectors, and notable among them are Canadian wildflowers. *Floral Illustrations of the Seasons* shows colonial cross-fertilization in action, particularly the two-way traffic between metropolitan and colonial sites for science.

Hooker sought to pique Mary Brenton's interest and sharpen her eye by sending her an illustrated book about native Canadian plants that had been collected across British North America and introduced into England in recent decades. Soon afterwards, Hooker sent Mary Brenton his own *British Flora* (1830), a teaching text that aims "to provide the young Student with a description of our native plants, arranged according to the simplest method"; and ... to afford to the more experienced Botanist, a manual that should be useful in the field as well as in the closet."<sup>93</sup> His gifts to Mary Brenton continued as acknowledgement and further encouragement of her work. Thus, in August 1833, when she was seeking out mosses on his behalf, Hooker sent fascicles from his writing about Cryptogams that were issued as a part of J. E. Smith's *The English Flora*.<sup>94</sup>

Nearly every year from 1830 to 1838, Mary Brenton sent Hooker specimens of plants from locations in the interior of Newfoundland and along the coasts. In addition to plants that she dried and shipped, she also arranged for Hooker to receive "a Bag of living Plants ... very flourishing and easily cultivated in bog mould."<sup>95</sup> She reports collecting in the neighbourhood of St. John's and from St. Mary's and Placentia Bays, as well as trips "upwards of two hundred miles along the Northern Coast," and the same distance "on the Southern Coast."<sup>96</sup> She also sent Hooker plants from Labrador, but did not collect these herself. Instead, she distributed funds sent from Hooker "to such persons as

have assisted me in my floral and other collection,” some of which went, she wrote in November 1834, to “a Planter’s wife ... who yesterday sent me the fruits of her summer.” She continues: “I am afraid you will find nothing new among the Plants but they will serve to show what Labrador can produce. She [the Planter’s wife] was unfortunately not in the Harbor when flowers are most plenty but the next season will remove to other parts of the coast and promises a further supply.”<sup>97</sup>

The realities of harsh weather and rugged landscape are integral to the circumstances for plant collecting that Brenton details to Hooker. The spring and summer seasons of 1832, for example, were “such as has not been known in this Island for half a century. Winter and ice lingered till the beginning of June, and since that period cold rains and fog have hindered any flowers from coming to perfection.”<sup>98</sup> She reports the same about the summer of 1833. Getting her hands on plants was a problem in itself, whether she was collecting on her own or had others to assist her: “as the best flowering Plants usually grow in swamps, it is difficult for a lady to reach them. I can find but few persons who have enthusiasm sufficient to induce them to penetrate into a bog up to their knees in water in search of what they may not find after all, and, to those who are not accustomed to the search, many minute flowers are overlooked as not worth gathering.”<sup>99</sup> Mary Brenton was rewarded for her explorations knee-deep into those bogs, however, and Hooker cited her for the native orchids *Calopogon tuberosus* (tuberous grass pink orchid), *Platanthera blephariglottis* (white fringed orchid), and *Platanthera dilatata* (tall white bog orchid). She also discovered a bog species of *Solidago* (goldenrod) that was new to both Hooker and Asa Gray.

Mary Brenton’s collecting was shaped by other circumstances as well. “My walks,” she wrote, “are generally so limited, having but a short time to scramble about on shore [when] my father has [some time away] from his official duties to accompany me, that you cannot wonder I have not been more successful.”<sup>100</sup> Material circumstances for drying and transporting plants presented yet other difficulties. She apologizes that she “cannot procure more proper Paper for the Plants,”<sup>101</sup> and that basic conditions of travel imperilled her specimens: “the perpetual rain and [fog] destroyed the plants as soon as I had dried them. They were sadly knocked about in the small vessel we were cruising in during the autumn gales.”<sup>102</sup> She also struggles to find “a safe opportunity” for sending plants to Hooker in Scotland.<sup>103</sup>

Compared to Lady Dalhousie or Harriet Sheppard, Mary Brenton was not steeped in botanical knowledge or natural history practices. She at no point includes Latin botanical names in her letters, even though Hooker’s volumes (as well as Mrs. Roscoe’s *Floral Illustrations of the Seasons*) would have given her vocabulary for identification. She refers to trees she has seen only in the vernacular, among them larch, pine, birch, ash, elm, poplars, “Dog Wood, White Wood, Wild cherry, wild Pear, Sloe.”<sup>104</sup> She would like to be able to send Hooker specimens that “I hope you have not seen before” and that “may prove a

valuable acquisition,”<sup>105</sup> but seems not to have enough knowledge or experience to differentiate familiar plants from rare specimens. She reports, for example, on plants she thinks of as common weeds in England, “among them dandelions, chickweed, clover, dock, and nettle.” Hooker was happy to report these, however, as being present in Newfoundland. Despite her assertions about how little she knew botanically, Mary Brenton in fact sent Hooker important material for his flora of British North America, and her interest and knowledge grew during the course of her collecting for him. She wrote in June 1836 of her “love of research”: “I have lately heard of a flower which grows only in St Georges Bay called by Natives there the ‘Salmon flower;’ [and blossoms just before the arrival of the salmon] ...it is in appearance very like the Auriculas — the same stiff leaf, the same farina on the petals of the flower growing on a stalk as high as the English cowslip. I have much curiosity to see it and have sent to obtain both the root and the flower by two different methods.”<sup>106</sup> Mary Brenton’s description and the date of her letter have made it possible to identify this plant now as *Primula laurentiana* (Laurentian primrose), a native species of Primrose.

William Hooker recruited for his *Flora Boreali-Americana* where he could, and circumstances of geography, class, and politics brought Mary Brenton into the history of collecting. She appears to have pursued her interest on her own, without the friends, neighbours, and institutional resources of learned societies that characterized botanical work by the women collectors in Quebec. Yet Mary Brenton’s circumstances took her well beyond the grounds of genteel estates, out into collecting across a larger geographical range and in more varied settings than her Quebec counterparts. There is a noticeable tension in the letters as Mary Brenton warms to praise from Hooker and is gratified by his flattery, yet acknowledges the realities of her circumstances as an inexperienced collector in difficult terrains. When the family was preparing to leave North America, she wrote to thank Hooker for encouraging her “floral researches” and adds: “I dare not say Botanical for I have not the slightest knowledge of that interesting science. Mine is a real love for flowers.”<sup>107</sup> The distinction she draws between “botany” and “flowers” would seem to describe different domains of interest for Mary Brenton herself. In her case, locating and identifying plants and using technical names and features within botanical science were less compelling to her than her “real love for flowers.” At the same time, the distinction she draws is characteristic of the 1830s, when the scientific study of plants was increasingly demarcated from emotive connections to flowers.

## Conclusion

Writing in 2006 in her introduction to a special issue of *Scientia Canadensis* on “Women and Gender in Canadian Science, Engineering and Medicine,” Ruby Heap called for Canadian women’s history and history of science to learn about women doing scientific work in English-speaking Canada by using all available resources, including analytic perspectives developed by feminist

and other interdisciplinary scholars. Essays assembled for that journal issue focussed on individuals, practices, and institutions from the late nineteenth century to the late 20<sup>th</sup> century, and aimed to “highlight the importance of considering carefully women’s historical, spatial and social locations when trying to reconstitute [the] experiences of women” in the areas identified.<sup>108</sup> Publications by feminist scholar Marianne Gosztonyi Ainley had done much in this direction, particularly for her own areas of expertise in women, natural history, and natural science in Canada from the nineteenth century onwards.<sup>109</sup> But then, as now, much remains to be done.

Botanical collecting was a social practice that connected Lady Dalhousie, Anne Mary Perceval, Harriet Sheppard, and Mary Brenton to a British scientific project, and class privileges gave them access to networks and activities that brought them into the history of women in Canadian science culture. Their letters to botanist William Hooker during the 1820s and 1830s are records of participation by women in botanical exploration and discovery. This work pre-dates the specialized and institutionalized practices that came to characterize the sciences and science history of the mid- and later nineteenth-century. For this reason alone, the four women who contributed plants for the *Flora Boreali-Americana* could well instigate study of individuals and groups yet to be identified who similarly found and made room in the New World for activities that likely would have been more restrictive in the Old. Archives and print materials from the opening decades of the nineteenth century are among the resources for locating other such women in British colonial Canada and elsewhere. Early magazines offer largely untapped materials for the media history of science. Other topics for research include the presence and absence of women in early societies, and the place of natural history in formal and informal schooling.

Attention to the four women who collected plants “with botanical friends” in British North America can in turn alert historians to other women involved in the study of plants in Canada before Confederation, and back before the British Empire, giving cognizance to botanical collecting and other work with plants by women in French and indigenous traditions. Recently, feminist historians Catherine Carstairs and Nancy Janovicek introduced their volume of new essays on women in Canada by calling for research that extends the chronological range of enquiry farther back because, they write, “[w]e need to better understand women’s lives and gender relations in earlier periods in order to construct more complete portraits of recent times.”<sup>110</sup> In Canadian science, as elsewhere, it is the cultures that develop around enquiry into natural knowledge that shape access to the work of discovery. By looking to earlier forms of involvement by women and by men in studies of nature, we can enrich historical scholarship and understand better the social, cultural, political, and individual forces that, coming into the present day, close doors or open gates.

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## Endnotes

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- 2 Notable exceptions include Carl Berger, *Science, God, and Nature in Victorian Canada* (Toronto: University of Toronto Press, 1983), 13; James S. Pringle, "Anne Mary Perceval (1790-1876), An Early Botanical Collector in Lower Canada," *Canadian Horticultural History* 1 (1985), 7-13; Jacques Cayouette, "Anne Mary Perceval, l'élégante châtelaine de Spencer Wood," *FloraQuebeca* 9 (2004), 1: 1-11.
- 3 Suzanne Zeller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* [1987] (Montreal & Kingston: McGill-Queen's University Press, 2009).
- 4 See, for example, Elizabeth Jane Errington, *Wives and Mothers, Schoolmistresses and Scullery Maids: Working Women in Upper Canada 1790-1840* (Montreal & Kingston: McGill-Queen's University Press, 1995) and Gail Cuthbert Brandt, et al., "'Plenty of Work': Women's Waged and Unwaged Labour in British North America." *Canadian Women: A History*. Ed. 3. (Toronto: Nelson, 2011), 66-97.
- 5 *Flora Boreali-Americana; or, the Botany of the Northern Parts of British North America* (London: Henry G. Bohn, 1829-40). 2 vols.
- 6 On William Jackson Hooker (1785-1865) as teacher, writer, correspondent, editor, illustrator, and shaper of botany as a discipline, see Joseph Dalton Hooker, "A Sketch of the Life and Labours of Sir William Jackson Hooker," *Annals of Botany* (1902), OS 16 (4). W.J. Hooker is not to be confused with his contemporary William Hooker, a botanical and horticultural illustrator. All references here are to William Jackson Hooker.
- 7 James S. Pringle, "The History of the Exploration of the Vascular Flora of Canada," *The Canadian Field-Naturalist*, 109 (July-September 1995), 3: 303. See also Trevor H. Levere, *Science and the Canadian Arctic: A Century of Exploration 1818-1918* (Cambridge: Cambridge University Press, 1993), 103-37.

- 8 “Directions for Collecting and Preserving Plants in Foreign Countries,” reprinted in *Supplement to the Nautical Magazine*, 10 (December 1832), 1: 575, 576.
- 9 Anne Secord, “Corresponding interests: artisans and gentlemen in nineteenth-century natural history,” *British Journal for the History of Science* 27 (1994): 389.
- 10 Joseph Dalton Hooker, “A Sketch of the Life and Labours of Sir William Jackson Hooker,” xxiv. n. 1.
- 11 See Erika Lorraine Milam and Robert A. Nye, eds. *Scientific Masculinities, Osiris*, ser. 2, vol. 30, 2015.
- 12 See, for example, Beth Fowkes Tobin, *The Duchess’s Shells: Natural History Collecting in the Age of Cook’s Voyages* (New Haven & London: Yale University Press, 2014); Barbara T. Gates, *Kindred Nature: Women Embrace the Natural World* (Chicago: University of Chicago Press, 1998), esp. ch. 3; Ann B. Shteir, *Cultivating Women, Cultivating Science: Flora’s Daughters and Botany in England 1760 to 1860* (Baltimore: The Johns Hopkins University Press, 1996); Anne Secord, “Corresponding Interests: Artisans and Gentlemen in Nineteenth-Century Natural History.” *British Journal for the History of Science* 27 (1994): 383–408; David Ellison Allen, *The Naturalist in Britain: A Social History* (Princeton: Princeton University Press, 1994).
- 13 Dalhousie specimens can be seen in Canada in the Royal Botanical Gardens Hamilton, Ontario, and the herbarium of the Canadian Museum of Nature, Gatineau, Quebec; in the Royal Botanic Garden in Edinburgh, Kew, Hamilton; in collections in Geneva, Florence, and West Chester, Pennsylvania; and in the Herbarium of the Natural History Museum in Paris.
- 14 Peter Burroughs, RAMSAY, GEORGE, 9TH EARL OF DALHOUSIE, *Dictionary of Canadian Biography*, vol. 7 (Toronto: University of Toronto/ Université Laval, 1988).
- 15 Gilles Gallichan, “La bibliothèque personnelle du gouverneur Dalhousie,” *Les Cahiers des dix*, no. 65 (2011), 92-3.
- 16 René Villeneuve, *Lord Dalhousie: Patron and Collector* (Ottawa: National Gallery of Canada 2008), 19.
- 17 J.M. LeMoine, *Picturesque Quebec* (Montreal: Dawson Brothers, 1882), 74-5. The “old” Chateau St. Louis was destroyed by fire in January 1834.
- 18 Walter S. White, *Governors Cottage (A collection of historical documents pertaining to the Governors Cottage in the Seigniorship of Sorel)*, (no locality, no date [1967]), 119-127.
- 19 Deborah Reid, *Unsung Heroines of Horticulture: Scottish Gardening Women, 1800 to 1930*, (PhD dissertation, University of Edinburgh, 2015), 97-100.
- 20 Marjory Whitelaw, ed., *The Dalhousie Journals* (Ottawa: Oberon Press, 1978), I: 93.
- 21 Reid, *Unsung Heroines*, 101.
- 22 Joseph Archibald, “Dalhousie Castle & Gardens: the Botany of the Neighbourhood,” *Gardener’s Magazine*, vol. 1 (1826), 252-3.
- 23 Reid, *Unsung Heroines*, 108.
- 24 Had Lord and Lady Dalhousie succeeded in their plan, The King’s Gardens might have been the first botanic garden in Canada, predating that established by the Botanical Society of Canada at Queen’s College, Kingston, in 1861. On the Botanic Garden at Queen’s College (now Queen’s University), see William G. Dore, “Canada’s First Botanic Garden,” *Greenhouse, Garden, Grass* vol. 6, no. 2, Summer 1967, 6-14.
- 25 Marjory Whitelaw, ed. *The Dalhousie Journals* (Ottawa: Oberon Press, 1981), II: 144.
- 26 See Jacques Cayouette, “Pursh explore le Haut-Canada en 1816,” *FloraQuebeca* 5 (2000), 1: 6-7; and “Pursh dans l’est du Bas-Canada et à l’île d’Anticosti, 1: la saga des spécimens d’herbier,” *FloraQuebeca* 10 (2005), 1: 13-18.

- 27 Nova Scotia Museum, Halifax, Mss. 85.119.34 and the corresponding album at the herbarium of the Canadian Museum of Nature in Gatineau, Quebec.
- 28 “Catalogue of Canadian Plants collected in 1827 and Presented to the Literary and Historical Society, by the R. H. the Countess of Dalhousie,” *Transactions of the Literary and Historical Society of Quebec* (1829) I: 255-61. The collection is believed to have been destroyed in fires at the headquarters of the Society.
- 29 James S. Pringle, “Canadian Botanical Specimens Collected 1826-1828 by the Countess of Dalhousie, Acquired by the Royal Botanical Gardens,” *Canadian Horticultural History* (1995), 3: 15.
- 30 William Jackson Hooker, *Exotic Flora*, Vol. II (Edinburgh: William Blackwood, 1825), 145-6.
- 31 Cited in Levere, *Science and the Canadian Arctic*, 114.
- 32 “On the Botany of America,” *Edinburgh Journal of Science* 2 (1825), 126.
- 33 *Director’s Correspondence*, DC 44: 56, October 31st, n.d. [1825].
- 34 *Director’s Correspondence*, DC 53: 38, Feb. 4, 1833.
- 35 Lady Dalhousie reports reading these botany books in 1830: Johann Friedrich Blumenbach, *A Manual of the Elements of Natural History* (London 1825), G. N. Lloyd, *Botanical Terminology* (Edinburgh 1826), John L. Knapp, *The Journal of a Naturalist* (London 1829), W. J. Hooker, *Flora Scotica* (London 1821), Jane Marcet, *Conversations on Vegetable Physiology* (London 1829), William Roxburgh, *Hortus Bengalensis* (Serampore 1814), and *Flora Indica* (Serampore 1820-24). (See Reid, *Unsung Heroines*, 99, n. 9).
- 36 *Director’s Correspondence*, DC 44: 39, March 4, 1833.
- 37 *Curtis’s Botanical Magazine* (1833), vol. 60.
- 38 Cited in Reid, *Unsung Heroines*, 121.
- 39 *Director’s Correspondence*, DC 53: 38, Feb 4, 1833.
- 40 James S. Pringle, “Anne Mary Perceval” (1985), 10-11; Jacques Cayouette, “Anne Mary Perceval” (2004), 10.
- 41 René Villeneuve, *Lord Dalhousie: Patron and Collector* (Ottawa: National Gallery of Canada, 2008), 200.
- 42 John Crowley, *Imperial Landscapes: Britain’s Global Visual Culture 1745-1820*, p. 72. On Spencer Wood, see J. M. LeMoine, *Maple Leaves*, 3rd series. (Quebec: Hunter, Rose & Co., 1865), 76-81.
- 43 Anne Mary Perceval presided in 1808 as “Lady Mayoress” at the ball when her widowed father, Charles Flower, was installed as London’s Lord Mayor. *National Register*, November 13, 1808, 731.
- 44 Elizabeth Jane Errington, “Suitable Diversions: Women, Gentility and Entertainment in an Imperial Outpost,” *Ontario History* CII (2010), 2, esp. 177-79.
- 45 J. M. LeMoine, *Picturesque Quebec*, 334.
- 46 Among plants that Mrs. Perceval sent to Torrey, now in the New York Botanical Garden Herbarium, one orchid from “around Quebec” was later named by botanist Rydberg as a new species, *Limnorchis media*, which became the hybrid *Platanthera xmedia*, now in synonymy of *Platanthera huronensis*.
- 47 Letter to John Torrey, n.d. [1824?], John Torrey Papers (PP), Archives, The New York Botanical Garden, ser. I: 6.64.
- 48 John Torrey to Hooker, *Director’s Correspondence*, DC 44 (175), August 20, 1824.
- 49 *Director’s Correspondence*, DC 44 (116), June 13, 1825.
- 50 Frederick Pursh, *Flora Americae Septentrionalis* (London: White Cochrane & Co, 1814), I: xxii.
- 51 See Michele Cohen, “‘Familiar Conversation,’ the Role of the ‘Familiar Format’ in Education in Eighteenth and Nineteenth-Century England,” *Educating the child in Enlightenment Britain: Beliefs, cultures, practices*, ed. Mary Hilton & Jill Shefrin (Farnham, England; Burlington, Vt.: Ashgate, 2009), 99-116.

- 52 *Director's Correspondence*, DC 44 (116), June 13, 1825.
- 53 On Hooker's *Botanical Illustrations* see Anne Secord, “Botany on a Plate: Pleasure and the Power of Pictures in Promoting Early Nineteenth-Century Scientific Knowledge,” *Isis* 93 (2002), 28-57.
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- 55 Simon Schaffer et al., ed. *The Brokered World: Go-betweens and Global Intelligence, 1770-1820* (Sagamore, MA: Science History Publications, 2009).
- 56 *Director's Correspondence*, DC 44 (117), October 23, 1825.
- 57 *Director's Correspondence*, DC 44 (118), October 7, 1826.
- 58 *Director's Correspondence*, DC 44 (117), October 23, 1825.
- 59 The Schweinitz Herbarium in the Academy of Natural Sciences, Philadelphia, contains 36 plants from Mrs. Perceval.
- 60 Joseph Ewan, “Darlington, William,” *Complete Dictionary of Scientific Biography* (Detroit: Charles Scribner's Sons, 2008), vol. 3, 562-3.
- 61 “Specimens of Canadian Plants, Presented by the Hon. Mrs. A. M. Percival, of Spencer Wood, near Quebec, to Wm. Darlington. 1826” is part of the Herbarium of West Chester University, West Chester, Pennsylvania. Jacques Cayouette and colleagues at the herbarium of the Department of Agriculture in Ottawa are doing conservation work on the album to restore and identify specimens.
- 62 Jacques Cayouette has compiled a complete list of plants in Anne Mary Perceval's album “Specimens of Canadian Plants.” See Alain Asselin, Jacques Cayouette, and Jacques Mathieu, *Curieuses histoires de plantes du Canada*, tome 3 (Quebec: Septentrion, 2017), Appendix 8.
- 63 Perceval asked Hooker in a letter dated February 14, 1865, about the “safe arrival at Kew” of plants sent to him (DC 42 [222]). Another letter acknowledges Hooker's request for “Tussock Grass” and reports that she has arranged for this to be fulfilled (DC 42 [223], n.d.)
- 64 *Director's Correspondence*, DC 44 (117), October 23, 1825.
- 65 For an itemized list of plants collected by Harriet Sheppard that are cited in the *Flora Boreali-Americana*, see W. G. Dore, “Specimens attributed to Mrs. Sheppard by Hooker,” ms. 4 pp., Plant Research Library, Ottawa, 16 January 1970. Hooker received more material than he cited, and did not include the names of all contributors who sent him, for example, common spring plants.
- 66 William Sheppard to Hooker, *Director's Correspondence*, DC 63 (414), May 28, 1846.
- 67 Jacques Cayouette, “Pursh dans l'est du Bas-Canada et à l'île d'Anticosti” (2005), 16-18. Specimens in the Herbarium New York Botanical Garden and the Gray Herbarium bear the labels “Mrs Sheppard Herbarium.”
- 68 Pierre Savard, SHEPPARD, WILLIAM, *Dictionary of Canadian Biography*, vol. 9 (Toronto: University of Toronto/Université Laval, 1976).
- 69 Helena M. Pycior, Nancy G. Slack, & Pnina Abir-Am, eds., *Creative Couples in the Sciences* (New Brunswick, N.J.: Rutgers University Press, 1996).
- 70 J. M. LeMoine, *Maple Leaves*, Quebec 1865, 3rd ser., 83.
- 71 *Director's Correspondence*, DC 44 (158), n.d., enclosed in letter from William Sheppard to Hooker, DC 44 (157), October 26, 1829.
- 72 *Ibid.*
- 73 *Ibid.*
- 74 “Mrs. Sheppard of Woodfield on the recent shells which characterize Quebec and its environs,” *Transactions of the Literary and Historical Society of Quebec* (1829), I: 188 *passim*, 191.
- 75 Karen Stanworth, *Visibly Canadian: Imaging Collective Identities in the Canadas, 1820s-1910s* (Montreal & Kingston: McGill-Queen's University Press, 2014), 59.

- 76 William Sheppard, "Observations on the American plants described by Charlevoix," *Transactions of the Literary and Historical Society of Quebec* (1829), I: 218-30; and "Notes on some of the plants of Lower Canada," *Transactions of the Literary and Historical Society of Quebec* (1831), II: 39-64; (1837), III: 83-129.
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- 79 William Sheppard, "Natural History Society Annual Conversazione," *The Canadian Naturalist and Geologist* (1864), new series, I: 53.
- 80 *Ibid.* 54-5.
- 81 *Director's Correspondence*, DC 44 (60), November 15 [1829?].
- 82 James S. Pringle, "Anne Mary Perceval" (1985): 304.
- 83 J. B. Cahill, BRENTON, EDWARD BRABAZON, *Dictionary of Canadian Biography*, vol. 7 (University of Toronto/ Université Laval, 1988).
- 84 Advertisements for auctions of Brenton household items appeared in issues of *The Public Ledger and Newfoundland General Advertiser*, e.g., July 3, 1838. I thank Jim Pringle for bringing this to my notice.
- 85 See, e.g., Willeen G. Keough, *The Slender Thread: Irish Women on the Southern Avalon, 1750-1860* (New York: Columbia University Press, 2008).
- 86 Frederic F. Thompson, COCHRANE, Sir THOMAS JOHN, *Dictionary of Canadian Biography*, vol. 10 (University of Toronto/Université Laval, 1972). See also Pam Perkins, "Thomas Cochrane and Newfoundland in the 1820s," *Newfoundland and Labrador Studies* 29.1 (Spring 2014): 117-69.
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- 88 *Director's Correspondence*, DC 61 (51), September 1830.
- 89 *Ibid.*
- 90 Michael Eamon, *Imprinting Britain: Newspapers, Sociability, and the Shaping of British North America* (Montreal & Kingston: McGill-Queen's University Press, 2015), ch. 4.
- 91 Anne Secord, "Botany on a Plate" (2002); and "Pressed into Service: Specimens, Space, and Seeing in Botanical Practice," *Geographies of 19th-Century Science*, ed. David N. Livingstone & Charles W. J. Withers (Chicago: University of Chicago Press, 2011), 283-310.
- 92 Mrs. Edward Roscoe, *Floral Illustrations of the Seasons* (London: Thomas Richardson, 1829), Preface.
- 93 *British Flora* (London: Longman, Orme, Brown, Green, & Longmans, 1830), vii.
- 94 *Director's Correspondence*, DC 61 (55), November 1, 1833. Hooker's material on Cryptogams is in *The English Flora*, vol. 5, part 1 (February 1833).
- 95 *Director's Correspondence*, DC 63 (47), March 15th [1838].
- 96 *Director's Correspondence*, DC 61 (52), September 10th 1831.
- 97 *Director's Correspondence*, DC 62 (48), November 28th 1834. The "Planter's wife" would have belonged to a family descended from New England colonists who migrated to maritime Canada.
- 98 *Director's Correspondence*, DC 61 (54), October 20th 1832.
- 99 *Ibid.*
- 100 *Director's Correspondence*, DC 61 (55), November 1, 1833.

- 101 *Director's Correspondence*, DC 61 (54), October 20th 1832.
- 102 *Director's Correspondence*, DC 61 (55), November 1, 1833.
- 103 *Director's Correspondence*, DC 61 (53), December 26th 1831.
- 104 *Director's Correspondence*, DC 61 (52), September 10th 1831.
- 105 *Director's Correspondence*, DC 61 (54), October 20th 1832.
- 106 *Director's Correspondence*, DC 62 (49), June 13 1836.
- 107 *Ibid.*
- 108 Ruby Heap, *Scientia Canadensis* 2 (2006), 8.
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# Moral Economies and Codes of Conduct: the Social Organization of Canadian Experimental Psychology

Jordan Richard Schoenherr

**Abstract:** *Psychological science has flourished in North America since the late 19th century. As laboratories multiplied, professional organizations began to emerge to facilitate communications through journals and conferences. This article examines the development of the moral economy of professional and scientific psychology in Canada. While the general features of the social organization of psychological science in Canada and the United States have followed similar trajectories, important differences are also evident. In particular, these differences are apparent in the values and conventions outlined by the two largest professional organizations in Canada (CPA) and the United States (APA).*

**Résumé :** *La science psychologique est florissante en Amérique du Nord. Avec la multiplication de ces laboratoires, la communication entre les institutions de recherche est devenue essentielle, les organismes professionnels assurant la diffusion des connaissances par le biais de revues spécialisées et de congrès. Cet article examine la croissance de l'économie morale de la psychologie professionnelle et scientifique au Canada. Bien que les caractéristiques générales de l'organisation sociale de la science psychologique au Canada et aux États-Unis aient suivi des trajectoires semblables, d'importantes différences demeurent évidentes. Plus particulièrement, ces différences sont apparentes dans les valeurs et conventions énoncées par les deux plus importants regroupements professionnels au Canada (la Société canadienne de psychologie) et aux États-Unis (l'American Psychological Association).*

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**Keywords:** Experimental psychology, scientific societies, social organization, codes of conduct

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SOCIAL NETWORKS EXERT A STRONG INFLUENCE on the associations of concepts, materials, and methods, as well as the sources of evidence that define a research paradigm. Organizations such as scientific societies are both an antecedent and consequent of the social networks in science, forming out of existing bonds and forging new relationships in hopes of gaining social capital. In North America, scientific societies have provided a means to facilitate communication within widely dispersed research communities, whether through formal dispatches such as newsletters and journals or through informal discussions at scientific meetings. Like other ceremonial social gatherings<sup>2</sup>, scientific societies and their meetings are used to define, refine, and negotiate social norms and the criterion for group membership.<sup>3</sup> These norms and conventions constitute a discipline's moral economy,<sup>4</sup> representing the permissible activities and motivations of researchers along with status criterion that define a symbolic economy of power.<sup>5</sup> Consequently, professional societies have an important function in terms of monitoring and regulating the beliefs and behaviours of actors within a social network, a critical feature in the process of professionalization.<sup>6</sup>

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In the case of Canadian psychology, the history of scientific societies illustrates the development of social relationships, the negotiation of social identities of groups, and the epistemological boundaries of a discipline. In what follows, I consider the development of the organization of Canadian experimental psychology by considering the overall pattern of disciplinary emergence.<sup>7</sup> First, I consider a number of antecedents in terms of the German physiological psychology tradition (the “New Psychology”) that influenced North American psychological science and the emergence of formal organizations in the United States. As I will attempt to demonstrate, American professional societies exerted a strong influence on the social organization of Canadian psychology. Second, the evolution of psychological science within Canada is described along with the development of professional societies. I argue that these organizations reflect the creation, and divergence of, collective identities that differ in their valuation of specific norms and conventions related to science and practice. Finally, I provide an analysis of the moral economies of these epistemic communities by comparing the norms developed by the Canadian Psychological Association (CPA) and American Psychological Association (APA). Their respective norms demonstrate a shared collective identity as psychologists across national boundaries, while also demonstrating divergence between these geographically distributed communities.

#### **Templates for Social Organization: The German Laboratory and The Royal Society**

Discipline formation requires an exploration of available epistemological, material, and human resources to determine what constitutes evidence, how knowledge can be created, and who is deemed a reliable source of knowledge.<sup>8</sup> Early psychologists wove together concepts and practices from philosophy, physiology, physics, and astronomy.<sup>9</sup> One of the most durable threads within psychology can be found in nineteenth-century German physiological research. While his work was influenced by many others, including psychophysicists like Ernst Weber and Gustav Theodore Fechner,<sup>10</sup> Wilhelm Maximilian Wundt is generally given pride of place due to his prolific writings, instrument development, and experimentation. Through his actions, he provided the most comprehensive delineation of an experimental psychological science and trained numerous students in his laboratory.<sup>11</sup>

Wundt’s status within psychology is defined in terms of a bidirectional relationship with the number of doctoral students and research assistants.<sup>12</sup> For instance, Edward Titchener played a considerable role in (mis)interpreting Wundt’s work for North American psychology<sup>13</sup> and went on to write widely used textbooks on experimental practices that influenced a generation of researchers. Titchener’s student, Edwin G. Boring, would reify this interpretation in his history of psychology textbook. The Wundtian laboratory, and those that attempted to replicate or modify its content and practices, provided a nucleating site for experimental psychology in Germany and elsewhere through the late nineteenth century.<sup>14</sup>

If laboratories provided local organization of social networks, scientific societies did so for larger and more epistemologically diverse research communities. The Royal Society's creation in England in 1660<sup>15</sup> illustrates this process where correspondence among members as well as public demonstrations were used to support the veracity of truth claims, reflecting in the Society's motto: *Nullius in verba*.<sup>16</sup> In 1665, communication was formally directed through the Society's journal, *Philosophical Transactions*. Sponsorship was also provided for seminal works such as Robert Hooke's *Micrographia* in 1665 and Isaac Newton's *Principia Mathematica* in 1687. As other authors have noted, the role of gentlemanly identity and its associated norms as well as the Royal Charter from Charles II were used to confer status and legitimacy upon the new natural philosophy.<sup>17</sup>

Drawing on the model of the British Association for the Advancement of Science founded in 1831, American researchers formed the American Association for the Advancement of Science (AAAS) in 1848.<sup>18</sup> Both the annual meetings and its later association with *Science magazine* were critical features of the association's organizational function that helped formed a social scientific network. The affordances of social organization were an explicit focus of the AAAS. As Alexander Dallas Bache noted in his 1851 AAAS presidential address, the organization of science in the United States, "for good or evil, is the means to an end. While science is without organization, it is without power." James McKeen Cattell, president of the American Psychological Association in 1895, offered complementary sentiments concerning the social role of science in 1925 when he noted that "the advancement of science should be the chief concern of a nation that would conserve and increase the welfare of its people." As later scholars have noted, the power and prestige of science can also be thought of as demonstrating the congruity between scientific values and the general values<sup>19</sup> and interests<sup>20</sup> of a society. However, due to the breadth of its membership, the AAAS's activities reflected only very general interests in the sciences.

### **Formation and Fragmentations of the American Psychological Societies**

Dissatisfaction with the AAAS soon emerged, with many members feeling that their specific interests were not adequately addressed. In 1883, the American Society of Naturalists was formed, in part, to facilitate the creation of specialized professional societies. Soon after, psychologists came together in the residence of G. Stanley Hall and delineate their own society, the American Psychological Association in July 1892.<sup>21</sup> The APA's first meeting followed in December of that year, with Hall as its first president. Initially, its 31 members reflected the broad scope of psychology including philosophers, educators, and experimental psychologists. Tensions later arose prompting the introduction of membership criterion in an attempt to differentiate psychologists from other areas of inquiry.<sup>22</sup> In particular, many psychologists were concerned with the perceived over-representation of philosophers in

the society.<sup>23</sup> Robert MacLeod later noted that “[the psychologist] was so determined to prove that he was not a philosopher that he seized eagerly upon any little formula that seemed to demonstrate the superiority of observation and measurement over armchair speculation.”<sup>24</sup> Hugo Münsterberg had earlier raised this concern, arguing that psychology was “rich in decimals but poor in ideas.”<sup>25</sup> Concurrently, psychologists also began to consider how research might address practical concerns. Münsterberg had also noted “experimental psychology has reached a stage at which it seems natural and sound to give attention to its possible service to the practical needs of life.” He called for an “independent experimental science which stands related to the ordinary experimental psychology as engineering to physics.”<sup>26</sup> The shift in focus to practical outcomes is also evidenced in the creation of 19 clinics in psychology departments by 1914.<sup>27</sup> The discrepant priorities of scientists and practitioners would remain a common theme throughout the formation and fragmentation of North American psychology.

The emergence of numerous clinics significantly impacted the structure of psychological science. In 1917, members of the APA first sought to establish the American Association of Clinical Psychologists (AACP) but it failed to fully materialize.<sup>28</sup> By 1919, a specific section for clinical psychology was formed within the APA. Within two years, a section for consulting psychology was also established. Applied psychological organizations expanded and contracted in the 1920s and 1930s until the establishment of the American Association for Applied Psychology (AAAP) in 1938.<sup>29</sup> The AAAP was defined by sections for clinical, consulting, educational, and industrial psychology, resulting in the intentional dissolution of the clinical section of the APA. Thus, two fields began to dominate American psychology by the 1940s: experimental and applied psychology.<sup>30</sup>

At the outset of American involvement in the Second World War, there was greater pressure for psychologists to focus on applied topics. In a pattern consistent with the fragmentation of science more generally,<sup>31</sup> the APA, following a similar model to that of the AAAP, had formally recognized nineteen divisions by 1944. This divisional growth would continue in an attempt to balance the needs of maintaining a common collective identity as psychologists while accommodating the increasing diversity of interests of these researchers and practitioners. For instance, following early episodes of creation and consolidation, divisional growth increased at a rate of 0.8 divisions per year from the 1960s to 1995.<sup>32</sup> During this time, clinical and counseling psychology began to play an ever-increasing role.

### **Reasserting Experimental Psychology: The Emergence of the Psychonomic Society**

During the growth and consolidation of applied psychology, experimental psychologists became increasingly dissatisfied with APA’s perceived shift in focus from experimentation to practice. These concerns were a focus of an elite group of researchers, the Experimentalists,<sup>33</sup> initially formed by Edward Titchener,

**Table 1. Inception dates of referenced organizations associated with the formation of North American psychological science**

Period	United States	Canada
1800-1850	American Association for the Advancement of Science (1848)	
1850-1900	American Society of Naturalists (1883) American Psychological Association (1892)	The Royal Society of Canada (1882)
1900-1925	American Association of Clinical Psychologists (1917) Society for Experimental Psychologists (1929)	National Research Council (1916) French-Canadian Association for the Advancement of Science (1923)
1925-1950	American Association for Applied Psychology (1938)	Canadian Psychological Association (1939)
1950-1975	The Psychonomic Society (1959)	Canadian Scientific, Technological and Engineering Societies (1970)
1975-2000	Association for Psychological Science (1988) <sup>1</sup>	Société Québécoise pour la Recherche en Psychologie (1978) Canadian Association of Neuroscience (1982) Canadian Society for Brain, Behaviour, and Cognitive Science (1991)

<sup>1</sup>Formerly the American Psychological Society

[**Figure 1**] who acted as an incubator for North American psychological science. Following Titchener's death, the Society for Experimental Psychologists (SEP) was created in 1929 as a formal descendent of the Experimentalists. Along with this elite group, there was also a perceived need for a larger, more accessible organization. The seeds of this organization were sown during an AAAS meeting in 1958 and would be followed by further discussion in 1959 at a meeting of the SEP. Those attending felt that there was sufficient grounds to establish a larger psychological society focused on experimentation, one that what would become the Psychonomic Society.

A number of features of the Psychonomic Society are instructive, as they inform the social re-organization of Canadian psychology. The founders first established the broad features of the organization in their initial meeting: “Decisions were made concerning the membership, the nature of the meetings, the form of governance, and the possibility of journal publication.”<sup>34</sup> Equally important was how the Psychonomic Society used the APA as a negative model for their organization.<sup>35</sup> While the APA was seen to be focusing on clinical practice and licensure, the Psychonomic Society would focus on scientific advocacy and limiting membership fees. The founders of the Psychonomic Society sought to emphasize the equal status among of members, eliminate the influence of commercial interests, and ensure exclusivity for psychological researchers. As William S. Verplanck reported “no special events, e.g. symposia, invited addresses, etc. will be scheduled. No commercial exhibits of any sort will be permitted. No formal relationship with... the press.”<sup>36</sup> Similarly, Clifford T. Morgan noted that

We [created the Psychonomic Society] primarily because we wanted meetings ... with a low noise level, meetings of some serenity and dignity, meetings attended by people with a common interest in communicating with each other about science, meetings where it is possible to see and talk with one’s scientific friends without stumbling over people with “patients,” meetings not dominated by program committees who subordinate original scientific papers to symposia or who tell you you can’t have slides, meetings without press rooms and book stalls—in short just plain scientific meetings attended by scientists talking about science.<sup>37</sup>

These comments reflected the desire to create a common collective identity (i.e., experimental psychologists) that reinforced a formal organization that also explicitly defined itself in opposition to other practitioners (i.e., clinical and counseling psychologists). This echoes the early reconfiguration of the APA to exclude spiritualists and philosophers. The Psychonomic Society continues to perform its scientific advocacy function today although special events, exhibitors, and sponsors are now permitted.

Although this limited review does not permit an exhaustive discussion of features of the social organization of psychological science in the United States, it is critical to note that other professional organizations, such as the APS that focused on experimental psychology, have featured prominently in the history of North American psychological science. Initially called the American Psychological Society, the acronym was later repurposed to accommodate an international focus: the Association for Psychological Science. Rather than focusing on perception, cognition, and neuroscience like the Psychonomic Society, the APS instead focused on experimental psychology. Importantly, along with fragmentation, there is evidence of collaboration among psychological societies. The APA, the Psychonomic Society, and other professional societies, jointly support scientific advocacy through the Federation of Associations of Behavioral and Brain Sciences. As I will argue below, important parallels are evidenced in the organization of Canadian psychology.



**Figure 1:** *The Sixth Meeting of the Experimentalists, Clark University, 1909.* Credit: *The Society of Experimental Psychologists Archive* <http://www.sepsych.org/1909.htm>

### Social Organization of Canadian Psychology

The Royal Society of Canada represented the first attempt at a national scientific organization.<sup>38</sup> Founded in 1882 by the Governor General, the RSC held annual meetings and published the *Proceedings of the Royal Society of Canada*. In terms of psychology, Canadians followed a very similar path to that of their American neighbours. This is attributable both to the common origins of psychological science, as well as the influence of Canadians observing their counterparts in the United States and participating in American societies.

Psychology first established itself in Canadian universities as moral philosophy in philosophy departments, making Canadian psychology as “old as its universities.”<sup>39</sup> James Mark Baldwin established the first psychological laboratory in the British Empire at the University of Toronto in 1890-91.<sup>40</sup> After Baldwin’s departure, August Kirschmann took over and expanded the laboratory.<sup>41</sup> Kirschmann also introduced the two-volume *Psychological Series* as the publication of Canadian-based psychological research had “...hitherto been without a representative publication.”<sup>42</sup> At that point, most research from Canadian psychologists was published in American journals (e.g., *American Psychology Journal*). Canadians also participated in APA conventions, with Canadian-born psychologist John Wallace Baird serving as APA president in 1918.<sup>43</sup> In 1938, a meeting in the University of Ottawa psychological laboratory

lay the foundation for a Canadian psychological society the following year. In contrast to their American counterparts, the Canadian Psychological Association and its membership explicitly directed their research toward supporting the war effort.<sup>44</sup> In 1940, Donald O. Hebb founded the *Bulletin of the Canadian Psychological Association*. Paralleling American experience, Canadian laboratories led to professional societies and the establishment of journals and other media.

Canadian psychology first became invested in national affairs and policy beginning with the First World War. In 1916, the federal government established the National Research Council (NRC) to provide advice on scientific matters and later constructed laboratories in 1932.<sup>45</sup> The NRC expanded rapidly during the Second World War with primary focus on military-related research. This expansion led Canadian psychologists to lobby the NRC for funding, which responded by creating the Associate Committee on Applied Psychology in 1949. During this time, NRC funding was divided into two pools: funds for Defense Research and funds for mental health research through the Department of National Health and Welfare. Although the former consisted of representatives from social, experimental, clinical, and educational psychology, both of these funds were more relevant to applied projects. Funding issues continued to have a significant influence on the fledgling psychological communities. For many psychologists, this became problematic, raising concerns about the independence of psychological science. Edward Alexander Bott at the University of Toronto wrote a post-war report expressing concerns that research would be “(patterned) too closely to suit current requirements or policies of particular departments of government.”<sup>46</sup> In the post-war period in Canada, even those psychologists who sought practical ends wanted to ensure professional autonomy.

Tensions within psychology were evidenced very early on within the CPA. Hebb described the problem in the *Canadian Journal of Psychology*:

Academic or ivory-tower psychology — experimental, physiological, and comparative (and including an important part of social psychology) — was the goose that laid the golden egg of applied and clinical methods. In Canada, if this goose is not dead, it is very skilful at feigning death. The glaring lack in Canadian psychology is in plain, old-fashioned, intellectual curiosity; hence the lack in academic research to parallel and stimulate research in practical methods.<sup>47</sup>

These tensions reflected a larger trend in psychology similar that in the United States during this period. Other authors have documented the movement for the professionalization of psychology in Canada: the CPA had become focused on issues of licensure and taxation with many believing that science and science advocacy had become comparatively neglected priorities.<sup>48</sup> Although later efforts by the CPA to accommodate this emerging group represented a self-conscious and concerted effort to redefine the disciplinary structure, early meetings of these individuals suggest that these attempts were

initially disaggregated, often occurring at the provincial level.<sup>49</sup> This contrasts with the later development of the CPA providing accreditation for doctoral programs in such areas as clinical and counseling psychology.<sup>50</sup>

In order to address the perception of a growing divide between experimental and clinical psychologists, Canadian psychology gradually adapted. In 1956, a divisional structure was proposed, but was rejected by members. By 1972, the CPA had established a divisional structure, consisting of Experimental and Clinical Divisions, that mirrored the APA's structure. Later debates focused on the inadequacy of this structure in accommodating the growing diversity of research interests and which later resulted in the creation of sections in 1989. Among others, sections were created for Industrial/Organizational, Social and Social Responsibility, Health, as well as Brain and Behaviour. This latter group became the scaffolding for another experimental-psychology society: the Canadian Society for Brain, Behaviour, and Cognitive Science (CSBBCS) [Figure 2].

### **Disciplinary Fragmentation: From Unity to Multiplicity**

Despite the creation of a sectional structure, the priorities of experimental and clinical psychologists persisted in the CPA. Over time, commentators have used terms that suggested this was an essential difference between the two groups. MacLeod noted that “[t]he big problem is that we [psychologists] must face two facts: 1. We have a scientific discipline called psychology, and, 2. We have a professional discipline called psychology. These two seem to be moving in different directions...Perhaps the scientific side demands one kind of person, the professional, another.”<sup>51</sup> George A. Ferguson offered a similar insight in his discussion of the perception of multiple social identities at McGill:

Applied students were sometimes viewed as of a lower order, although work required of them for the master's degree was more demanding than for the master's in other areas. Also, it was thought by some that their work might “contaminate” the research of their more pristine associates. In general, the distinction between scientific and applied psychology was divisive.<sup>52</sup>

With both applied and experimental psychologists making claims for a greater share of resources within the scientific-reward system, the distinction between pure and applied research came to define Canadian psychology as it had in the United States, with concomitant perceptions of different status within the hierarchy of practice.

Evidence of conflicting values is also evident in the CPA archives. During the 1988 meeting, a proposal was tabled to develop separate organizational units, one for Professional Affairs and another for Scientific Affairs. This resolution was rejected with the experimental psychologists blaming the clinical psychologists. The *CPA Chronicle* reported that “[a] significant number of members who considered themselves to be both scientists and professionals did not feel that the two functional Divisions adequately represented their needs.”<sup>53</sup> The *Chronicle's* account highlights the dual identities of the majority

of the voters: scientists and professionals. It also reflects the primacy of the scientific-practitioner model of education in applied and clinical psychology in contrast to experimental psychology.<sup>54</sup> The minority of those who had voted for the establishment of the new organizational structure were individuals that later formed the CSBBCS.

According to Richard Tees, the experimentalists sought to create an organization in the CPA, or one closely linked to it.<sup>55</sup> The rejection of the proposal by the membership vote may have been a catalyst for selecting the latter of these options, demonstrating the critical difference in opinion among individuals within these collective identities.<sup>56</sup> If the CPA's mandate was directed toward scientific communication, the membership must have believed that they were effectively accomplishing this task using existing means. This cursory account highlights the importance, if not of the presence of priorities, then of their perceived emphasis.

Comparable to the rationales for founding other scientific societies, the CSBBCS's founding stemmed from the need to obtain funding and recognition from the scientific-reward system. In Canada, the National Science and Engineering and Research Council (NSERC) maintains national Grant Selection Committees (GSC) in order to allocate funds. How a discipline is classified within this organization provides insight into its status as a science and its relationship to other scientific disciplines. Prior to 1989 the GSC for psychological research was situated within the Life Sciences. NSERC created a Cross-Disciplinary section that was intended to include psychological research. NSERC later reversed this decision, reflecting the ambiguous status of psychological research as a science within the larger scientific community.<sup>57</sup> Interestingly, those who were involved in the formation of the CSBBCS also served as members of the GSC, as well as the Brain and Behaviour division of the CPA.

Motivated by these concerns, members of the APA's Brain and Behaviour division were surveyed to assess the viability of forming a new organization. In 1989, a satellite meeting was held at the CPA conference to discuss the creation of a new society with representatives from animal learning, cognition, and neuroscience/neuropsychology.<sup>58</sup> Initially calling itself the Canadian Society of Behaviour and Neuroscience, the first organizational meeting was held in Ottawa in 1990, followed by one in Calgary the next year that chose an executive committee. One of the central questions considered in Calgary was the name of the society with considerable debate whether "psychology" should be used in the society's official title.<sup>59</sup> The name was designed to "satisfy the most recruits ... while alienating the fewest."<sup>60</sup> APS was a major influence on this fledgling society as it formed during the same period for similar reasons.<sup>61</sup> The CSBBCS's main foci were the promotion of perception, cognitive science, and neuroscience in NSERC and Canadian Institute for Health Research (CIHR) and to highlight the best research in these areas.<sup>62</sup>

Fragmentation and division in Canadian experimental psychology had



*Figure 2: Poster session CSBBCS Calgary, Calgary 2013. Credit: Dan Macdonald, Purple House Photography.*

been evident even earlier with the formation of the Canadian Association of Neuroscience (CAN). In a similar manner comparable to psychological organizations, CAN's formation followed from a meeting of the Canadian Federation of Biological Sciences (CFBS) with its first meeting co-located with the CFBS in 1982. The society was formed ostensibly for practical reasons such as the promotion of the interests of researchers in neuroscience within Canada. CAN's first president, Vivian Abrahams, noted in her address to the organization:

Canadian Neuroscientists have been major contributors in this field of science, unfortunately too often while working in other countries...Neuroscience, for too many of you, is an underfunded activity conducted in institutions which do not adequately appreciate you, do not pay you appropriately and delay giving you any kind of security.<sup>64</sup>

CAN represented the specific needs of neuroscientists and, despite a desire to accommodate them within CSBBCS, a specialized organization that served their own interests was more attractive. Bryan Kolb links the decline in neuroscientist participation at CSBBCS to CAN's active representation of neuroscience interests and the "emergence of focused meetings on more specific topics (e.g., vision (ARVO), pharmacology, and so on)."<sup>65</sup> Psychological scientists and allied researchers in Canada sought out organizations that best represented their own special interests in obtaining resources and building

social networks. Abrahams' speech highlights how neuroscientists perceived that the research-reward structure did not take into account their interests or needs. For professional societies, social organization and reorganization was intimately bound to the status and reward system within science.

Fragmentation within the social organization of Canadian psychology has occurred for reasons other than disciplinary concerns. The Canadian context also provides evidence for the formation of scientific societies related to social identities and language boundaries. A notable feature of Canadian society is its multilingual nature and cultural pluralism. With two official languages (English and French), language can both facilitate and hinder the communication of research. Francophone scientists, for instance, established their own societies and associations; in 1923 in Montreal, they established the French-Canadian Association for the Advancement of Science.<sup>66</sup> In psychology, disciplinary needs were not met until the founding of the Société Québécoise pour la Recherche en Psychologie (SQRP) in 1978. SQRP promotes French-language psychological research in Québec and improving representation with granting agencies rather advancing a specific kind of psychology (e.g., clinical, social, cognitive).<sup>67</sup> In this case, while epistemological issues are relevant, the focus is on facilitating dialogue within a linguistic community that is coextensive with a research community, rather fostering cohesion within a specific research area.

While I have emphasized disciplinary fragmentation in an effort to sketch evolutionary patterns of Canadian psychology's social structure, researchers and practitioners have also attempted to maintain and increase accord between the sciences as well as between governmental and nongovernmental organizations. Researchers are clearly aware of shared interests, including the need to unify the sciences and promote their interests in society. Minutes from the 1999 CSBBCS meeting show how researchers also sought to emphasize connectivity with other social groups:

Richard [Tees] noted that in addition to CPA, our society has or should consider having relations with CCDP, APS, EPS, IUpsyS, BDP, CCR...Janet Werker noted that our society might benefit from joining another organization, the Canadian Federation of Biological Societies...The tremendous improvement at NSERC...was noted as was the Government's much welcomed increased support for [research]. Mention was made of the "thank you" letter to the important politicians that Vince DiLollo had drafted for Richard Brown's and Lorraine Allen's signature.<sup>68</sup>

Here we see interest in promoting a social network connecting multiple psychological societies (APS), general scientific societies (CFBS), international societies (the International Union of Psychological Science; IUpsyS), governmental organizations (NSERC), and elected officials. Similarly, fruitful international partnerships are also evidenced. CSBBCS and the UK's Experimental Psychology Society (EPS) have co-hosted a number of meetings, some that antedate the formal creation of the CSBBCS.<sup>69</sup> While national and geographic concerns exert a considerable influence on the social organization

of science, epistemological issues can still reinforce connections within a larger, research community.<sup>70</sup>

Within the histories of the CPA and CSBBCS, there is also recognition of the desirability of collaboration and coordination of mutual interests. Since the formation of CSBBCS, joint annual meetings have been held with the CPA.<sup>71</sup> Both societies collaborate in their publication of the *Canadian Journal of Experimental Psychology*. One of the primary reasons for continued interaction and coordination are shared values. As norms and conventions reflect a critical feature of the moral economy of a discipline, the next section will examine the codes of conduct of the CPA and APA to illustrate shared and distinct features of psychologists across national boundaries that reflect common features of a collective identity.

### **Codes of Conduct and the Collective Moral Economy of North American Psychological Science**

The fragmentation of psychology into experimental and clinical subdisciplines is perhaps not surprising. In addition to epistemological differences, scientific communities are constrained by social factors such as the number of relationships that can be maintained by an individual. Individuals have a finite amount of attention and must therefore be judicious in their selection of what information they monitor, what activities they take part in, and who is deemed a reliable source of information.<sup>72</sup> Inasmuch as the early APA and CPA accepted all those interested in psychology but later limited membership,<sup>73</sup> the coexistence of experimentalists and clinicians within a single organization might best be viewed as a temporary solution to a problem of social organization. Specifically, experimentalists focused on the conduct and report of research whereas clinicians focused on practice and licensure. Despite the fact that psychology is a diverse discipline<sup>74</sup> with researchers and practitioners having different priorities, there are many shared values and norms that reflect a collective moral economy<sup>75</sup> as evidenced in a core set of courses<sup>76</sup> and stability of curriculum over time.<sup>77</sup> Thus, while psychology might have to negotiate a diverse set of norms, it constitutes a discipline as cohesive as any other social group. Indeed, disagreements over norms are not uncommon among scientists in general.<sup>78</sup>

A key aspect to professionalization is the monitoring and regulation of a profession's social network to ensure the maintenance of professional standards. It is critical to note shared features, standards, and beliefs might simply reflect a perception rather than the actual state of affairs.<sup>79</sup> As I noted above, researchers in Canada perceived a need for the formation of a professional society because they believed that their efforts were not met with adequate recognition from existing social organizations (e.g., national bodies, inclusive professional societies). To this end, codes of conduct play a central role in legitimating a profession,<sup>80</sup> a core feature of professional organizations.<sup>81</sup> Whether educational, aspirational, or regulatory,<sup>82</sup> codes of conduct reflect the descriptive or prescriptive norms of a scientific community that serve as mutual

points of reference for those within the moral economy. A review of the norms established by both the APA and CPA reveal subtle differences in the number and rank-order of principles.

The creation of a formal code of conduct followed long after APA's 1892 founding with considerable impetus from the revelations of unethical experimentation during the Second World War. Created following a letter-based survey in 1948 of more than a thousand members, the APA initially believed the resulting standards reflected overall concerns of "loyalty or an area of responsibility."<sup>83</sup> Published in 1953, the APA code consisted of six standards: public responsibility, client relationship, teaching, research, writing and publishing, and professional relationships. This ordering on its own might suggest that research activities reflected only the fourth and fifth priorities of psychologists again affirming that experimental psychology was viewed as a subdiscipline of psychology as a whole.

In its various forms, the APA code was published, revised, and amended every 5-6 years up to 2016.<sup>84</sup> The contemporary APA standards identify five principles that guide ethics conduct: A) beneficence and nonmaleficence, defined as the assurance of helping clients and participants as well as ensuring that no harm comes to them; B) fidelity and responsibility, defined as creating trust in the profession and delimitation of services provided by psychologists; C) integrity, defined as honesty and accuracy in the report of findings; D) justice, defined as providing equal treatment; and E) respect for people's rights and dignity, defined as preservation of autonomy and confidentiality. These principles, it is important to note, are specifically identified as "aspirational in nature," reflecting "the highest ethical ideals of the profession."<sup>85</sup> Thus, the principles were not developed to directly regulate the behaviour of researchers and practitioners, but to provide a template for the motivations and values that formed a collective identity for psychologists.

While Canadian psychologists considered the creation of their own code of conduct following the Second World War,<sup>86</sup> most efforts in the CPA up to the 1970s focused on how it would adopt the APA's norms.<sup>87</sup> Starting in 1983, the CPA began a concerted effort to develop a Canadian code. In 1986, 33 years after the adoption of the APA's code, the CPA formally established the Canadian Code of Ethics for Psychologists.<sup>88</sup> In contrast to the principles of the APA, the CPA code defined its principles as 1) respect for the dignity, rights and autonomy of persons; 2) responsible caring for the best interests of persons; 3) integrity in professional relationships; and 4) responsibility to society. On the whole, however, the CPA and APA norms appear highly similar and commensurable. For instance, the CPA code seemingly merges the APA Principles B and C into its Principle 3. Thus, while there are unique and important features within the CPA code,<sup>89</sup> both CPA and APA codes reflect the construction of a common collective identity based on prescriptive norms.

One key difference is the ordering of the constituent principles. The selection of letter-based and number-based listing reflects an essential difference in how

these values were weighted. Within the APA, each principle is deemed to be of equal importance (i.e., employing a nominal scale). In contrast, the CPA assumes that some principles supervene upon others (i.e., employing an ordinal scale). Insofar as the CPA code orders its principles in terms of importance, it has been developed to facilitate ethical decision-making. Notwithstanding this intention, it is less clear that researchers and practitioners use the code in this manner or whether these communities in fact agree with the ordering of these principles. At a minimum, it is clear that the code is meant to influence how researchers monitor and regulate their own performance and that of their colleagues.

A recent study considers similarities and differences in the weighting of values.<sup>90</sup> It observes that APA members believe that the code of conduct used a supervening ordering principle. Using a six-principle code they recovered an ordering that differed from both those of the APA and CPA: integrity, respect for people's rights and dignity, competence, concern for other's welfare, professional and scientific responsibility, and social responsibility.<sup>91</sup> It is of course an open question whether the individual characteristics of researchers who developed the CPA code and those that responded to the APA study and created the subsequent code are similar. Thus, while the formal norms and conventions might be highly similar across geographic boundaries, there are clear differences within the valuation of individual principles. This difference might stem from a discrepancy between those principles formally adopted by the organization and those enacted in the context of research and practice (i.e., the distinction between prescriptive and descriptive norms) or between research communities (e.g., Canadian and American; psychologists that are involved in administering professional societies and survey respondents). Regardless of the source of this discrepancy, it does appear that there is a family-resemblance structure<sup>92</sup> that defines the moral economies of the members of these communities: while many values are shared, members need not share all of the same values.

In both psychological science and clinical psychology, the influence of codes of conduct is likely to be indirect. Namely, the socialization of students entails a minimal exposure to these norms in the formal undergraduate and graduate curriculum with much of the burden of communicating these norms left to academic supervisors and mentors.<sup>93</sup> While both APA and CPA codes are aspirational in nature, they also perform a regulatory function in the context of research ethics. Among other values, research ethics emphasizes beneficence/non-maleficence and respect for individuals' autonomy and confidentiality. Specifically, research ethics boards (REBs) in Canada and Institutional Review Boards (IRBs) in the United States have evolved to play a monitoring and regulatory function, limited to research ethics. Similarly, provincial and state licensing boards also perform monitoring and regulatory functions; however, their scope is limited to professional practices (e.g., education, licensure) and the investigation of complaints. Thus, while differences can be identified in

terms of instantiation of general norms as well as their perceived importance, there is sufficient similarity in prescriptive norms of the CPA and APA to suggest a common moral economy and associated motivations within their respective social exchange systems. As norms and conventions are an integral feature of social identity, there appears to be support for a collective identity as “psychologists.” Indeed, the delay in the adoption of a uniquely Canadian code of conduct might stem from this shared identity as well as the continued cross-border interaction between members of these research communities.

### **The Social Organization of Psychological Science in Canada**

The social organization of scientific research and practice provides important insight into how collective identities and associated norms are formed and negotiated over time. While early formulations of paradigm change overemphasized the social factors that influence scientific research,<sup>94</sup> social organizations like professional societies, government departments and agencies, and granting councils have considerable influence on the structure of science, and non-negligible influence on its contents.<sup>95</sup> While organizations such as the CPA and APA appear to share the same norms, their instantiation appears variable. In Canadian psychology, a disciplinary pluralism exists such that, due to limited attention and differences in priorities, research communities fragment into smaller, and more cohesive social groups. Thus, while internal divisions in a scientific society or between scientific societies might be initially attributable to the practical needs of organizing individual members, they will necessarily influence the epistemological concerns of a community. Specifically, those within the social organizational units will increase their frequency of exposure to the ideas and practices within their group, while decreasing their frequency of exposure to those outside their group. This appears to be a comparable process as that observed in the laboratory: the instruments, ideas, and procedures that one becomes familiar with influence the practice of experimentation.<sup>96</sup> In Canada, continued communication and joint efforts between CPA and CSBBCS illustrate that the recognition of common goals and shared norms still exist with other scientific organizations nationally and internationally. Moreover, a similar pattern is observed in the social organization of American psychological science.

In contrast to a hierarchy in which subdisciplines of psychology (i.e., specific groups) are rank-ordered in terms of their status, the structure of Canadian psychology can be understood in terms of a heterarchy. A heterarchical structure is defined by multiple groups within a larger social organization that have different criterion for assessing fairness and the assignment of rewards and status (i.e., relational exchange norms). As I have discussed above, scientists and practitioners in psychology have both made claims that prevailing exchange norms do not permit adequate recognition of, nor provide rewards to, their members. Consequently, they take this state of affairs to mandate the creation of separate professional societies in order to maintain their legitimacy.



**Figure 3:** *The one-time Attention Symposium, Dalhousie University, Halifax, 2012. Top row (Left to Right): Eran Zaidel, Avishai Henik, David Shore, Charo Rudea, Bruce Milliken, Charles Spence, and Jin Fan. Bottom Row (Left to Right): Juan Lupia\_éz, Raymond Klein, Michael Posner, Gail Eskes, and Paolo Bartolomeo. Credit: Dr. Michael Lawrence.*

This process is nothing new. For instance, in an effort to legitimate their work, early psychological researchers obtained training in experimental methods, acquired instruments, and created laboratories to differentiate themselves from other competing groups (e.g., philosophers).<sup>97</sup> However, the fact that a common set of norms (e.g., CPA and APA codes of conduct) can be applied to both scientists and practitioners, and that educational models identify both of these features of psychology as relevant, suggest that there are common criteria used within the moral economies of psychologists.

Rather than sharing a collective moral economy, it might be the case that these general, abstract principles reflect metarelational exchange norms. In contrast to exchange norms that govern interaction within a group in terms of the obligations of group members, how resources are to be shared and distributed, as well as how value judgments are made,<sup>98</sup> metarelational exchange norms govern interactions between groups.<sup>99</sup> These general codes of conduct might best be seen as a social representation that symbolically reflects a common identity as psychologists. Of course, regardless of their intentions, the formal principles of the CPA and APA might not facilitate interaction of psychologists working in distinct subdisciplines in practice.

The future of Canadian psychology will no doubt continue to demonstrate disciplinary fragmentation due to the limited attention relative to increases in the number of researchers, practitioners, research topics, and areas of

application. For instance, this pattern is evidenced in cognitive and behavioural sciences in Canada.<sup>100</sup> Unique meetings have been commonplace including the Lake Ontario Visionary Establishment (LOVE), the Vancouver Conference on Cognitive Science, and the Banff Annual Symposium in Cognitive Science (BASICS), and Cognitio, an annual conference held in Montréal at UQAM that alternates every second year with a summer school. These conferences are also supplemented with one-time events (e.g., the Attention Symposium held at Dalhousie University in Halifax in 2012, see **Figure 3**). While researchers can balance attendance at a number of these conferences and symposia, these organizations necessarily compete for the attention of researchers not only within Canada but with other international conferences. Though larger, more inclusive conferences will likely continue to perform a symbolic function of defining a group of practitioners, offering legitimation and giving those in attendance a general locus of community interaction, fragmentation will continue to play a critical role in the foci of experimental and applied areas of psychology.

While I have attempted to highlight the basic processes of the evolution of psychological science as a profession, much additional work is required to understand the underlying factors that drive these processes and whether similar processes are evident in the global history of psychological science.<sup>101</sup> Factors that might often be classified as externalities relative to scientific practice, such as available funding, charismatic historical figures, and gender also likely play a significant role in the evolution of disciplinary structures. For instance, gender represents such a persistent issue: researchers might select a topic due to its novelty or its status, and status might be determined by past associations with existing social categories such as gender.<sup>102</sup> Exemplifying this is the potential role of gender-biases in the formation of epistemological communities with the history of American psychology.<sup>103</sup> While female researchers sought out social science areas of psychology (e.g., developmental psychology, counselling), male researchers selected natural-science topics (e.g., sensation, perception, and cognition). While more research is required, findings such as these support the claim that epistemological domains and social organization interact to create and reinforce disciplinary boundaries.

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Research Note

## Cultivating Knowledge about Canadian Women Scientists through Seminars, Objects, and Exhibitions

Cindy Stelmackowich

**Abstract:** *Exhibition research and development can be an innovative way to cultivate new knowledge in university classrooms. This article describes a Carleton University seminar that incorporated collections-based research to study Canadian women scientists. Entitled “Representations of Women’s Scientific Contributions,” the seminar gave students the opportunity to apply feminist critiques to the material cultures of science as they wrote the cultural histories of scientific objects related to the women they studied. The seminar culminated in HERbarium, a well-received exhibition at the Carleton University Art Gallery in 2017.*

**Résumé :** *La recherche préparatoire et l’élaboration d’expositions peuvent être des moyens innovateurs pour cultiver de nouvelles connaissances dans les salles de cours des universités. Cet article décrit un séminaire offert à l’Université Carleton qui a porté sur la recherche effectuée sur des collections pour étudier des femmes scientifiques canadiennes. Intitulé « Représentation de la contribution scientifique des femmes » (Representations of Women’s Scientific Contributions), le séminaire a donné aux étudiants l’occasion de considérer la culture scientifique matérielle d’une perspective critique féminine grâce à un exercice de rédaction de l’histoire culturelle d’objets scientifiques associés aux femmes étudiées. Le séminaire a culminé avec une visite d’HERbarium, une exposition fort bien reçue, présentée à la galerie d’art de l’Université Carleton, en 2017.*

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**Keywords:** Canadian women scientists, feminist critiques of science, science exhibitions, art galleries

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GENERATING KNOWLEDGE ABOUT THE NORMS and practices of science and scientific discourse does not need to be restricted to only reading publications and writing texts. Rather, a variety of approaches including analysing the material cultures of science and developing innovative exhibitions that address the cultural histories of scientific objects and practices can be an innovative form of cultivating new knowledge. A combined undergraduate and graduate university seminar I developed in the winter term of 2017 at Carleton University for the

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Cindy Stelmackowich, “Cultivating Knowledge about Canadian Women Scientists through Seminars, Objects and Exhibitions,” *Scientia Canadensis* 41, 1 (2019): 55-65.



*Figure 1. A.R. Timothy, Photographer, Science '35 Queen's University, 1935. Sepia photograph on paper 89 x 22.86 cm. Private collection. Photo credit David Barbour.*

Pauline Jewett Institute of Women's and Gender Studies brought collections-based research to bear on the histories and contributions of Canadian women scientists; it gave students the opportunity to take an active role in applying feminist critiques to the material cultures of science.

Entitled "Representations of Women's Scientific Contributions," the seminar focused on researching the lives, contributions, and stories of Canadian female scientists. Course readings were drawn from history, science studies, museum and curatorial studies, material culture studies, feminist philosophy of science, and feminist/gender cultural theory.<sup>1</sup> The materials we researched and developed were to be incorporated into two planned exhibitions. The first was for a fall 2017 exhibition at Carleton University Art Gallery's exploratory space called the Carleton Curatorial Laboratory (CCL). The second was for a 2018 national exhibition on Canadian women in the natural sciences planned for the Canadian Museum of Nature.<sup>2</sup>

Instead of focusing exclusively on lectures and in-class discussions based on assigned readings, the seminar included numerous off-campus sessions to specialized archives and libraries, scientific laboratories, and collections facilities located across the National Capital Region. These included field-trips to the Natural Heritage Campus of the Canadian Museum of Nature; the storage facilities of the Canada Science and Technology Museum; the herbariums and archives of the Central Experimental Farm, Agriculture/Agri-Food Canada; as well as the special collections at Natural Resources Canada (NRCan) Library. This opportunity to conduct archival and artefact research where many rich primary sources and material cultures related to the histories of Canadian scientists reside allowed us to perform object-based research as a mode of generating knowledge. Equally important, these field trips provided opportunities for students to meet with science curators, collections managers of scientific materials, librarians of science collections and resources, and of course, scientists. Alongside these experts, we engaged in discussions about the expectations of the exhibition as a work in-progress and how scientific artifacts and objects could ask new questions of both science and its histories.<sup>3</sup>



*Figure 2. Detail of A.R. Timothy, Photographer, Science '35 Queen's University, 1935. Sepia photograph on paper 89 x 22.86 cm. Private collection. Photo credit David Barbour.*

Where to begin a seminar that focuses on unknown Canadian women scientists? Especially when the story of women in science is an ongoing account of discrimination, barriers, hostility, and invisibility. Perhaps with an archival record that has always stood as a statement about professional identity—in this case, the professional group portrait. [Figures 1 & 2] This group photograph taken of the ‘Science ‘35 class at Queen’s University’ was an artifact I brought into the seminar on the first day to allow us to ruminate on women’s specific marginalized position within science and the rules that govern science’s disciplinary formations. It is an 89-cm long black-and-white sepia-toned panorama photograph attributed to a Kingston commercial photographer who specialized in shooting large group portraits and graduation photographs for Queen’s University and the Kingston General Hospital. My intentions of starting off the seminar with a group portrait that did not include a single female was to try and make visible the otherwise invisible relations, shapes, and meanings that were already there.

Professional group portraits such as this one carry important narratives related to the goals of the group and its transmission of knowledge. Large assemblies gathered around their Masters demonstrate the desires of the students to join a professional fraternity based on principles and methods. Quintessentially these types of group photographs are a statement about identity. In this image, long rows of well-dressed students and science-faculty members positioned in the center fill the spaces. Male subjects holding onto their books and fedoras take up all of the shapes and spaces of meaning within this photograph recorded in front of the stately historic stone science building on Queen’s campus.

The focus for the seminar class was to discuss how this particular object opens onto a discussion about the invisible relations that governed science and scientific discourse in the 1930s. In other words, how could new sets of



**Figure 3.** Installation detail of HERbarium exhibit, Carleton University Art Gallery, Ottawa.  
Photo credit Patrick Lacasse.

questions that highlight difference/marginalization relations unfold onto rules of exclusion, prohibition, division, and rejection that governed science in Canada? In many respects, this group photograph illustrated what was at stake socially and culturally at the time when scientific disciplines were established and professionalizing. With no females in sight, the seminar students puzzled over the rules related to who was allowed to be there on the steps at Queen's university that day? How did the separation of spheres (private versus public) affect women entering into scientific fields? When were women formally allowed entry into universities in Canada, and then permitted to practice as professionals within the discipline of science? How did these masculinising effects related to professionalization redefine women's relationship to science and scientific discourse in ways that reverberate today?

The exercise with the 'Science '35 class at Queen's University' portrait made the students reflect on the enormous barriers facing women as they sought entry into science; they also recognized that telling the stories of women scientists would involve repositioning science to be seen anew, and that representing female scientists would likely entail making them visible for the first time. Armed then with the exciting prospects of developing a distinctive exhibition that would communicate the outcomes of research conducted during class field-trips, we set out to analyse the cultural and gendered backgrounds of the scientific objects we came across (whether that be the research notes connected to a scientist, her photographs of her laboratory experiments, or her herbarium specimens of flora, fauna or fungi). To these ends, the rich primary sources related to Canadian women scientists became epistemic things, presenting for us specific sources open to be viewed, read, analyzed and discussed, especially



*Figure 4. Installation detail of HERbarium exhibit, Carleton University Art Gallery, Ottawa. Photo credit Patrick Lacasse.*

as it related to the topic of gender.

As research progressed, it became apparent that we needed to communicate in the exhibition a relation between objects and context. How could our chosen objects pose questions that related to the history of being a women scientist? Interested in developing evocative displays and small tableaus, we contemplated the ways that scholarly arguments could be based on objects and extended into the spatial arrangements of the exhibition space. Extended further, how can the stories connected to scientific objects unfold or reveal their historical meanings and gendered content? For instance, how could the unique and effective sewing-needle solution that mycologist Dr. Mildred Nobles adopted for her taxonomical studies on mycological subjects be presented for what it was — an interface, where her ways of thinking and acting materialized to have a transformative effect?

It was not uncommon for women scientists to invent and adopt unique material forms and solutions while performing their research. As shown in **Figure 3**, Nobles used a sewing needle to poke through the holes of her taxonomy-research cards: similar codes signaled similar features and the cards would remain on the needle; while dissimilar cards meant different features (or species groups) and the cards would fall off the needle.<sup>4</sup> Serving as a perfect solution for the early management of large amounts of scientific data, Nobles created this system in her laboratory at the Canadian Department of Agriculture to identify 126 species of wood-rotting fungi that eventually led to Dr. Nobles' 1948 prized manual, known internationally today as the "Nobles Species Code."<sup>5</sup> For our display, the surprising yet extremely effective working actions and methods that played themselves out in a number of female

scientists' work were prioritized. The display we assembled of Nobles' hand-written punched cards brought into focus where, when, and how science and a tool more associated with traditional feminine handicrafts came together and materialized.

Since the study, collection, preservation, and representations of scientific specimens were preoccupations for a number of women, we decided to highlight the “her” within herbarium and selected *HERbarium* as the title for the Carleton Curatorial Laboratory exhibition.<sup>6</sup> Using the term herbarium made us aware of the underlying scientific, visual, and epistemological structures that governed the practices that shaped Canada's early natural heritage. A wall case displaying a large assortment of wood decay fungi specimens that were collected between 1925 and 1932 by Dr. Irene Mounce for the National Mycological Herbarium (DAOM) were carefully presented as veritable herbarium specimens; catalogue numbered fungi were isolated and placed in Pyrex glassware; original typed herbarium labels were either laid-out in the case or left thumb-tacked into the fungi itself; smaller specimens were shown in their original plastic specimen bags [Figure 4]. The reason for these choices was recognizing that it was important to put forward the case that Canadian women were actively and professionally involved in presenting specimens as a concept and a historical practice: a concept that understood that ‘nature’ could be contained and organized into fixed schemes, and a practice that has entailed scientists' naming, labeling, organizing, and theorizing.

*HERbarium* displayed the broad range of illustrative techniques — from original drawings and watercolour paintings to photographs — that Faith Fyles, assistant botanist at the Department of Agriculture, created for the Dominion Horticulturist's experiments with apple cultivation at the Central Experimental Farm in Ottawa, as well as for her 1920 publication on the poisonous plants of Canada.<sup>7</sup> [Figure 5] The display of these items showed that Fyles was instrumental in defining both the scientific and representational systems related to plants and food crops during this early period. Clearly, developing representations and generating objects structured perceptions, communications, and further scientific pursuits. In the case of Faith Fyles, scientific objects were also visual agents. For her, the continued transformation of natural objects into stylized and artistic forms was both an intellectual and artistic/aesthetic exercise. *HERbarium* was an opportunity to present a number of nineteenth- and early-twentieth century natural-history practices as engagements that represented wider colonial narratives and practices.

Posing questions related to the specific ideologies attached to being a scientist led us to better understand the ways that the personal and the professional, and the private and the scientific, are intertwined in the stories related to women scientists. Dr. Mildred Nobles never married and remained employed with the Canadian Department of Agriculture until her retirement. However the career of her predecessor, Dr. Irene Mounce, ended when she married. As noted in her obituary, “Dr. Mounce's career in mycology-plant pathology ended when she



**Figure 5.** Installation detail of HERbarium exhibit, Carleton University Art Gallery, Ottawa.  
Photo credit Patrick Lacasse.

married...in 1945, and was required to resign because of her marital status.”<sup>8</sup> The phrase “required to resign” caused both the class as well as the staff at the Department of Agriculture to pause. Our initial research on the personal lives of female scientists working at the Geological Survey of Canada during the same period disclosed similar results — only unmarried women were allowed to hold full-time employment; women who got married were “required to resign.” Intent on finding evidence of gender biases within employment records and policies, we poured ourselves into researching archived federal government employment policies in documents housed at Library and Archives Canada.

The ‘smoking gun’ was found! It came in a standard memo issued from the Privy Council Office of the Public Service Commission of Canada [**Figure 6**]. Dated June 18, 1920, the document stated that the Civil Service Act of 1919 was “pleased to” amend the existing Act to bar married women, whose husbands were living and able to work, from permanent positions in the public service. Sadly, this discriminatory measure remained in effect across Canada until 1955.

We all felt compelled to treat the Privy Council memo as a museological artefact even though it is atypical for a government policy document to be included in an art-gallery exhibition. Endowed with the ability to speak on its own, and needing little contextualization or preamble, the message in the letter points to the reasons why the female scientists were not allowed to fully mature and professionalize. Additionally, it points to how the private lives and careers of many Canadian women, including scientists, were affected by these discriminatory marriage policies between 1920 and 1955.

Actions and practices that previously went unnoticed came into view as our attention focused on material dimensions and personal histories. In the end it was through analyzing the social and cultural background of objects that we made visible the otherwise invisible meanings that regulated women’s involvement in science. Yet, objects such as crafting tools also became agents of change that gave women the ability to shape their knowledge and contributions. With *HERbarium*, the careful placements of objects and specimens in mini-displays and sub-stories allowed us to highlight specific discourses and power relations.

## Outcomes

As we look for ways to advance gender awareness, inclusion, and equality in STEM, there is value in focused seminars, exhibitions, and conducting object-based research that includes gender analysis. In addition to generating a unique exhibition, the outcomes of the seminar ranged from students learning about hidden science-collections facilities where they later secured internships and placements while advanced graduate students were introduced to untapped collections where they could pursue original research. All of the students felt they either met or researched and found historical female figures or mentors that gave them renewed hope to pursue careers in, or connected to, science. In the months following the seminar, students were invited to present in Montreal

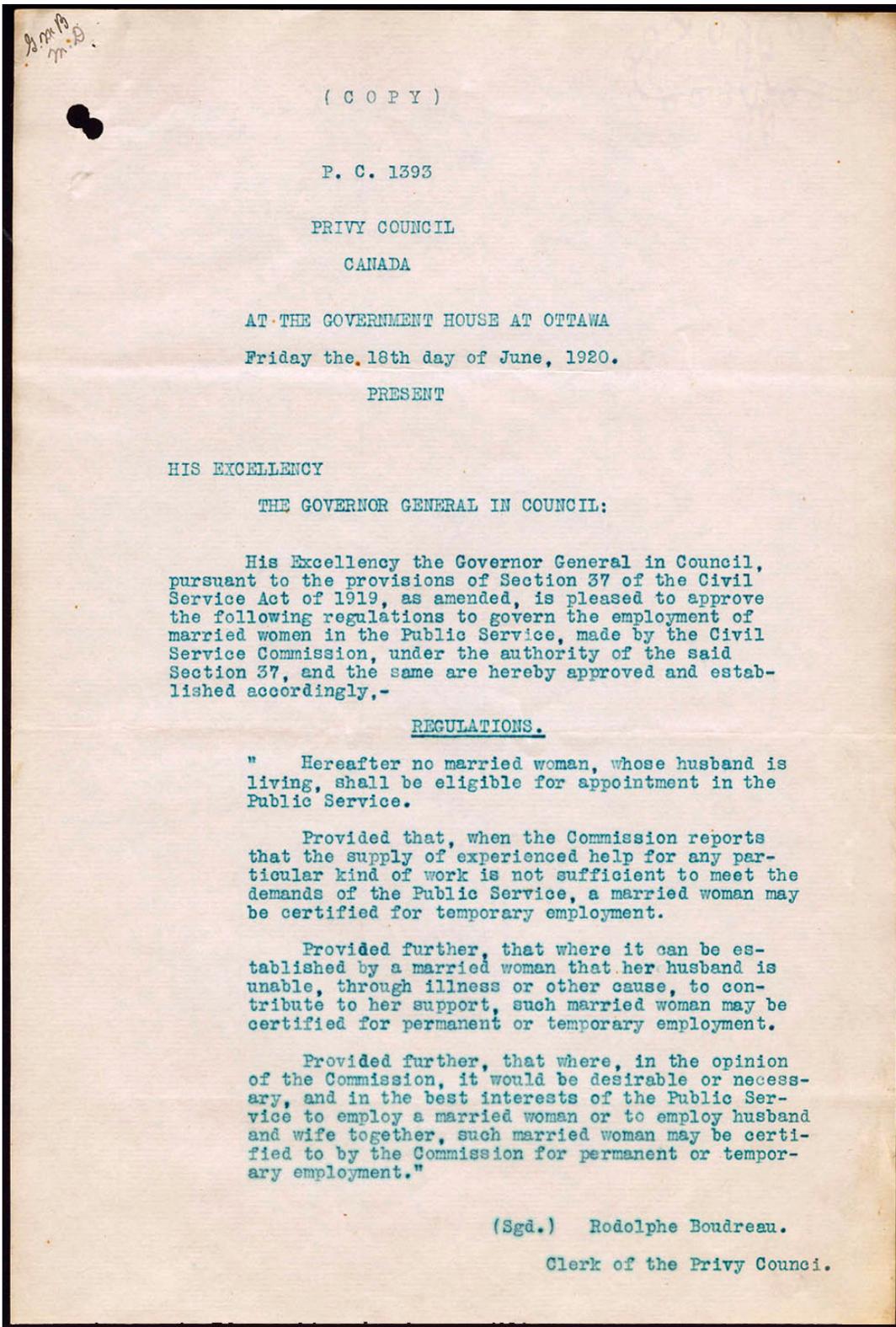


Figure 6. Memo from the Privy Council Office of the Public Service Commission of Canada, June 18, 1920. Ink on paper. Collection: Library and Archives Canada – Collection on Politics and Government, e008440398-v8.

a well-received poster on HERbarium at the North America 2017 Gender Summit. This international event allowed connections and exchanges with others active in current gender and science research and ‘women and girls in science’ initiatives from across the world. It gave a number of participants in the seminar the confidence to become leaders in Canadian science societies, specifically, the Committee to Encourage Women in Physics (CEWIP) and Carleton University’s undergraduate and graduate student Women in Science and Engineering Society (CU-WISE).

But it was not only the students that were impacted. Science institutions and federal-government departments that normally do not lend artefacts to galleries or museums due to a lack of interest or awareness about their collections were now keen to participate and partner in our curated exhibitions. This novel type of outreach caught the attention of Director Generals and Science Directors of federal-government departments. Furthermore, our research group with its unique focus on cultivating knowledge on women and science were profiled in a variety of local and federal-government newsletters, blogs, and university radio programs.

Researching and celebrating the lives and contributions of the largely unknown women scientists who often work away from the spotlight also became a critically important objective of the exhibition team when planning “Courage and Passion: Canadian Women in Natural Sciences” at the Canadian Museum of Nature. Simply put, role models matter and can make a difference for the next generation of girls and young women. Through hundreds of carefully selected artefacts, specimens, photographs, and field notes ranging from fossils, wet specimens and a 16-foot-tall giraffe skeleton, the layered and gendered stories of culturally diverse trailblazing Canadian women scientists were vividly and proudly presented. The interest in this national exhibition that I curated has been strong and far-reaching, garnering national-media attention and inspiring all ages.<sup>9</sup> Like any good text, experiment, or experience will do, a rich thematic exhibition has the potential to stimulate new scholarship and can contain the seeds for ongoing research, that is: pose ever more inspiring questions.

*Cindy Stelmackowich, PhD, is an Ottawa-based artist, curator and academic. She was a post-doctoral Fellow with the New York Academy of Medicine, the SSHRC Strategic Knowledge Cluster “Situating Science”, and the Lichtenberg-Kolleg Institute in Germany. She has been a research consultant and curator for permanent and temporary exhibitions at the Canada Science and Technology Museum, the Canadian Museum of Nature,*

Carleton University Art Gallery, Dalhousie University Art Gallery, and the Canadian Consulate (New York City).

## Endnotes

- 1 Readings included scholarship on science and gender by historians Marianne Ainley, Julie Des Jardins and Ruby Heap, as well as writings on the “material turn” in the cultural and social sciences by Martha Fleming and others. See Marianne Ainley, ed., *Despite the Odds: Essays on Canadian Women and Science* (Montreal: Vehicule Press, 1990); Julie Des Jardins, *The Madame Curie Complex: The Hidden History of Women in Science*, (CUNY: The Feminist Press, 2010); Ruby Heap, “Writing them into History: Canadian Women in Science and Engineering since the 1980s”, in *Out of the Ivory Tower: Feminist Research for Social Change*, eds. A. Martinez et al (Toronto: Sumach Press, 2003): 49-67; and Martha Fleming, “Thinking through Objects,” *PrePrint* 399, (Berlin: Max Planck Institute for the History of Science, 2010): 33-48.
- 2 In Fall 2016 I was invited to be the Curator for a special exhibition on Canadian women in the natural sciences for the Canadian Museum of Nature. Entitled *Courage and Passion: Canadian Women in Natural Sciences*, the exhibition revealed the contributions of innovative trailblazers in science from the 17th century up to the present times. It also addressed the social and gender barriers that women faced, with contemporary insights to inspire girls and young women with an interest in science. The exhibition opened July 28, 2018 and ran for seven months until March 31, 2019. The launch marked 100 years since women won the right to vote in federal elections, a milestone passed in the museum when it served as the temporary home for Parliament following the fire that destroyed the Centre Block in 1916. A link to the exhibition: <https://www.nature.ca/en/plan-your-visit/what-see-do/our-exhibitions/courage-passion-canadian-women-natural-sciences>
- 3 I am grateful for the many interesting discussions I had with the students enrolled in the Winter 2017 Carleton University seminar: Josie Arruejo, Chelsea Black, James Botte, Brigid Christison, Michelle Jackson, and Sharon Odell.
- 4 Special thank you to Dr. Scott Redhead, Curator of the National Mycological Herbarium (DAOM), for sharing his knowledge and enthusiasm about the contributions of Dr. Mildred Nobles and Dr. Irene Mounce.
- 5 Mildred K. Nobles, “Studies in Forest Pathology. VI. Identification of Cultures of Wood-rotting Fungi,” *Canadian Journal of Research*, 26c, 3 (1948): 281-431.
- 6 *HERbarium* was displayed at Carleton University Art Gallery in the Carleton Curatorial Laboratory (CCL) between September 11 and December 3, 2017. Thank you to Director Sandra Dyck and Curator Heather Anderson for this special invitation and their interest in our seminar research. <http://www.cuag.ca/index.php/exhibitions/404>
- 7 Faith Fyles, *Principal Poisonous Plants of Canada*, (Ottawa: Department of Agriculture, Dominion Experimental Farms, 1920) Ser. 2, Bull. 39.
- 8 “Obituary: Irene Mounce, 1894-1987,” *Mycologia*, 80, 5 (Sept.-Oct., 1988): 607-608.
- 9 Extensive national media interest was generated from the exhibition *Courage and Passion: Canadian Women and the Natural Sciences*. These included radio and television interviews with *Global News*, *CBC: All in a Day* and *CBC: Our Ottawa*. A couple of interviews published on-line include: <http://blog.cdnsiencepub.com/celebrating-canadian-women-in-science-at-the-museum-of-nature/>

## In memoriam Dr. Ursula Martius Franklin (1921–2016)

Monique Frize

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**Keywords:** Ursula Franklin, University of Toronto, science and technology, society

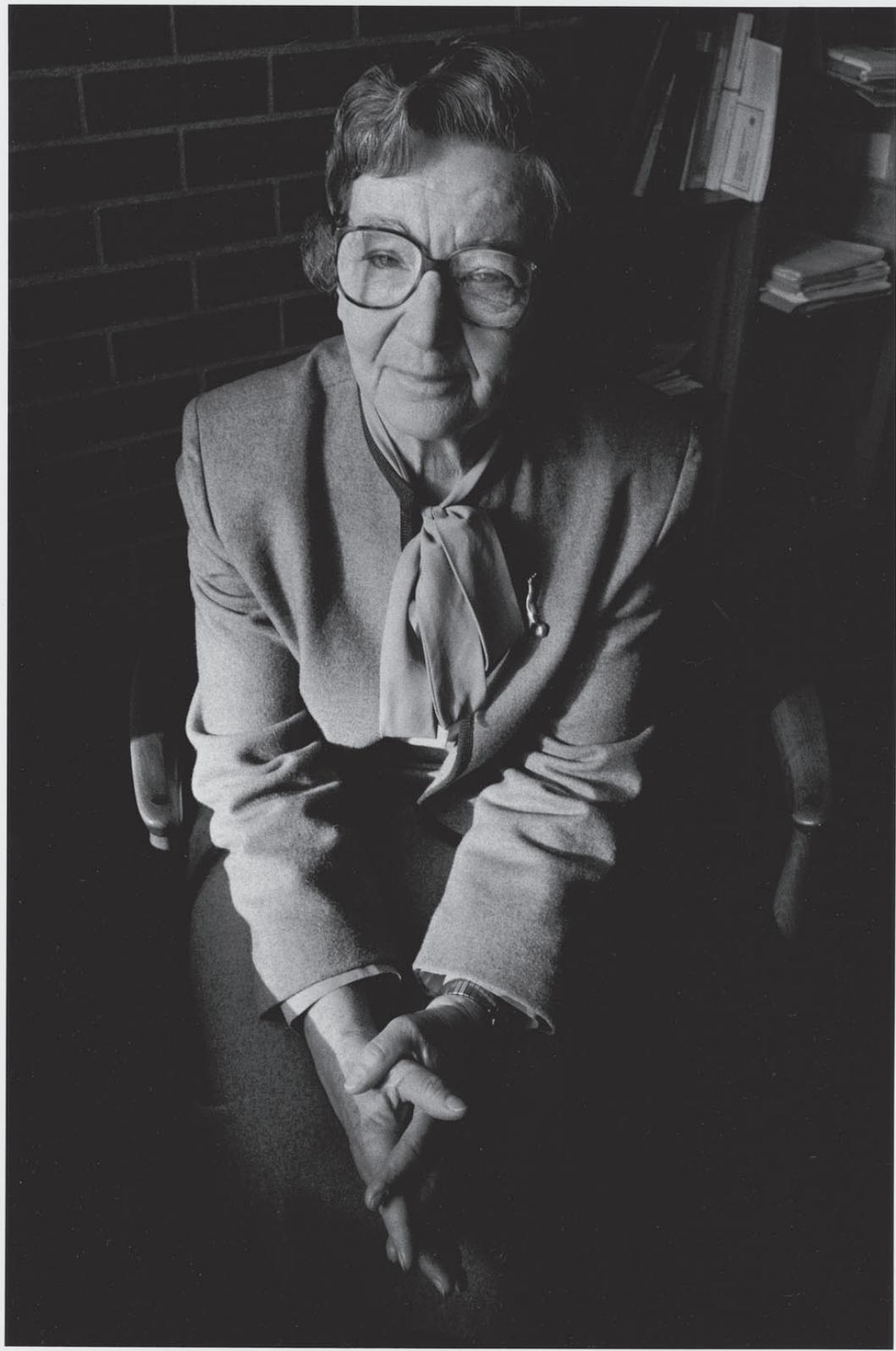
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**Abstract:** *Ursula Franklin was born in Germany in 1921 and moved to Canada in 1949 after surviving the Holocaust. She joined the University of Toronto's Department of Metallurgy and Materials Science in 1967, and became the institution's first female "university professor" in 1984. This memoriam recounts her influence on the author, among the many others Ursula Franklin touched during her remarkable life and career.*

**Résumé :** *Ursula Franklin est née en Allemagne en 1921, et s'est établie au Canada en 1949, après avoir survécu l'Holocauste. Elle a intégré le département des sciences de la métallurgie et des matériaux de l'Université de Toronto en 1967, et est devenue la première femme professeure de l'établissement en 1984. Cet hommage souligne son influence sur l'autrice et sur les nombreuses autres personnes qui ont été touchées par la vie et la carrière remarquables de Mme Franklin.*

IT IS AN HONOR FOR ME TO WRITE about Ursula Franklin, a woman I greatly admire, a mentor and a friend. My path crossed Ursula's several times between 1989 and 2002, while we both worked towards improving the life and work of women in science and engineering. The following tribute presents some examples of our interaction and my view of Ursula Franklin's impact on the quest for equity, justice, and harmony for women choosing these non-traditional education and career paths.

In May 1989, a press conference at the University New Brunswick (UNB) announced the creation of an academic chair with financial support from the Northern Telecom and the Natural Sciences and Engineering Research Council (NSERC). I applied for the position, was interviewed in September, shortly after completing a doctorate at Erasmus University in The Netherlands, and was selected for the position on November 8, 1989, with a starting date of December 11. The mandate of the Northern Telecom/NSERC Women in Engineering Chair was to increase the participation of women in engineering education programs and in the profession, a role which covered the entire country. One of my first priorities, after hearing of my appointment, was to attend a biomedical engineering conference, organized by the Engineering in Medicine and Biology Society (EMBS), which was held November 9-12 in Seattle (Washington); this would allow me to see the current state of research in my field and help me to develop an academic-research program.



*Figure 1. Ursula Franklin, 1989. Credit: Pamela Harris/Library and Archives Canada, 1991-151-NPC.*

On November 9, 1989, while waiting for my flight to Seattle at Pearson Airport in Toronto, I called Dr. Franklin at the University of Toronto to discuss the new position and ask for some advice. I had heard about Ursula Franklin's excellent work on this topic and thought she could give me some insight on tackling this intimidating role. Dr. Franklin took my call even though she had never heard of me. I explained the new exciting position and role and she shared with me some very wise ideas. The main point she made during our telephone conversation was that the approach needed to be more than just numbers; that women were to be recruited for their feminine perspectives and approaches, not just to make up the number of engineers. At this time, the profession claimed that many more engineers were needed in Canada. Ursula's words added an important dimension to the need for more engineers: the need for balanced gender perspectives in engineering work and technological innovations. I thought about this during the entire trip to Seattle and on my way back home, trying to understand exactly what Ursula meant and how to make it happen. This thought was to inspire my entire work on women's issues for the next twenty years.

Ursula and I met again in Victoria in 1990. We sat together on a panel to speak about women in science and engineering, along with Peta Tancred (McGill University), and Rose Sheinin (Concordia University). Elizabeth May had organized the event on behalf of the Royal Society of Canada (RSC). I spoke about early findings of the Canadian Committee on Women in Engineering (CCWE) of which I was the chair, and Ursula gave an inspiring and original talk on the question of feminist scholarship. She argued that most fact-makers (scientists) were male; they decided what questions needed to be asked and for whom the benefits would apply. She used an analogy: boys making facts in their sandbox with their tools and letting girls in if they helped them in their fact-making. But the girls may want their own fact-making with their own sandbox and their own tools. This is a simplification of course, and Ursula's full talk can be found in her book, *The Ursula Franklin Reader. Pacifism as a Map*, published in 2006. In "The Sandbox and The Tools", she states: "I think the challenge of feminist scholarship is in fact a struggle for the sandbox and the tools. That one can go around having a different process of fact-making, finding a different methodology, finding a different process of consensus and sanctioning..."<sup>1</sup>

The next time I met Ursula was in May 1991, at the National Conference organized by the CCWE. As chair of the conference "Women in Engineering: More than Just Numbers," I invited Ursula to give the keynote address. The conference was part of the CCWE's information gathering for a report to be delivered in the spring of 1992. In her speech, "Overcoming the Obstacles vs. Removing the Obstacles," Ursula Franklin made it clear that she favoured the latter option; she left us with excellent ideas that we took into consideration during our CCWE discussions. The final report bore the same title as the

1991 Conference, released in April 1992. It is easy to guess how this title was chosen!

On June 22, 1992, I met with Ursula Franklin again; this time, the meeting included Bill Vanderburg (a professor at the University of Toronto with expertise on technology and society), Jim Parr (an engineer, poet, composer, and Deputy Minister of Colleges and Universities in Ontario), and the Science and Technology Coalition (Ontario). This was another thought-provoking meeting at which I learned many new ideas about technology and society. Ursula and Bill were experts on this topic; Ursula's 1989 CBC Massey Lectures, *The Real World of Technology*, had been published and Bill had written much on this subject.<sup>2</sup> This enabled me to strengthen my lectures to engineering students on the impact of technology on society.

In May 1995, at the second "More than Just Numbers" conference, Dr. Ursula Franklin gave a memorable closing speech. Entitled "Looking Forward, Looking Back," the speech provided an excellent summary of the conference and included a key message: Ursula wanted us to make engineering fit for women, rather than women fit for engineering. She wanted us to avoid the situation where women in engineering classes had to adapt to masculine culture and become 'one of the guys.' Dr. Franklin was right in thinking that this happened all too frequently. She and I had witnessed sexist acts in which women were willing participants, likely signifying a desperate need to belong. Her speech was a road map for what should be accomplished over the next decade—the real changes that were needed to make engineering a friendlier place for women. In her speech, Ursula stated: "The exclusion of women has meant that some of the values that women traditionally bring to their tasks have been missing in the habits of work and thought in engineering."<sup>3</sup> Everyone should read Ursula Franklin's words—not only those at the closing of the 1995 CCWE Conference—but all of her speeches, which are so thought-provoking and wise! I was especially touched by Dr. Franklin's tribute to my efforts for women in engineering:

To me, it is not only important to honour what [Monique] has done— but—even more so—how she has done it. There has been a very special spirit of generosity that has flown through all of her work, work that culminated in this conference; it was also present in all phases of the process of the investigation she chaired. This combination of generosity and professional competence, which Monique has exhibited, is something very rare, and I would like to salute Monique here and say, Monique, yours is a job well done and well to be continued.<sup>4</sup>

Ursula and I met again in May 2000 at the BAITWorM (Biology as if the world mattered) Conference held at the Ontario Institute for Studies in Education (OISE) in Toronto. She gave another one of her inspiring speeches and the networking opportunities were excellent. I also spoke at the event, along with Claire Deschênes (**Figure 2**), a professor of engineering at Université Laval who also held the NSERC/ALCAN Chair for women in science and engineering in Quebec. Ursula received the Worm of the year award! Below is an extract of



*Figure 2. Dr. Ursula Franklin and Dr. Claire Deschênes at Dr. Franklin's launch of her book *Ursula Franklin Speaks. Thoughts and Afterthoughts* at the University of Toronto, May 23, 2014. Reproduced with the permission of Dr. Monique Frize.*

her talk at the BAITWorM Conference in May 2000:

Women must have the education and technical literacy that will allow them access to decision-making and to meaningful work in the continually evolving technological society. But women will also have to survive as human beings, as creative, spontaneous, and cheerful persons.

Ursula Franklin came to speak at Carleton University on November 6, 2001; Nadine Faulkner (a collaborator on my upcoming first book *The Bold and the Brave: A History of Women in Science and Engineering*) and I made sure to attend this event. Ursula received a standing ovation after her talk. The next morning, she agreed to have a coffee with Nadine and me to discuss the research for the book. As expected, this proved to be very helpful.

As a devout pacifist Quaker, Ursula Franklin's scholarship and activism was geared towards the condemnation of warfare and of military technologies. She was particularly concerned with the threat of nuclear power and of nuclear weapons. One of her important contribution to science was the discovery of radioactive substances in Canadian children's baby teeth. "It was a little disconcerting because it was my teeth," her son, Martin Franklin, recounted. "I was seven or so at the time and while other children had the tooth fairy, mine were being tested for strontium-90." There is no doubt that Franklin's research helped sway world opinion against nuclear-weapons testing during the Cold War.<sup>5</sup>

In an interview, Ursula Franklin said that she was most interested in

contributing to peace. Her daughter recalled that her mother would get angry when she learned of events such as the Gulf War of the early 1990s, which the scientist referred to as “totally and utterly insane.” “When she saw things she didn’t agree with or didn’t like, she would draw you in and explain why she didn’t like them and what needed to be done,” she explained. Her son told CBC News it was her work as a teacher, which spanned four decades, that made a lasting impact in the lives of many individuals who looked up to her. “Her responsibility to herself was to open doors [for others],” he insisted. Franklin’s children say their mother believed in the value of small acts, which set the stage for the world to embrace bigger ones.<sup>6</sup>

Claire Deschênes reunited with Dr Franklin during the Berkshire Conference on the History of Women held in 2014 at the University of Toronto. Claire chaired a special session on the history of women in science and engineering, organized in honour of Ursula Franklin by Ruby Heap, professor of history at the University of Ottawa, at the request of the Conference organizers. Ursula attended the session and then addressed and exchanged with the audience and session participants. This was a great moment to hear her thoughts on women in science and engineering, all informed by a long and fruitful life and career. Ursula Franklin was an inspiration for many.

This special event included as well a signature session for Ursula’s most recent book, *Ursula Franklin Speaks: Thoughts and Afterthoughts*, written in collaboration with Sarah Jane Freeman. The book includes twenty-two of Dr. Franklin’s speeches and five interviews between 1986 and 2012, in which she shares her insights into the social and political impact of science and technology.<sup>7</sup>

Ursula Franklin, an experimental physicist, University Professor Emerita at the University of Toronto, a former board member of the National Research Council and the Science Council of Canada, and a companion of the Order of Canada, has also been awarded honorary degrees by more than ten Canadian universities. The Ursula Franklin Academy, a Toronto high school, was named in her honor. Fellow of the Royal Society of Canada, she was awarded the Order of Ontario, the Pearson Peace Medal and the City of Toronto award of merit,

Dr. Ursula Franklin passed away at 3:00 pm on Friday, July 22 2016. Ursula, my mentor and friend, is the woman I admired most in the entire world. A philosopher, scientist, pacifist, and the wisest woman I know. She will be missed by many, but we have the consolation that she left behind books, speeches, very wise sayings, and her archives located at the University of Toronto.

In Ursula’s honour, consider small acts that will make the world and our society a better place. Ursula was a proponent of “the earthworm theory”- it is the little acts that prepare the soil and nurture the seedlings so that bigger actions can follow and flourish.

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## Endnotes

- 1 Ursula Franklin, "The Sandbox and the Tools," in *The Ursula Franklin Reader: Pacifism as a Map* (Toronto: Between the Lines, 2006) 324.
- 2 Ursula Franklin, *The Real World of Technology*. CBC Massey lectures series, 1992. Revised Edition. (Toronto: Anansi, 1999).
- 3 Ursula Franklin, "Looking Forward, Looking Back," *The Ursula Franklin Reader*, p. 348.
- 4 *Ibid.*, p. 345.
- 5 "Ursula Franklin, renowned Canadian scientist, dead at 94," *CBC News*, posted on July 23, 2016. Retrieved from <https://www.cbc.ca/news/canada/toronto/ursula-franklin-dead-1.3692502>.
- 6 *Ibid.*
- 7 Ursula Franklin, in collaboration with Sarah Jane Freeman. *Ursula Franklin Speaks: Thoughts and Afterthoughts* (Montreal & Kingston: McGill-Queen's University Press, 2014).

## Book Reviews / Comptes rendus

Michèle Dagenais. *Montreal, City of Water: An Environmental History*. xx + 231 pp., plus figs., bibl., index. Translated by Peter Feldstein. Vancouver: UBC Press, 2017. \$29.95 (paperback). ISBN 9780774836234

*Montreal, City of Water* is a welcome translation by Peter Feldstein of Michèle Dagenais' earlier book *Montréal et l'eau* (Boréal, 2011). An innovative take on Montreal's complex history, the book is an environmental, rather than strictly urban history of Canada's second-largest city. Written for historians interested in a wide range of topics—Quebec, urbanism, architecture, public health, and municipal politics—*Montreal, City of Water* explores water as both a physical and social/cultural attribute. While engineers, doctors, and other experts, for example, struggled to assess and manage the city's water supply, H<sub>2</sub>O simultaneously shaped the city's image and social relations. Notably, Dagenais sees the relation of city and water as mutually dynamic, avoiding any suggestion that water determined the morphology of Montreal: "Montreal's history is discussed with reference to water as a constitutive dimension of its development" (4).

Dagenais' argument for the significant role of water in the evolution of Montreal unfolds chronologically in a clear, almost linear structure. The book begins with a chapter reviewing the main publications on Montreal in the nineteenth and twentieth centuries, outlining the ways water has been depicted. Especially important in these

early publications is an emphasis on Montreal's unique location, in the centre of the Hochelaga archipelago at the meeting of the St. Lawrence and Ottawa Rivers. In the subsequent six chapters, Dagenais presents a lineup of significant events and topics that shaped the island-city's water management into distinctive eras: the demolition of the city's walls in the early nineteenth century, the design of the harbor, the rise of the science of sanitation and water treatment, ecological concerns, the construction of the St. Lawrence Seaway, and even last year's 375th anniversary of the city. An implicit argument of the book is that water has been a constant, rather than episodic concern to Montrealers for more than 200 years.

The book clearly satisfies the author's stated intention, articulated in the Introduction, "to reconstruct the ways in which water and its uses have intertwined with the City of Montreal throughout its history" and "to attempt a reconstruction of the dynamics governing the conception, definition, and lived experience of the collective relationship with water" (5). Additionally, the book is not a heroic tale of individuals who tamed the river and the city; this is truly a history of the shared/public ways Montreal water has been engineered, controlled, cleaned, moved, harnessed, exploited, enjoyed, and imagined. In the book's conclusion, Dagenais refers to this as "the process of co-construction of the city," a fascinating concept for architectural historians like me.

The strength of *Montreal, City of Water*

is that it links the history of a major city with larger scales of nature, weather, geography, and geology, as well as its comprehensive use of textual sources, from urban planning regulations to travel documents. Dagenais' use of visual sources is less convincing. While her analysis of maps is compelling, they are poorly reproduced and hard to read (and sideways). Photographs are included without critical commentary, as if they are objective evidence of real situations. Additionally, some visual material is incorrectly captioned (for example, in Figure 11, the photographer is Alexander Henderson, rather than Anderson).

Somewhat surprising to me as a historian of architecture is the absence of attention paid to Expo 67, a moment which focused the world's attention on two islands in the St. Lawrence River, including Île Notre-Dame, constructed from scratch in an enormous feat of engineering linking city and river. Historians of science and technology will likely be drawn to Chapter 5, which explores the Rivière des Prairies as the site of a massive hydro-electric dam, which cut the river in two and thus prevented shipping. In general, however, they may be somewhat

disappointed in Dagenais' portrayal of the history of the river as a series of technical "fixes" to water-based problems (172).

These are minor shortcomings. *Montreal, City of Water* is full of insights. One is that the image of the city morphed from being an island, to being a riverfront city (as the significance of Rivière des Prairies or "Back River" disappeared). Additionally, Dagenais shows how Montrealers went from seeing the St Lawrence as a natural amenity to a tool of urban infrastructure (91). Indeed, a major theme in the book is the tensions arising from our use of the St. Lawrence River as both a source of water and as a site to discharge wastewater. An unforgettable moment in the book is when Dagenais illustrates how identity politics, particularly related to sociolinguistic divides, were literally "channeled ... through the material fact of the water supply systems" (91). For this Montrealer, reading Dagenais' book means I will go from seeing Montreal as a place where water is invisible, to seeing it everywhere.

*Annmarie Adams*  
*McGill University*

Frank Myron Guttman and Alexander Wright. *The Sir Mortimer B. Davis Jewish General Hospital*. Xiv+330 pp., plus illus. Montreal and Kingston: McGill-Queens University Press, 2018. \$65 (cloth). ISBN 9780773553064

Almost 30 years ago I wrote a review essay on hospital history in the *Canadian Bulletin of Medical History* that oddly still appears to have historiographic traction. Amongst other things, I hinted at the likelihood of this subfield of medical history taking off in Canada. During subsequent decades extremely solid scholarly studies of major hospitals in Canada, in particular in Ontario, were indeed published in scholarly journals and by academic presses. Similarly, the fine work by Annmarie Adams and her medical architectural historian colleagues was an additional boost.

Most recently, a slew of studies that pertain to Montreal hospitals have appeared under the imprint of McGill-Queens University Press, including the book under review here: *The Sir Mortimer B. Davis Jewish General Hospital*. Thus hospital history is certainly *alive* in Canada, but is it *well*? Perhaps not. On the one hand, David Wright's account of Toronto SickKids hospital (University of Toronto Press, 2016) maintains a high scholarly standard, while on the other hand *The General: A History of the Montreal General Hospital* (McGill-Queen's University Press, 2016) edited by Joseph Hanaway and John H. Burgess was pretty well panned by most reviewers (including myself) for its amateurish approach and historical naïveté.

Unfortunately, this study of Montreal's Jewish General Hospital is less aligned with the former and more akin with the latter. The book's lack of an index and a bibliography, along with its skimpy endnotes further diminish its scholarly value.

Readers also ought to know that most of this book was previously published in 1984 in a hospital fiftieth anniversary commemorative volume by then archivist Alexander Wright; this is freely available at <http://jgh.ca/en/archivesourtributeeverlastingen>. So what do you get when you pay \$65 for the current book? Basically two new chapters by Frank Guttman (who is a retired pediatric surgeon): one on Jewish hospital across the world and a second on Jews and medicine; biographical tributes to hospital benefactors such as Mortimer Davis, Allan Bronfman, and Samuel Cohen; and recent facts and figures describing the hospital growth and its notable (mostly male) doctors. This blend of new and old material serves to describe the origins, growth, and eventual success of an overtly Jewish institution in sometimes anti-Semitic Québec culture. Many of these achievements are attributable to the generosity and tenacity of the Jewish community in Montreal to see their hospital succeed; much can also be attributed to the fact Montreal Jews could be at ease in this hospital that observed Jewish cultural, religious, and food traditions, in addition to the high quality of health care it offered.

Yet with the increasing multiculturalism of Canada and Montreal, one senses from this book a feeling of a socio-medical tradition under stress: "The

Jewish General Hospital's links with both the Jewish population of Montreal and the community in general have always been strong. If the hospital is to continue to provide a level of care so in accordance with the aspirations and needs of the particular group it serves, this relationship, ever a priority among the Jewish General's leaders, must continue to be nurtured as it has been in the past" (173).

That this theme of survival and assimilation is not more fully explored in this book is perhaps a missed opportunity. Across North America, the number of distinctly Jewish hospitals has dwindled from hundreds to a few for a variety of reasons. The decline of virulent anti-Semitism is one factor, including the open acceptance of Jewish doctors on to the staff of non-Jewish hospitals who were once barred. Another factor is the economics of institutional survival through hospital mergers that often involve once "rival" Jewish, Protestant, or Roman Catholic hospitals joining forces to become a more denominationally neutral single organization.

In Montreal, the hospital merger movement may have played out differently, but it still may have left the Mortimer B. Davis Jewish General Hospital in a quandary. On one side of the city has arisen MUHC (McGill University Health Centre), the so-called purpose built "super hospital" that absorbed most of the well-established anglophone institutions. While

elsewhere in town is an organization with (ironically?) the mirror image acronym CHUM (Centre Hospitalier de l'Université de Montréal). This project when completed will also be a "super hospital" complex resulting from the absorption of Montreal's main francophone (and Catholic) hospitals that were affiliated with the city's other university with a medical school. The Jewish General, perhaps forced to take a side, is affiliated with McGill University.

In that earlier essay review I talked up the notion of narratives of individual hospitals, now I would suggest a more synthetic historical approach, especially for urban centres that have one or more medical schools as is the case in Montreal. Perhaps the time has come to consider how hospitals interact (or not) with each other, with their local communities, with affiliated medical schools and their training objectives, and with grant-funded research projects. In short, not to describe a hospital in isolation, but to study historically the institutional ecosystem of hospitals and academic medicine in particular locales and cultures. Edward Shorter's mammoth study *Partnership for Excellence: Medicine at the University of Toronto and Academic Hospitals* (University of Toronto Press, 2013) whatever its flaws, might help point the way.

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Frédéric Guillaume Dufour. *La sociologie historique. Traditions, trajectoires et débats*. Montréal: Presses de l'Université du Québec. 2016. 480 p. 50.00 \$. ISBN 9782760543492

Cet ouvrage constitue une contribution majeure à l'historiographie de la sociologie historique. Frédéric Guillaume Dufour offre ici au lecteur passionné de sociologie un travail intellectuel inestimable. Dans le sillage des préoccupations épistémologiques du sociologue Charles Wright Mills, l'auteur réussit avec une rare finesse d'analyse à produire une synthèse captivante des recherches contemporaines et ce, en évitant les écueils de deux grands paradigmes que représentent le positivisme anhistorique et le relativisme abstrait à courte vue.

Au fil des pages, le lecteur ne pourra qu'être impressionné par l'ampleur de l'entreprise à laquelle s'est attelée le chercheur, soit de proposer une véritable généalogie d'un champ de recherche tout en faisant dialoguer les auteurs classiques et les recherches contemporaines. À cette tâche, les deux premiers chapitres s'avèrent particulièrement précieux: situer les trajectoires et les débats et, surtout, éclairer les différentes tensions et questions de méthode. Une tâche qui, comme le souligne à juste titre l'auteur, « ne peut faire l'économie d'une démarche réflexive » (86). Par la suite, l'auteur nous convie à une réflexion passionnante sur les débats tendus et parfois « à couteaux tirés » sur les concepts de classes sociales, de famille et de propriété (chapitre 3). Dans les traditions sociologiques inspirées de Marx et de Weber, les enjeux liés aux

approches théoriques ne « sont pas que sociohistoriques ». Les nombreuses études féministes ont contribué, plus que toutes autres analyses, à illustrer « le caractère politique des normes relatives à l'accès et à la transmission de la propriété » (118). Les inégalités sociales, les nouveaux visages de la pauvreté ou encore « la racisation et à la féminisation de certains secteurs plus à risque d'être moins bien payés » (131) sont des questions qui demeurent d'une grande d'actualité et qui demandent continuellement aux sociologues d'en déconstruire « le caractère dit naturel ».

Le portrait à la fois complexe et interdisciplinaire se dégageant des analyses subséquentes traversent un nombre importants de débats. Des structures de pouvoir au processus de centralisation étatique aux formes que revêtent la souveraineté (chapitre 4), l'analyse ouvre une voie féconde à la compréhension « des normes qui ont encadré et domestiqué la politique » (183). Selon l'expression de Bruce Curtis, l'État par le biais de la bureaucratie, s'exige de « produire une population ». Penser l'État, c'est faire l'étude, avec George Canguilhem et Gaston Bachelard, « des catégories du savoir en sciences sociales et dans le développement d'un sociologie réflexive » (201). Ici, Frédéric Guillaume Dufour fait preuve non seulement de grande érudition théorique, il démontre un véritable souci d'interroger les implications et les rôles du ou de la sociologue engagé et des savoirs constitués en politique qui participent « à la construction de l'État, de la population et des clôtures sociales » (206). Ces savoirs à destination

politique imposent de nouvelles règles de conduite à l'action collective, action tout autant imprégnée de subjectivité politique et de « préoccupations relatives aux luttes sociales » (207).

Or, ce n'est peut-être qu'au chapitre dédié à la transition au capitalisme (chapitre 5) que le lecteur prend la pleine mesure du tour de force que constitue cet ouvrage de synthèse. Si nous retrouvons ici les travaux incontournables d'Adam Smith, Karl Marx et Max Weber, l'auteur nous invite à saisir « le moment relationnel » (Robert Brenner) qui prend en compte la « médiation de la transformation des relations sociales de pouvoir médiatisées par l'organisation sociale de la propriété » (243). Ici, les questions relatives de la place qu'a jouée « l'institution particulière » qu'est l'esclavage dans le commerce mondial trouvent écho aux débats théoriques concernant le développement du salariat, de la persistance des modèles seigneuriaux (notamment au Bas-Canada) tout comme des nouvelles formes de hiérarchie au sein de l'économie. Enfin, en remettant en question « l'eurocentrisme de la tradition wébérienne », c'est un champ complexe de questions (loi de la valeur, principe d'accumulation primitive, marché domestique) qui se retrouve au cœur de l'analyse.

À notre humble avis, ce remarquable pèlerinage théorique atteint son point culminant au chapitre suivant : *la sociologie historique des révolutions et des conflits sociaux* (chapitre 6). « Qu'est-ce qui incite les acteurs à se mobiliser » ? À cette question, non seulement l'auteur distille avec brio les différentes perspectives liées à l'étude

des conflits sociaux, il détaille les concepts fondamentaux des théories liées aux mouvements sociaux, à l'action collective et au changement social. Comme le rappelle à juste titre Frédérick Guillaume Dufour, dans ce vaste champ d'étude que constitue la sociologie historique des grandes révolutions modernes, se pose l'épineuse question « des critères sur la base desquels on distingue une révolution d'une révolte, d'une insurrection, d'un soulèvement et d'une guerre civile » (270). Au croisement de trois grandes familles de débats – les révolutions bourgeoises d'inspiration marxiste, les phénomènes politiques influencés par le contexte international et les révolutions négociées – c'est tout un ensemble de répertoires d'action sociale et politique (manifestations, occupations, grève, pétition, sabotage, etc.) qui marque la naissance des mouvements sociaux, des révoltes et, des révolutions.

Progressivement l'auteur déplace la lentille afin d'observer les manifestations des régimes politiques, de l'État et de la démocratie (chapitre 7). Se référant à T.H. Marshall, l'auteur démontre pièce par pièce, les principales composantes qui mènent à l'institutionnalisation de la citoyenneté, à savoir « les droits civiques, garantis par des institutions juridiques; les droits de participation politique, garantis par les parlements; et les droits sociaux, associés au développement de l'État-Providence » (317). Encore une fois, l'auteur fait ici preuve d'une remarquable analyse. En réactualisation les différentes débats entourant les pratiques nationalistes (chapitre 8), l'analyse

expose « à quel point le développement du marché et du capitalisme allait entraîner un ensemble de processus socioculturels contradictoires : l'invention des traditions; la nostalgie des temps révolus; la politisation des mémoires; l'appel d'un sacré intégriste sécularisé; et le repli sur les mythes de l'authenticité » (357).

En faisant dialoguer les traditions théoriques, les débats contemporains, et les différents courants parfois contradictoires et souvent fragmentées de la sociologie historique, l'auteur réussit son pari. Ce livre est peut-être, et surtout, en cette « sombre » période, une invitation à la sociologie et aux

rôles indispensables qui lui incombent: mettre en éclairage le fonctionnement des institutions, les différents rouages des pouvoirs, et les catégories de connaissances qui les sous-tendent. La sociologie se saisit du présent pour appréhender, révéler et expliquer, dans une perspective critique, la production « de mythes nationaux, dans la mise en récit de la trame historique des 'nations majoritaires' où l'homogénéité de ces majoritaires est amplifiée et où l'agence et la subjectivité des autres est laissée dans la marge de l'histoire » (397).

*Charles Beaudoin-Jobin*  
*Cégep de Sainte-Foy*

Pierre Doray et Claude Lessard. *50 ans d'éducation au Québec*. Montréal: Presses de l'Université du Québec. 2016. 273p. 40.00 \$. ISBN 978-2-7605-4509-0

Dirigé par Pierre Doray et Claude Lessard, cet ouvrage est la concrétisation d'un colloque tenu à l'Université Concordia en 2014 dans le cadre des événements entourant les 50 ans du Ministère de l'Éducation du Québec. Il regroupe plus d'une quinzaine de chercheurs dont la majorité s'intéresse au secteur de l'éducation – du primaire à l'université. Si, dans sa préface, Paul Gérin-Lajoie donne un ton politique au livre en réclamant que « l'éducation redevienne une priorité nationale » (insinuant par le fait même qu'elle ne l'est plus), les contributions subséquentes des chercheurs sont appuyées sur des faits avérés, même si les années 1960 et le rapport Parent sont parfois idéalisés. L'ouvrage traite de l'évolution de l'éducation québécoise depuis les années 1960 et priorise une approche centrée sur le rôle de l'État. Il est divisé en 19 chapitres subdivisés en 5 parties, qui se penchent sur les politiques éducatives, les acteurs de l'éducation, les ordres d'enseignement, les enjeux du système éducatif et les mesures à apporter pour améliorer, voire transformer, le système d'éducation provinciale.

La première partie synthétise l'évolution des politiques publiques en éducation. En prenant les années 1960 et le rapport Parent comme point de départ, les trois chapitres de cette section mettent à la fois l'accent sur l'héritage des politiques éducatives des années 1960 – la démocratisation

en tête – et le « changement de référentiel politique » qui s'opère dans les années 1980-1990. Ce qui ressort de l'analyse, c'est la montée des « impératifs proprement économiques », qui se concrétisent entre autres dans le « nouveau management public » des années 1990, la « gestion axée sur les résultats » et l'utilisation d'indicateurs quantitatifs pour évaluer la « performance » du secteur éducatif.

Divisée en deux chapitres, la seconde partie est consacrée à l'évolution des effectifs enseignants et étudiants. Le premier texte sur la transformation de la profession enseignante souligne les « gains professionnels » du corps enseignant pendant les années 1960-1970 – augmentation salariale, sécurité d'emploi, avantages sociaux – et le « retour à la précarité » causé par la stagnation des salaires et la multiplication des tâches du maître depuis les années 1980. Axé sur « l'évolution des publics scolaires », le chapitre suivant analyse la démocratisation des institutions. Outre l'augmentation des effectifs étudiants, c'est la constitution de ces effectifs qui intéresse les auteurs. Pierre Doray et Nicolas Guindon montrent, par exemple, que l'accessibilité des femmes aux études supérieures est marquée par la « division sociale et culturelle du travail »; les femmes se retrouvant majoritairement dans des domaines traditionnellement féminins.

Dans la troisième partie, les auteurs s'intéressent aux différents ordres d'enseignement. Les chapitres retracent l'évolution de l'école primaire et secondaire, de la formation professionnelle et technique, des cégeps, de l'université et de l'éducation

permanente. Encore une fois, c'est la démocratisation des années 1960 et la « réorientation des politiques » au profit d'un idéal plus économique à partir des années 1980 qui est au cœur des préoccupations des auteurs. Si les actes de colloque ont parfois le désavantage de ne pas avoir de fil conducteur clair, celui-ci trouve sa cohérence dans l'explication du tournant économique des années 1980 et la perte graduelle de la « substance culturelle » de l'éducation.

La quatrième partie sur les enjeux du système éducatif diffère quelque peu des autres. Trois des six chapitres se penchent sur les institutions d'éducation supérieure et deux d'entre eux traitent de la recherche scientifique dans la province. Celui d'Yves Gingras retrace l'évolution du système québécois de la recherche universitaire avec des données quantitatives essentielles pour comprendre la production du savoir scientifique au Québec. Alors que Gingras traite des universités, Sébastien Piché s'intéresse à un autre acteur de la recherche : le cégep. Ce qu'il montre, c'est que même si la recherche est une activité périphérique des collèges, ceux-ci participent activement à la création des savoirs scientifiques. L'auteur espère d'ailleurs voir la recherche se généraliser dans ces institutions. Selon lui, « le défi est maintenant d'arrimer la recherche collégiale aux autres activités des collèges et de cesser de la concevoir en périphérie » (206). Loin de nous opposer à la recherche scientifique, rappelons toutefois que l'enseignement et la recherche ne vont pas de soi. Yves Gingras a d'ailleurs démontré qu'ils se retrouvent plutôt en opposition lors de l'institutionnalisation de la recherche

en milieu universitaire. Comme il n'y a aucune raison de croire que la généralisation de la recherche en milieu collégial se passera autrement, il est essentiel, selon nous, de considérer la sociologie de la recherche scientifique avant de transformer radicalement ces institutions.

La dernière partie propose des considérations prospectives pour améliorer le système éducatif. Deux textes attirent particulièrement l'attention. Celui d'Anne Mai Walder sur « l'innovation pédagogique » et celui d'Antoine Baby sur l'école et le « nouvel humanisme ». Dans son texte, Walder argumente que « l'innovation pédagogique » est une réponse aux défis de l'éducation. Même si elle le définit plus ou moins clairement, l'utilisation de ce concept fourre-tout fait en sorte que tout ce qui est nouveau semble correspondre à une ingénieuse « innovation pédagogique » devant être soutenue par l'État. Ce qui semble être nécessaire selon Walder, ce n'est donc pas de changer le contenu des cours, mais de l'enseigner différemment. C'est d'ailleurs tout le contraire de ce qu'affirme Antoine Baby dans son texte. Selon lui, il faut s'attaquer aux bases et aux contenus de la formation et « laisser la paix » aux enseignants. Dans un chapitre d'une belle utopie, Baby réclame la mise en place d'une éducation humaniste et non utilitaire. Si son argumentaire est inspirant, quelques-unes de ses conclusions font sourire. En empruntant la formule à Condorcet, il réclame par exemple que l'école forme des « citoyens difficiles à gouverner ». Or, force est d'admettre que dans une société industrielle avancée comme le Québec, il serait plus

que surprenant que l'État adopte des politiques expressément dans l'objectif de former ce type de citoyens!

Même si les textes sont parfois sommaires lorsque pris individuellement, leur mise en relation dans cet ouvrage donne une idée claire de l'évolution de l'éducation au Québec depuis la Révolution tranquille et de la place que prend l'État dans le système éducatif. Si ce n'est pas toujours explicite, l'idée selon laquelle

l'éducation est un bien commun et la crainte de la voir glisser vers un bien privé lie les auteurs entre eux. En conclusion, Doray et Lessard font d'ailleurs le souhait que le Québec s'inspire des projets collectifs des années 1960 pour « relever les défis d'aujourd'hui et dénouer les nœuds qui paralysent l'action » (254).

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Stéphane Castonguay. *Le gouvernement des ressources naturelles. Sciences et territorialités de l'État québécois 1867-1939*. Québec: Presses de l'Université Laval, 2016. 203 p. 29,95\$. ISBN 978-2-7637-2835-3

L'ouvrage est le fruit d'une douzaine d'années de réflexions sur les institutions scientifiques québécoises dans leur rapport avec la territorialité des ressources naturelles depuis la Confédération. Professeur en histoire de l'Université du Québec à Trois-Rivières, l'auteur reprend en partie des textes publiés dans certaines revues savantes. Il propose cinq chapitres. Le premier chapitre porte sur les capacités administratives de l'État québécois Quatre. Les quatre suivants sont consacrés aux différents secteurs des ressources naturelles, soit les mines, la forêt, la chasse et la pêche, et l'agriculture. L'auteur embrasse large et on comprend que la période examinée doit s'arrêter en 1939 alors que l'État fédéral, en période de guerre, transforme le champ scientifique.

Ces différentes études nourrissent une problématique très claire qui remet en question la perception habituelle d'un État québécois impuissant dans la gestion et l'organisation du domaine public. Face aux sociétés minières, aux barons du bois et aux clubs privés de chasse et de pêche, l'État n'aurait pas que brader nos ressources. Il est proactif, établissant un appareil administratif et des services scientifiques et, du même souffle, il organise et structure son territoire. «[S]i pour la période à l'étude laisser-faire et entreprises privées dictent la marche de l'État [...] ce dernier

doit néanmoins avoir les ressources intellectuelles pour agir en ce sens. D'où viennent-elles? Comment agissent-elles? Quels en sont les effets de pouvoir?» (9).

Le premier chapitre propose une vue d'ensemble des différents services scientifiques dans l'exploitation des ressources agricoles, forestières, minières et fauniques. Ces services ont été un des moteurs de la croissance des capacités administratives de l'État québécois, car les scientifiques « ont imaginé et façonné un espace national » (188). Par la suite, chaque ministère impliqué dans les ressources naturelles est passé en revue.

Dans « L'invention d'un espace minier », au chapitre deux, j'avoue avoir eu des réserves. Selon l'auteur, le travail des géologues du ministère des Mines aurait été déterminant dans le développement de cet espace. Preuve en est, la construction ferroviaire en Abitibi, terminée à la veille de la Première Guerre mondiale, qui n'a pas suffi à provoquer sur le champ un développement minier. Il fallait aussi que l'État établisse la construction minéralogique de la région pour qu'enfin démarre ce développement, une dizaine d'années plus tard. On aurait aimé que l'auteur produise des données sur l'évolution de l'extraction parallèlement à celles des explorations. Il aurait fallu aussi tenir compte de la situation des sociétés aurifères du nord-est ontarien, car ce sont elles, en vertu de la grande mobilité du capital minier, qui ont cherché en Abitibi de nouvelles zones de production et de profits, seulement après avoir atteint, à Timmins et à Kirkland Lake, un niveau de développement soutenu.

J'ai beaucoup apprécié, au chapitre suivant, ce portrait d'un commissaire des Terres de la Couronne qui n'est pas demeuré cantonné dans la question forestière. Ici, l'auteur a bien raison d'admettre le laxisme de l'État et de souligner que les agents forestiers responsables des déclarations de coupe des entrepreneurs ne peuvent être blâmés par certains hauts fonctionnaires, car ils sont « protégés et appuyés par les députés [...] Les éléments concourent à ce que ces agents, sans compétence propre au secteur forestier et employés à la saison par nomination politique, ferment les yeux quand vient le temps de surveiller les activités forestières ou de percevoir les droits de coupe » (93-94). Vital pour les papetières et non pour les entreprises de sciage – parce que les premières peuvent difficilement se relocaliser – le reboisement est bien traité par l'auteur. Délaisse par les papetières en raison de la crise, il est finalement récupéré par le ministère des Terres et Forêts pour donner naissance à une foresterie scientifique.

S'il est un domaine où le bilan des contributions scientifiques gouvernementales nous est apparu fort mince, c'est bien celui de la chasse et de la pêche. Le chapitre est néanmoins réussi parce qu'il démontre que l'octroi de privilèges aux clubs privés était loin d'être incompatible avec une protection du territoire. Selon nous, c'est l'introduction d'un nouvel ordre culturel imposé aux pêcheurs et aux chasseurs qui demeure le fait marquant de la gestion des ressources fauniques et ichtyologiques. « Que leurs pratiques de chasse et de pêche visent à fournir de la nourriture ou un revenu

d'appoint aux activités agroforestières ou qu'elles constituent la base d'une activité commerciale [...] petits agriculteurs, pêcheurs commerciaux et autochtones [...] sont aux prises avec un nouvel ordre culturel alors que l'État fait de la chasse et de la pêche des activités purement sportives et déclare illégale toute autre méthode de capture sportive, soit un acte de braconnage» (128).

Le poids du politique trouve toute sa place au dernier chapitre portant sur les connaissances agronomiques. C'est ainsi, par exemple, que chaque comté électoral doit avoir son agronome dont il est difficile par ailleurs de mesurer la contribution. Cela dit, le ministère de l'Agriculture aurait été orienté, à l'inverse des trois autres, vers la diffusion plutôt que le développement des connaissances.

Pour être dans l'ensemble réussi, ce livre n'est pas sans défaut. D'abord la forme, puisque les graphiques, en se présentant en diverses teintes de gris et en fond gris, demeurent généralement peu accueillants, parfois même incompréhensibles telle la Figure 5.9. Si les nombreuses photos et cartes émaillant l'ouvrage permettent sans doute de le rendre moins rébarbatif, on aurait apprécié un index afin de compléter la table des matières.

Là où nos réserves demeurent plus sérieuses c'est dans l'amalgame que l'auteur tisse entre le champ du pouvoir et le champ du savoir personnifié par ces nombreux fonctionnaires scientifiques impliqués dans les différents ministères. Leurs connaissances ont-elles servi à prendre des décisions objectivement fondées qui auraient permis d'écarter l'influence

des milieux d'affaires et mieux servir l'intérêt public? Rien n'est moins sûr. La sinistre table de mesurage du bois à pâte, en vigueur pendant quatre décennies et qui réduisait magiquement de 20% les volumes de bois déclarés, était pourtant bien connue des fonctionnaires. Ce ne sont pas eux qui l'ont finalement écartée du calcul

des droits de coupe mais le premier gouvernement de Maurice Duplessis en 1937. Cela dit, il s'agit d'un livre dont le grand mérite est de démontrer avec force détails que l'État québécois est né bien avant la Révolution tranquille.

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David Niget and Martin Petitclerc (eds.). *Pour une histoire du risque: Québec, France, Belgique*. Montréal: Presses de l'Université du Québec. 2012. 366 pages. 35.00 \$. ISBN 978-2-7605-3359-2.

What do floods, murders, and cough syrups have in common? In this collection of essays on risk, all three show the emergence of new ways of calculating danger. They show us how modern notions, languages, and technologies of risk were formulated under a wide variety of circumstances and in dialogue with older languages of morality, political calculation, and knowledge claims. They write risk and prevention into modern commerce, professionalization, and state-formation. Whatever risk is, we are told, it is conspicuously modern, and at once influential and understudied. This collection brings together an impressive collection of historians, European and Canadian, Anglophone and Francophone, all writing case studies in the history of risk in Quebec, France, and Belgium. It offers a terrific vista for reflecting on similarities and differences between these places. Quebec is often described as having embraced modernity later than Europe, especially France. So how well does risk work as a mechanism for telling us about when, where, and how Quebec modernized?

Risk, as the editors note, is much studied by social scientists but comparatively neglected by historians. There's been new work in the field since this book first appeared, in 2012, but the book very ably holds its own in the conversation. The history of risk merits particular attention because

both history and risk are analyses of causal relations, albeit constructed very differently. History always looks backwards, with hindsight; risk always looks forwards, predictively. But ultimately both history and risk are debates about causes. We might describe risk as rational calculation around predictive factors.

But determining why some factors become predictive and some become invisible requires contextual, historical analysis of the sort done here. Various papers identify the way risk lends itself to particular styles of reasoning, with a particular bias for liberal economics and technological solutions. As Stéphane Castonguay remarks in his analysis of flood management in early twentieth-century Quebec, natural and social factors continually intermingled in calculations of risk. Water engineering were an important foundation for modern risk, and Castonguay's is one of two papers on floods, the other—by Damien Bouchée and Grégory Quenet—on the Seine in 1740s Paris. If science and engineering can do new things—i.e. with water—then the study of risk shows us how engineers, state officials, and corporations integrated those new possibilities into changing expectations upon the state. Hence the relevance of this book for readers of *Scientia Canadensis*.

Several papers survey the changing understandings of police and prophylaxis that emerged in the early modern period. New urban agglomerations created new hazards to life, health, and property. To some degree, Xavier Rousseaux suggests, risk was an urban logic, reflecting new

calculations about how to govern the city, according to quasi-commercial, quasi-political considerations that could be generalized to other constituencies. In an incisive conclusion, Mariana Valverde, remarks that the history of risk is, amongst other things, a history of the “naturalization of certain levels of governance” (346) and she instances the way that immigration became a national-security question.

The most interesting analyses show state and personal rationalities colliding. Anywhere that someone had to do serious rational calculation about how best to use technologies, especially new technologies, with potentially lethal consequences in the event of misjudgment, you were sure to get new debates about risk. Terrific examples here include Magda Farhni on the dangers that cars posed to pedestrians and Marie-Aimée Cliche on the dangers of overdosing infants with opiates (amidst new pressures to keep babies quiet in densely populated slums). Were individuals to blame or were cars and opiates just too dangerous for ordinary folk? Corporate lawyers and public moralists did battle in newspapers and courts on such questions. Doctors had their opinions about risk, of course, and they exercised particular influence in the emergence of the public health movement that ranked alongside water management as a core constituent of modern risk. Prophylaxis was supposed to prevent the catastrophic threat that epidemics posed to public welfare and stable political order. Thus, for example, we get Yannick Marec on hygiene in Rouen and Janice Harvey on its relative lack of influence in Montreal, where bourgeois

reformers worried about children at risk (“in danger”) feared the moral hazards from poor relief more than the physical hazards of insalubrity. David Niget also writes about at-risk children with a history of incorrigibility in Belgium.

Some papers yield fascinating results when they compare “traditional” and more modern and risk-infused discourses. Jean-Philippe Warren shows that colonial Quebec had its own mechanisms for dealing with the calamities consequent on an unexpected death. Its experts were lawyers and notaries, and its technologies were law and the family. Martin Petitclerc shows that, whereas theorists believe that risk edged out religion as a response to such catastrophes, the Montpetit commission had no difficulty in fusing them in a conservative model of social-welfare organization. Donald Fyson sheds further light on both the question of comparison and the bias of risk itself when he compares Montreal and Quebec. The former was construed as a modern city with such attendant modern dangers as high crime rates; the latter as a bastion of antimodernity. Because Quebec was less invested in modernity, it didn’t report crime statistics as Montreal did. Greater concerns about crime in Montreal created a market for burglary insurance. Because you couldn’t make a claim without reporting a burglary, claims were probably disproportionately reported in Montreal compared to Quebec.

Risk, in other words, tended to generate its own evidence and its own biases in the process. His and other papers show that crime continually

produced calculations of danger, ranging from early modern reflections on murder, recidivism, and pardon analysed by Bernard Dauven, to Xavier Rousseaux on crime and police, to criminal-peril in the Third Republic, analyzed by Frédéric Chauvaud. There's

no single answer to the “is Quebec typical?” question but the collection is a must-have for anyone interested in the history of governmentality in Canada.

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Caroline Durand. *Nourrir la machine humaine. Nutrition et alimentation au Québec, 1860-1945*. Montreal and Kingston: McGill-Queen's University Press. 2015. 324 p. 90.00 \$. ISBN 9780773544888.

Fruit d'une thèse de doctorat soutenue en 2011 à l'université McGill, *Nourrir la machine humaine* nous propose une plongée originale dans l'histoire du Québec à travers la question de la nutrition et de l'alimentation. Son auteure, Caroline Durand, aujourd'hui professeure adjointe d'histoire et d'études canadiennes à l'Université de Trent, y étudie en effet l'évolution des habitudes alimentaires et du rapport à l'alimentation des Québécois entre 1860 et 1945, période où se développe tant la science de la nutrition que le Québec moderne. Puisant dans des sources aussi diverses que les traités médicaux, les livres de cuisine, les guides gouvernementaux, les publicités, les revues spécialisées, les notes de cours d'école ménagère, les études anthropologiques, les archives orales ou d'institutions philanthropiques, elle s'attache à reconstruire, au plus près des pratiques culinaires effectives, les transformations de la diète québécoise ainsi que les représentations qui y sont attachées. Elle prend en outre soin de réinscrire ces mutations dans un contexte social et politique auquel elles contribuent autant qu'il les influence en retour. Elle souhaite plus précisément étudier la nutrition en tant que « discours préventif et normatif » (7) véhiculant des valeurs socioculturelles qui ne sont pas sans enjeux politiques dans un Québec en cours de modernisation,

d'industrialisation et d'urbanisation. Pour ce faire, elle divise son étude en deux parties respectivement consacrées aux périodes 1860-1918 et 1919-1945 et composées l'une de quatre et l'autre de trois chapitres thématiques.

Suite à une introduction détaillant les enjeux théoriques et historiographiques de son objet d'étude, Durand débute son analyse en présentant, dans le premier chapitre, la diète et l'état de santé général de la population québécoise entre 1860 et la fin de la Première Guerre mondiale. Elle relève que pour les ruraux, l'alimentation est surtout basée sur les pommes de terre, les légumineuses et des pois, et la viande de porc. Il y a bien sûr, aussi, le lait, le lard, les œufs, le sirop d'érable, le pain, parfois du poulet ou du poisson selon les régions ainsi que des fruits et légumes plus variés en fonction des saisons, mais la variété et l'abondance sont rares. Les ouvriers des villes ont, pour leur part, davantage accès à des produits manufacturés ainsi qu'à une variété de produits importés. Mais la viande de porc, la soupe et les pommes de terre restent néanmoins au cœur des tables des Québécois francophones de la seconde moitié du 19<sup>ème</sup> siècle. L'urbanisation et l'industrialisation changent néanmoins progressivement la diète des urbains tout en contribuant à une dégradation de leur état de santé. Le lien entre santé et nutrition, pourtant connu depuis la médecine hippocratique, n'est alors pas encore mis en avant par les experts et les autorités pour expliquer cet état de la population. Même si une nouvelle science de la nutrition a vu le jour en Europe et aux États-Unis, les conseils

nutritionnels donnés aux Québécois, principalement par des médecins et des religieuses, s'inscrivent davantage dans une visée philanthropique et sociale, ainsi que le précise le deuxième chapitre.

Si certains médecins se font en effet l'écho des recherches nutritionnelles menées ailleurs dans le monde, le discours adressé à la population par les organisations charitables, qui assurent l'aide alimentaire, ou par les écoles ménagères, qui se développent alors au Québec, ne fait que peu de référence à la science de la nutrition en développement. De plus, l'alimentation reste encore une affaire essentiellement personnelle, sauf pour les ouvriers dont on s'inquiète de l'impact de leur santé sur leur productivité. Mais progressivement, au cours de la première décennie du XX<sup>e</sup> siècle, l'idée selon laquelle l'alimentation peut devenir un puissant ressort d'amélioration de la santé des plus pauvres ou des plus vulnérables (dont les enfants), comme d'augmentation de la productivité sociale s'installe dans la Province.

C'est ce dont témoigne le troisième chapitre qui s'attarde sur le contenu des cours de nutrition dispensés dans différentes institutions québécoises, dont l'École ménagère provinciale de Montréal, ainsi que sur la nature des discours transmis au cours des expositions de 1908 et 1912, respectivement consacrées à la tuberculose et au bien-être des enfants. Ces diverses interventions éducatives et de sensibilisation, essentiellement destinées aux mères de famille, contribuent à confirmer, aux yeux de la population, l'existence de liens

scientifiques entre alimentation et santé, mais montrent surtout que la science est encore principalement mobilisée pour asseoir un discours où se transmettent des valeurs sociales nationalistes et conservatrices, notamment en termes de répartition genrée des rôles. La participation du Canada à la Première Guerre mondiale va finalement renforcer ce nouveau rôle social et politique joué par les discours sur la nutrition, ainsi que leur dimension nationaliste, conservatrice et patriarcale.

C'est ce que précise Durand dans le quatrième et dernier chapitre de cette première partie. La guerre, affirme-t-elle « accélère la rationalisation de l'alimentation en plus de marquer le début de la modernité et de la rationalité diététique au Canada et au Québec » (p. 110). La métaphore du corps machine, qui était au cœur de la conception de la nouvelle science de la nutrition, s'impose, notamment à travers la figure du soldat, comme un modèle pour les citoyens canadiens qui envisagent désormais de plus en plus l'alimentation comme un élément de contrôle de soi, de sa santé et de son image corporelle et comme un soutien à une existence saine et productive. Une nouvelle ère s'ouvre ainsi qui se caractérise par plus de rationalisation des approches, de normalisation des comportements, mais aussi par une diversification des ressources et des pratiques culinaires.

Le cinquième chapitre, qui inaugure la seconde partie de l'ouvrage, fait état de cette multiplication des ressources alimentaires qui s'opère au Québec après la Première Guerre mondiale. La démocratisation de la

crème glacée manufacturée témoigne de cet impact sur les pratiques alimentaires de l'industrialisation et de la modernisation de la Province. Cette dernière engendre également une multiplication des discours et donc des sources pour l'historien. De plus en plus d'acteurs sociaux s'intéressent en effet à la nutrition, que ce soit les statisticiens qui étudient l'évolution du coût des aliments, les médecins qui poursuivent leur rationalisation de la diète, ou les anthropologues qui s'intéressent au changement d'habitudes alimentaires qui s'opère dans les années 1920-1930.

Cette multiplication des discours, pourtant parallèle à leur rationalisation et à une certaine modernisation du Québec, ne met pas fin à la transmission de valeurs, notamment familiales et sociales, des plus traditionnelles qui prévalait dans la période précédente. Au contraire, comme Durand le démontre bien dans le sixième chapitre, « la sauvegarde de la famille traditionnelle reste le principal objectif poursuivi par les émetteurs de conseils diététiques » (170). Les idéaux ruralistes et conservateurs, portés notamment par l'Église, sont transmis tant dans les écoles de diététistes qui voient alors le jour que dans les institutions charitables ou d'assistance, les cercles de sociabilité, les écoles ménagères ou les brochures gouvernementales. La science prend tranquillement le relais de la religion pour assurer le maintien de la tradition et de la normalisation des comportements, ici alimentaires. Il faudra attendre la crise économique pour voir les choses changer.

La période qui s'ouvre en 1929, pour

se clore avec la fin de la Deuxième Guerre mondiale, se caractérise en effet – c'est l'objet du septième et dernier chapitre – par l'accroissement des enjeux sociaux et politiques liés à la nutrition. L'alimentation devient une question essentiellement sociopolitique et plus encore qu'auparavant la science de la nutrition vient soutenir des efforts de propagande et d'éducation qui se multiplient à travers le pays. De ce fait, des dissensions se font jour, notamment entre les médecins hygiénistes et les chercheurs en sciences humaines et sociales et certaines infirmières, quant à la réponse alimentaire à apporter à la crise économique. L'unanimité autour du modèle libéral, nationaliste et conservateur qui dominait jusqu'alors tend à se fissurer, avant de se voir vite réaffirmée par l'entrée en guerre du Canada. Une chose pourtant s'est définitivement transformée : la propagande ne fait plus référence à quelque modèle culinaire traditionnel que ce soit, mais se fonde dorénavant entièrement sur la science de la nutrition pour asseoir et faire passer ses messages.

Ainsi, en recourant à des sources variées, qu'elle fait habilement dialoguer entre elles, Caroline Durand parvient à nous offrir une image claire et détaillée du changement de représentations qui s'opère progressivement, au cours de la seconde moitié du XIX<sup>e</sup> siècle et de la première moitié du 20<sup>ème</sup>, autour de l'alimentation. Par-là même, elle peut donner à voir les représentations corporelles, sociales ou de genre à l'œuvre dans la modernisation de la société québécoise qui se produit alors. Elle démontre ainsi que loin d'être

uniforme et linéaire comme a pu le laisser croire une certaine idéologie du progrès, cette dernière fut au contraire ambiguë et duale, ainsi qu'en témoigne le rôle de la nouvelle science de la nutrition dans le maintien de modèles sociaux des plus traditionnels. Elle rappelle en outre, très justement, que malgré les évolutions sociales et scientifiques, l'image de la famille traditionnelle, portée par la femme au foyer responsable des enfants, des repas comme du bien-être du mari, s'est maintenue au cœur de la société québécoise francophone comme un de ses piliers essentiels, que ce soit dans le discours de l'Église ou dans celui des scientifiques et des experts de la nutrition. Au final, cet

ouvrage, bien que parfois un peu scolaire dans sa présentation, nous offre, de manière toujours claire et accessible, une perspective originale sur l'histoire québécoise. Il laisse ainsi entrevoir la richesse d'un champ de recherche encore trop peu développé dans l'historiographie de la Province : une histoire de l'alimentation où l'histoire des sciences et des techniques rejoint l'histoire du corps, de la santé, des femmes, des institutions et des politiques au profit d'une exploration singulière des mouvements à l'œuvre dans la mutation de la société québécoise.

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Norman B. Keevil. *Never Rest on Your Ores: Building a Mining Company, One Stone at a Time*. xviii + 459 pp, plus fig., ill., bibl., index. Montreal: McGill-Queen's University Press, 2017. \$35.95 (hardcover) ISBN 9780773551558

*Never Rest on Your Ores*—cleverly titled after a popular expression ‘never rest on your oars,’ which seems apt for a story of a natural resources company—was published as part of the Footprints series edited by Jan Errington. The series introduces the reader to personal stories of extraordinary Canadians, who in one way or another influenced this country and often the world. Norman B. Keevil Jr. is certainly one such individual. Born in 1938, Keevil Jr., a geologist, an explorer, and an entrepreneur, has been one of the central figures of Canadian mining since he joined the Board of Directors of Teck Resources Limited in 1963. The company was founded by his father Norman B. Keevil Senior—a legend of Canadian mining—who grew it from a small consulting firm, created like so many similar businesses after the end of Second World War, to a global mining giant. Keevil Jr. witnessed that growth, led, and managed some of the key undertakings in the history of Teck, such as the acquisition of Cominco, the company's involvements with Hemlo gold mine, and with Voisey's Bay, among many others. Any historian of technology, and especially a historian of mining will find Keevil's recollections fascinating.

Keevil is an excellent storyteller. He invites the reader into his family's life, recalling anecdotes from his father's early days as a researcher at Harvard

University. A historian of mining may be surprised to learn that a Nobel Prize winner, Dr. Harold Urey, head of Substitute Alloy Materials Laboratories at Columbia University, invited Keevil Sr. to join the Manhattan Project. Had it not been for the fact that FBI did not process his security clearance on time, Keevil Senior's career may have gone in a very different direction. The book also gives us a glimpse into Keevil's relationship with other mining personalities—President of Inco Mike Sopko, entrepreneur Robert Friedland, President of Bre-X David Walsh—all listed at the beginning of the volume like dramatis personæ in a play on Canadian mining. Yet even with its 459 pages, the recollections leave us wanting more. Joan Keevil, the author's wife, comes across as a fascinating yet somewhat enigmatic personality we would want to know better. What was the role of his mother, a chemist Verna Bond, only occasionally mentioned in the book, in the family's businesses? Were there any other exceptional women scientists and entrepreneurs that shaped Teck Resources? (Well-respected in the mining community Patricia Dillon is one name that a mining historian would want to find in this book.)

Although written in a very personal, often humorous style, *Never Rest on Your Ores* is in essence business history. It takes the reader through ore discoveries, establishments of mines, and mergers and acquisitions, as well as failures that made Teck Resources into one of the most diversified and largest mining companies in the world. Although Keevil talks about

miners vs prospectors hockey games (24); hints at fishing competitions (242); or recalls a cartoon that he commissioned, with Mike Sopko's head on a lion's body to depict Inco's position during difficult negotiations over Voisey's Bay (355), Keevil does not delve much into social history around his company. He also does not go into details on technological processes, or many innovations that came out of research conducted at Teck. His is also not a workers' history. For example, when he talks about Teck's acquisition of a bankrupt Westar Balmer mine, which went under in 1991, and was reopened by Teck as Elkview mine, he summarizes difficult union-management relationship in one short paragraph: "Teck soon reopened Balmer (...). All prior employees had to reapply, and were carefully selected for their ability and dedication to working. The Mine Worker's Union was shut out. The mine reopened as non-union, but we encouraged the Steelworkers' Union to come in, and that was approved by a free vote of the workforce." (330)

Where Keevil exceeds as an author and a writer, is when he takes the reader through complicated, highly political, and tricky business deals and schemes. He brings to life personalities and events; business negotiations behind the closed door and over a

cigarette; and dealings with domestic and global politics, which are all parts of building a company and keeping the company in business. Although, he is often careful in the narration that he creates for Teck Resources, omitting for example references to a failed attempt to take over Inco, which Teck Cominco launched at a value over \$17 billion in 2006 and ultimately lost to a Brazilian mining company Vale, Keevil does include some controversial events in his book. He carefully, so not to tarnish Teck's reputation, recalls the Bre-X fiasco, taking personal responsibility. "[W]hen the chase begins, it's human nature not to want to be left behind" (369), he admits of the reasons for pursuing Bre-X despite all the warning signs.

Although not technological history, *Never Rest on Your Ores* is nevertheless a fascinating read for a historian of mining. It offers a glimpse into the thoughts of one of the drivers of this industry. It shows us what is and what is not on the mind of this fascinating individual, as he looks back at almost eight decades of his life. It leads us through an entrepreneur's view of mining with all its insights and all its omissions.

*Anna Adamek, Ingenium: Canada's Museums of Science and Innovation.*

Marie Hicks. *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing*. 352 pp. Cambridge, MA: MIT Press, 2017. \$40.00 (hardcover). ISBN 9780262035545

The relationship between gender, computing, and labor is a relatively recent research topic in the history of technology. Prior accounts focused on installing a much-needed counter-story to the dominant masculine image of computing. Marie Hicks' *Programmed Inequality* extends these perspectives in two ways. First, it strategically avoids to chronicle single individual accounts and instead draws attention to women as a class to reflect this large group of labor. Second, the book shows how the history of women's participation in Britain's computing industry informs today's broader conditions of IT labor in the Anglo-American world. Through the case of Britain's computing industry and its particular governmental context, Hicks presents a detailed account of how heteronormative societal norms not only affected Britain's abundant class of skilled computer workers — women — but also its early leading position in the international computer market.

These two changes, as Hicks describes, are intertwined. They frame the book's argument that computerization is a project of power reinforcement by certain groups of people at the expense of others, in the book's context—of women and class in British society. Understanding women and women's computing labor as a class reveals the importance of gender in the construction of computer technology and societal organization by technology as Hicks notes.

The book's narrative draws on a multitude of sources from government records and archival material on Britain's nationalized computing companies to census data and oral interviews with female computer workers. Yet, as Hicks notes, although women are prominent in the book, the women themselves were not prominent programmers or scientists compared to examples from other computer histories. Reflecting Britain's computer development, the book's story also "shifts from women's work to men's work, and from labor to management, as the gender of the field changes" (16). *Programmed Inequality* begins with the origins of computer work during World War II, moving forward to the post-war translation of computing for the British civil service and in the country's attempts to modernize society through this technological revolution in the mid-1960s, and ends in the late 1970s when Britain's computer development was outplayed.

The first chapter introduces how women's computing work, often designated as rote and deskilled, contributed critically to early computerization and the outcome of the war. Hicks' analysis of the recently accessible archival data on Bletchley Park and the Colossus computers illustrates how women's invisibility, owed partially to the secrecy around Bletchley, signaled later gendered labor hierarchies. The war's context of the WRNS (Women's Royal Navy Service) work restricted internal and external exchange about this type of work and its level of complexity. Such secrecy ensured that a 'sub-clerical' categorization remained attached to

women's work in the post-war period. As the War ended, many women working in war-related computing positions found their ways into Civil Service computer work. As Hicks points out in the *second chapter*, however, this process created "a feminized machine underclass" (59) through a series of institutional reforms — definitions of labor practices as "machine grades" and job classifications that ensured. These labor reforms established computing as a low-paid, feminized work without career perspectives. Women at this time were assumed to leave jobs once they reached a certain age to get married and have children. These women who first operated these electromechanical machines and later electronic ones were the preferred hiring target not because of their skills, but because of the perception created through clerical job descriptions that their work was mindless. As Hicks shows, the opposite was the case.

The result of these reforms would set the stage for a technocratic era based on the "coming computer "revolution"" (98) to follow; but also as it turned out to counteract this vision. In *Chapter 3*, "luck and labor shortage" determined the computing labor developments of the 1960s. At this time the computer would become a standard tool and the instrument of the government's commitment to establish a new social order through Prime Minister Harold Wilson's launched "White Heat" technological revolution. Institutional transformations and massive funding of the national computing industry aimed not just at producing technology. These implementations raised the profile of computing work to make it

more attractive to men as management changed their understanding of the embedded in this technology. Paradoxically, as Hicks demonstrates by comparing oral histories with government records, the computer companies' advertisement of computing work as female and skill-less countered these kinds of endeavors. As this period of luck and labor shortage brought many women into higher-ranked positions, the government and Civil Service began seeing this as a threat to men's career opportunities. Ongoing labor reforms, as *Chapter 4* demonstrates, would allow relatively young, unmarried women to earn more than their male colleagues. This advantage had to find an end by creating new structures, which would bring management and computing jobs closer together. Female computer operators often had to make room for male executive officers they had trained. As long as technical work remained "liminal" to the white collar clerical work, however, the male officers with newly acquired technical skills would often end up leaving for the private sector and non-computing jobs.

Shifting computer labor from female to male and from lower clerical work to higher-ranked one was not a side effect of ongoing reforms as the *fifth chapter* demonstrates. It was part of the stirred effort of the state's computerization according to Hicks. The active alignment with centralization and the focus on mainframe computers through consolidation of Britain's computing companies, however, slowed down the country's "computer progress;" ultimately, leading to the failure of British computer technocracy

in the late seventies. In the *concluding chapter*, Hicks argues that Britain lost the leading position in computing with its unceasing attempts to redefine computer workers' class and hesitation to respond to international computer technology developments adequately.

*Programmed Inequality* presents a rarely framed connection between female computer work, its defining hierarchies of gender and class, and ideas of centralized control ascribed to technology. As computer labor became more professionalized and confined to a male domain not only in Britain but everywhere, the book gives voice to a largely ignored class of workers and their knowledge which

shaped post-industrial nations relying on computing. Hicks' account reminds us of all the other areas of computer work disregarded in the boundless focus on 'computer geniuses,' scientists, and programmers. As the book shows, their work and public service would be impossible without the many thousands of female computer workers behind that. *Programmed Inequality* will interest historians and social scientists of computer technology and labor alike, as well as a general audience concerned with the cultural histories of hidden figures.

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