Science Culture in English-speaking Montreal, 1815-1842

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ABSTRACT

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Most North American work on the history of science concentrates on the period of the 1840s and beyond, a time when permanent scientific institutions were founded and science emerged as a professional pursuit. The originality of this thesis lies in its examination of the earlier period and the demonstration that amid the large-scale social, religious, political and economic change in Montreal there was an emergent, amateur urban science culture and practice.

Recent studies have emphasized the importance of the local setting and the factors there that facilitated or retarded the development of science culture, the practice of science and the growth of scientific institutions. This thesis examines the multiplicity of ways in which science became a part of the cultural attitudes of English-speaking Montrealers during the period from 1815 to 1842.

Attitudes toward science were shaped by public spectacles and lectures, informal and formal learning experiences, and by the growth of such institutions as libraries and scientific institutions. By 1835 a number of elementary and secondary schools included some science in the curriculum.

Civic pride and emulation lay behind the founding of literary and scientific institutions in Montreal. Members of the Natural History Society

of Montreal (NHSM), which was founded in 1827, sought to form a museum of natural history specimens found in the Canadas and to diffuse a knowledge of science among the public.

The research for this thesis is based on a wide range of primary source materials, including the archives of the NHSM and the Montreal Mechanics' Institute (MMI) held respectively at McGill University and the Atwater Library, as well as contemporary newspapers, periodicals and other printed documents.

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I wish to express my thanks to Professor Graham Carr, who showed great patience during the gestation of this thesis - reading a number of very lengthy preliminary drafts. He made several valuable suggestions for readings that helped to improve my grasp of the background against which the activities and events portrayed in the dissertation might be viewed. In addition, he provided hints for improvement to the manner of expression of the ideas involved. Careful reading led him to point out a number of infelicitous expressions and the need for greater clarity. Nevertheless, I alone must take responsibility for any remaining errors of fact or of expression.

All this needs to be seen against the fact that Professor Carr inherited the supervisory role on the committee after the untimely death of Professor Susan Sheets-Pyenson. Working in a field, which was not his area of expertise, he provided much guidance and his ever-present good humor made working together a pleasure.

My gratitude is also due to my wife Joanne for her patience and loving encouragement during what must have seemed like a never-ending project.

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ACRONYMS

AAAS	American Association for the Advancement of Science
BAAS	British Association for the Advancement of Science
GRSM	Groupe de recherché sur la société montréalaise au 19e siècle
JHALC	Journals of the House of Assembly for Lower Canada
LHSQ	Literary and Historical Society of Quebec
MGH	Montreal General Hospital
MIM	Mechanics' Institution of Montreal (1840 on)
ML	Montreal Library
MLA	Mercantile Library Association
MMI	Montreal Mechanics' Institution (1828-1840)
NHSM	Natural History Society of Montreal
RCPS	Royal College of Physicians and Surgeons
RCSE	Royal College of Surgeons Edinburgh
RCSL	Royal College of Surgeons London

Introduction

During much of the nineteenth century Montreal was the focus for persons with an interest in science and the locus of scientific practice. Both amateur and by mid-century professional scientific endeavor found a home here. Early nineteenth century activity resulted in the establishment of the Natural History Society of Montreal (NHSM) in 1827 and the Montreal Mechanics' Institute (MMI) the following year. In the second quarter of the nineteenth century, with the exception of the two Quebec City museums, that of the Literary and Historical Society of Quebec and Chasseur's Museum, the museums connected with the two Montreal institutions were almost alone in the Canadas in the field of collection, conservation, and display of natural history specimens. As late as the early 1880s, many of the practitioners of scientific activities in Canada continued to look to Montreal as the place to make known and publish their findings and to show their specimens.[1]

This dissertation examines the growth of local science culture and the knowledge and practice of science among English-speaking Montrealers in the period from 1815 to 1842.[2] The term *science culture* here refers to the combination of informal and formal inter-

est in scientific discoveries, displays, fieldwork and classification, as well as the incipient growth of institutions, both amateur and professional that supported scientific inquiry. The thesis, therefore, describes the multiplicity of ways by which science became part of the life and culture of a segment of the English-speaking population of Montreal through public spectacles and lectures, informal and formal education, as well as the growth of museums and libraries. In this way it traces how the cultural attitudes of English-speaking Montrealers toward science were formed and their scientific knowledge was advanced.[3] The cultural attitudes thus formed enabled professional scientific personnel in the second half of the nineteenth century, such as William Edmond Logan and Sir John William Dawson, to marshal the support necessary for their institutions and their activities.

Although Lower Canadian society was predominantly French-speaking, this thesis focuses on the experiences of English-speaking Montrealers because in the early nineteenth century this was the population group that was most deeply engaged with scientific questions and provided support for the practice of science. Within the formal societies, more particularly the NHSM, Protestants of

Scottish origin were the dominant group. There were French-Canadians with an interest in science, but there was no sustained institutional scientific endeavor.[4] As Yvan Lamonde points out the associations of French-Canadians in Montreal in the 1830s were political rather than cultural.[5]

The quarter century from 1815 to the 1842 was a time of large-scale social, religious, political and economic change in Montreal. The year 1815, the starting point of the thesis, marked the return to peace and civilian life in the Canadas and Europe. The influx of immigrants to the Canadas from the British Isles after the end of the Napoleonic Wars in Europe altered the linguistic balance and added to the religious diversity of the city. This wave of immigration to the Montreal plain and to Upper Canada fostered economic growth and the diversification of Montreal's mercantile trade, which was largely in the hands of English-speaking Montrealers. The intense political debates around responsible government and local autonomy exacerbated the political and cultural differences among Montrealers of various origins. This study ends in 1842, a year that marks the transition to a new phase in the experience of science culture in Montreal and the Canadas. That year was the beginning of

the period when the Geological Society of Canada was established, followed by the inauguration of university chairs for the teaching of natural history and natural philosophy at McGill College, Trinity College, Toronto, and Queen's College, Kingston. These events marked the beginning of professional institutions devoted to science and the process of training a cadre of persons who earned their living by the practice of science.[6]

In an article, which was written in 1990, Sally Kohlstedt points to the tendency, because of the rise of more permanent scientific institutions, to consider the middle years of the nineteenth century as the formative period for American science. She declares, "It is time to reconsider the appropriateness of beginning in the 1840s, while largely dismissing the previous decades ... paying particular attention to scientific initiatives." Kohlstedt cites works that treated the early period, which found a rising number of cultivators and researchers in science. She points out, however, that this fact alone could not explain the more general cultural attitudes toward science and the public curiosity about scientific subjects. Professional science in the later period would find its support in the curiosity aroused about science and in the cultural attitudes formed

during this early period. Kohlstedt, therefore, sees the period up to the 1840s as "an interesting and formative one, worthy of respect," and urges that it is "important to investigate places where science became embedded in personal inquiry and public discourse."[7]

Because the period in early nineteenth century that preceded the 1840s is largely overlooked in North American histories of science this thesis breaks new ground by showing how an emergent, amateur urban science culture, that eventually flourished and professionalized in the late nineteenth century, arose amid the changing realities of Montreal. Moreover, this thesis illustrates how debates about the place of science and support (or the lack of it) for scientific institutions in Montreal was linked to the wider social, political and economic urban context. One of the main arguments of the thesis is that interest in and curiosity about science, while often rudimentary, cut across social boundaries of class, religion, ethnicity and, to some extent, gender and age.

Canadian Studies in the History of Science

Most Canadian studies to date have focused to a large extent on the Victorian era and in particular the second half of the nineteenth century. Suzanne Zeller begins her study of Victorian science in Canada with the remark that "the history of science in Canada is still largely unexplored, and its place in the formation of Canadian culture has not been fully assessed."[8] With few exceptions, the history of the dissemination of scientific knowledge and the rise of institutions, which fostered the study of science and the practice of scientific activities within the urban culture of the early nineteenth century Canadas, is sketchy at best.[9] Much less is known of how popular science was an integral part of the life and culture of the pre-Victorian and the early Victorian era.

Studies of Canadian societies touch very lightly on the early history and activities of the NHSM. For example in 1976, P.J. Bowler, whose concern is the rise of national science societies, writes "early Canadian (scientific) societies ... served a function as 'information systems' at a purely local level."[10] Richard A. Jarrell, also writing in the late 1970s, focuses on the social functions of scientific societies. Many of his examples of activities in the NHSM,

such as evening soirées and society-organized field trips, are drawn from the 1860s and 1870s.[11] One would assume from reading these studies that few scientific activities and little of scientific importance took place within the early societies.

Carl Berger, in the 1982 Joanne Goodman Lectures, *Science, God, and Nature in Victorian Canada*, relates the practice of natural history in mid-nineteenth century Canada to natural theology. He refers to the study of "science as a social activity," a fashionable and respectable pursuit for educated, urban, middle-class persons. Berger states, "The implanting and growth of science in Victorian Canada was one strand in a complex fabric of transplanted British civilization overseas; like other strands in that culture it was modified and the resulting pattern was not an exact duplication."[12] He mentions the metropolitan tradition, which saw colonial resources as assets to be exploited for imperial purposes, and saw the beginnings of science as an indigenous activity of British immigrants, who brought an interest in natural history with them.[13] His references to natural history societies, however, are general and have little specific information on individual institutions and their activities. Only after mid-century when the economic value of science was increas-

ingly recognized does he think that such societies were self-sustaining.

In Suzanne Zeller's book, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation*, which is a broad study of science in nineteenth century Canada, the practice of science is related to the economic and political history of Canada. She argues, "In particular, science gave credence and respectability to the very idea of a transcontinental Canadian nation, and to the conviction that, with science, the idea would become a reality." For Zeller, science provided the ideological framework for English Canadians and some French Canadians to understand their surroundings and then supplied the analogies and metaphors that were used to promote political union.[14] Zeller sees a certain necessity, almost inevitability, for a Confederation of the British North American territories and its expansion westward to the Pacific. The familiar nation-building theme of the political historians, such as Innis and Creighton, was born out of this alliance of Victorian science ideas with the common economic and cultural pursuit.[15]

In her 1996 biography of Sir John William Dawson, Susan Sheets-Pyenson deals with the history of the NHSM after Dawson's

arrival at McGill in 1855.[16] She underlines his involvement with the NHSM and credits Dawson with the revitalization of a moribund society.[17] The earlier society is characterized as having been "the preserve of the city's English-speaking professionals and entrepreneurs: doctors, lawyers, preachers, and merchants, as well as a sprinkling of other vocations."[18] According to Sheets-Pyenson, Dawson brought order from chaos and gave it [i.e., the NHSM] a respectable popular scientific vocation, complete with a new building, a museum curator and a scientific journal. Nevertheless, there is little in her account about the society's earlier importance for the practice of science and the diffusion of scientific knowledge.

There has been some work on the early exhibitions and museums in the province of Québec, due in large part to Jean Trudel at the Université de Montréal, who has directed a project entitled "L'idée de musée au Québec (1800-1900): la collection." In theses and studies arising from this work, local trends were explored and museums considered in relation to the society and culture in which they were found.[19] Raymond Duchesne and Paul Carle, for example, studied cabinets and museums of natural history in Quebec in the period from 1824 to 1900.[20] In their presentation, these authors

analyze the history of museums under three periods: 1) 1824-1860, Public awakening and the first museums; 2) 1860-1890, Museums and the progress of instruction; and 3) 1880-1900, Government intervention and the Golden Age of museums.[21]

Hervé Gagnon, while a researcher in this project at the Université de Montréal, sees the period 1800 to 1850 as determinative for the beginnings of the first public museums. During these years travelling exhibitions, strongly influenced by American curiosity cabinets, became a factor in the choice of the content of the early museums.[22] Both the museum of the Montreal Library and Delvecchio's Italian Museum were so influenced, putting the accent on the curious and the spectacular.[23] The Italian Museum melded curiosity and spectacle in a prescientific arrangement of natural history specimens, automatons, wax figures and musical instruments. For Gagnon, the Delvecchio museum becomes a case study for the embodiment of curiosity-spectacle in Lower Canada and its eventual dissociation from the museum milieu. According to Gagnon, the collections of the NHSM, which incorporated the mineralogical contents and curiosities of the Montreal Library's museum, hesitated

between being a cabinet of curiosities or a collection of natural history specimens until the 1840s.[24] Gagnon finds

> Le demarcation se precise entre le musée 'savant' et la curiosité-spectacle, celle-ci devenant peu à peu l'exclusivité des expositions itinérantes et fêtes foraines qui offriront avec éclat au public, jusqu'à la fin du siècle, des collections de curiosités (les 'dime museums') similaires à celles des cabinets.[25]

As may be seen from this brief review of Canadian literature, much of the focus with regard to science practice and to the NHSM relates to its history after mid-century. The early history of the NHSM has not been fully told nor has it received the attention that it requires. Indeed, its early history and its accomplishments, its difficulties and its relationship to Montreal society are little known. The role that the NHSM played in the rise of scientific culture and the diffusion of scientific knowledge in Montreal has not been explored. Local conditions that hindered or abetted the rise of science culture and the practice of science in Montreal are ignored. The manner in which the NHSM adapted the culture of metropolitan Britain to its local environment and the way in which it in turn was shaped by as well as shaping local science culture are worthy of study.

Science in its Urban Setting

Gerald Tulchinsky in *The River Barons: Montreal Businessmen and the Growth of Industry and Transportation 1837-53*, traces the relationship between Montreal businessmen and the development of transportation. Like others concerned with social history he justifies his approach by stating:

> Historians are now anxious to move beyond the concepts of Innis and Creighton, who stressed the function of Montreal in continental terms, to an understanding of what took place within the cities: physical expansion and population increase, social problems and class divisions, politics and corruption, and wealth and poverty, in addition to many other urban themes.[26]

Historians of science have expressed similar concerns and have studied local institutions within their urban context relating them to factors that favored or retarded the development of scientific institutions. Guy Kitteringham, for example, argues in his 1982 article that different classes of citizens in Liverpool valued science differently.[27] Some of the city's wealthier citizens saw science as one of several components making up a general intellectual and literary culture. On the other hand, there was a smaller group of the middle class, influenced by Scottish educational ideals, who held

science in esteem as a tool for educating youth and bringing moral and social improvement.

In the introductory essay to the book, *Metropolis and Province, Science in British Culture, 1780-1850*, edited by Ian Inkster and Jack Morrell, Inkster reviews the diverse articles contributed to the book and points out that the different experiences of scientific culture are to be explained by differences in the socio-economic structures of the several cities and by their differing relations with the metropolis.[28] He then suggests an analysis of twelve factors for the study of science in provincial cities. These factors comprise demographic, political, socio-economic, religious, environmental and intellectual variables. His co-author J.B. Morrell, in his 1985 presidential address to The British Society for the History of Science on the place of public science in Bradford between 1800 and 1850, states that science was hampered there by political and religious conflict. Moreover, in this address he looks with favor upon Lord Briggs' idea that there were a number of separate provincial cultures in Britain up to the 1890s and that each required examination and explication. He concludes that "quirky localism" remained important as long as the British central authority was weak.[29]

More recent studies emphasize the importance of geography and location to the production and reception of science. In 2003, for example, David N. Livingstone, in his book *Putting Science in its Place: Geographies of Scientific Knowledge*, states that a local or regional culture shapes science and in turn is shaped by science. He points to the range of sites or venues of science in the local situation, that is places where science was practiced, from laboratories, museums, the field, gardens, to hospitals, and even the human body.[30] David Wade Chambers and Richard Gillespie see a need for "a great array of independent and interdependent local histories of production, application and diffusion of natural knowledge" in order to provide by systematic comparison a framework for the discussion of historical trends in science.[31] The study of local level activities is important because as Sverker Sörlin writes, "scientists, like other people, bore identities, they belonged somewhere, and they were loyal to something. Even more importantly, the daily activities of scientists were carried out in a framework of institutions, agendas, career opportunities, working language, financial support and patronage systems."[32]

In a similar vein, Science and the City was the theme of a 2003 issue of the journal *Osiris*.[33] In the introductory article, Sven Dierig, Jens Lachmund and J. Andrew Mendelsohn urge that cities play an active role in shaping both scientific practice and scientific knowledge. They see science as local practice.[34] In their contribution, Dora B. Weiner and Michael J. Sauter argue that in the early nineteenth century the city of Paris played a unique role in the shaping of clinical medicine.[35] Denise Phillips examines the Isis Society, an early natural history society in Dresden, Germany. Detailing the spread of organized science practice to the lower middle class, Phillips writes of a sociable urban culture which valued collecting natural history. Members profited from recreational walking (wanderung) and their research in the field, which in turn led to the publication of local guidebooks highlighting natural history sites.[36]

Drawing on the historiographic emphasis on the importance of the local and the urban in the history of science, the first chapter of this thesis provides an overview of Montreal's unique urban context and the changes that the city underwent in the first decades of the nineteenth century. It picks up Inkster's concern for an understanding of the demographic, socio-economic and environmental

structures of the city. Montreal's growing English-speaking population and its geographic location with regard to the rapidly increasing population of the area around it were important to the two-way traffic of trade and information both within the Canadas and between the Canadas, the United States and the British Isles. The growth of the mercantile class and of the professions, and the rise in status of some master craftsmen and their role in science is discussed. The linguistic, ethnic, religious and political divisions that curtailed participation in scientific endeavor are described and the increasing literacy of Montreal's English-speaking inhabitants and the growing interest in learning are examined.

This study of the nascent urban science culture in Montreal during the period 1815 to 1842 is important to an understanding of how Montreal became the focal point for scientific work in Canada in the latter half of nineteenth century through individuals and organizations including the Geological Survey of Canada, McGill University and the Natural History Society of Montreal. The study also speaks to how the cultural attitudes were formed that later permitted Sir William Edmond Logan, Sir John William Dawson and others to marshal support from leading Montrealers to build the necessary

infrastructure and gain an international reputation for scientific activities in Montreal.

Defining Science in the Early 19th Century

Throughout this thesis I use the word *science* in its present day sense although in the early nineteenth century for English-speaking persons science signified learning in general. What are now designated as the physical sciences - that is, astronomy, chemistry, mathematics, physics, etc., were known in the British Isles and North America as natural philosophy and its adepts were known as natural philosophers. Biology, that is botany and zoology, and mineralogy and geology, which are sometimes referred to as the observational sciences, were known as natural history, which was practiced by natural historians.[37]

In the first half of the nineteenth century the physical sciences were in large measure a continuation and extension of what they had been in the previous decades. Chemistry was given impetus as a public science by the work of William Cullen and Joseph Black who taught it as one of the disciplines in the medical curriculum of Edinburgh University Medical School. In England, Joseph

Priestly was an effective communicator of his discoveries, making use of a number of itinerant lecturers, who conveyed his ideas to the public through illustrative experiments. Antoine Lavoisier's theories, on the other hand, were stoutly resisted in England because of the revolutionary climate in France. The rise of the importance of mineralogy, however, in the early part of the nineteenth century induced groups of chemists in Britain to undertake analyses of metals, minerals and spring waters. Others experimented with the various gases.[38]

Natural history collections became popular in the last half of the eighteenth century and floral and horticultural societies flourished. Excursions into the countryside to collect specimens were seen as both healthful and educative. The collection of plants, which was one of the features of the eighteenth century, continued into the nineteenth century.[39] Nature was considered to exert a moral influence on individuals and to point to the divine. The rising interest in geology because of its utilitarian value began in the early nineteenth century. Collections of fossils and minerals had long predated this period but suggestions of natural wealth to be exploited

gave renewed impetus to mineralogical and geological collecting and classification.[40]

Barbara T. Gates writes of a "culture obsessed with sight," of a people "retraining their eyes to look as never before to witness what was around them in their everyday worlds, or in the wider worlds of the British Isles, or the British Empire."[41] The establishment of Kew Gardens with its aim to collect all known flora was but one instance of this concern.[42] A well-preserved and classified natural history collection could help the public to see the order, which revealed God's handiwork in its world. For immigrants to America there was a new world to explore and exploit.

In North America the early nineteenth century was a period of exploration of the continent and of the peopling of the western frontiers. Collecting natural history specimens was paramount for attempts to catalogue and classify American flora and fauna, both of which differed to some extent from those in Europe. British immigrants with some scientific knowledge were involved in collecting and sending specimens to collectors in Europe, such as William Jackson Hooker, who were classifying them and publishing the results. The Linnaean sexual classification of botany held sway in Eng-

land, where Linnaeus's collections had recently found a home, while European botanists sought a more morphological classification.[43]

In the British Isles many of those who collected specimens or were involved in the practice of science were self-taught or participated in mutual improvement groups. L. Pearce Williams, referring to the fact that Michael Faraday was self-educated, remarks, "It should be remembered that this was the rule in science rather than the exception."[44] In Great Britain only the Scottish universities taught natural history, mainly botany, chemistry and geology in their relationship to medicine. There and elsewhere in Britain natural philosophy appeared as part of the philosophy curriculum. In England, however, entry to a university in order to study science at that level required adherence to the established church, the Church of England.

Science and Public Culture

Just as approaches to learning science took different forms in the early nineteenth century, the emerging public culture of science was also highly diverse and diffuse in the period. As Aileen Fyfe has shown, this continued a pattern that began in the eighteenth cen-

tury when various things, such as "lectures, demonstrations, books, and periodicals" all contributed to bring science into the public realm."[45] Middle class men and women were active in scientific activities in the British Isles and women were the authors of many popular books on science which had for their audience both women and children. Ann B. Shteir has urged that for "previous generations, going back to the mid-eighteenth century, science writing for women had been part of the Enlightenment culture of improvement across the middle and upper ranks of society." Shteir contends, "The growth of popular science during the eighteenth century had shaped an audience of women and children who participated in home-based science education and scientific practices."[46] By the early nineteenth century, therefore, the knowledge of science and scientific activity was no longer the sole domain of the gentleman amateur nor solely of the male member of the household.

In a 1994 essay Roger Cooter and Stephen Pumfrey argue the need to recognize a "greater plurality of sites for the making and reproduction of scientific knowledge" and "a greater plurality of signifiers of scientific activity."[47] In an article from the same year, Anne Secord examines Lancashire artisan botany as it was practiced

in the pub.[48] In a second article published that year, Secord traces the formal relationships formed between correspondents of differing social classes.[49] Subsequent studies have emphasized the many sites where science was both learned and practiced, and the ways in which science was experienced as popular culture by a broad cross-section of the general public.

For instance, the sites and experiences of nineteenth century science were the theme of a conference held in 2004 at York University, Toronto. In the resulting publication, *Science in the Marketplace: Nineteenth Century Sites and Experiences* edited by Aileen Fyfe and Bernard Lightman, the essays are treated under three themes: orality; print; and display. The authors of the essays emphasize the role of sites and experiences, that is, where "people [might] encounter and interact with the sciences, and what sort of experiences they [might] have there."[50]

Lawrence Levine argued in several of his works that in the early nineteenth century culture was both more fluid and more inclusive than it would be toward the later years of that century.[51] Entertainment, spectacle and edification were presented within a shared social context and as such were integral to popular culture,

that is, culture that was popular to a mixed audience not yet clearly segmented according to class and economic status. In order to attract, entertain and edify an audience, cultural events usually were comprised of several genres.[52] Musical accompaniment, for example, was usual in many popular activities, including public science performance. Together the audience laughed or expressed its wonder at and delight in the spectacle. On the other hand, Levine maintained that the audience was rarely passive, wholly absorbing the message or interpretation intended by the authors of the event. Rather, members of the audience were able to place their own ideas and constructions upon what they saw and heard.[53]

The second chapter of this thesis examines how popular science was presented to and seen by the Montreal public. Showmanship, performance and spectacle that excited awe and wonder and aroused curiosity about science were all part of the visual culture of the period. Popular presentations in inns, circuses and other public places accessible to the general public for a small fee were meant to entertain and educate. Illusions, artistic panoramas, automatons and mechanical devices, electrotherapy and pneumotherapy attracted patrons. Zoos and menageries displayed exotic and abnor-

mal animals and unusual humans performed. Lectures were illustrated with transparencies, elaborate experiments, or the manipulation of specimens. By these means public curiosity about science was aroused and interest in science became part of popular culture.

Sites and occasions for informal learning of science and the formal learning of science in school are presented in the third chapter. Everyday family activities, such as conversations, reading aloud in the home, and visits of invited guests provided opportunity for hearing and learning about science. Family excursions to examine and collect specimens of natural history, as well as visits to expositions and museums were important occasions for discussion and learning. Schooling consolidated and extended what had been learned in informal settings. Further schooling and higher education abroad fostered the practice of science and incited efforts to diffuse scientific knowledge.

Civic Pride and Local Factions

In Great Britain the proprietary libraries, museums, and literary institutions erected by a literary and mercantile elite in the late eighteenth and early nineteenth centuries were seen as showpieces

of the elite classes' civic pride and civic cultural achievement. As Eric Glasgow writes of Liverpool, "its better-off citizens wanted a more spacious and respectable haven for reading and thinking." This led to the founding and erection of the Liverpool Athenaeum in 1798, which according to Glasgow "represented and embodied the more enlightening side of the city's ensuing nineteenth-century prosperity as a trading centre."[54] Similarly, according to Ronald Story, the Boston Athenaeum, which was founded in 1807, was modeled on the Liverpool Athenaeum, and "one motive of its support was certainly civic pride. According to the 1807 'memoir,' the Athenaeum would be 'ornamental to the metropolis.' Its development would lift Boston above New York, Philadelphia and other cities."[55] Civic institutions founded by the elite classes in other British and American cities had similar motives, including civic pride, rivalry and emulation.[56]

The civic and cultural pride of the elite classes demanded a suitable edifice to house the scientific and literary institutions that they founded. Why such a building embodying the cultural aspirations of the elite failed to appear in Montreal is the subject of the fourth chapter. The interplay of Montrealers' civic pride with the

ethnic, religious and political conflict of the period reveals how these factors affected cultural leadership and scientific and literary institutions in Montreal. As in Morrell's portrait of Bradford, the elements of political and religious conflict were part of the answer.[57] In addition, the institutions' leaders struggled to muster the financial support required for science and learning.

Scientific Institutions

Self-improvement and mutual-improvement were the watchwords of the first half of the nineteenth century. Literary and historical societies, debating societies, scientific societies and mechanics' institutes were organized to meet the desire for education and social intercourse or sociability.[58] Both in the United States and in Great Britain there were several models on which such institutions in the Canadas might have been based. It would appear, however, that historic links to Britain determined the type of societies that appeared in the Canadas before the 1840s. In large part the literary and philosophical societies of Britain provided a template for the social and literary elite and middle class in the Canadas, while the artisans, mechanics and tradesmen found the model of the mechan-

ics' institutes more suitable for their purposes.[59] It was only in the early 1840s that the Montreal merchants' clerks formed a society modeled on an American institution, the Mercantile Library Association in New York.[60]

Each of the prototype models mentioned above involved a library with a collection of books, a museum, and often a reading room with newspapers and periodicals. Meetings fostered an exchange of ideas between members, whereas public lectures provided funds for the society's activities and allowed members and the public to increase their knowledge and awareness of the subjects involved. Museums operated as repositories for collections of various kinds. This entailed the collection, conservation and safeguarding of individual specimens, research on their relationship to other similar artifacts and their classification, then their display for viewing as well as their interpretation to a wider audience. As Bonnie Pitman explains, museums are "gathering places of objects and ideas that assist individuals in understanding the world around them."[61]

Heather Murray has demonstrated that literary societies were a widespread cultural and educational phenomenon among the edu-

cated and middle classes in nineteenth century Ontario.[62] She defines a literary society by its multiple activities, i.e., reading, composing texts, speaking and performing, in relation to civic or cultural ends. Murray saw these activities as a vehicle possibly leading to "economic or social advancement, or the accumulation of cultural capital." She maintained that "Readers do things with texts: they become speakers, writers, producers, performers, and critics."[63] The prominence of Scottish immigrants in such societies meant according to Murray that there was a pragmatic focus on mutual instruction. As I will point out the NHSM at times was seen as being in some respects analogous to a literary society.

Montreal's scientific institutions and their activities are the subject of the final chapter. The desire for self-education and mutual-improvement through cooperative research brought the founding of the NHSM in 1827 and the MMI in 1828. In the former cultivators of science sought to keep scientific knowledge and practice before the Montreal public with a museum and library as well as through public lectures and essay competitions. The fruit of a long lobbying effort by the NHSM was the establishment of the Geological Survey of Canada in 1842. The Mechanics' Institute, which was

beset by conflict throughout its history, attempted to improve knowledge and skills in the arts, and more particularly in the building trades.

By examining local science culture and the everyday practice of science the chapters that follow demonstrate how science became an integral part of the culture of English-speaking Montrealers in the period from 1815 to the 1840s. It was the development of scientific knowledge and the practice of science that determined the cultural attitudes of English-speaking Montrealers toward science and built support for a Geological Survey and later for the teaching of science at McGill University.

Method and Sources

Since this thesis breaks new ground in examining science culture in the period 1815 to 1842 there are peculiar challenges in trying to piece together the necessary evidence that sustains its arguments. In part, this is due to the fact that the rise of popular urban science culture was an emerging phenomenon. There is, therefore, no collection of source material specially devoted to the theme. Moreover, the fact that the period was one of major social,

cultural and political change means that both participants and observers were not always fully aware of historical trends at the time. In addition, local events and institutions were not always to the forefront in newspaper and periodical coverage, which often devoted much of their attention and space to British and European events. Nor have there been recent studies assessing the place of science in Canadian culture or the role that was played by institutions at an urban level.

In consequence, I read exhaustively in newspaper and periodical accounts and sought information on individuals and institutions. I have relied on lists, notices and minute books and attempted to place events and experiences against a larger background of social, cultural and educational understanding in order to portray a reality that was not consciously inscribed or described by the people of the period.

The first chapter, which provides the Montreal setting for the study of how science became a part of the culture of Montreal, builds on a number of sources dealing with demographic, social, political, economic, educational and religious history in Lower Canada.

Chapter Two depends on a close reading of newspaper announcements. Some of the material on exhibitions in Montreal parallels work done by Hervé Gagnon and seeks to relate the spectacles to science categories.[64] I traced menageries and zoos that traveled in the Canadas and the United States and appeared in Montreal in the newspapers and in Thayer's Circus Anthology.[65] Material dealing with the botanical gardens and museums was traced in the newspapers and periodicals. Delvecchio's museum is the subject of a number of contemporary and present day articles.[66] I combed the newspapers for the material on lecturers and lecturing.

The material about informal and formal learning in Chapter Three draws on insights garnered from a comparison of members of the NHSM with persons listed in the Dictionary of Canadian Biography, sometimes a parent or at other times the individual himself. In addition, I have traced schools and schoolmasters from newspaper advertisements and articles about education and related them to the two Viger Censuses, of 1825 and of 1835, used by Renée Dufour in her article and thesis on schools, subjects taught and enrolment.[67] I am indebted as well to numerous studies on education in both Lower and Upper Canada. The material in Li-

brary and Archives Canada on the licensing of doctors in Lower Canada provides information on those licentiates who came from or studied abroad and their degrees.

The history and portrait of activities in the literary and scientific institutions in Chapters Four and Five relies on many varied sources, extant records, current newspaper and periodicals, as well as petitions to the Legislature. The documents extant for the Montreal Library (ML) consist of five published catalogues, which in addition to listing the books and volumes in the library contain the rules of the library, the subscription rates and the hours.[68] A careful scrutiny of the newspapers and periodicals as well as the library's several petitions to the Legislature helps to flesh out the account of its history and its aspirations. Comparison with other subscription libraries, and in particular with the Quebec Library, is insightful, in revealing the cost to operate such a library. Accounts of subscription libraries often overlook the fact that there were two classes of members, the proprietors and the subscribers.[69] The quarters occupied by the subscription library are easily traced.

The fate of the ML, that is, its sale by auction is found in newspaper advertisements and the purchase for £200 of the re-

maining books is found in the records of the Mercantile Library Association. The books obtained by the Association are listed separately in the 1844 catalogue of its library and the names of ML proprietors of that date who received life memberships in the Association may be found in its twenty-sixth annual report in 1867.[70]

There is a brief account of the Montreal Library in the first part of E.C. Moodey's history of the Fraser-Hickson Library.[71] Hervé Gagnon has an article dealing with the museum which was begun in the ML.[72] An account of the museum and its contents is found in the *Montreal Herald* 22 February 1823. The specimens and curiosities of the ML museum were the first donation to the nascent NHSM.[73]

The history of the Montreal Newsroom is entirely dependent upon an examination of existing newspaper accounts. N. Bosworth's account in *Hochelaga Depicta* has the wrong date for the newsroom's founding.[74] The merger of the ML and the newsroom is found in a series of newspaper notices in January 1819 and the severance of ties in a notice in March 1826.[75] The story of its potential rivals in the early 1830s must also be traced in newspaper accounts of the period.

The Natural History Society records are incomplete but can be supplemented from newspaper accounts of meetings and petitions to the Legislature as well as from various advertisements for lectures and prize essay competitions. There are three formal engrossed Minute Books detailing the regular meetings of the society from May 1827 to February 1832, including a transcription of much of the correspondence received.[76] There are also two volumes of Minute Books relating to the Council of the NHSM. The first tattered volume covers May 1827 to May 1830 and can be described loosely as some rough draft minutes of ordinary NHSM meetings with early notes and reports pasted into place as well as some (but not all) of Council Minutes for that period. The second book extends from May 1833 to September 1841.[77] It contains very sparse and scattered draft minutes of the Council, dealing mainly with donations received and payment of accounts. In addition to the minutes there are the Annual Reports. The first (1828) through the ninth (1836) annual reports appeared as printed booklets and may be found on microfiche.[78] The tenth (1837) and thirteenth (1840) and fourteen (1841) annual meetings and re-

ports as well as accounts of the eleventh (1838) and twelfth (1839) annual meetings only are found in the *Montreal Gazette.*

There are other early NHSM documents that help to picture the activities of the society. These include the *Constitution and bye-laws of the Natural History Society of Montreal: with directions for preserving and forwarding objects of natural history* (Montreal: Montreal Gazette, 1828) and the *Act of Incorporation and bye-laws of the Natural History Society of Montreal: incorporated by act of the Provincial Parliament, 2 Will. IV, Cap 65),* (Montreal: A.H. Armour, 1833). The *First report of the Indian Committee of the Natural History Society of Montreal: read the 26th May 1828* exists in folio copy and is also incorporated into the first Minute Book. There is a *Catalogue of the Library and Museum of the Natural History Society of Montreal* (Montreal: Lovell & Gibson, 1846), which contains only the catalogue of books. A perusal of the minutes and newspaper reports permits one to find the donors and dates of donations or the purchases of books and a number of other books and pamphlets that do not appear there (presumably they were lost or not returned).

In the early-1850s there was an attempt to document the early history of the NHSM. The President, Major Robert Lachlan, was instrumental in this endeavour. Some of the records, which had been lost, were found. This effort produced the manuscript *Register book of donations to the Natural History Society: from its foundation in 1827: compiled from the Society's records in 1853: written up to 1852 by Alex G. Lachlan, continued from 1852 by the Librarian,* which may also be compared to and supplemented from newspaper reports.[79] Major R. Lachlan spoke of the society's history at a meeting of the NHSM in 1852 and it appeared in booklet form as "*A retrospective glance at the progressive state of the Natural History Society of Montreal.*"[80] The lecture is engrossed in the Minute Book in December 1852. The only recent treatment of the NHSM that deals in part with its early history is an article by Stanley B. Frost, during his work on the McGill History project.[81]

For the Montreal Mechanics' Institute, which existed from 1828 to 1835, there is a Minute Book and a copy of the Constitution and By-laws.[82] The annual reports are engrossed in the Minute Book and some appear in the newspapers. There was a petition to the legislature in February 1831.[83] A comparison with the Quebec

Mechanics' Institute would highlight the difference in the membership of the two institutions.[84] The material on the MMI may be supplemented from the various notices and editorials found in the newspapers.[85]

The Mechanics' Institute of Montreal, which was founded in 1840, may be followed in its Minute Book and numerous newspaper articles and notices.[86] The first library catalogue was published in 1850. There was a register of correspondence, a catalogue of donations and book listing the life memberships.[87] Both the *Montreal Gazette* and *Montreal Transcript* are useful for information about courses of lectures and classes offered at the second institute.

End Notes

[1] After the Geological Survey of Canada moved to Ottawa in 1881, its personnel continued as Corresponding Members of and contributed papers to the NHSM for several years. Montreal hosted the AAAS for a second time in 1882. In 1884 the BAAS held its first meeting outside the British Isles in Montreal. As well during the 1880s Principal J. William Dawson was engaged in correspondence and trading activities with other science practitioners and collectors while building up a collection in the Redpath Museum to equal that lost to Montreal by the removal of the Geological Survey museum to Ottawa.

[2] Although such dates are necessarily arbitrary, as historical periods do not have clear beginnings and endings, the end of the 1812-1814 War in America and the Napoleonic Wars in Europe provides a convenient date for the beginning of the period and similarly the establishment of the Geological Survey in 1842 is chosen as an end date for this thesis.

[3] Luc Chartrand, Raymond Duchesne et Yves Gingras, *Histoire des Sciences au Québec* (Montréal: 1987) write "With their libraries, their museums, their publications and their lectures learned societies in Quebec as elsewhere were a powerful instrument for the advancement and diffusion of knowledge. Their success bears witness to the place that science had in the encyclopedic culture of the time; science as an amusement and as a spectacle mixed freely with the arts, literature and philosophy," 78.

[4] In Quebec City, in the early 1800s there was a mineralogy museum at the Grand Seminaire with 429 specimen sent from France to which abbé Guay added some of his specimens. Abbé John Holmes taught natural history and conducted field excursions from 1827. See René Bureau, "Le musée de minéralogie et de géologie de l'université Laval," *Le Naturaliste canadienne* 76 (1949) 205-222. La Société pour l'encouragement des Sciences et des Arts composed of English- and French-speaking Quebecers was formed in 1827, but interest by French-speaking Quebecers waned after the society was merged with the LHSQ in 1829. There were individual French-speaking Montrealers who had an interest in science but there was no effort during this period to develop societies here devoted to the study and practice of science. Jacques Viger, for example, sent mineralogical specimens to Washington College (*Canadian Spectator,* 30 May 1827) and L.-J. Papineau consulted J.J. Bigsby about books on geology and where to purchase a geological cabinet (John J. Bigsby, *The Shoe and Canoe, or Pictures of Travel in the Canadas,* vol. 1 {London: Chapman & Hall, 1850}, 59f.)

[5] Yvan Lamonde, *Histoire sociale des idées au Québec, 1760-1896* (Montréal: Fides, 2000), 146. Lamonde uses the sociological concept *sociabilité* in the study of social interrelationships. The history of associations in Quebec is traced

by Pierre Rajotte, "Les pratiques associatives de la constitution du champ de production littéraire au Québec (1760-1867) *RHAF* 45, no.4 (1992): 545-572.

[6] I have found no historiographic basis for a comparison of the developing science culture in Montreal with other parts of the Canadas during this early period 1815 to 1842.

[7] Sally Gregory Kohlstedt, "Parlors, Primers, and Public Schooling: Education for Science in Nineteenth-Century America," *Isis* 81, no. 3 (1990). The citations in this paragraph are from pages 426-428.

[8] Suzanne Zeller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* (Toronto: University of Toronto Press, 1987), vi.

[9] The one exception is the studies devoted to the Literary and Historical Society of Quebec (LHSQ). See the thesis of Laura Bancroft "The Literary and Historical Society of Quebec: an historical outline written from the sociological point of view," (M.A. thesis: Laval University, 1950); and the article and thesis of Ginette Bernatchez, "La Société littéraire et historique de Québec (Literary and Historical Society of Quebec) 1824-1890," (Mémoire de maîtrise, Université de Laval, 1979). The Institut Canadien in Montreal, a French-Canadian institution, which was founded later in the early 1840s in the NHSM rooms, is also the subject of several studies.

[10] Peter J. Bowler, "The Early Development of Scientific Societies in Canada," in *The Pursuit of Knowledge in the Early American Republic,* ed. Alexandra Oleson and Sanborn C. Brown (Baltimore: John Hopkins University Press, 1976), 328f.

[11] Richard A. Jarrell, "The Social Functions of the Scientific Society in Nineteenth-Century Canada," in *Critical Issues in the History of Canadian Science, Technology and Medicine* ed. Richard A. Jarrell and Arnold E. Roos (Thornhill: HSTC Publications, 1983), 31-44.

[12] Carl Berger, *Science, God, and Nature in Victorian Canada: the 1982 Joanne Goodman lectures* (Toronto: University of Toronto Press, 1983), xiii.

[13] *Ibid.* Berger writes that "It was to be expected that British-born immigrants, who were so conspicuous in colonial natural history, should send their finds to the Royal Botanic Garden at Kew or to the British Museum, publish their discoveries in the journals in the homeland, and continue to look to Britain for recognition through election to prestigious societies or honours from the crown," 22. One might suggest that the same would be true of Scots and Scottish educated persons, that is, that they would send specimens to the several Scottish institutions and to the professors with whom they studied.

[14] Zeller, *op. cit.* 6.

[15] *Ibid.* 274.

[16] Susan Sheets-Pyenson, *John William Dawson, Faith, Hope, and Science* (Montreal & Kingston: McGill-Queen's University Press, 1996).

[17] Sheets-Pyenson is similar to Berger at this point.

[18] Sheets-Pyenson, *op. cit.* 167.

[19] In addition to the articles and the thesis of Hervé Gagnon, viz., "L'évolution des musées accessible au public à Montréal au XIXe siècle: Capitalisme culturel et réprésentations ideologique" (Thèse du doctorat: Université de Montréal, 1994), there were articles and the theses by Raymond Duchesne, "Sciences, culture savante et pouvoir politique: Le Musée de l'instruction publique et l'histoire naturelle au Canada" (Thèse du doctorat: Université de Montréal, 1984) and Paul Carle, "Le Cabinet de physique et l'enseignement des sciences au Canada français: le cas du Séminaire de Québec et de l'université Laval" (Thèse du doctorat: Université de Montréal, 1986). See the bibliography for articles by these authors.

[20] Raymond Duchesne and Paul Carle, "L'ordre des choses: cabinets et musées d'histoire naturelle au Québec (1824-1900)" *RHAF* 44, no. 1 (1990): 3-30.

[21] *Ibid.*

[22] H. Gagnon, "Expositions et curiosité à Montréal (1817-1847)," *Musées* 13, no. 2 (1991): 28-35; and, "Des animaux, des hommes et des choses. Les expositions au Bas-Canada dans la première moitié du XIXe siècle," *Hs/SH* 26, no. 52 (1993): 291-327.

[23] *Idem.* "Le projet avorté de musée d'histoire naturelle de la Montreal Library (1822-1827). Note de recherche sur l'histoire des premiers musées au Québec," *Cahiers d'Histoire* 12 (1992): 76-88; "Le Musée Italien et la genèse des musées à Montréal dans la première moitié du XIXe siècle: du cabinet de curiosités au musées scientifiques," *RHAF* 45, no. 3 (1992): 415-430; and, "The Natural History Society of Montreal's Museum and the Socio-Economic Significance of Museums in 19th-Century Canada," *Scientia canadensis* 18, no. 2 (1994): 103-135.

[24] *Idem.* "The Natural History Society ..." See the section titles on pages 106

"THE ANGLOPHONE BOURGEOISIE BETWEEN CURIOSITY AND SCIENCE (1827-1850)" and 113 "CREDIBILITY AND PROSPERITY (1850-1870)" as well as the remark that after 1850 the museum was subject of "a more scientific turn," 113. *Idem.* "Du Cabinet de curiosités au musée scientifique ..." writes "Si le musée de la Natural History Society of Montréal possede, dès son ouverture en 1827, une certaine quantité de curiosités, le register des acquisitions de 1827 à 1853 confirme leur rapide abandon au fil des ans et la concentration exclusive sur l'histoire naturelle. L'objet, inséré dans un demarche scientifique, cesse graduellement d'être une curiosité individuelle pour devenir partie significative d'un tout, d'une typologie," 429f.

[25] *Ibid.* 430. Martin Hewitt, "Science as Spectacle: Popular Scientific Culture in Saint John, New Brunswick, 1830-1850," *Acadiensis* 18, no. 1 (Autumn 1988): 243-276 finds that the program of the Mechanics' Institute in Saint John, New Brunswick went in the opposite direction and was centered mainly on the amusement found in spectacle divorced from scientific explanation.

[26] Gerald J.J. Tulchinsky, *The River Barons: Montreal Businessmen and the Growth of Industry and Transportation 1837-53* (Toronto: University of Toronto Press, 1977), ix.

[27] Guy Kitteringham, "Science in Provincial Society: The Case of Liverpool in the Early Nineteenth Century," *Annals of Science* 39 (1982): 329-348.

[28] Inkster, *art.cit.* 11-54.

[29] Morrell, *art. cit,* 1-23.

[30] David N. Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge* (Chicago: University of Chicago Press, 2003).

[31] David Wade Chambers and Richard Gillespie, "Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge," *Osiris* new series 15 Nature and Empire: Science and the Colonial Enterprise (2000): 226. I owe this and the following citation to a précis of the context of this thesis by Bertrum MacDonald.

[32] Sverkler Sörlin, "Nationalism and International Aspects of Cross-Boundary Science: Scientific Travel in the 18th Century," in *Denationalizing Science. The Contexts of International Scientific Practice* ed. Elizabeth Crawford, Terry Shin and Sverker Sörlin (Dordrecht: Kluwer Academic Publishers, 1993), 45.

[33] *Osiris* 2nd series no. 18 Science and the City (2003): 1-149.

[34] Sven Dierig, Jens Lachmund, and J. Andrew Mendelsohn, "Introduction: Toward an Urban History of Science," *ibid.* 1-19.

[35] Dora B. Weiner and Michael J. Sauter, "The City of Paris and the Rise of Clinical Medicine," *ibid.* 23-42.

[36] Denise Phillips, "Friends of Nature: Urban Sociability and Regional National History in Dresden, 1800-1850," *ibid.* 43-59.

[37] William Whewell coined the term *scientist* in 1833 and in time it replaced the terms *natural philosopher* and *natural historian.*

[38] This paragraph draws on the work of Jan Golinski, *Science as Public Culture: Chemistry and the Enlightenment in Britain, 1760-1820* (Cambridge: Cambridge University Press, 1992).

[39] Sally G. Kohlstedt, "Institutional History," *Osiris* 2nd series no. 1 (1985) "Natural history collections were based in substance and in theory on a long-standing tradition," 26.

[40] Silvio A. Bedini, "The Evolution of Science Museums," *Technology and Culture* 6, no. 1 Museums of Technology (Winter 1965): 7, 25 and Table 1. Roy Porter, "Gentlemen and Geology: The Emergence of a Scientific Career, 1660-1920," *The Historical Journal* 21, no. 4 (Dec. 1978) cites the founding of the British Mineralogical Society in 1799 as the beginning of the notion of the utilitarian value of the study of geology, 816.

[41] Barbara T. Gates, "Ordering Nature: Revisioning Victorian Science Culture," in *Victorian Science in Context* ed. Bernard Lightman (Chicago: University of Chicago Press, 1997), 181.

[42] Livingstone, *op. cit* suggests that gardening might be seen as an attempt to recover paradise, 52f.

[43] Suzanne Seller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* (Toronto: University of Toronto Press, 1987), 186f.

[44] L. Pearce Williams, "Michael Faraday's Education in Science," *Isis* 51, no. 4 (December 1960): 515.

[45] Aileen Fyfe, "Reading Children's Books in the late Eighteenth-Century Dissenting Families," *The Historical Journal* 43, no. 2 (June 2000): 453.

[46] Ann B. Shteir, "Elegant Recreations? Configuring Science Writing for Women," in *Victorian Science in Context* ed. Bernard Lightman (Chicago: University of Chicago Press, 1997), 237.

[47] Roger Cooter and Stephen Pumfrey, "Separate Spheres and Public Places: Reflections on the History of Science Popularization and Science in Popular Culture," *History of Science* 32 (1994): 237-267.

[48] Anne Secord, "Science in the Pub: Artisan Botanists in Early Nineteenth Century Lancashire," *History of Science* 32 (1994): 269-315.

[49] Idem. "Corresponding Interests: Artisans and Gentlemen in Nineteenth-Century Natural History," *BJHS* 27 (1994) 383-408.

[50] Aileen Fyfe and Bernard Lightman, "Science in the Marketplace: An Introduction," in *Science in the Marketplace: Nineteenth-Century Sites and Experiences*, ed. Aileen Fyfe and Bernard Lightman (Chicago: University of Chicago Press, 2007), 4.

[51] Lawrence W. Levine, "William Shakespeare and the American People: A study in Cultural Transformation," *The American Historical Review* 89, no. 1 (Feb. 1984) After discussing a shared culture early in the nineteenth century Levine points to a change which brought about a contrasting more exclusive culture in the last quarter of that century, 47f. Elizabeth Traube, "'The Popular' in American Culture," *Annual Review of Authors* 25 (1996): 127-151 also sees a more divided culture later in the century. She remarks, "Between the 1830s and the 1890s, the American cultural field was organized into a hierarchical structure that correlated roughly with social class. This was the period of the so-called great divide, the separation of high from popular culture, or more precisely, their articulation as opposed, mutually conditioned spheres," 137.

[52] See Lawrence W. Levine, *art. cit.* 34-66 and his "The Folklore of Industrial Society: Popular Culture and its Audiences" *ibid.* 97, no. 5 (Dec. 1992): 1369-1399. These essays became part of his books, *Highbrow/Lowbrow: The Emergence of Cultural Hierarchy in America* (Cambridge, Mass. 1988), and *The Unpredictable Past: Explorations in American Cultural History* (New York 1993), respectively. Bernard Lightman, *Victorian Popularizers of Science* (Chicago: University of Chicago Press, 2007) uses a similar definition - "popular in the sense of being highly successful or because they were intended for a mass audience," 10.

[53] *Idem.* "The Folklore of Industrial Society ..." 1374.

[54] Eric Glasgow, "Two Public Libraries in Victorian Liverpool," *Library History* 19 (July 2003): 129f.

[55] Ronald Story, "Culture and Class in Boston: The Athenaeum, 1807-1860," *American Quarterly* 27, no. 2 (May 1975): 183. See also Paul Goodman, "Ethics and Enterprise: The Values of a Boston Elite, 1800-1850," *American Quarterly* 18, no. 3 (Autumn 1966): 437-451.

[56] See for example, Colin A. Russell, *Science and Social Change, 1700-1900* (Macmillan, 1983) "One compelling reason was the need to minister to 'civic pride'," 176. Simon Naylor, "The field, the museum and the lecture hall: the spaces of natural history in Victorian Cornwall," *Transactions of the Institute of British Geographers* new series 27 (2002) "Britain's many middle-class scientific societies of the late nineteenth century were trenchant in their belief that any such morally upright organization should have, or at least rent, its own property," 496. To this effect he cites David E. Allen, *The Naturalist in Britain: A Social History* (London: A. Lane, 1976) "status was founded on property - and a propertyless body, it was assumed, must be no less contemptible and ineffectual than a propertyless man or woman," 145.

[57] See note 29 *supra.*

[58] See Yvan Lamonde, "La sociabilité et l'histoire socio-culturelle: le cas de Montréal, 1760-1880," *CHA Historical Papers/Communications historiques* (1987): 86-111.

[59] See Heather Murray, *Come, Bright Improvement: The Literary societies of Nineteenth-Century Ontario* (Toronto: McClelland and Stewart, 2002).

[60] *Montreal Gazette,* Feb. 1841. Report of Meeting held 25 Jan. 1841, "For our guide and model, we may, with great advantage, refer to the Mercantile Library Association of New York."

[61] Bonnie Pitman, "Muses, museums and memories," *Daedalus* 128, no. 3 (Summer 1999): 1-32.

[62] Murray, *op. cit.* 155.

[63] *Ibid.* 163f.

[64] Hervé Gagnon, "Expositions et curiosité à Montréal (1817-1847)," *Musées* 13, no. 2 (juin 1991): 28-35 and "Des animaux, des hommes et des choses. Les expositions au Bas-Canada dans la première moitié du XIXe siècle," *Hs/SH* 26, no. 52 (1993): 291-327.

[65] Stuart Thayer, *American Circus Anthology, Essays of the Early Years.* Arranged and edited by William L. Slout, 2005. On line at: <http://www.circus history.org/Thayer/Thayer.htm>.

[66] Raymond Duchesne, "Delvecchio, Thomas (Tommaso)," *DCB* VI; Hervé Gagnon, "Du Cabinet de curiosités au musée scientifique. Le Musée italien et la genèse des musées à Montréal dans la première moitié du XIXe siècle: du cabinet de curiosités au musées scientifiques," *RHAF* 45, no. 3 (hiver 1992): 415-430; Jean Trudel, "The Origin of Museums in Lower Canada: Thomas Delvecchio's 'Museo Italiano' in Montreal and Pierre Chasseur's Museum of Natural History in Quebec," in *The Private Collector and the Public Institution*, ed. Sheila Campbell (Toronto: University of Toronto Art Center, 1998), 33-63.

[67] Andrée Dufour, "Diversité Institutionnelle et fréquentation scolaire dans l'île de Montréal en 1825 et en 1835," *RHAF* 41, no. 4 (printemps 1988): 507-538, and "Le réseau scolaire de l'île de Montréal, 1825-1835" (Mémoire de maîtrise, UQAM, 1987).

[68] The five library catalogues are listed by Yvan Lamonde, *Les Bibliothèques de collectivités à Montréal (17e-19e siècle)* (Montréal: 1979), 37f. They may be viewed on CIHM/ICMH collection de microfiches nos. 89967, 95190, 44281, 46674 and 43399.

[69] For example, Karen Smith repeats this oversight in her essay on "Community Libraries," in *History of the Book in Canada, Volume One: Beginnings to 1840*, ed. P.L. Fleming, G. Gallichan and Y. Lamonde (Toronto: University of Toronto Press, 2003), 145.

[70] Mercantile Library Association, *Act of Incorporation, Rules and Regulations, and Library Catalogue of the Mercantile Library Association of Montreal* (Montreal: Lovell & Gibson, 1844) and *The Twenty-Sixth Annual Report of the Mercantile Library Association of Montreal* (Montreal: 1867).

[71] Edgar C. Moodey, *The Fraser-Hickson Library: an informal history* (London: 1977).

[72] Hervé Gagnon, "Le projet avorté de musée d'histoire naturelle de la Montréal Library (1822-1827). Note de recherché sur l'histoire des premiers musées au Québec," *Cahiers d'histoire* 12 (1992): 76-88.

[73] NHSM Minutes 2 July 1827, and NHSM, *First Annual Report*, 18 May 1828.

[74] N. Bosworth, *Hochelaga Depicta or the early history and present state of the City and Island of Montreal* (Montreal: Wm. Greig, 1839; reprint, Toronto: Coles Publishing Co., 1974).

[75] *Montreal Herald*, 2 Jan. 1819, *Montreal Gazette*, 6 Jan. 1819 and *Canadian Courant*, 25 Mar. 1826.

[76] The first Minute Book covers the period May 1827 to October 26, 1829, the second November 30, 1829 to April 26, 1830, and the third May 18, 1830 to February 27, 1832.

[77] This second volume of Minutes of the Council bears the notation that it was found May 8, 1880 by Major J.A.H. Talorin(?), M.A.

[78] The one exception is the second annual report. The booklet is missing in the material on microfiche but the report may be found in the first Minute Book as well as in the newspapers.

[79] For example, there are cumulative lists covering extensive periods in the *Canadian Courant*: 18 Jul. 1829 (List of donations to the Museum and Library of NHSM Jan. 1, 1829- Jul. 1, 1829), 15 Sep. 1830 (List of donations to the Museum and Library of NHSM Jan. 1, 1830- Jul. 1, 1830), 7 Sep. 1831 (List of donations to the Museum and Library of NHSM Jan. 1, 1831- Jul. 1, 1831). Donations may also be found in newspaper account of individual meetings.

[80] Major Robert Lachlan, *A retrospective glance at the progressive state of the Natural History Society of Montreal with a view to ascertaining how far it has advanced the important objects contemplated by its founders: being a lecture delivered before the Natural History Society on the 31st March 1852 and published by desire of the society* (Montreal: J.C. Becket, 1852).

[81] Stanley B. Frost, "Science Education in the Nineteenth Century. The Natural History Society of Montreal, 1827-1925," *McGill Journal of Education* 17, no. 1 (Winter 1982) 31-43.

[82] MMI, *Minute Book of the Weekly Meetings of the Mechanics' Institute*, November 21, 1828 to April 7, 1835. (This volume now in found on-line at the Atwater Library website.) MMI, *Constitution and By-laws of the Montreal Mechanics' Institute* (Montreal: Starke, 1833).

[83] *JHALC*, 4 Feb. 1831, 70f.

[84] The *Canadian Courant,* 22 and 24 Dec. 1830 had accounts of the early meetings of the Quebec Mechanics' Institute, while the *Irish Vindicator*, 14 Dec. 1830 and 28 Jan. 1831 printed the accounts as well as E.B. O'Callaghan's letter and editorial concerning the Quebec Mechanics' Institute. The Quebec institution would appear to have had a different target clientele with a lower literacy rate. Its petition to the House of Assembly read that the purpose was "to encourage a taste for reading, and to facilitate the indulgence of that taste, and the acquisition of knowledge among the working mechanics in the City and neighborhood of Quebec." The petition also stated that "the first Public Meeting of the Society ... took place on the first day of February, one thousand eight hundred and thirty-one, and that the present number of Members is nearly one hundred, of whom the greater portion are working Mechanics." *JHALC* 9 Feb. 1831.

[85] The editorial in the *Irish Vindicator,* 22 Nov. 1831 on the failings of the institution during its first period is of particular interest for its characterization of the difficult situation within the MMI.

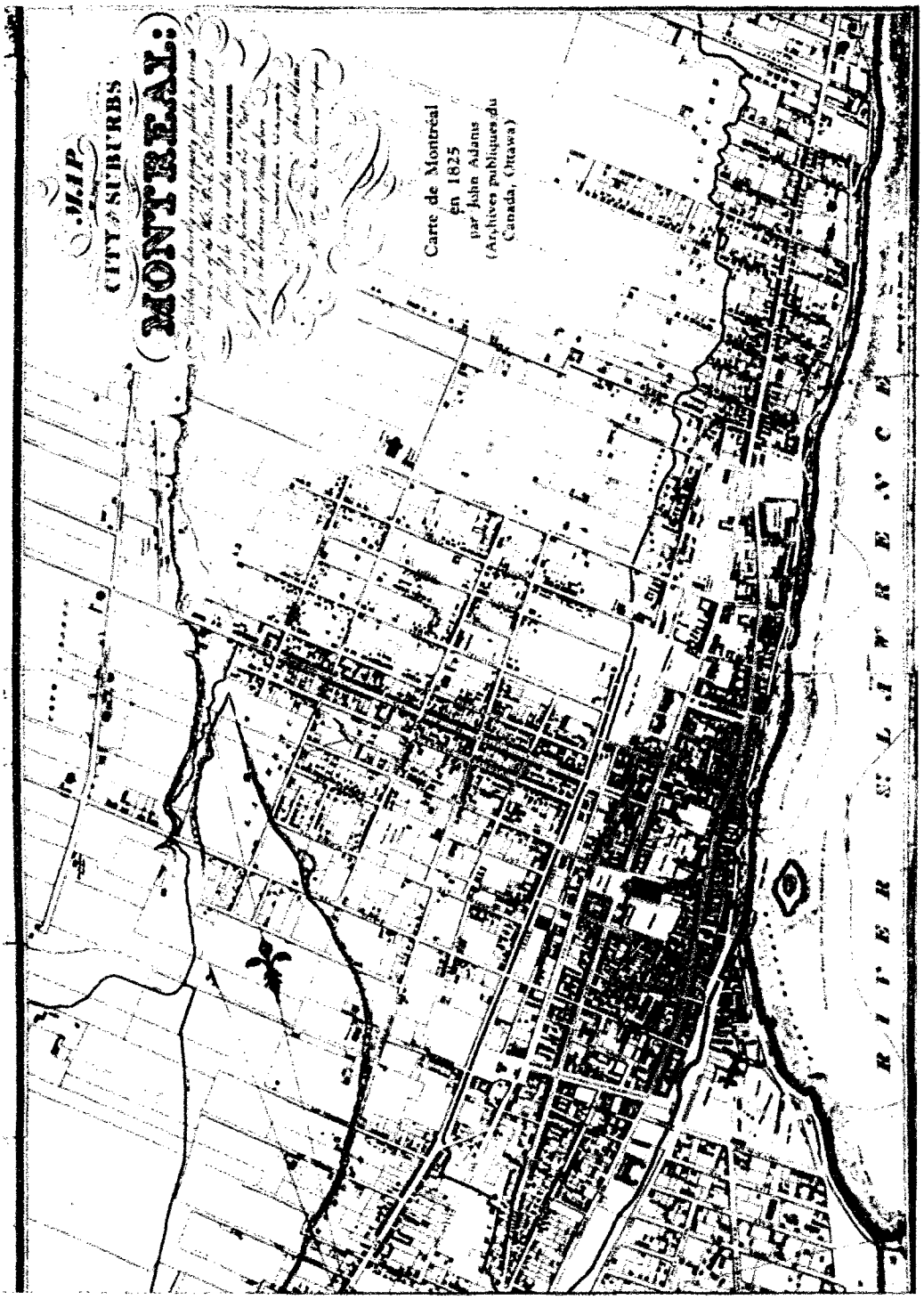
[86] Minute Book of the General Committee of the Mechanics' Institute of Montreal, February 11, 1840 to January 28, 1845. The annual reports were engrossed or pasted in the minute books in this period. This and later books have been published on-line.

[87] MIM, *Letterbook of the Mechanics' Institute of Montreal* (c 1840-1858), *Donations to the Mechanics' Institute* from August 30, 1845 to March 6, 1907, and *Mechanics' Institute of Montreal List of Life Members* 1841-1898.

Chapter One: A Portrait of Montreal 1815 to 1842

In their respective works on the history of science in the provincial cities and towns in Britain, Ian Inkster and J.B. Morrell identified more than a dozen factors - demographic, political, socio-economic, religious, environmental, intellectual - that conditioned the local practices of science.[1] Drawing on their work and that of other historians of science, this chapter provides a snapshot of Montreal, showing how profoundly it was transformed in the first half of the nineteenth century. As a result of substantial immigration from the British Isles following the Napoleonic Wars the city's social and ethnic composition, as well as its physical landscape, was radically altered. The occupational and social class structure of the city became more complex and Montreal became a majority English-speaking, rather than a French-speaking, jurisdiction.[2] During the period covered by the thesis Montreal experienced unprecedented economic growth, increased commercial and other ties both to Great Britain and the United States, and became embroiled in

Figure 1: John Adams' 1825 Map of the City of Montreal and Suburbs.



Source: Pierre-André Linteau et Jean-Claude Robert, "Propriété foncière et société à Montréal: une hypothèse" *RHAF* 28 no.1 (1974) Annex.

religious and political turmoil, some of which was general throughout Lower Canada and some of which was specific and local. All of these factors impinged on and shaped the cultural and intellectual life of the city, and created the particular context and preconditions for the emergence of a science culture.

Demographic Factors: Size and Rate of Growth of the Urban Population

Montreal grew rapidly between 1815 and 1842 and its ethnic and religious composition changed markedly as a result of post-Napoleonic War immigration from the British Isles. From an estimated population of 15,000 persons in 1815, the city had reached 22,540 persons in 1825, thus surpassing from that point in time the population of Quebec City. The number of Montreal residents rose to 27,297 in 1831, to 31,093 in 1835, and to 39,809 in 1842.[3] Due to the increasing immigration from the British Isles the English-speaking population became the majority group in the early 1830s.[4] Rapid population growth engendered a sense of civic pride but ethnicity, linguistic background,

political affiliation and religious ties bulked large during the 1820s and 1830s.

The following chart displays the changing demography of the Montreal population by comparing the 1825 census to the 1842 census.

Table 1: Population of Montreal by Linguistic Group and Birth-place, 1825 and 1842.

	1825	1842
Population	22,540	39,809
French-speaking total	12,349 (54.8%)	16,700 (41.9%)
Born in Lower Canada	12,273	n/a
Born elsewhere	76 (born in France)	n/a
English-speaking total	9,925 (44%)	22,313 (56.1%)
Born in Lower Canada	2,847	7,395 (18.6%)
Born in British Isles		
England and Wales	1,249	
Scotland	1,380	2,989
Ireland	3,641	2,582
Sub-total	6,270 (27.8%)	8,804
Born in United States	730	14,375 (36.1%)
Born in Europe		
Born in B.N.A.	78	543
Born elsewhere	266	661
		483

Sources: 1825: Claude Perreault, Montréal en 1825 (Montréal: Groupe d'études, 1977). 1842: S. Olson, "Research Note/Note de Recherche: Ethnic Partition of the Work Force in 1840s Montreal," *Labour/Le Travail* 53 (Fall 2003) 196, Table 1.

An analysis of the population statistics shows an increase of French Canadians due to births and migration to Montreal from the countryside but a percentage decline to 41.9% of the total. Due to births and immigration the English-speaking population attained majority status by 1831 and reached 56.1% of the total population in 1842. The increase in English-Canadians born in Lower Canada includes the children of immigrant parents. Those born in the British Isles included those still living who had immigrated before 1825 as well as those who came during the period from 1825 to 1842.

One important feature of the changing English-speaking population of Montreal was the large increase in persons born in Ireland, of whom the majority was Roman Catholic. Sherry Olson and Patricia Thornton characterize the Irish Roman Catholics as a third community that was "distinctive in its demographic behaviour and institutional allegiances."[5] Several scholars have noted that the situation of Irish Catholics in Montreal was quite unlike that of their compatriots who settled in American cities. Here they found themselves in an exceptional welcoming environment, where their language linked them to the majority English-

speaking population of the city, while their Roman Catholicism linked them to the majority religion of both the city and the province.[6] These two linkages were important factors at different times in the period from the 1820s to the 1840s in determining the allegiances and actions of the Irish Roman Catholics. They were knowledgeable about reform movements in Ireland and ready to participate in efforts at political reform in their new homeland. Yet as devout Roman Catholics they were wedded to their church and their religious practice and this determined the preference of most of them after 1834 for peaceful reforms rather than revolutionary acts. Their beliefs, therefore, would bring the majority of them to be uninvolved in the rebellions or to align themselves with the English-speaking majority in the mid 1830s.[7]

Montrealers of English and Scottish origin, although less numerous than the Irish, were important in the promotion and growth of the practice of science and in the diffusion of a knowledge of science in Montreal. Scientific expertise and encouragement for the teaching of science was provided by schoolmasters, clergymen and medical doctors, who had emi-

grated from the British Isles, and more particularly by persons who came from Scotland or by persons who had studied at the Scottish universities. For example, two former students of Glasgow University, James McGill, who matriculated there in 1756, and the Reverend James Somerville, who obtained his Master of Arts degree there in 1792, played a significant role in the promotion of science and learning in Montreal; the former by his legacy of the Burnside Estate and an endowment of £10,000 to establish McGill College, and the latter by a legacy of £1,000 in 1838 which was given in order to establish the Somerville Lecture series of the NHSM.

Socio-economic Features - Ethnicity and Occupational Status

Ethnicity and its relationship to occupational status relate to another of the factors that Inkster cites as involved in the rise of local science culture. Olson's work on the ethnicity of the labour force in 1840s probably reflects in large measure the situation prevailing throughout the preceding period studied here. She divides male occupational status into six categories, viz., "merchants at the top, professionals (equivalent to a petite

bourgeoisie), clerks, skilled labour, semi-skilled labour, and, at the bottom, labourers."[8] In another article, which Olson co-authored with Jason Gilliland, these categories are subsumed into the more usual three groups, where "the high-status group included merchants, professionals and white-collar occupations, the middle group was dominated by the skilled trades, and the low-status group was dominated by labourers."[9]

In terms of grouping by socio-economic status, the variables Olson mentions, namely, income, wealth, status and education as well as the alliances within the Canadas, were important determinants of status. In addition to the factors mentioned by Olson, I think that one also must consider that the length of time a person was resident in the province (persistence) and the commercial and family ties one retained from the previous homeland also were important. One also must allow for some flexibility in assigning persons to these status groups, for as Bryan Palmer writes there were "master artisans whose self-perception placed them on a par with professionals, clerks and other 'black-coated workers'."[10] Among such, for example, were

the craftsmen Henry Corse, and John Try, both of whom were active in the NHSM.

Olson's study of householder occupational status in 1842 places 15.3% of householders in high status occupations, 53.9% in medium status occupations, and 30.7% in low status occupations.[11] Fernand Ouellet wrote that "the economically powerful were overwhelmingly English-speaking, particularly of English, Scottish and American origin. The French-Canadians had their professional, religious, and commercial elite, but most were small merchants, craftsmen, and labourers."[12] When Olson takes religion and ethnicity into account Irish Protestants and other Protestant householders were disproportionately represented in high status occupations. The majority of French Catholic householders are found in medium status occupations. Nearly half of Irish Catholic householders held low status occupations.[13] This distribution is illustrated in the following table derived from Olson's analysis.

Table 2: Population Groups and Occupational Status in 1840s.

	High Status Occupations	Medium Status Occupations	Low Status Occupations	Total
Total Population	15.3%	53.9%	30.7%	99.9%
Irish Protestants	18.3%	50%	32.1%	100.4%
Other Protestants	29.1%	53%	17.9%	100%
French Roman Catholics	9.1%	60.2%	30.7%	100%
Irish Roman Catholics	7.9%	44.6%	47.6%	100.1%

Source: S. Olson, "Research Note/Note de Recherche: Ethnic Partition of the Work Force in 1840s Montreal," Labour/Le Travail 53 (Fall 2003) 201, Table 7.

Moreover, there was a disproportionate concentration in the Old City of high status occupations where 46% of all such households were found, compared to 38.4% of medium, and 15.6% of low status occupations. The large mercantile houses, printing trades, professional practices, as well as the religious

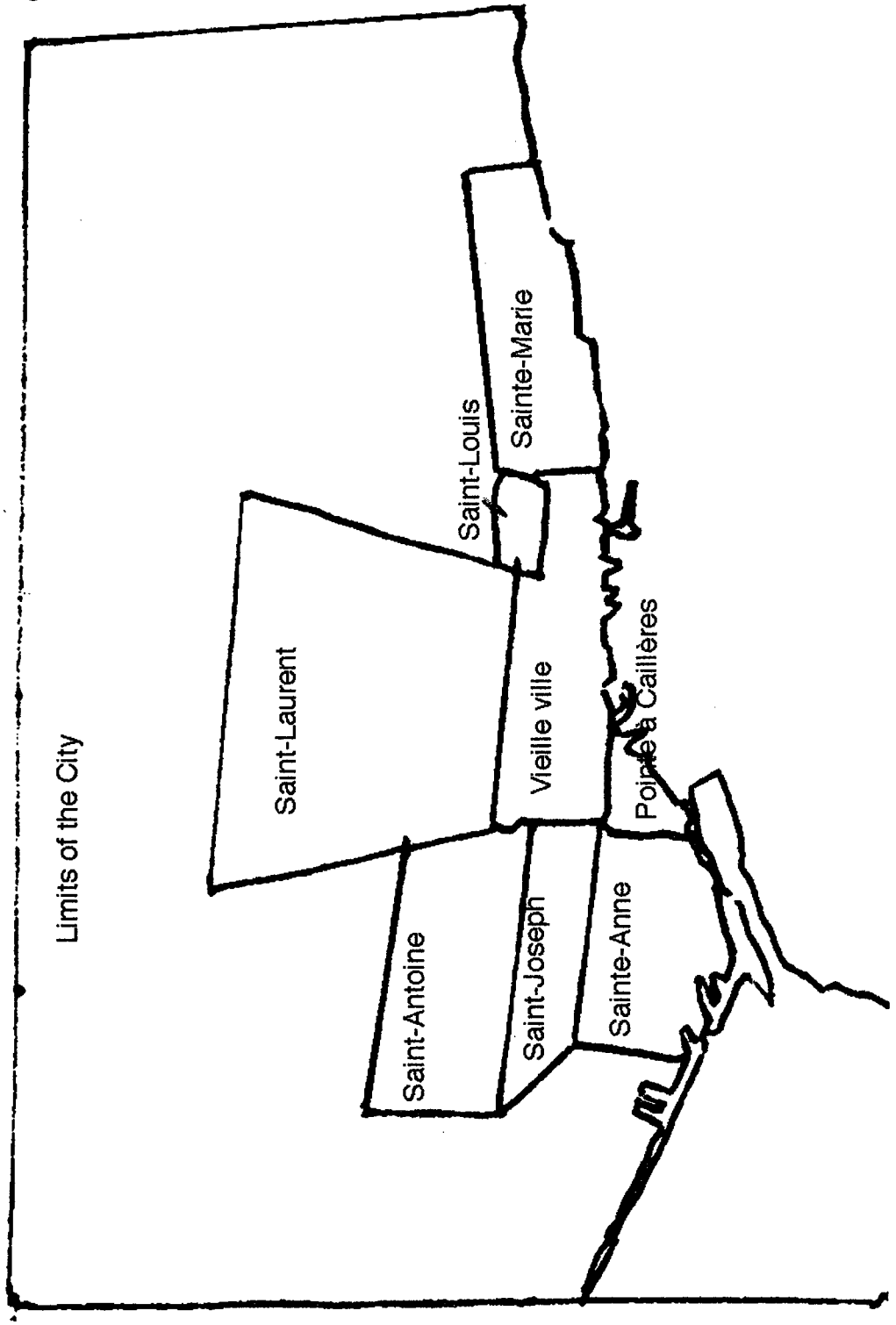
and civic institutions and elite schools account for much of this concentration of high status occupations.

In 1825 the Old City had a population of 5,363 (23.8% of the total), while the suburbs had 17,177 (76.2%). The Old City consisted of 1,916 persons who were French-Canadian or born in France (35.8%) whereas 3,375 were English-Canadians, born in the British Isles or the United States (62.9%), with 72 of other national origins.[14] The Old City was bounded by the St. Lawrence River on the southeast, and followed the lines of the old city walls which had been razed in the 1810s, McGill Street on the southwest, Fortification Lane on the northwest, and the present St. Hubert Street on the northeast. The major streets running southwest to northeast parallel to and moving up from the river were Commissioners, Saint Paul, Notre Dame, and St Jacques Streets. Olson characterized Montreal in 1842 as "highly polarized with wealth at the centre and poverty on the rim."[15]

Proceeding counterclockwise around the Old City the suburbs were: Quebec (or St. Marys) suburb on its northeastern boundary, St. Louis and St. Laurent suburbs to the northwest,

St. Antoine, St. Joseph (or Recollet), and Ste. Anne suburbs to the southwest, while Pointe à Caillières lay on the southern corner between the Old City and the St. Lawrence River (see Figure 2). The linguistic breakdown of the population figures for the suburbs in 1825 were almost the reverse of those for Old City with 10,433 (60.7%) French-Canadian or born in France and 6,550 (38.2%) English-Canadians or born in Britain or the United States, and 194 of other origins.[16]

Figure 2: Outline Map of City and Suburbs in 1825.



Source of GRSM map of Montreal and suburbs: Andrée Dufour, "Diversité institutionnelle et frequentation scolaire dans l'île de Montréal en 1825 et 1835," *RHAF* 41 no. 4 (1988) 513.

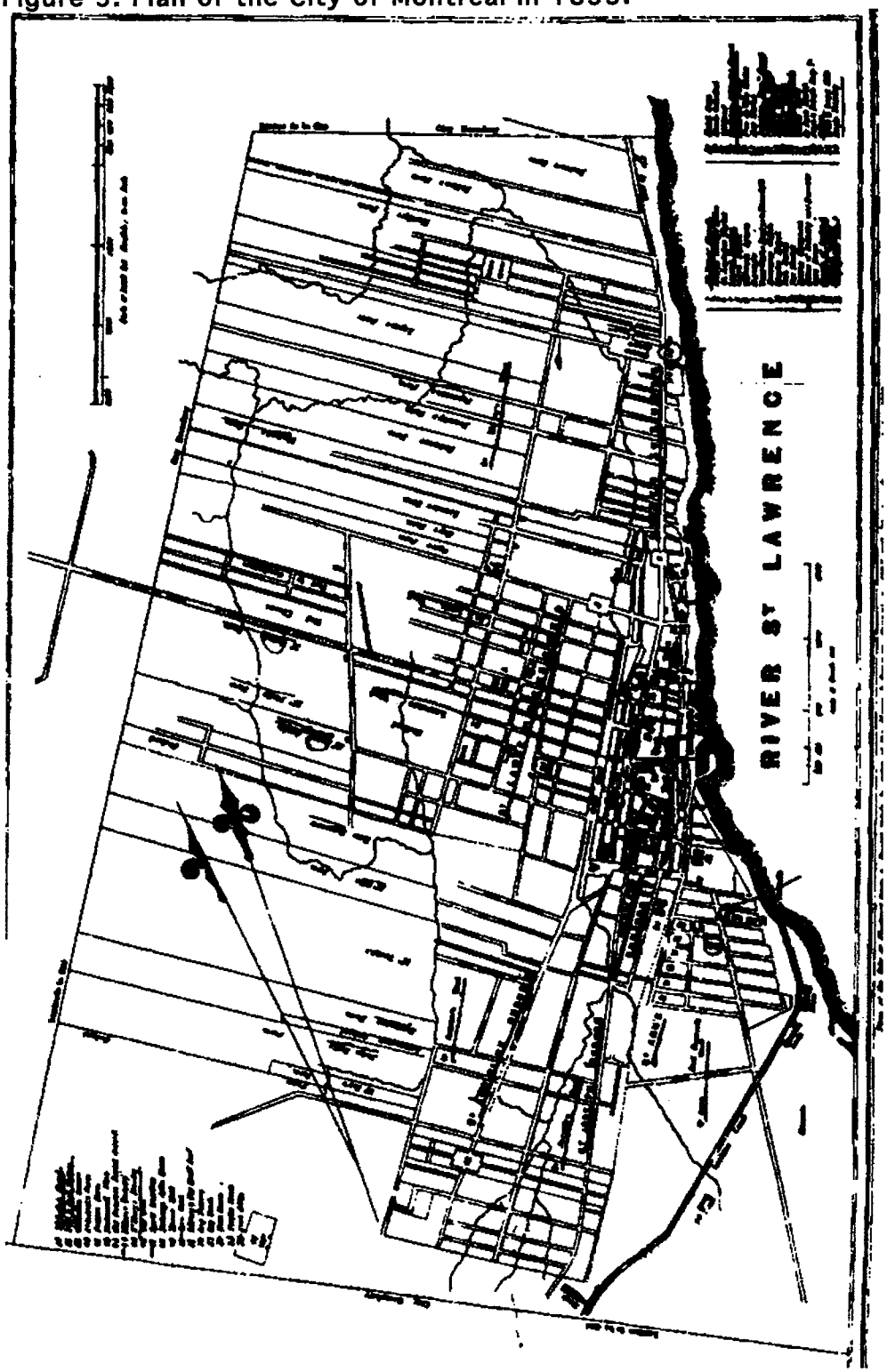
Dalhousie Square and the Quebec Gate barracks, which were occupied by the military, were located on the northeast edge of the Old City. The Fish Market and the New Market were near the northeastern end, while the Hay Market and the Custom House, which had replaced the Old Market in the late 1830s, were at the southwestern end. Mercantile operations were concentrated in the Old City. Commissioners Street, part of which was still subject to Spring flooding, and St. Paul Street were the site of warehouses and wholesale operations; retail stores with their owner's residence above were found on Notre Dame and St. James Streets. Government offices, the Post Office, churches, hospitals and civic and cultural institutions, the offices and residences of professionals, as well as newspaper and printing establishments were also located in the Old City.

The appearance of the city changed a great deal during the 1830s. Newton Bosworth writing in 1839 stated:

> Those who knew the city seven years ago, and have not seen it since, were they to visit it now, would be surprised at the change ... Beside a multitude of new and elegant houses, in almost every party of the city and suburbs, large spaces and several streets have been considerably improved.[17]

Thus, by 1842 there were better stone-faced and tin-roofed buildings in evidence, the streets were improved and public squares were provided. There were improved harbor facilities and the Lachine Canal, Ottawa Canals and Rideau Canal permitted easier access to Upper Canada. Sewage drains were in place and the open creeks into which sewage had previously drained were contained and covered.

Figure 3: Plan of the City of Montreal in 1833.



Source: N. Bosworth, *Hochelaga depicta, or the Early History and Present State of the City and Island of Montreal* (Montreal: William Greig, 1839; rp. Toronto: Coles Publishing Co., 1974) End Paper.

The merger of the North West Company and the Hudson Bay Company in 1821 meant that, although the company headquarters were in Lachine, most of the supplies for the trade and the furs destined for Europe no longer flowed through Montreal. Nevertheless, the resulting shift of economic activity to the staples trade in timber, potash and wheat and the transshipment of goods to Upper Canada and to the area surrounding Montreal appears to have favored to a large extent those individuals and firms who had participated in the earlier fur trade as well as those who had supplied staples to the forces in the War of 1812. Previous connections to merchants in Upper Canada proved important commercially for the mercantile firms in Montreal, as did their ties to the mercantile and banking firms in Britain.

Ouellet noted that "between 1815 and 1830, the numerical strength of the urban merchant class in Montreal grew spectacularly."[18] The merchants, who also were involved in the sale of lands and the exploitation of natural resources, provided an audience for science. Merchants' clerks had become so numer-

ous by the early 1840s that in January 1841 they were able to found the Mercantile Library Association, which was modeled on similar institutions in New York City and Baltimore. It was only in 1844, after the association had contracted a large debt by purchasing the remnants of the Montreal Library, that merchants were invited to membership in the library. The latter then were allowed two advisory posts on the board of directors but remained ineligible to hold office.

The increasingly mercantile base of the Montreal economy and the increase of commercial activity in the city and environs led to the chartering of the Bank of Montreal in 1817. This increase in economic activity established Montreal as the financial centre of the Canadas.[19] The proprietors of the Bank spent more than £11,000 on a suitable building in St. James Street that would express its pride of place within the city and region's economy. To that end it was decorated with four emblematic devices that symbolized Agriculture, Manufactures, Arts and Commerce.

Improvements to facilitate water transportation enhanced Montreal's position with regard to international and internal

trade and access to information about trade and other affairs, as well as science. The dredging of Lake St. Pierre and the harbour basin and extensive work on the wharves permitted ocean-going ships to reach Montreal and turned it into a seaport. The Chambly Canal on the Richelieu River facilitated access to the United States and the completion of the canals to Upper Canada on the St. Lawrence and Ottawa Rivers allowed Montreal to become a transshipment point for goods to Upper Canada and for staples from Upper Canada to be forwarded through Montreal to Europe. By 1830 Montreal had been authorized to have a Harbour Commission (Trinity House) independent of the one in Quebec City and in 1832 the city was declared a port of entry responsible for the collection of custom duties. A Custom House built on the site of Old Market in the years 1836 to 1838 marked Montreal's success in the commercial rivalry that had existed between it and Quebec City.

The professions too exhibited strong growth in the period after 1815. Ouellet listed 76 members of the professions in Montreal in 1819, 137 in 1831 and 215 in 1843-44. Included in these totals were: 12 French-speaking and 13 English-speaking

lawyers in 1819, 29 and 32 respectively in 1831, and 40 and 45 in 1843-44; 14 French-speaking and 4 English-speaking notaries in 1819, 16 and 6 respectively in 1831, and 24 and 13 in 1843-44; 3 French-speaking and 22 English-speaking doctors in 1819, 8 and 16 respectively in 1831, and 17 and 37 in 1843-44.[20]

Barbara Tunis writes that "after 1815 ... the structure of society changed and a new class of medical men emerged from the middle class."[21] In 1819 Thomas Doige listed 21 medical practitioners in Montreal, 3 of whom were military doctors.[22] R. Armour's *Montreal Almanack* listed 34 doctors in Montreal in 1831, 18 of whom had university degrees in medicine: 10 from Edinburgh, 4 from Paris, 3 from the United States, and 2 others.[23] The *Montreal Directory for 1842-43* listed 43 doctors, 19 of whom held a university degree in medicine. In 1831, 23 of the doctors were English- and 11 were French-speaking, whereas in 1842-43 29 were English- and 14 were French-speaking.[24]

The medical profession, in particular, is important to the study of scientific culture in Montreal. Ian Inkster notes that "the professional or professionalising occupational groups were of

quite disproportionate importance as cultural activists."[25] It has been noted that medical personnel who had immigrated from Great Britain or native-born Americans who had studied abroad played an important role in the two-way traffic of scientific knowledge between European savants and North America.[26] This was also true for Montreal. In the period from 1815 to 1840 at least fifteen doctors who practiced in Montreal had returned from studies in Edinburgh and several had studied elsewhere in Europe. There also were several doctors who immigrated to Montreal from Great Britain. In addition to the medical practitioners' role of acting as the two-way bridge between America and Europe, it should be noted that they played a role in the introduced of scientific studies. Thus, the Montreal Medical Institution, which was founded in 1823 and became the Medical Faculty of McGill College in 1829, taught mineralogy in chemistry and botany in materia medica as part of the its curriculum. When McGill's Faculty of Arts opened in 1843, it was the Medical Faculty, which provided chemistry, botany, zoology and mineralogy as part of the university curriculum.

In the skilled trades, some of the master artisans, particularly those in the construction trades, became affluent and moved into the higher status group.[27] Brian Young has pointed to the large-scale construction projects of the period, which permitted contractors to accumulate capital and become entrepreneurs.[28] The erection of Notre-Dame Church, the construction of the Lachine, Ottawa and Rideau canals, the building of the MGH, of churches, warehouses, and housing all contributed to this rise in status. Other buildings were erected, enlarged or refurbished in the period from 1815 to 1842. The affluence of this group permitted some leisure and created a desire to participate in cultural activities.

Political and Religious Diversity

Social and cultural differences among Montrealers during the 1820s and 1830s mirrored the pluralistic mix of linguistic, ethnic, religious and political divisions. This pluralism had consequences for the provision of schooling and for social and cultural relationships. There were, for instance, schools that were founded on the basis of religion, ethnic origins, and language. On

the other hand, there were also groups that cooperated with each other in spite of differences. For example, during the 1820s some Scottish liberals supported the *Parti canadien*, while there were French-speaking Montrealers who supported the *British Party*. The ethnic, religious and political affinities, however, accentuated or maintained most social and cultural differences.

Two Montrealers, Louis-Joseph Papineau and John Richardson exercised leadership of the two opposing political parties, the *Parti canadien* (in the 1830s the *Parti patriote*) and the *British Party*, respectively.[29] The *Parti canadien* was dominant in the House of Assembly, while the *British Party*, unable to muster electoral support in the rural areas of the province, sought to exercise control of the political agenda through the Legislative Council. Members of the *Parti canadien* proposed institutional reform based largely on English constitutional practice. The *British Party* members, on the other hand, saw attacks on the authority of the Governor as well as the House of Assembly's efforts to gain control of the provincial revenues as disloyalty.[30]

Political divisions, which had been present for some years, became more acute after 1821. The Montreal merchants and Governor had proposed a union of Upper and Lower Canada to facilitate trade, commerce and transport between the two Canadas. The following year, news reached the Canadas that the British Government was considering a bill to bring the two Canadas together in a legislative union. The proposed legislature was to be composed of equal numbers from each province and was to function solely in English and all legislation was to appear only in English. On October 7th 1822 the Montreal Constitutional Meeting under the chairmanship of Louis Guy denounced the proposal.[31] The Montreal merchants and others met a week later in the Exchange News Room under John Richardson to express their support for the proposed Act.[32] In early 1823 Papineau and John Neilson of Quebec City went to London to oppose the proposed union.

In the 1820s Jocelyn Waller as editor of the *Canadian Spectator* rallied Irish Roman Catholics to the *Parti canadien* cause using arguments based on the British constitution, which were familiar to them from their homeland. After Waller's death

in 1828, Daniel Tracy founded the *Irish Vindicator* in order to continue to elicit Irish Roman Catholic support for the *Parti canadien*. After Tracey's death in 1832, E.B. O'Callaghan as editor equated Papineau and his defence of French-Canadian causes and rights with the Irish patriot Daniel O'Connell and his similar mission on behalf of his Irish compatriots.[33]

The two major English newspapers in Montreal, the *Gazette* and the *Herald*, were conservative and pro-British.[34] The *Gazette* under the ownership of the Armour family from 1827 to 1843 voiced the concerns of tory Montreal merchants and appeared as extremely anti- French-Canadian.[35] The *Herald* under Archibald Ferguson from 1824 to 1833 and the Weir family from 1833 to 1843 also was strongly tory in orientation. Editors of these newspapers such as David Chisholme, David Kinnear, Adam Thom and James Moir Ferres were stridently tory and biased against French-Canadians.[36]

A number of religious differences affected relationships in Montreal during the period. The Sulpicians who had charge of the parish of Montreal were reluctant to recognize the authority of Bishop Lartigue, who had been a member of their community.

Lartigue enlisted the help of his relatives, who were leading members of the *Parti canadien* to obtain a site in the Montreal suburb of St. Louis for the erection of a Church and a Parish school. In the 1830s the increasingly democratic and nationalist even republican tone of the *Parti patriote* rhetoric and its attempted actions upset the Roman Catholic authorities. Efforts by the *Parti patriote* in 1832 to democratize the Parish Councils were opposed by Bishop Lartigue and led to a rapprochement with the Sulpicians.[37] The latter persuaded the Irish Catholics in the 1830s that loyalty to the authorities and peaceful means of change rather that acts of violence and rebellion were their religious duty.[38]

The hierarchy of the Church of England attempted to exercise leadership in affairs of state and in education as the established church. This was contested by the hierarchy of the Roman Catholic Church and also by clergy of the Church of Scotland. The latter claimed recognition for their Church as co-established on the basis of the 1707 union between England and Scotland. In 1817 the Rev. Henry Esson was brought to Montreal and installed as colleague and successor to the Rev. James

Somerville in St. Gabriel Street Church in order to strengthen Church of Scotland practices and claims.[39] Ironically, shortly afterward the Rev. John Bethune, a son of the founding minister of the St. Gabriel Street Church, became rector of the Church of England and Ireland parish, Christ Church. Esson was in the forefront of efforts to have the rights of the Church of Scotland recognized. Laymen and clergy of the Church of England, including Bethune despite his family's religious origin, vigorously contested his efforts.[40]

The Royal Institution for the Advancement of Learning, established by law in 1801, fell under the control of the Church of England when its Board of Governors was instituted by Letters Patent in 1818.[41] Grammar Schools, which had been established in 1816, were placed under the jurisdiction of the Board and elementary schools were founded by it in various parts of the province. The Roman Catholic clergy did not view these elementary and grammar schools and the Royal Institution itself with equanimity.

The Protestant religious denominations were subject to the fears, the antipathies, the prejudices and the political divi-

sions of the period. The Methodist and the Presbyterian congregations split over the issue of loyalty to the Crown. The Methodist congregation, which in the early 1800s was in large part Loyalist immigrants from the United States, as early as 1807 had asked for a British Wesleyan preacher. In 1815, following the war of 1812-14, the members locked out the American preacher, who was sent to minister to them and invited the British Wesleyans to take charge of the Montreal congregation. When the presiding elder of the American Conference, the Rev. Henry Ryan, arrived to assert the claim of the American Church, he was met with cries of "I am a true Britton (sic!)."[42]

Antipathy to things American and suspicions of the possible lack of loyalty of the Americans long continued to play a part in promoting the cohesiveness of American citizens of Montreal. In 1822 the St. Peter Street secession Presbyterians, who had been ministered to by clergy allied to the American denomination, voted by a narrow margin to have an evangelical minister from the Church of Scotland.[43] The American members of the congregation formed the American Association and founded the

American Presbyterian Church, which continued to look to the United States for clergy.[44]

The Governorship of the Earl of Dalhousie was also a time of much discord, for while he encouraged the efforts of Church of Scotland adherents to make their claim to co-establishment with the Church of England, he also was an active supporter of the evangelical wing of the former Church.[45] In 1822 Peter McGill introduced the Rev. Edward Black to the St. Gabriel Street congregation where his evangelical style of preaching attracted a following. Hoping to prevent an exodus of members to the more evangelical and pro-British St. Peter Street Church and the Methodist congregation, Black was invited to become Esson's assistant.[46] By the late 1820s two factions had formed in St. Gabriel Street Church behind the Rev. Henry Esson a moderate liberal backed by liberal Scots, on the one hand, and the Rev. Edward Black an evangelical with British Party supporters, on the other.[47] The dispute was only resolved in late 1832 with the formation of St. Paul's Church under the Rev. Edward Black.

The influx of British artisans and tradesmen during the late 1820s and 1830s brought further religious differences among

the Protestants. Jane Greenlaw pointed out that it was this group of immigrants that contributed to the founding and growth of the secession Presbyterian, the Methodist, the Congregational and the Baptist churches in the 1830s.[48] This denominational diversity and conflict created and sustained cultural tensions within the English-speaking community.

Ethnic differences and sensibilities were brought to the forefront in 1834 when various national organizations appeared: Aide-toi, le ciel t'aidera, March 8, 1834; St. Patrick's Society, March 17, 1834; Société St. Jean Baptiste, June 24, 1834; St. Andrew's Society, December 1, 1834; St. George's Society, December 19, 1834; and the German-Canadian Society early in 1835. The ethnic organizations fed into the Committees of Correspondence, founded by *Parti patriote* supporters, and the Constitutional Associations, formed by the *British Party*. These organizations were active in the years leading up to the rebellions of 1837 and 1838.

The pluralistic mix of linguistic, ethnic, religious and political divisions noted in this section had a limiting effect on active

Table 3: Religious Affiliation of the Population of Montreal in 1825 and 1842.

	1825	1842
Roman Catholic	15,100	25,123
Church of England	3,831	6,587
Church of Scotland	2,982* Figure includes American Presbyterians	4,340
Methodist	283	1,714* Figure includes British Wesleyan, Canadian Wesleyan, Methodist Episcopalian and other Methodists
Other Presbyterian		1,040
Congregational	-	434
Baptist & Anabaptist	27	352
Jews	53	91
Other	19	28
Quakers	2	

Sources: The 1825 figures are from Claude Perrault. *Montréal en 1825* (Montréal: Groupe d'études, 1977), while the 1842 figures are from S. Olson, "Research Note/Note de recherché: Ethnic Partition of the Work Force in 1840s Montreal" *Labour/Le Travail* 53 (Fall 2003) 196, Table 1.

participation in the cultural societies, which were founded for cooperative literary and scientific study.

Literacy and the English-speaking Montrealers

The years from 1815 through the 1840s were a time of increasing literacy and a growing interest in learning in Montreal.

Many of the immigrants, who came to Montreal after 1815, had at least rudimentary literacy skills. The extensive Scottish parish school system meant that there was a high rate of literacy among those who emigrated from Scotland. Immigrants from the eastern United States also were accustomed to the local provision of schooling.[49] Olson referred to the higher rates of literacy and schooling of immigrants from England and Ireland as compared to the French Canadians and the fact that the colonial structures favoured the use of English.[50] She gave figures for the 1840s showing that for English-speaking Protestants 85 percent of males and 65 percent of females, for Irish Catholics 71 percent of males and 20 percent of females, and for French Canadians 27 percent of males and 18 percent of females were able to sign the marriage register.[51] By the 1840s some of this observed level of literacy also might be attributed to schooling that had been received by immigrant children after their arrival in Montreal.

Scholars writing about the period find a parental concern for education. Karen Smith, writing about the rise of community libraries, comments "one underlying motivation that many immi-

grants shared was a desire to improve their way of life and provide a better future for their families. Educational opportunities for their families were a high priority."[52] Roderick Macleod and Mary Poutanen in their survey of Protestant schooling in rural areas of the province of Quebec find "an earnest desire for education" and parental involvement in its provision. They point to the high rate of literacy among immigrants and their desire to provide schools for their children even without any governmental or ecclesiastical assistance. Rural settlers of Scottish and American background particularly were diligent in this regard long before the 1829 Act establishing local rural schools.[53]

The high level of literacy among the English-speaking Montrealers might be seen in the array of periodicals, newspapers and bookstores in existence in Montreal. The *Montreal Magazine and Literary Repository* and the *Canadian Review and Literary and Historical Journal* published in the mid 1820s contained articles on science, as did the newspapers - the *Montreal Gazette*, the *Montreal Herald* and the *Canadian Courant*. These publications saw the tory Montreal merchants and professionals as their clientele. The *Canadian Spectator* published from 1822

to 1828 and its successor the *Irish Vindicator* published from 1826 to 1937 had in view the Irish Catholic population of Montreal. The *Montreal Courier*, which began publication in 1835, espoused whig politics while the *Montreal Transcript,* which was issued from 1836 as a penny newspaper, addressed itself to the artisans and mechanics of Montreal. In addition to the publications mentioned there were numerous short-lived magazines and periodicals. From an early period several men and firms were engaged in the book trade, which from the 1830s stocked and printed elementary schoolbooks in addition to other literature, including scientific works. All of this suggests that there was an audience for cultural and scientific materials.

Prior Scientific Traditions and the Persistence of Local Savants

Another of the factors Inkster recognizes as important in the development of an urban science culture was the existence of earlier scientific traditions. Certainly there were earlier as well as contemporary explorations and practice that influenced science in Montreal. Pehr Kalm, friend and pupil of Carl Linnaéus, had spent two weeks in Montreal in late July 1749.[54]

The botanist André Michaux, who had been sent to North America by the French Government, visited Montreal in June 1792. During a month spent in the area he botanized and met with several fur trade merchants. His *Flora Boreali-Americana* was published in 1803, the first such work to deal with North American plants.[55] Francis Masson, who was sent to North America by Sir Joseph Banks, wintered in Montreal in 1798 and became acquainted with the fur traders. He travelled the fur trade route up the Ottawa River as far as the mid-west and botanized there and in the St. Lawrence valley before his death in December 1805 at the home of fur trader John Gray. The Saxon Frederick Pursh, whose *Flora Americae septrionalis* (1814) was the second North American flora to appear, resided in Montreal from 1816 until his death in 1820 at the home of Robert Cleghorn.[56] He was intent on preparing a Flora of Canada. In 1817 Pursh entertained the Scottish botanist John Goldie, sent to North America by W.J. Hooker. Pursh encouraged Canadian botanical collectors to send specimens to the American John Torrey in addition to those that they sent to W.J. Hooker in Britain.[57] The persistence of the knowledge of

Pursh's stay in Montreal is seen in the 1855 efforts of the Botanical Society of Canada to move Pursh's remains to Mount Royal Cemetery and to erect a memorial monument.[58]

There were also the several contemporary provincial and imperial projects which created an interest in the geology of the area around Montreal. These activities in the Canadas, which comprised boundary surveys, canal construction, exploration and land surveying, as well as hydrographic mapping, mirrored similar activities in Britain. There the mapping by the Ordnance department, canal building, railroad construction, and mining, lay behind the development of geology and aroused interest in natural history.[59]

The surveys of the International Boundary Commission from 1816 to 1828 involved Montrealers, John Ogilvie, Stephen Sewell, David Thompson and Alexander Stevenson in the early years. J.J. Bigsby, a military medical officer, who replaced Sewell, was known and had access to homes of the elite in Montreal and by his writings promoted geology.[60] The Lachine Canal, which opened in 1825, and Chambly Canal, which was inaugurated in 1835, were built by Montreal contractors. Several Montrealers,

including John Redpath and Alexander White, were contractors for the Rideau Canal. Capt. Henry Bayfield, who was responsible for the hydrographic mapping of the Great Lakes and St. Lawrence waterway from 1828 to 1841, provided mineralogical and geological specimens to both the LHSQ and the NHSM.

The Ordnance Department of the British army was heavily involved in mapping and exploration for routes for possible canals and the construction of defence works. The Royal Engineers mapped inland routes from Kingston and Lake Simcoe to the Ottawa River in the period after 1815.[61] The presence of the Royal Service Corps on the Ottawa River from 1819 to 1833, building canal works at Grenville, Carillon and Chute à Blondeau, drew the attention of Montrealers to this location and provided scope for collecting specimens of geology and mineralogy.[62] From 1827 to 1832 the Royal Engineers were responsible for construction of the Rideau Canal. Some of the military personnel of these two corps spent their winters in Montreal and were in correspondence with Montrealers.[63] All of this was a stimulus for Montrealers to collect natural history specimens, particularly mineralogical and geological.

Another of the factors that Inkster cites as involved in the making of a local science culture was the persistence and success of local savants. Four professionals who immigrated to Lower Canada around the turn of the century were active in teaching and practicing science. Alexander Skakel, A.M., was a prominent figure in this regard. A graduate of King's College, Aberdeen, he had emigrated to Quebec City in 1798 to take charge of a school there. Skakel was warmly received there by the Reverend Alexander Spark, A.M., also a graduate of King's College, Aberdeen. When Skakel moved by invitation to Montreal in 1799 to open his own school, he was succeeded in Quebec by James Somerville, A.M., a Glasgow graduate, who was called to St. Gabriel Street Scotch Church, Montreal in 1803. The latter was succeeded in Quebec by his friend Daniel Wilkie, A.M., a fellow Glasgow graduate. These four men, Skakel, Spark, Somerville and Wilkie, who were close friends, played a large role in encouraging and sustaining an early interest in science in Lower Canada, particularly in natural philosophy. Skakel's lectures in Montreal on natural philosophy over a period of four decades were an important contribution to the promotion of that science.[64]

Active and retired military medical personnel also played a role in promoting science and medicine in Montreal. Andrew Smyth who had retired from the army promoted the need for a general hospital and was an early medical lecturer.[65] John Blackwood, an army medical doctor, served on the Dispensary and MGH staff.[66] William Caldwell and William Robertson, both of whom were trained in Edinburgh and had retired from the army on half pay in 1815, contributed through their teaching at the Montreal Medical Institute/McGill Faculty of Medicine to the advancement of the knowledge of medicine and encouraged their younger colleagues in the pursuit of science. William Lyons M.D. (Edin.) lecturer at the Montreal Medical Institution from 1823 to 1825, provided natural history specimens and books on science to the NHSM while later stationed in Quebec. James Crawford M.D. (Edin.), who later was on the McGill faculty from 1845 to 1855, and William Pardy M.D. (Edin.), R.C.S.L., were active early members of the NHSM.

Mention might also be made of several others who actively fostered these subjects in Montreal. Among them would be the American Martyn Paine A.B., M.D. (Harvard), who was licensed

and practiced in Montreal from 1816 to 1822. It was in his office that the early medical lectures, which preceded the founding of the Montreal Medical Institution, were held. After his return to the United States where he was a co-founder of the Medical College of the City of New York, he sent a large number of mineralogical and geological specimens to the NHSM.[67]

The example of these men was important in arousing interest in science among English-speaking Montrealers. Both the knowledge and practice of botany and geology flourished due of their efforts.

Montreal Science and its Urban Context

Montreal's favorable situation on the Montreal plain at the juncture of the St. Lawrence and the Ottawa river systems was of benefit not only to trade but also to natural history. It gave naturalists an advantage in that it was the jumping off point for exploration and settlement of the Canadas and the West. The flow of immigrants through the city on their way to the lands to the north and south of the Island and to Upper Canada helped to establish relationships between Montrealers and the outlying

population. Some persons who had been residents of Montreal and others who were related to Montrealers also sought out opportunities in the upper province.[68] The establishment of a network of correspondents allowed Montrealers to reach out and discover the natural riches, the flora, the fauna and the geological aspects, of the outlying areas.[69] In this way the position of Montreal as a center for the study of science was enhanced.

The connection of Montreal to the Indian Department, the earlier mercantile involvement in the fur trade in the Northwest, and the exploration for a Northwest passage elicited interest in the native Indian and Inuit inhabitants and the natural resources of the two Canadas and the area beyond. Robert Armour Jr., editor of the Montreal Gazette and member of the NHSM, and others sought information on the manners, habits, customs, language and institutions of the native inhabitants of the two Provinces. The result was that the NHSM established an Indian Committee and possessed many Indian curiosities, including costumes, weapons, tools, etc.

The result of Montrealers' involvement in this way enriched the NHSM museum and made Montreal the centre for

much of the research on natural history in the Canadas. Geology, particularly, found a home in Montreal. Without a knowledge and practice of the science of geology among Montrealers there would have been no lobbying for the Geological Survey of Canada. The Geological Survey museum, in turn, found a home in the NHSM building in the 1840s and early 1850s. Until the 1880s the Geological Survey had its home in Montreal and its presence made Montrealers aware of various possibilities for mineral exploration and exploitation. Several of the early mining companies in the Canadas were established or financed by Montreal merchants who profited from the relationship of the Geological Survey to Montreal.

Conclusion

This chapter examined a number of the factors that Inkster and Morrell suggest foster or deter scientific practice and the diffusion of the knowledge of science. These factors will be seen at play especially in Chapter Four. In spite of the ethnic, religious and political differences among Montrealers there were persons and groups in the English-speaking community that ad-

vocated for and diffused knowledge of science and encouraged its practice.

The next chapter examines the culture of science as spectacle. It details what was available to Montrealers at a fee, sometimes minimal, in public places. In a shared social context the display of popular science provided both entertainment and information for a wide spectrum of the population without distinction on ethnic, political or religious grounds.

End Notes

[1] Ian Inkster, "Introduction: Aspects of the history of science and science culture in Britain, 1780-1850 and beyond," in *Metropolis and Province: Science in British culture, 1780-1850* ed. Ian Inkster and Jack Morrell (London: Hutchinson, 1983), 27-35, and J.B. Morrell, "Wissenschaft in Worstedopolis: Public Science in Bradford, 1800-1850," *BJHS* 18 (1983): 23.

[2] E.A. Talbot, *Five Years' Residence in the Canadas*, vol. 2 (London: Longman & Co., 1824; reprint, Johnson Reprint Corporation, 1968), 283. Talbot, perhaps echoing British usage, employed the term classes: "The population of this city has, by general consent, been divided into four distinct classes: The FIRST is composed of the civil and military officers, the most respectable professional men in Law, Physic, and Divinity, and the several members of the North West Company: - The SECOND, of merchants of large fortune: - The THIRD, of shopkeepers and the more wealthy mechanics: - And the FOURTH, of that class of men, which in England is distinguished by the appellation of the 'lower orders'."

[3] Various sources were used for the population figures given in this chapter: Y. Lamonde and C. Beauchamp, *Données statistique sur l'histoire culturelle du Québec (1760-1900)* (Chicoutimi: IREP, 1996); Claude Perrault, *Montréal en 1825* (Montréal: Groupe d'études, 1977); Andrée Dufour, "Diversité Institutionnelle et fréquentation scolaire dans l'île de Montréal en 1825 et en 1835," *RHAF* 41, no. 4 (1988); idem. "Le réseau scolaire de l'île de Montréal, 1825-1835" (Mémoire de maîtrise, UQAM, 1987); S. Olson, "Research Note/Note de recherché: Ethnic Partition of the Work Force in 1840s Montreal," *Labour/Le Travail* 53 (Spring 2004): Tables 1 et al.

[4] Fernand Ouellet, *Lower Canada 1791-1840: Social Change and Nationalism* (Toronto: McClelland and Stewart, 1980), 157 places this shift in population to a majority English-speaking population in Montreal as early as 1831.

[5] S. Olson and P. Thornton, "The Challenge of the Irish Catholic Community in Nineteenth-Century Montreal," *Hs/SH* 35, no. 70 (2002): 331-362.

[6] Rosalyn Trigger, "The Geopolitics of the Irish-Catholic Parish in Nineteenth-Century Montréal," *Journal of Historical Geography* 27 (October 2001): 553; Mary Finnegan, "The Irish-French Alliance in Lower Canada, 1822-1835" (M.A. Thesis, Concordia University, 1982).

[7] Compare D. Aidan McQuillan, speaking of rural Irish settlers "Beaurivage: The Development of an Irish Ethnic Identity in Rural Quebec: 1820-1860," in *The Untold Story: The Irish in Canada* ed. Robert O'Driscoll and Lorna Reynolds (Toronto: Celtic Arts of Canada, 1988) "Of all the groups of immi-

grants who came to Quebec in the 19th century, the Irish Catholics were the most assimilable. Linguistic differences aside, they had much more in common with French Canadians than American, Scottish, Welsh or English immigrants. The Irish and French Canadians shared the same religion; thus one major impediment to intermarriage and biological assimilation did not exist. Both groups were rural oriented, moulded and directed by the clergy. They had little experience of urban living and neither group had been swept up in the industrial revolution." On-line at <gail25.tripod.com/untold.htm>

[8] S. Olson, "Ethnic Partition ...," *Labour/Le Travail* 53 (Fall 2003): 176.

[9] S. Olson and J.A. Gilliland, "Claims on housing space in nineteenth-century Montreal," *UHR* 26, no. 2 (Mar. 1999): n. 18. That this was the more usual grouping is shown by a meeting of the Montreal medical profession 22 Jan. 1830 presided by Dr. Arnoldi, Sr., to set fees. The meeting attended by Robert Nelson, F.T.C. Arnoldi Jr., O.-T. Bruneau, John Stephenson, A.F. Holmes, W. Caldwell, and J.G. Vallée divided the clientele into three classes "known to everyone, admitted by all, and has existed from time immemorial" reported in the *Vindicator* 12 Feb. 1830. The *Quebec Gazette,* 18 Feb. 1830 commented on this decision "to divide the community into 1st, 2d and 3d classes. Such a classification, so difficult of definition, is nevertheless easy of comprehension; it is known to every one, admitted by all, and has existed from time immemorial."

[10] Bryan Palmer, "Most Uncommon Common Men: Craft and Culture in Historical Perspective," *Labour/Le Travailleur* 1 (1976): 16. E.A. Talbot parodied such men in his *op. cit.* vol. 2 (London 1824). His comments were reprinted in the *Vindicator,* 18 Feb. 1834. See note 27 *infra.*

[11] Olson, "Ethnic Partition ..." 201, Table 7.

[12] Ouellet, *op. cit.* 157.

[13] Olson "Ethnic Partition ..." 51. See Table 7 'Household characteristics 1842, by ethnicity and occupational status of household head: Size, tenure, voter rights, and presence of servant.'

[14] These figures are taken from A. Dufour, *art. cit.* 527, Tableau 8.

[15] Olson, "Ethnic Partition ..."188.

[16] Dufour, *art. cit.* 527, Tableau 8.

[17] N. Bosworth, *Hochelaga depicta, or the early history and present state of the City and Island of Montreal* (Montreal: William Greig, 1839; reprint, Toronto: Coles Publishing Company, 1974), 92.

[18] Ouellet, *op. cit.* 159.

[19] See Talbot, *op. cit.* vol. 1 "Montreal, when regarded in a commercial light, may be said to be the capital of the Canadas," 78 and Dufour, *art. cit.* "le metropole économique des Canadas," 511.

[20] These figures are taken from tables prepared by F. Ouellet, *Eléments d'histoire sociale du Bas-Canada* (Montréal: Hurtubise HMH, 1972), 182-185. The figures differ from those that I gathered about doctors in the next paragraph. J.P. Bernard, P.-A. Linteau and J.-C. Robert, *art. cit.* show 173 members of the liberal professions in 1825 a figure that requires adjustments using the table on 412 to a figure of 100 in order to fit with Ouellet's tables, 389.

[21] B. Tunis, "Medical Education and Medical Licensing in Lower Canada: Demographic Factors, Conflict and Social Change," *Hs/SH* 14, no. 27 (1981): 69.

[22] It is possible that several other doctors did not appear in the list that was made up of householders only; for example, Peter Diehl, M.D., a partner of J.D. Arnoldi from 1818, does not appear on the list. The three military doctors were John Blackwood, Dr. Franklin, and Henry Grasset.

[23] R. Armour, *The Montreal Almanack or Lower Canada Register* (Montreal: R. Armour 1831).

[24] R.W.S, Mackay, *Montreal Directory for 1842-43 ...* (Montreal: Lovell & Gibson, 1842), 239f.

[25] Inkster, *art. cit.* 30.

[26] See for example, John C. Greene, "American Science Comes of Age, 1780-1820," *Journal of American History* 55, no. 1 (June 1968): 28. In Montreal, A.F. Holmes and Archibald Hall provide examples. They brought European collections home and sent Canadian specimens back to Scotland.

[27] Talbot, *op. cit.,* vol. 2 "Within the last twenty years, many men have acquired large fortunes in Montreal from very low beginnings; and it is worthy of remark that, although there are not, I believe, more than five or six families in the city, excepting those of the first class, whose rank in life, before the acquisition of their wealth, was above that of servants and mechanics,

they exhibit as much pride, and as strong an inclination towards aristocratical distinction, as many of the old patrician families in Europe. The *ci-devant* coopers and carpenters of this city, having once thrown aside the adze and the jack-plane assume all the airs of nobility, and look down upon their less fortunate compeers with *well-merited* contempt. Nothing can be more characteristic of the vanity of these *gentry*, than the fact, that you may see them daily advertised in the public papers as 'Directors of the Banking establishments,' with ESQUIRE in full length at the tail of their names. I have now a newspaper before me, which contains no less than three of these advertisements, in which the names of five persons are given to the public as ESQUIRES: - two of whom are carpenters, still working at their trade; the third, once a plasterer, has become a gin-seller; the fourth, formerly a cooper, is now a retail grocer; and the fifth is a painter and glazier," 282-284.

[28] Brian Young, *In its Corporate Capacity: the Seminary of Montreal as a Business Institution, 1816-1876* (Montreal & Kingston: McGill-Queen's University Press, 1986), xiv.

[29] After Richardson's death in 1831 leadership of the British Party devolved upon George Moffatt.

[30] Jane Errington, *The Lion, the Eagle, and Upper Canada: A Developing Colonial Ideology* (Montreal & Kingston: McGill-Queen's University Press, 1987) and David Mills, *The Idea of Loyalty in Upper Canada, 1784-1850* (Montreal & Kingston: McGill-Queen's University Press, 1988) claim that the concept of loyalty was important politically in the first half of the nineteenth century. It became a kind of litmus test of one's politics as the British or Tory Party attempted to maintain that loyalty to the British Constitution meant loyalty to the executive of government. Any opposition to the executive was deemed disloyal, even republican, and therefore intent on undermining the British Constitution itself.

[31] *Canadian Spectator,* 19 Oct. 1822.

[32] *Ibid.*

[33] Yvan Lamonde, *Histoire sociale des idées au Québec, 1760-1896* vol. 1 (Montréal: Fides, 2000), 200.

[34] Elizabeth Waterston "Kinnear, David," *DCB* IX writes, "Montreal in the 1830s had two conservative, pro-British, 'anti-patriot' newspapers."

[35] George L. Parker, "Armour, Robert," *DCB* VIII writes that the Montreal Gazette was "the leading Tory newspaper in Lower Canada."

[36] Carl Ballstadt, "Chisholme, David," *DCB* VII; Elizabeth Waterston, "Kinnear, David," *ibid.* IX; Kathryn M. Bindon, "Thom, Adam," *ibid.* XI; Lorne Ste. Croix, "Ferres, James Moir," *ibid.* IX.

[37] Gilles Chaussé and Lucien Lemieux, "Lartigue, Jean-Jacques," *DCB* VII.

[38] See Finnegan, *op. cit.* "As French-Canadian nationalism intensified it brought about ethnic polarization. Gradually more and more Irish withdrew from the *Parti patriote*. ... The split became apparent in 1834 and widened the following year. ... French Canadian reform had become ideological rather than political, and the Irish appreciated that they could never integrate culturally. Therefore they shifted their allegiance to the Anglo-Saxon community, a move that reflected their choice of that group as being a more suitable partner to their social and political ambitions," 67f.

[39] Elizabeth A.K. McDougall, "Esson, Henry," *DCB* VIII.

[40] John Irwin Cooper, "Bethune, John," *DCB* X.

[41] Louis-Philippe Audet, Le Système scolaire de la Province de Québec, tome 3 (Québec: Les presses universitaires Laval, 1952), 164f.

[42] Nathan Mair, *The People of St. James Montreal 1803-1984* (Montreal: n.p. 1984), 4.

[43] J.S.S. Armour, *Saints, Sinners and Scots* (Montreal: 2003), 31. Armour states that the vote to obtain a minister from Scotland was decided by "a substantial majority" whereas other accounts speak of as little as one vote difference.

[44] G.R. Lightall, *A Short History of the American Presbyterian Church* (Montreal: 1923), 1f.

[45] Dalhousie was founding Patron of the Glasgow Colonial Society formed in 1825 while he was in Great Britain. The Society sent evangelical preachers to minister to Church of Scotland parishes in British North America.

[46] Armour, *op. cit.* 32.

[47] There is no direct mention of the political stance of the two opposing parties in any of the accounts of the schism in the congregation, but it appears that politics were involved. Esson's political stance is hinted at by Robert Campbell in *A History of the Scotch Presbyterian Church, Saint Gabriel Street* (Montreal 1883) where he wrote that Adam Ferrie was "a fast friend of Mr. Esson's. Both were ardent defenders of the popular rights, and

champions of liberty," 476. In addition two of Esson's supporters were James Leslie and John Fisher, members of the House of Assembly for Montreal East and Montreal West respectively. Leslie was one of the liberal Scots. See also *The Vindicator,* 20 Mar. 1829. Among the toasts proposed by the Friends of Ireland was one to "The Rev. Mr. Esson and our dissenting brethren, James Leslie, Esq., M.P., and the liberal Scotch." Rev. Edward Black's partisans, such as the Armour family, were largely members of the British Party.

[48] Jane Greenlaw, "Choix pratiques et choix des pratiques: Le non-conformisme protestant à Montréal (1825-1842)," *RHAF* 46, no .1 (été 1992): 93. See also Jane Greenlaw, "'Fractious Individuals': Protestant Non-Conformity in Montreal 1828-1848" (Mémoire de maîtrise, UQAM, 1988) and Jane Greenlaw and P. Orr, "A Study of Presbyterianism in Montreal, 1792-1856," (McGill Business History Project 1979).

[49] R. Macleod and M.A. Poutanen, *A Meeting of the People: School Boards and Protestant Communities in Quebec: 1801-1998* (Montreal: McGill-Queens University Press, 2004) point up the tradition of public education in Scotland and New England and the determination of immigrants of these origins to open and maintain schools, 22.

[50] Olson, *art. cit.* 178.

[51] *Ibid.* 179.

[52] Karen Smith, "Community Libraries," *History of the Book in Canada, volume one. Beginnings to 1840* ed. Patricia Fleming, G. Gallichan and Y. Lamonde (Toronto: University of Toronto Press, 2004), 144.

[53] Macleod and Poutanen, *op. cit.* 20f.

[54] Richard A. Jarrell, "Kalm, Pehr," *DCB* IV.

[55] J.F.M. Hoeniger, "Michaux, André," *DCB* V, "It remained for many years the most complete flora of eastern North America." Charleston Horticultural Society labels it "the first flora of North America," and John L. Reveal and James S. Pringle, "Chapter Seven: Taxonomic Botany and Floristics in North America, North of Mexico: A Review Comment," in *Flora of North America* write "At last, temperate North America had an account of its native plants." <hua.huh.harvard.edu/FNA/Volume/V01/Chapter 07.shtml>

[56] See Raymond Duchesne, "Pursh, Frederick" *The Canadian Encyclopedia 2000 World Edition* (1999). William Sheppard at the Second Annual Conversazione of the NHSM stated that Pursh died "at the house of Robert Cleg-

horn, Blink Bonny, a nursery man, and a good botanist." *Canadian Naturalist* new series 1, no. 1 (Feb. 1864), 54.

[57] Joseph Ewan, "Frederick Pursh, 1774-1820, and his Botanical Associates," *Proceedings of the American Philosophical Society*, 96, no. 5 (Oct. 15, 1952): 621.

[58] *Canadian Naturalist and Geologist* 2, no. 1 (Mar. 1857): 77-80, "Proceedings of the Botanical Society of Montreal." See also *Canadian Naturalist.*, 9, no. 3 (1881): 184-187. Ewan, has an account of this action and a picture of the gravestone, 622.

[59] The British Ordnance Survey website mentions the mapping of one third of England and Wales between the 1790s and mid-1820s. In 1824 the Survey was ordered to Ireland to do surface mapping and triangulation. (Two of the Workman brothers, who came to Montreal, had worked on the Irish survey for a short period.) The story of William Smith is ably told in Simon Winchester, *The Map that Changed the World: William Smith and the Birth of Modern Geology* (Harper-Collins, 2000). William Logan while in Swansea, drawing inspiration from Smith's work devised a system of colored cross-section mapping and this map technique also was important in that was adopted by British Geological Survey. C. Gordon Winder, "Logan, Sir William Edmond," *DCB* X.

[60] For example, "On the utility and design of the Science of Geology, and the best method of acquiring a knowledge of it; with Geological Sketches of Canada" *Canadian Review and Literary and Historical Journal* 1, no. 2 (Dec. 1824): 377-395 (attributed to Bigsby).

[61] See for example, J.W. Bain, "Surveys of a Water Route between Lake Simcoe and the Ottawa River by the Royal Engineers, 1819-1827," *Ontario History* 50 (1958): 15-28.

[62] NHSM - Dr. Peter Diehl donated graphite and syenite from Grenville, J. Duncan Gibb, mica from Grenville, Col. Hugh Hill, marl from St. Andrews, Hon. Robert Harwood, minerals from Grenville and Vaudreuil. MMI – Henry Johnson and William Smillie donated mineral specimens from Chatham tp.

[63] NHSM Minutes 27 Jul. 1829. Lt. E.J. Cleather wrote from Grenville July 22, 1829. "He regretted that the duty on which he was employed did not admit of his being useful to the NHS. He had to superintend the construction of a double lock on the Canal which fully occupies his time, besides the excavations on that line were completed with the exception of a few feet in one lock-lift through the strata of a very hard grey limestone which yield nothing of any value to the Society after the specimens already sent from here by Capt. King, the late Dr. Jearrard and others. At Chute à Blondeau

and Carillon a few miles below Grenville he should request the officers in charge of the works to preserve whatever might be found worthy of the Society's acceptance."

[64] Several of Skakel's pupils were among the cultivators of science, for example, Andrew F. Holmes, William Badgley, Archibald Hall.

[65] See Chapter Three.

[66] The only Blackwood listed in the Army lists was John Blackwood, who attained the rank of Hospital Assistant 25 April 1814. In 1821 he was listed as on half pay and remained on the Army Lists as late as 1830. Despite the reading of "Dr. T.P. Blackwood" by previous writers on the MGH, contemporary advertisements for both the early Montreal Dispensary and the MGH have Dr. John Blackwood as the Medical Secretary.

[67] NHSM, *Third Annual Report*, 18 May 1830. "Among the donors of minerals, the Council think right to mention the name of Martyn Paine, M.D. of New York, whose specimens are among the finest and largest in the Society's Cabinet."

[68] For example, naturalist and writer John Rae of Williamsburgh, U.C. had a sister, Ann Cuthbert Rae Fleming in Montreal. See R. Warren James, "Rae, John," *DCB* X.

[69] Examples of Corresponding Members in Upper Canada, moving from east to west include: the Reverend Hugh Urquhart, Cornwall (formerly of Montreal), David Thompson, Glengarry, Charles Fothergill, Pickering, George Rolph, Dundas, Samuel Hooker, Niagara Falls, Dr. John Munro and Thomas G. Anderson, Drummond Island.

Chapter Two: Science as Spectacle

Public science culture in the late eighteenth century and throughout most of the nineteenth century was about showmanship, performance and spectacle.[1] As Iwan Morus writes of later Victorian science, "Performances -- making science and its products visible, pulling in the crowds and amazing them with nature's wonders -- were part and parcel of the business of making science and its products real to their audiences."[2] A science spectacle was calculated to excite wonder and awe and to arouse curiosity about and interest in the science behind it in a broad cross-section of the community. Persons who attended the lectures and demonstrations of the period expected to be amused as well as informed. Science culture in Montreal in the early nineteenth century certainly followed this pattern. Popular exhibitions and amusements were announced in detail by large and small posters and broadsheets (flyers), as well as advertised and commented on in the Montreal newspapers.[3]

This chapter outlines how the Montreal community experienced popular science exhibitions that were frequented by both English- and French-speaking Canadians. Beginning with natural phi-

losophy, which included what is now known as the physical sciences, this account deals with the illusions produced by the use of light and various instruments, as well as paintings depicting a 360-degree view. Mechanical motion was illustrated in various displays of automatons and pendulums. The search for alternative therapies led to electrical and chemical exhibitions and experimentation. Natural history was also presented by means of spectacle. Zoos and menageries, *lusus naturae*, exotic, and abnormal size animals as well as unusual humans excited wonder and curiosity. The narrative then turns to itinerant museums, which, with their wax figures, stuffed animals and other artifacts, were forerunners of local museums, including Thomas Delvecchio's Museo Italiano. Nor was lecturing without its displays and illustrations. The public presentation of science to Montreal audiences encompassed all of these types of spectacle.

Natural Philosophy - Visual Effects

Natural philosophy was part of a visual public scientific culture from the late eighteenth through the nineteenth centuries. In the late eighteenth century, members of the Royal Society of Lon-

don were debating the merits of Sir Isaac Newton's particle theory of light versus those of Christiaan Huygens' wave theory of light. In the early 1800s Thomas Young [1773-1829] initiated the debate by presenting arguments in favor of the wave theory of light.[4] This focus on light and optics aroused public interest in the effects that could be produced by light as well as in the use of a number of optical instruments to aid in the observation of various phenomena or to create illusions. Wendy Bellion notes "Visual illusions were the stuff of scientific inquiry, philosophical speculation, and popular intrigue in late-eighteenth-century America, particularly within Philadelphia's thriving intellectual communities."[5] The telescope and the microscope were joined by various instruments that could project images onto a background and that when used in pairs with the aid of mirrors could dissolve one image into a second that seemingly emerged from the first.

The instruments employed by the itinerant lecturers in the early nineteenth century to create such visual impressions and illusions included the Galvanic Cell, Magic Lanterns, Mirrors, Solar Microscopes, Lucernal and Compound Light Microscopes, and the Camera Obscura.[6] Bellion writes:

> Camera obscuras, magic lanterns, telescopic tubes, magnifiers, zograscopes, magic mirrors, penetrating perspectives, divination boxes, and optical philosophical machines: collectively known as "pleasing deceptions," these oddly-named instruments contributed to a culture of optical illusionism that interested a broad range of viewers in the United States as well as Europe. ... we find a society captivated by optical instruments, virtual images, and phantasmatic projections.[7]

Fred Nadis suggested that such "wonder shows" came to the Americas in the very early 1800s, but there is evidence that they date at least as far back as the 1780s.[8]

Iwan Morus, for his part, traced the origin of these illusions and effects to the medieval magicians, but marked a difference in audience reactions to them:

> Renaissance natural magicians use optical tricks and sleight of hand to underline their virtuosity and their access to hidden powers. Their nineteenth century equivalents did the same. The difference was that nineteenth century audiences knew (or were meant to know) it was a trick and were invited to decipher the performance at the same time they applauded it. ... By displaying the showman's ingenuity, they pandered to their audiences' sense of their own superiority - their sense that they were the kind of people who could be depended on to see through the smoke screen of effects.[9]

One such itinerant Signior Joseph Falconi had been performing his "philosophical experiments" for at least twenty years when he returned to Montreal for a month long stay at Thomas Holmes' City Hotel in 1809.[10] He advertised his performances as natural

and philosophical experiments on electricity, gas, magnetism, mechanics, catoptrics, and others. In addition to the Galvanic Cell, which had been the focus of his earlier appearance in December 1808, he appears to have used magnets, the camera obscura, and magic lanterns with mirrors to produce various visual effects. Bellion in her article states that Falconi "made a point of including a lesson about the 'pleasing deceptions' that could be 'invented by the power of lights, and how far the Catroptricks [sic] can deceive the sight.'"[11]

Similarly, a Mr. Brunel announced a philosophical exhibition at the Mansion House Hotel in February 1820.[12] The editor of the *Montreal Herald* referred to these demonstrations and performances as "phantasmagorical tricks and philosophical and mechanical deceptions" and "illusion," thereby indicating that they probably had been produced by the magic lantern with mirrors and other allied instruments. The editor also referred to the interest evinced and the satisfaction experienced by the audience, and noting "a number of juvenile characters among the audience" counseled them to cultivate a habit of enquiry and seek the causes of the illusions witnessed.[13]

A Mr. Collings, in 1823, advertised a solar microscope with 100,000 power magnification.[14] The solar microscope was a form of projector with magnifying lenses using the light of the sun to project magnified images on an interior wall. It required assiduous care to keep the mirrors and lenses oriented toward the sun. Collings took a house on College Street next to the new Mansion House Hotel, where he and his wife attempted to open a Boarding School and Day School for Girls.[15] There he promised "a view of almost invisible Nature" on days when the sun shone. In addition, he stated that he would display a variety of objects with other microscopes and present a beautiful living picture with the camera obscura. All would tend to "show the power and wisdom of the Great Creator." The editor of the *Montreal Herald* expressed his enthusiasm for the sights to be seen, and for "indulging the curiosity, which we think every mind must feel, of lifting the veil which covers the most exquisite labors of Nature."[16]

Other optical presentations involved artistic representations that were exhibited in various public sites using the magic lantern. In 1819, there were lenses presenting eight views, which was possibly a very early form of diorama using the magic lantern.[17] In

1821, the Stowell and Bishop Museum presented twenty elegant views and from 1824 Thomas Delvecchio's Museo Italiano had an Optical device with a large number of excellent views.[18] The diorama, an optical presentation invented by Louis Jacques Mandé Daguerre in the early 1820s, first appeared in Montreal in 1833.[19] There was a presentation of fourteen views at the Théâtre Royal, followed by the exhibition of a collection of six portraits.[20] The diorama and other projected views often were intended to give the audience the sense of an imaginary visit to faraway places.

In addition to these optical illustrations, there were the large artistic panoramas depicting battles and landscapes that were to be viewed from the inside of the circle formed by the painting, permitting visitors to turn and have a 360 degree view.[21] The earliest of these to appear in Montreal, *The Battle of Alexandria* by Sir Robert Ker Porter was exhibited in August and September 1809, in a building built specially for it on St. Paul Street near the College.[22] In November 1817 and February 1818 respectively, *The Panorama of the Battle of Algiers* and *The Panorama of the Battle of Waterloo* presented by Henry Aston Barker, son of Robert Barker the inventor of this artistic technique, were shown in the Circus building in Mont-

real.[23] Each was over 4,000 square feet in size and pamphlets explaining the pictures were for sale.[24] In August 1823 a *Panorama of the Palace and Gardens of Versailles*, painted in 1818-19 by the American artist John Vanderlyn, was shown in West's Circus building.[25] A *Panorama of Bytown and surrounding area* painted by a W.S. Hunter was exhibited at Bellamy's Hotel in the Old Market in March 1831.[26]

Napoleon's life, the events and the objects related to him commanded much attention throughout the early nineteenth century. Sinclair's *Grand Peristrephic, or Moving Panorama, of the Battle of Waterloo, St. Helena, &c.*, which showed twelve scenes, ranging from the battle through the capture and exile of Napoleon at St. Helena and his funeral procession, was mounted in the Grand Salle of the Nelson Hotel in July 1836.[27] A year earlier in September 1835, there had been a *Calligraphic Drawing of Napoleon's principal battles, with 130 portraits*, a musical chair and a musical Cock and Hen, exhibited at the Italian Café, corner of Notre-Dame and McGill Streets. The drawing was alleged to have been made for Napoleon's son, the Duke of Reichstadt, and the musical chair to have been presented to General Lafayette.[28] The collection and viewing of

mementos ascribed to historical persons was certainly one of the interests of the period.[29]

Natural Philosophy - Mechanics and Motion

Interest in mechanics and motion lay behind another element of the public visual science culture of the period. The presentations of automatons, or self-operating mechanisms, pendulums and other perpetual motion machines were advertised as scientific exhibitions. In August 1821, for example, Jean-Baptiste Jacotel, recently arrived from Paris, used what was billed as a scientific exhibition, in order to demonstrate his skill in the creation of automatons to introduce himself to Montrealers.[30] His mechanical panorama was exhibited at Maneux's in the New Market and consisted of a performing musical band, workers engaged in mechanical pursuits, a singing mermaid and a performing bird trio. Jacotel remained in Montreal as a piano and organ builder and repairer.[31]

There were a number of such mechanical exhibitions. A Mr. Haddock, in October 1826, presented a number of mechanical men (life-like automatons) going about their various tasks.[32] In July 1835 a Mr. Hoffmaster exhibited at Rasco's Hotel a perpetual mo-

tion machine and a bust of Napoleon that moved its head and its eyes as though reviewing the troops.[33] There also were mechanical panoramas accessible to the public in two of the museums open to the general public. The Stowell & Bishop museum in June 1821 contained a *Temple of Industry, or Grand Mechanical Panorama*, consisting of thirty-six moving figures all working at their different occupations.[34] Thomas Delvecchio's museum had several such sets: five small wax figures playing tunes on a carillon of bells, a mechanical concert of automatons, and a Temple of Industry.[35]

Many of these visual and mechanical elements came together in the Grand Mechanical Exhibition mounted at the Nelson hotel in October 1837. R. Twist announced his "wonderful specimen of Architecture, consisting of Art, Ingenuity and Music, Moral, Historical, Interesting and Amusing." Part one consisted of a large painting of the Battle of Waterloo, followed by Professor Richelieu's Phantasmagoria or Orrery of Paintings, described as illusions depicting nine scenes, no doubt produced by the camera obscura, the magic lantern and mirrors. Part two included a drama in seven acts, performed by automatons. Fifteen artificial dancing figures were to fol-

low performing several dances, and an artificial tumbler would perform many active feats.[36]

Natural Philosophy - Alternative Therapies

The search for alternative cures for diseases and ailments aroused public interest. Among the therapies explored in Great Britain and America during the early eighteenth century were hydrotherapy, pneumotherapy and electrotherapy. A number of exhibitions grew out of these attempts to find a panacea for disease and discomfort.

Luigi Galvani's and his nephew Giovani Aldini's experiments on animal electricity published in 1791 led to interest in the effects of electricity on the human body.[37] As early as December 1808 Signior Falconi had appeared at Thomas Delvecchio's Hotel in the Old Market advertising his galvanic machine. He professed an interest in the use of electricity in medicine and indirectly claimed it to be useful for a long list of ailments.[38] A letter to the editor signed "Curious," probably written by Falconi himself, sought to promote the exhibition while tempering expectations by suggesting a limit of its usefulness for nervous afflictions.[39] It is not known if Falconi practiced

group electrotherapy but group electrifying experiences were part of the presentation of an electrical machine at the New Museum in early 1823.[40]

At Thomas Beddoes' Pneumatic Institute in Bristol, the scientists attempted to assess the therapeutic effects of a series of gases on humans. It was there that in 1799 Humphry Davy discovered the hallucinogenic properties of nitrous oxide, commonly known as laughing gas. He demonstrated the effects of the gas on his own person and then administered it to his audience.[41] The anesthetic properties of the gas, however, were not recognized until the mid 1840s.

Nitrous oxide, therefore, first made its appearance in Montreal as an alternative therapy or recreational drug. A Mr. Cullen, in June 1821, announced an introductory lecture on chemistry and an exhibition of the effects of the gas on the human system at the City Tavern Assembly Hall.[42] In late July he advertised he would be at J. Roy's New Assembly Hall, near the New Market, for a week with sufficient gas to administer to all who wished to partake.[43] Dr. S. Coult, an alias for Samuel Colt the inventor of the Colt revolver, described and administered the gas in July 1834 at Kauntz's Nelson

House Hotel, in the New Market.[44] After returning from Quebec the following month, he spent another three days in Montreal at the same hotel administering the gas.[45] A Mr. Saunders gave exhibitions of nitrous oxide at Kauntz's Hotel in late December 1835.[46] Both participation by members of the audience in inhaling the gas and the observation of the behavior of those who had inhaled nitrous oxide were part of the spectacle.

Natural History - Zoology

Turning to the field of natural history, one finds that spectacle also was involved in its presentation. Some of the elements of popular activity and entertainment relating to zoology also should be viewed against the background of the everyday life of Montrealers. For many Montreal inhabitants of the period, their daily life involved the keeping of animals within the city, such as chickens and pigs, and for some, sheep and cows. The horse was for many the means of transport both within the city and beyond. Exhibitions of animals, including horses, cows, sheep and pigs, held under the aegis of the Agricultural Society were calculated to bring improvements in breeding.[47] Equestrian shows (an early form of the circus),

some with well-known local performers, were also part of the Montreal scene.[48] Interest in and curiosity about exotic animals, therefore, might be seen in part as an extension of the everyday natural knowledge of Montrealers.

There were exhibits from the animal kingdom in the period before 1840 that involved or included abnormal size animals contrasted with smaller animals.[49] One might see the exhibition of examples of domestic animals of abnormal size as presenting a contrast with the viewer's everyday knowledge of animal life. For example, in July 1830 there was a Grand Caravan with a mammoth horse. It had been imported from England and was declared by the promoters as without equal in size. The proprietors offered $1,000 to anyone who could produce one of greater size.[50] A huge cow fifteen hands high (60 inches) with its two-month-old calf at two foot ten inches was the attraction of the week at Jude Richard's in the New Market in August 1830.[51] The giant ox Columbus weighing more than 4,000 pounds, accompanied by a calf 30 inches high and 18 inches long, a bull with five legs, a sheep with four horns, and a wild South American pig, along with several bears, Canton white mice as well as other animals, could be seen in February 1831.[52]

The promoters' enhancement of their presentation by means of a size contrast would increase the viewers' sense of the size of the animal involved.

There also was an interest in malformed specimens of domestic animals, the so-called *lusus naturae*. Variant forms included a two-headed hermaphrodite calf with two tails and six legs, locally delivered by Caesarian operation, and exhibited from late April to May 1821.[53] A live two-year-old heifer with ten legs was exhibited as part of the zoo in September 1822.[54] The following year there was a sheep from Lavaltrie whose head and appearance had a striking resemblance to a human face but whose body was that of a sheep.[55] A bull with five legs and a sheep with four horns were mentioned above. A deformed one-eyed sheep with a small head from Chambly was exhibited in March 1831.[56] Montreal Veterinary Surgeon James Turner reported in October 1836 on a "bull calf, or rather two such calves united, having eight legs, two tails, two ears, two eyes, four nostrils, one mouth and two distinct bodies turned belly to belly, and completely united at the commencement of the sternum or breastbone."[57] Later, in September 1838, there were three rams, having in total fourteen horns, two having five and the

other four horns, along with a calf with only three legs.[58] Given the four local examples cited, it may be suggested that although *lusus naturae* was a phenomenon that was known to Montrealers, it was one which generated a certain curiosity, as well as wonder, awe and interest. Writing about his find, Turner summed up the attraction as "well worth the inspection of the public, whether for the sake of aiding scientific knowledge or of satisfying curiosity."[59]

Nor was a general interest and curiosity lacking for the unusual in human form, an interest that would later be exploited by the circus and the freak shows.[60] Medical interest in humans of abnormal size, referred to as the science of teratology, was of long standing.[61] Some of the medical community's interest centered on the authenticity of claims made about the height, size and weight of such individuals.

In January 1817, there was a forty-nine year old, three foot two inch dwarf dressed in comic clothing, who could be seen and conversed with.[62] In October of that year the much-celebrated Beautiful Albiness (Miss Harvy), who had met with acclaim in Europe, spent several weeks in Montreal and received visitors.[63] During the 1830s there was a flurry of exhibitions of unusual human

forms. In April 1831, there was the fifty-eight year old veteran of 1812, Calvin Edson, the so-called "human skeleton" weighing only fifty-eight pounds, recently returned from Europe, where he had been seen by noted physicians.[64] The same year, the six foot four inch Modeste Maillot, "the Canadian Giant" from Lotbinière, who weighed 619 pounds, could be viewed. [65] In June and July 1832, a Mr. Tyler brought from London a twenty-two inch high female dwarf, who appeared with a Boa Constrictor.[66] Two married dwarves, Mr. and Mrs. Booth, who earned their living by public exhibition, arrived in February 1834. He was forty years old and thirty-six inches tall, while she was twenty-six and thirty-two inches tall.[67] They returned to Montreal in January 1837.[68] The Siamese twin brothers, Chang and Eng, who had appeared in Europe, received visitors in July 1835.[69] The twins also made a return visit to Montreal in April 1846.[70] In 1836 a ten-month-old baby girl, Adelaide Scott, weighing ninety pounds from St. Rémi Parish was exhibited by her poverty-stricken parents.[71] One may assume that visitors and spectators made comparison and contrasted the unusual humans with persons and phenomena that they knew in everyday life. In addition, visitors were entertained by the various routines per-

formed and the costumes worn. The brothers Chang and Eng, for example, were first shown in native dress and amazed audiences with acrobatic feats.[72]

Itinerant Zoos and Menageries

In addition to variants of the familiar everyday animals which Montrealers knew and saw first-hand, their knowledge of zoology was enhanced by the more exotic animals found in the travelling shows, menageries and zoos. John Moring stated that "In the eighteenth and nineteenth centuries, people wanted to see animals - the more unusual the better."[73] The presentations of foreign animals may have coincided with and reinforced the interest for the exotic life and scenes that some had from reading the Bible and travel and exploration narratives as well as in viewing panoramas, etc.[74] Viewing the animals would permit visitors to create a romantic picture of far-off lands and in imagination to enter into untold adventures there.[75] As well these animals piqued the curiosity of many for what was novel.

Certainly one of the aspects that attracted public attention in the showing of these animals was their character and their feeding

habits. Among the several animal menageries, there was the travelling zoo of J. Ryerson, exhibited in late August 1817. It focused on the fierce character of two African "Urus," identified by some as a form of antelope or ancient wildebeest.[76] In their Quebec City appearance the animals had fought with dogs.[77] Columbus, an eight foot tall male elephant with ears two and a half feet long and weighing 5,000 pounds, was exhibited in late June 1820. Much interest was focused on its means of eating and drinking.[78]

Two of the itinerant zoos wintered in Montreal. A small zoo, which existed under several names and forms between 1813 and 1834, arrived from Philadelphia in early November 1817. It was billed as "the most beautiful, the richest and the rarest collection of live animals," and remained in Montreal until May 1818. It consisted of seven rare animals, an African Red Lion, a South American Guanaco or Peruvian Camel [i.e., a llama], an Asian Royal Tiger, monkeys from Guinea and Africa, a long-tailed monkey from Barbary and a Capuchin monkey from Rio de la Plata. Visits were accompanied by organ music.[79] Another, Grand Caravan of Living Animals, composed of two dozen animals wintered in Montreal from November 1828 through February 1829. It was composed of a lion and a lion-

ess, a tiger, a leopard, a jaguar, a catamount, a jackal, wolves, baboons, monkeys, etc. Feeding time at 8:00 p.m. was a popular time for visits. For New Year's Day 1829 the site at Pointe-à-Caillières was decorated, illuminated in the evening, and musical accompaniment was provided.[80]

In September 1822 there were twenty-six "rare animals procured at great expense from different parts of the world." This zoo included two animal curiosities, or *lusus naturae*, the live two-year-old heifer with ten legs already mentioned, and a Chinese "camousse" with hands like a baby.[81] A Grand Caravan, consisting of forty animals, appeared in July 1830. One of its main attractions was the mammoth horse, already mentioned above.[82] A menagerie from Boston and New York with a Siamese Elephant, a great lion from Africa, a lioness from Asia, a Buffalo, a Royal Tiger from Bengal, a Hyena, etc. was shown in August 1833. Visits to see the animals were accompanied by music.[83]

In the early nineteenth century there was an interest in snakes among naturalists, who wanted to know, for example, how the venom reached the fangs of the rattlesnake. This interest translated into a public fascination with reptiles of all kinds. For

much of July 1831 tame glistening serpents were to be seen in Montreal and once again feeding time was part of the attraction. The editor of the *Canadian Courant* stated, "They are certainly worthy of the attention of the naturalist, and the curious observer of nature."[84] As mentioned above, a Boa Constrictor was exhibited with a dwarf in June and July 1832.[85] In September 1838 a live rattlesnake was shown.[86]

Natural History - Botany

An instance of visual popular culture as it related to botany may be found in the rearrangements made in horticultural centers after the mid-1830s. Established in the summer 1831 Joseph Guibault's horticultural centre, which sold seeds, plants, shrubs, fruit trees and flowers, had early assumed the name "Jardin Botanique." With business contacts in London, New York and Paris, a considerable variety of foreign and domestic horticultural specimens were offered to the public.[87] From an early period, the public was invited to come to the garden near Eglise St. Jacques to view the flowering of exotic and colorful plants.[88] In 1835 Guibault rearranged the garden to provide walking paths and erected a refreshment stand.[89]

The public was invited to stroll through it from dawn to dusk and admire the botanical display, with its more than 400 varieties of rose bushes.

In 1835 to further attract the public Guilbault arranged to illuminate the gardens for two evenings of music and fireworks, such as was done in European gardens.[90] These special evenings were repeated in the following two years.[91] There also were other evenings with music provided by the regimental band.[92] Providing rest and recreation, entertainment and the knowledge of plants and horticulture, Guibault's Botanic Garden was apparently so successful that Robert Cleghorn opened his Blink Bonny Garden to strollers in 1838, providing rustic benches under the trees and proposing to widen the paths and add a refreshment booth.[93]

Itinerant Museums

Itinerant museums, usually having wax figures and added attractions, made an early appearance in Montreal. For instance, in April 1802 a travelling wax museum with thirty-three figures representing such notables as George Washington, General James Wolfe, John Adams, and General Butler visited Montreal.[94] Philippe Aubert

de Gaspé, in his diary, mentioned another from about 1810 that depicted David and the slain Goliath, General Hamilton mortally wounded by a fierce Adam Burr, and the Russian General Sowarow lying on a mortuary bed, then rising to a sitting position. It appears that the macabre aspects of the display left a lasting impression on de Gaspé.[95]

The Stowell & Bishop Museum visited Montreal from mid-June to mid-July 1821. This museum represented an extension of the itinerant wax museums into a more inclusive form. It had thirty-two wax figures including notable persons, classical and Biblical figures, as well as a local figure, Mrs. Smith, of Albany, who drowned crossing on the ferry, while her twins were saved. In addition to the wax figures, as already mentioned there was a Temple of Industry, with thirty-two figures exercising various occupations, and a collection of twenty elegant views. There was musical accompaniment on two elegant organs, a chime of bells, a drum and triangles.[96]

In late November 1822 there were two notices relating to the formation of local museums. The first dealt with the agreement of the Directors of the Montreal Library to receive donations for a public city museum.[97] Despite the use of the word *public* in its

name, the museum of the Montreal Library was of limited access to the public because of the subscription requirement for membership and entry to the library. The second notice indicated that Thomas Delvecchio was collecting curiosities and intended to open a public museum.[98]

Prior to the opening of Delvecchio's museum, however, another itinerant museum paid a visit to Montreal. Styled the New Museum, it appeared by permission of the magistrates from the end of January to early March 1823. Among the wax figures were representations of two men of large proportions. There were a variety of Indian war implements from the North, the West Coast, the Sandwich Islands, and Oraheit, as well as models of canoes and paddles. The museum boasted that it had "Narnes New Invented Electrical Machine" and stated visiting groups might be electrified by it. Visits to the museum were accompanied by music on an elegant concert organ as well as on other instruments.[99]

Later one other small itinerant museum appeared for a short period in mid-July 1833. It consisted of fifteen life-size wax figures, a mechanical panorama, and a model of the 132 cannon ship Caledonia. There was also musical accompaniment during visits.[100]

Thomas Delvecchio's Museo Italiano

Delvecchio's museum opened in early February 1824.[101] Claiming to have visited different places in order to collect curiosities worthy of inclusion in his museum, he announced:

> that after upwards of four years' research and expense, he has formed, and completely arranged his Cabinet of Natural, Artificial, and Harmonious Curiosities, and which are at present ready to be seen; he believes that he can assert, that on the whole, this Cabinet is one of the most curious that is to be found in America; and he flatters himself that the lovers of natural history, the arts, and of harmony, will find it to amply satisfy their curiosity.[102]

No doubt while in the United States, he had visited the Philadelphia Museum of Charles Willson Peale, with its stuffed animal and birds, as well as his art.[103] Delvecchio may also have visited the American Museum of John Scudder in New York, which had a collection of Indian artifacts and wax figures, as well as the Columbian Museum of Daniel Bowen in Boston, with its wax figures and paintings.[104] These museums would have been most pertinent to his purposes. All three museum-keepers sought to make their collections popular and to exploit their commercial potential.[105]

Like many of the museums of the period the Delvecchio museum consisted of a heterogeneous collection that included exemplars similar to many of the objects of curiosity and spectacle seen in the train of the visiting lecturers, performers and travelling menageries mentioned above.[106] The ceiling tapestry depicted the Sandwich Islanders in their brilliant costumes, executing their dances and military maneuvers. The first room included quadrupeds, reptiles, birds, fishes, shells, insects and twelve life-size wax figures. The second and third rooms contained works of art and mechanical representations. In another separate room there were musical instruments, a pianoforte and an organ. Visitors to the museum were treated to musical accompaniment during the time of their visit.[107]

Among the natural history items were exotic stuffed animals and other creatures including three *luaus nature*. The quadrupeds included a large leopard, a panther, a young tiger, a lion cub, a young wild boar, two lynx, two porcupines, a polar bear from Greenland, a four-foot long lizard, a scaly lizard, an armadillo, a chameleon and a crocodile from the Nile. Among the reptiles were two large serpents, sixteen and eighteen feet long, one of which was a lethal viper from South America, and the other an anaconda from Ceylon.

The bird collection comprised an ostrich, an albatross, a pelican, a russian hen, a toucan, a scarlet ibis, a bird of paradise and several species of pheasants and parakeets. There were devilfish and swordfish, cases of dried butterflies and insects, shells and shellfish. The *lusus naturae* were a lamb with eight legs, a pig with two bodies, four ears, and eight legs, and the head of a ram with four horns.[108]

There was a large array of wax figures, moving automatons and mechanical presentations. The twelve life-size wax figures in the first room represented a South American Indian family, as well as various beautiful women, including the beautiful albiness who had appeared in Montreal. In the second room there were five smaller figures playing tunes on a carillon of bells and a mechanical automaton concert, a mechanical temple of industry, and an automaton playing fanfares. The optical machine presented a variety of views, including the City of London.[109]

A local public commercial museum such as Delvecchio's depended on a continuing clientele who made several return visits.[110] To facilitate visits Delvecchio charged group rates. In order to bring visitors back for return visits, the museum had to be seen as adding

new attractions. The differences, which may be noticed between the account in *Le Spectateur canadien* of August 1824 and the sale advertisements in August and September 1829, indicate only small changes had been made.[111] Delvecchio complained that the patronage of the museum had been "insufficient to indemnify him for his trouble and expences (sic!)," and did not permit him to augment "the natural, artificial and musical curiosities contained in the said Cabinet."[112]

Despite Delvecchio's complaint the museum found a ready buyer after his death.[113] The announcement that the museum was for sale appeared in May 1829 and in September the NHSM decided not to purchase the artifacts.[114] The grocer, Joseph Cajetan Leblanc, a brother of Delvecchio's son-in-law, purchased the museum and it reopened as the Cabinet of Natural History in October 1830. Leblanc advertised continuously and introduced other attractions to the museum.[115] In December 1834, for example, under the heading "Soirées amusantes," the museum was lent to M. Giovani of Paris, who produced showings of Chinese Ghosts on the magic lantern.[116] The museum was open Tuesday and Thursday evenings to accommodate those who were unable to visit during the daytime.[117] It re-

mained open until Leblanc's death in June 1847. The contents of the museum were sold by auction in August of that year and the list of its contents at auction is very similar to the list at its opening in 1824.[118]

Lecturing

As well as the spectacles mentioned above, most public lecturers employed visual effects to demonstrate their material. Studies of the lecturers of the eighteenth century through to the Victorian era urge the importance of performance.[119] The lecturer was on stage, as it were, performing for the audience. Leaving aside for later notice the lectures by local personnel Alexander Skakel, A.F. Holmes, Archibald Hall and those sponsored by the NHSM, mention may be made of several other lecturers, who appeared in Montreal.[120]

In 1815 and 1816 Charles Whitlow advertised lectures on the Linnaean system of classification, employing the first set of illustrative transparent paintings, published by Dr. Robert Thornton as the *Temple of Flora*, to have been brought to North America. Exhibition of the transparencies was accompanied by readings of Thornton's

compendium of poetry by various authors. The first series of lectures in November 1815 was given in the City Tavern operated by Thomas Holmes, father of brothers, Andrew F. and Benjamin Holmes, who were later active members of the NHSM.[121] Gagnon sees this exposition as a more academic form of exposition, but it also fits the spectacle model, with its visual display and use of poetry to illustrate the Linnaean sexual system of classification.[122] For the second series of twelve lectures in May 1816, as a concession to modesty, ladies were admitted in the forenoon and gentlemen in the afternoon.[123] Subscribers paid ten dollars each, an amount that would have limited the audience to members of the middle and upper classes. On the other hand, non-subscribers could view the transparencies on alternate evenings at a cost of $1.00.

The Linnaean method of classification of plants by their sexual attributes, i.e., number of stamens and the pistil, was not unknown in Montreal. Early visitors such as Pehr Kalm, a friend and pupil of Carl Linnaeus, in 1749, André Michaux, a pupil of Bernard de Jussieu, in 1792, and Francis Masson, who corresponded with Linnaeus, and was based in Montreal from 1799 to 1805, had made

the Linnaean system known to the early fur-trading and general mercantile class.[124]

Dr. Willcock Sleigh, R.C.S.L., in 1821 advertised several series of free popular lectures at his Anatomical Theatre, 18 St. Paul Street. The topics of his lectures were optics, the principles of animal economy, and finally craniology, i.e., phrenology.[125] He announced the last named subject as a science "which professes to discover by the shape of the head, the predominant propensities of the human mind." He invited "the Friends and Opponents of Craniology" to hear his lecture and stated that afterwards he would answer objections raised by "professional and literary persons."[126] Such lectures usually employed skulls and busts for illustrative purposes, and manipulated heads for readings. After the lectures on craniology anyone who wished could have "their naturally predominant disposition told them."[127]

In February 1822, Alexander Ramsay, M.D., formerly Lecturer on Anatomy, Physiology and Natural Theology in Edinburgh, appeared at the City Tavern. He claimed friendship with the Right Hon. Sir Joseph Banks and the patronage of the Earl of Dalhousie. Ramsay proposed in four lectures on the philosophy of the human mind

to reduce "philosophy to the important practical religious principles of human nature."[128] He promised an introductory lecture illustrated by elegant preparations, and sought to encourage parents, teachers, and families to attend. The fact that he apparently used anatomical preparations suggests that he also was a proponent of phrenology.[129]

Sleigh's claim that there had been no previous lectures on the subject in America might be accurate, as lecturing on phrenology only began as a lecture and demonstration subject in Britain when Johann Gaspar Spurzheim arrived there in 1814.[130] Phrenology was first articulated in Vienna in the 1790s by Franz Joseph Gall and by the mid 1840s was popular and known throughout Britain. This so-called science does not appear to have made much of a mark in Montreal in the 1820s possibly due to Sleigh's return to Britain. It did, however, gain more popularity in Montreal in the mid- to late-1830s, first under Dr. Jonathan Barber and later in the 1840s under Christopher Dunkin, who was Barber's stepson and son-in-law.[131]

In August 1826, John Cleves Symmes introduced his theory of a hollow earth to Montrealers. He believed that the earth was a hollow sphere open at the poles. He itinerated as a lecturer for ten

years, from 1818 to 1828, propounding his theory and seeking funds to mount an expedition to the North Pole to prove it true. The editor of the *Canadian Courant* published a *résumé* of the lectures and, although sceptical of the theory, remonstrated against journalists who had subjected it to ridicule and witticism. He counseled the use of enquiry, discussion and research in the quest for truth.[132] There were at least four lectures with much recapitulation of points that Symmes had already made.[133]

Conclusion

This chapter has outlined the presentation of public science as spectacle in order to attract and amuse as well as to edify an audience. The use of visual display and showmanship to promote science was typical for the time both in America and in Europe. This visual public science culture was extended in the 1830s by the discovery of the stereoscope and the daguerreotype and in the 1840s by the kaleidoscope. The displays or exhibitions mentioned above were public in the sense that they were presented in public places, hotels, inns, taverns, stores, houses and circuses, which permitted a shared social experience accessible to many. No doubt hosting

such events proved beneficial to innkeepers, storekeepers and others both as a means of publicity and as an attraction that drew clients to their business.

Lawrence Levine remarked that such social settings left the audience prone to "the 'contagion' of other people's reactions - their laughter, rumblings, anger, movements, shouts, ecstasies."[134] They were part of the crowd, sharing its reactions and conversing about them afterwards. Yet despite this social reaction, interpretation was also highly conditioned by one's prior education, life experiences and expectations. Samuel Alberti remarks:

> Viewers observed and reacted to the object, and these responses (and their traces) are symptoms of the relationship between thing and observer. This relationship is historically and culturally contingent, but it is never one-way. However didactic and interpreted an exhibition, responses were a combination of that which was elicited by the display and that which came from within the visitor — things remembered and felt. ... Objects are thus afforded a new set of meanings and values.[135]

As mentioned earlier, Iwan Morus suggested that it was intended that the viewer see through the smoke screen of effects. This may have been true for some after a period of reflection, yet others may have been content to be merely amused. Some might have come away from the spectacle with a very different under-

standing of what had been seen and done and what the meaning was for them.

In the menageries and zoos, with their live animals, some in the audience focused on the eating habits and diet of the animals as well as other habits and characteristics. Comparisons could be made to the animals that were common in their life setting, sheep, pigs, cows and horses as well as domestic pets. Others would see the exotic live animals in the light of their reading of the Bible and exploration and travel narratives as illustrative of what was to be found in foreign settings.

The museum presents its own difficulties and challenges to fathoming visitor reactions and understandings. Alberti suggests:

> visitors responded to objects viscerally, gawking in awe and wonder or recoiling in horror. They touched things ... smelled objects ... talked about them, agreed or disagreed on their meaning, engaged in disputes, or reached consensus. Their reactions wrapped the objects in further layers of meaning.[136]

How did the visitor approach and interpret the exotic stuffed animals and the preserved life found in a museum? Did some compare the various members of the cat family and relate them to their various genera and species? Very different approaches and under-

standings were possible, dependent on education, reading, experience and intent.

Sophie Forgan sees museum visits as entry into places where imagination had free reign:

> The experiences of audiences are infinitely variable and may be linked to the inner world of the imagination. The imagination is not simply stimulated by the eye but is shaped by all five senses, including even taste. "Looking" in the museum requires standing in space, movement through space, and mobilizing the senses to create attention, before any response or understanding of what is exhibited can be achieved.[137]

The visual culture of the period and the knowledge possessed by the audience produced a popular culture inclusive of various aspects of science and differing scientific understandings. In the use of spectacle to amuse or entertain as well as inform and educate popular science culture in Montreal drew upon exhibitions and spectacles that also were presented in other cities in North America and Europe.

From the spectacle, the more inclusive popular science culture, which was experienced in a shared public social context, the next chapter turns to the more intimate life of the individual and the social context of the middle-class family. There, the multiple

sites and contexts of informal and formal science education are explored. One discovers a diverse web of ways that overlapped, reinforced and supported the learning of science.

End Notes

[1] See Simon Schaffer, "Natural Philosophy and Public Spectacle in the Eighteenth Century," *History of Science* 21 (1983): 1-43, and Iwan Rhys Morus "'More the Aspect of Magic than Anything Natural': The Philosophy of Demonstration" in *Science in the Marketplace: Nineteenth-Century Sites and Experiences,* ed. Aileen Fyfe and Bernard Lightman (Chicago: University of Chicago Press, 2007), 336-370.

[2] Morus, 337.

[3] See for example, *Montreal Gazette,* 24 Apr. 1809 advertisement for Signor Falconi's exhibition "Particulars in the bills of the day," *Montreal Herald,* 26 Jun. 1821 advertisement for Cullen's lecture "For particulars see hand bills" and *Montreal Herald,* 5 Sep. 1825 advertisement for Delvecchio's museum "For particulars see the Bills."

[4] Encyclopedia Britannica, "Thomas Young" cites the experiments on light and the publication of Thomas Young, *Experiments and Calculations Relative to Physical Optics,* 1803.

[5] Wendy Bellion, "Object Lessons: Pleasing Deceptions," *Commonplace: The Interactive Journal of Early American Life, Inc.* - <www.common-place.org · vol. 3 · no. 1 · October 2002> [viewed Jun 2008].

[6] See Morus for the history and uses of some of these instruments and their successors, the Induction Coil and the Oxyhydrogen Microscope. For example, on pages 344f., he traces Magic Lanterns back to the 1600s and writes that "Increasingly throughout the eighteenth century they became a staple of popular entertainment, with exhibitors vying with one another to produce new and ever-more-spectacular and inexplicable effects as they tried to stay one step ahead of their audiences' appetites for the macabre or the incomprehensible."

[7] Bellion traces the interest in visual effects in Philadelphia back to the mid-1780s and cites experiments undertaken and philosophical explanations given by David Rittenhouse.

[8] Fred Nadis, *Wonder Shows Performing Science, Magic, and Religion in America* (New Brunswick, N.J.: Rutgers University Press, 2005), 9.

[9] Morus, 338.

[10] *Montreal Gazette,* 24 Apr. 1, 8, 22, 28 May 1809. Nadis, *op. cit.* locates Falconi at Baltimore in 1787 but treats him as a stage magician, 117. According to Bellion, Falconi lectured on "Perpetual Electricity" in Philadelphia in 1796 and demonstrated the deceptions possible using lights and mirrors. (Jeffrey H. Richards gave a paper, which I have not seen, on "The Mysteries of Signior Falconi" at the Charles Brockden Brown Society October 21-22, 2004 in New York.)

[11] Bellion.

[12] *Montreal Herald,* 19 Feb. 1820.

[13] *Ibid.* (editorial comment)

[14] *Montreal Herald,* and *Canadian Spectator,* 20 Aug. 1823.

[15] *Canadian Spectator,* 12 Nov. 1823 and *Montreal Herald,* 31 Jan. 1824. The Collings do not appear on the 1825 Census of Schools in Montreal. In June 1824 Collings advertised his Solar Microscope in Quebec City - see *Quebec Mercury,* 8, 15, 19 Jun. 1824.

[16] *Montreal Herald,* 20 Aug. 1823 editorial comment.

[17] *Le Spectateur canadien,* 19 Juin 1819.

[18] For the Stowell and Bishop Museum see *Montreal Herald,* 16 Jun. 1821 and for Delvecchio's Italian Museum see *Le Spectateur canadien,* 14 août 1824.

[19] For Daguerre see Robert Leggatt, *A History of Photography* <www.rleggat.com/photohistory/history/daguerr.htm>

[20] *La Minerve,* 5 Aug. 1833.

[21] A modern comparison might be the Imax Theatre in the round at Expo 67.

[22] *Montreal Gazette,* 21 Aug. 1809; the advertisement continued to run through September.

[23] *Le Spectateur canadien,* 29 novembre 1817 and *Montreal Herald,* 21 Feb. 1818. There is a pamphlet in the Special Collections department of the University of Edinburgh with the title: "Description of Lord Exmouth's Attack upon Algiers on the 27th of August, 1816; painted by Henry Aston Barker now exhibiting in his PANORAMA, Leicester-Square, written by James Jennings, London

1818 Price Sixpence."
<http://www.lib.ed.ac.uk/resources/collections/specdivision/botmapr06.shtml > [Viewed Jun 2008].

[24] *Montreal Herald,* 21 Feb. 1818 "Books explaining the Picture will be furnished at the Exhibition - Price 1s."

[25] *Montreal Herald,* 27 Aug. 1823; Gagnon cites *Le Spectateur canadien,* 30 Aug. 1823. This panorama presently is installed in the American Wing of the Metropolitan Museum. Gagnon appears to have mistaken the meaning of circus thinking that the panoramas were shown in connection with a troupe of performers rather than in an outdoor structure.

[26] *La Minerve,* 24 Mar. 1831. I have been unable to identify W.S. Hunter. The date is too early for the Canadian artist, William Stuart Hunter [1823-1894].

[27] *La Minerve,* 7 juillet 1836. The list of the scenes appears on a broadsheet illustration at:
<http://newman.baruch.cuny.edu/DIGITAL/2003/panorama/images/waterloo_lg.jpg>. [viewed Jun 2008].

[28] *La Minerve,* 7 juillet 1836.

[29] The Montreal Library Museum reportedly contained the snuffbox of Charles 12th of Sweden and the sword of Stuart of Bute, standard-bearer of the immortal Wallace. *Montreal Herald,* 22 Feb. 1823.

[30] *Montreal Herald,* 25 Aug. 1821. For another instance of an artist introducing himself to the Montreal public see *La Minerve,* 3 mars 1831. The artist, James Duncan, who had arrived in Montreal from Ireland the previous summer, exhibited a large canvas in the Lawyers' Room of the Palais de Justice, five feet high by eight feet wide, of a view of Montreal from the foot of the mountain. The public was invited to view it and assess his abilities.

[31] Jacotel's obituary is found in *La Minerve,* 9 août 1832. The organ-building business was carried on by his pupil/son-in-law.

[32] *Le Spectateur canadien,* 21 octobre 1826 is cited by H. Gagnon, *Divertir et Instruire: les musées de Montréal au XIXe siècle* (Sherbrooke: 1999), 16 and 25.

[33] *La Minerve,* 13 to 30 juillet 1835. Hoffmaster presented his mechanical creations in Quebec City in August and September - *Quebec Mercury,* 29 Aug., 3, 5 Sep. 1835.

[34] *Montreal Herald,* 16 Jun. 1821.

[35] *Bibliothèque canadienne,* 1, no. 2 (juillet 1825): 55 "Dans les seconde et troisième divisions sont les curiosités exclusivement artificielles: on y voit encore des Figures en cire de jeunes garçons et jeunes filles qui paraissent animées et jouent des airs sur des timbres; ... un grand Concert mécanique d'Automates, et une Maison d'Industrie." The number five is found in *Le Spectateur canadien,* 14, 21, 28 août 1824.

[36] *Canadian Courant,* 7 Oct. 1837.

[37] *Encyclopedia Britannica, "Luigi Galvani" and "Giovanni Aldini."*

[38] *Montreal Gazette,* 5 Dec. 1808.

[39] *Ibid.* 19 Dec. 1808.

[40] *Montréal Herald,* 29 Jan. 1823.

[41] See Jan Golinski, *Science as Public Culture: Chemistry and the Enlightenment in Britain, 1760-1820* (Cambridge: Cambridge University Press, 1992), Chapter Six especially 166f.

[42] *Montreal Herald,* 26 Jun. 1821.

[43] *Ibid.* 28 Jul. 1821.

[44] *Montreal Gazette,* 15 Jul. 1834 and *La Minerve,* 17, 21, 24 juillet 1834. One should note that Kauntz was a son-in-law of the late Thomas Delvecchio. See *La Minerve,* 27 mai 1833 for the marriage of Paul Kauntz and Catherine Delvecchio, daughter of the late Thomas Delvecchio.

[45] *La Minerve,* 28 août 1834.

[46] *Ibid.* 21, 24 and 28 décembre 1835.

[47] See for example the editorial note *La Minerve,* 22 septembre 1828: "L'Exhibition de Bestiaux qui a eu lieu JEUDI dernier a été considérable, et les améliorations que les cultivateurs ont faites à leurs races de chevaux, de bêtes à corne, de moutons et de cochons, démontrent qu'on ne saurait douter plus

longtemps des avantages qui résultent de cette institution. Il a aussi été adjugé des prix pour d'excellens fromages. Voici la liste des Prix qui ont été adjugés en cette occasion."

[48] West's Circus, which was based in Quebec City, appeared in Montreal in May and June 1821 (*Montreal Herald,* 16 May 1821) and the promoter erected a circus (i.e., an arena). Blanchard's Equestrian Team from Boston appeared in Montreal in March 1824 (*Montreal Herald,* 17 Mar. 1824). The two circuses merged as West and Blanchard and operated from Quebec City. The appearance in Montreal of these or other circuses may be traced in most years.

[49] A number of these travelling shows and exhibitions are listed by Hervé Gagnon in "Expositions et curiosités à Montréal (1817-1847)," *Musées* 13, no. 2 (juin 1991): 28-35; "Des animaux, des hommes et des choses. Les expositions au Bas-Canada dans la première moitié du XIXe siècle," *Hs/SH* 26 (1993): 291-327; "*L'évolution des musées accessibles au public à Montréal au XIXe siècle: capitalisme culturel et représentations idéologiques*" (thèse de doctorat en histoire, Université de Montréal, 1994) - in which a collection of his published articles were presented; and in *Divertir et Instruire: les musées de Montréal au XIXe siècle* (Sherbrooke: 1999) a published revision of his thesis.

[50] *La Minerve,* 26, 29 juillet 1830 and *Montreal Gazette,* 29 Jul. 1830.

[51] *La Minerve,* 9, 12 août 1830.

[52] *Ibid.* 3 février and 3 mars 1831; the notice is also found in *Canadian Courant,* Sat. 12 Feb. 1831 (dated 2d Feb.).

[53] *Montreal Herald,* 25 Apr. 1821 with editorial comment.

[54] Gagnon cites *La Gazette canadienne,* 4 septembre 1822.

[55] Gagnon cites both *La Gazette canadienne,* 4 septembre 1822, or *La Gazette canadienne,* 26 mars 1823 (sic !).

[56] *La Minerve,* 28 mars 1831 (editorial).

[57] *Montreal Gazette,* Thu 20 Oct. 1836 "Interesting to Naturalists."

[58] *Montreal Transcript,* Sat. 22 Sep. 1838.

[59] *Montreal Gazette,* Thu. 20 Oct. 1836.

[60] See Robert Bogdan, *Freak Show: Presenting Human Oddities for Amusement and Profit* (Chicago: University of Chicago Press, 1988).

[61] See John H. Appleby, "Human Curiosities and the Royal Society, 1699-1751," *Notes and Records of the Royal Society of London* 50, no. 1 (January 1996): 13-27. Barbara T. Gates "Ordering Nature: Revisioning Victorian Science Culture," *Victorian Science in Context*, ed. Bernard Lightman (Chicago: University of Chicago Press, 1997) writes that in the Victorian era "medical anomalies ... were often featured not just in medical publications but also at Victorian freak shows," 184.

[62] Cited by Gagnon, *op. cit.* 24 "Des Animaux ...," 305, *Le Spectateur canadien,* 6 janvier 1817.

[63] Cited by Gagnon, *ibid.* 305, *Le Spectateur canadien,* 18 octobre 1817.

[64] *La Minerve,* 28 avril 1831 and *Canadian Courant*, Sat. 30 Apr. 1831. When Edson died in 1832 it was discovered that his condition resulted from an intestinal parasite.

[65] *La Minerve,* 12 septembre 1831.

[66] *La Minerve,* 28 juin, 2, 5, 9, 16 juillet 1832.

[67]. *La Minerve,* 13 février 1834.

[68] *Montreal Transcript,* 10, 12 Jan. 1837. Here their heights differ from the account of their previous visit.

[69] *Ibid.* The brothers published a book, *An Historical account of the Siamese twin brothers*, a copy of which was listed in the Register Book of Donations to the NHSM.

[70] *La Minerve,* 16 avril 1846 "Curiosité. Le LUSUS NATURAE dont il a été question il y a quelques temps, de deux enfants qui sont attachés ensemble, presque dans la forme de deux frères Siamois est arrivé en cette ville. On peut le voir à l'Hôtel de Québec. Prix d'entrée, TRENTE SOUS. - 16 avril."

[71] *La Minerve,* 14 mars 1836.

[72] Bogdan, *op. cit.* 115.

[73] John Moring, *Early American Naturalists: exploring the American West* (New York: Cooper Square Press, 2002), 3.

[74] There were numerous travel and exploration narratives in the NHSM Library as well as in the Montreal Library.

[75] See the essay by Victoria Carroll, "Natural History on Display: The Collection of Charles Waterton" in *Science in the Marketplace: Nineteenth-Century Sites and Experiences*, ed. Aileen Fyfe and Bernard Lightman (Chicago: Chicago University Press, 2007).

[76] Gagnon cites *Le Spectateur canadien,* 23 août 1817. The notice is also found *Montreal Herald,* 23 Aug. 1817. For this identification of the urus, see J.W. Mackail's review of "T.F. Royds, The Beasts, the Birds and Bees of Virgil; A Naturalist's Handbook to the Georgics," *Journal of Roman Studies* 4, no. 1 (1914): 117-118.

[77] *Quebec Mercury,* 14 Oct. 1817, 6-7 "BATTLE."

[78] Cited by Gagnon, *art. cit.* 311, *Le Spectateur canadien,* 19 and 24 juin 1820. See Stuart Thayer, *American Circus Anthology, Essays of the Early Years* (arranged and edited by William L. Slout, 2005). "(8) Elephant Columbus." "The fourth elephant to reach America, Columbus, was landed in Boston in December, 1817."

[79] Gagnon cites *Le Spectateur canadien,* 8 novembre 1817. See Thayer, *op. cit.* "(4) Grand, Rich and Rare Collection of Living Animals, 1816-1821," with several sequels.

[80] *La Minerve,* 30 octobre, 3 novembre, 29 décembre 1828; 1, 5, 12, 19, 26 janvier, 2 and 9 février 1829. See Thayer, *op cit.* "(16) Boston Caravan of Living Animals, 1826-1828."

[81] Gagnon cites, *La Gazette canadienne,* 4 septembre 1822. See Thayer, *op. cit.* "(11) Exhibition of Natural Curiosities, 1821-1828." "We find them in New England in the fall of 1822, and by this time their consist was: Asian lion, catamount, wildcat, ichneumon, six legged heifer, monkeys, llama, male buffalo, female buffalo, elk, Dandy Jack, marmoset, a total of twenty-six animals, including a 'cammose' which they said came from China." The latter animal has not been identified by any writer.

[82] *La Minerve,* 26, 29 juillet 1830 and *Montreal Gazette,* 29 Jul. 1830.

[83] *La Minerve,* 5, 8 août 1833 and *Montreal Gazette,* 13 Aug. 1833. See Thayer, *op. cit.* "New England Caravan of Living Animals, 1830-1834." "In February, 1833, a large male elephant, Siam, landed in Boston and was added to the New England Caravan. That year they listed their collection and it read: elephant Siam, African lion, buffalo, Asian lioness, tiger, mocca, and hyena. ... the mocca was likely a macaque. ... In June, 1833, the title became Boston and New York Menagerie."

[84] *Canadian Courant,* 13 Jul. 1831; advertisements are found *Canadian Courant,* 8, 13 Jul. 1831, *La Minerve,* 11, 14, 18, 21 and 25 juillet 1831.

[85] *La Minerve,* 28 juin, 2, 5, 9, 16 juillet 1832.

[86] *Montreal Transcript,* Sat. 22 Sep. 1838.

[87] *La Minerve,* 7 juillet 1831.

[88] See, for example, *La Minerve,* 6 février, 21 avril, 30 juin 1834.

[89] *Ibid.* 16 juillet 1835 - editorial comment.

[90] *Ibid.* 16, 20, 23, 27 juillet and 17, 20, 24 août, 10, 14 septembre 1835. See the editorial comments of 16 juillet 1835. On July 26, 2005 the *Montreal Gazette* feature "Pages from the Past" reprinted the advertisement from 28 July 1835 concerning Guilbault's fireworks displays and editorial comments on the event. The first evening attracted "a great concourse of people, there being not less than six or seven hundred individuals present."

[91] *La Minerve,* 7 juillet 1836, 6 juillet 1837.

[92] See *Ibid.* 31 juillet, 7, 21 août.

[93] *Montreal Transcript,* 11 Aug. 1838.

[94] *Gazette de Montréal,* 26 avril 1802.

[95] Diary cited by Gagnon, *op. cit.* 17.

[96] *Montreal Herald,* 16 Jun. 1821.

[97] *Montreal Gazette,* 22 Nov. 1822 and *Montreal Herald,* 23 Nov. 1822.

[98] *Montreal Herald,* 23 Nov. 1822 and *Canadian Spectator,* 4 Dec. 1822 and following, where the advertisement was dated 29 Nov. 1822.

[99] *Montreal Herald,* 29 Jan. and 5 Mar. 1823.

[100] *La Minerve,* 18 and 22 juillet 1833.

[101] *Le Spectateur canadien,* Mon. 7 fév. 1824. The early advertisements in French read "qu'après beaucoup de soins, de voyages et de dépenses, (encore *dernièrement dans les Etats-Unis,*) il est enfin parvenu à former une très belle Collection de choses rares et curieuses." [My italics]

[102] *Ibid.*

[103] Note the reference to visiting the United States in the French advertisement cited in note 101 *supra.* The article by Michel Bibaud in *Bibliothèque canadienne,* 2, no. 1 (juillet 1825) reads "*dans les principales villes des États-Unis,* et y [ayant] vu ce qu'on peut y voir de plus intéressant en ce genre," 53-54. [Cited by Gagnon, "Du Cabinet de curiosités au musée scientifique. Le Musée Italien et la genese des musées à Montréal dans la première moitié du XIXe siècle," *RHAF* 45, no. 3 (hiver 1992): 421.] [My italics]

[104] Gagnon, *ibid.* suggests visits to the Salem East India Society or the Charleston Library Society, the Western Museum of Cincinnati and the American Museum of New York. The Salem East India Society organized in 1799 contained materials collected while trading in the far East (war clubs, masks, and costumes) and models of ships involved in the trade. See for instance <www.salemweb.com/tales/eastindiamarinehall.shtml>. I have not found a reference to a museum in connection with the Charleston Library Society, a subscription library established in 1748. The Western Museum of Cincinnati was founded in 1820 by Daniel Drake. The Western Museum was possibly modeled on that of Charles Willson Peale as Drake studied medicine in Philadelphia in 1815. Although Gagnon mentions Peale's American Museum curiously he does not include it in the list of possible museums visited.

[105] For Peale see C.C. Sellers, *Charles Willson Peale* (New York: Charles Scribner's & Sons, 1969), for Scudder see Michael Wilkens "Today in New York History": P.T. Barnum buys Scudder's American Museum" *NY History Examiner,* at <www.examiner.com/x-40965-NY-History Examiner>, and for Bowen see Wm. P. Marchione, "Daniel Bowen: Boston's Pioneer Museumkeeper" found at <http://www.oaksquare.com/history/daniel_bowen/html>.

[106] Lynn Barber, *The Heyday of Natural History 1820-1870* (Garden City, NY: Doubleday, 1984) "In 1800 such museums as existed were heterogeneous jumbles of 'curiosities' entirely devoid of methodical purpose or arrangement ... The situation in America was rather better since Peale's Museum, Philadelphia was then at its zenith," 152f.

[107] The description of the Museum may be found in *Le Spectateur canadien,* 14, 21 and 28 août 1824 and *La Bibliothèque canadienne,* 1, no. 2 (juillet 1825): 53-55. The advertisement was cited by Gagnon, *op. cit.* 87 and Jean Trudel, "The Origins of Museums in Lower Canada: Thomas Delvecchio's 'Museo Italiano' in Montreal and Pierre Chasseur's Museum of Natural History in Quebec," in *The Private Collector and the Public Institution,* ed. Sheila D. Campbell (Toronto: University of Toronto Art Centre, 1998), 36-37.

[108] *Ibid.*

[109] *Ibid.*

[110] Marchione, *op. cit.* writes "Museumkeeping was a lucrative profession only if the public could be induced to make repeated visits. This meant a constant addition of new exhibits ..."
<http://www.oaksquare.com/history/daniel_bowen/html>.

[111] *La Minerve,* 13 août 14, 21 septembre 1829.

[112] *Canadian Courant,* 25 Mar. 1826 (dated 20 Jan.).

[113] Obituary, *Le Spectateur canadien,* 6 mai 1826. He died on May 5th.

[114] *Montreal Gazette,* 21 May 1829 and NHSM Minutes 28 Sep. 1829.

[115] *La Minerve,* 28 mars 1831 (editorial remarks).

[116] *Ibid.* 8 décembre 1834. "Au Musée Italien, Rue St. Paul, No. 37. Mr. Jos. CAJETAN à l'honneur d'informer le Public en Général, qu'il vient de mettre son Muséum à la disposition de M. GIOVANI, arrivé tout recemment de Paris, pour offrir au Public la représentation des Ombres Chinois à la Lanterne Magique et d'autres Objets de Curiosité du Musée. Les représentations auront lieu le Mardi, Jeudi et Samedi de chaque semaine. La Salle sera ouverte à $6^1/_2$ heures du Soir; on commencera à 7 et on finira à 9 heures. Prix d'entrée Trente Sols. ** Le Muséum sera ouvert comme par le passé depuis 9 heures du matin jusqu'à la brune pour les personnes qui désiront le visiter. - 8 décembre."

[117] *Ibid.* 14 octobre 1830.

[118] *Ibid.* 16 août 1847. Gagnon, "Du Cabinet de curiosités au musée scientifique ..." reaches the same conclusion writing "Entreprise commerciale vieillissante, le Musée italien ne renouvelle pas sa collection après 1826," 428.

[119] See note 1 *supra* as well as Ian Inkster, "The Public Lecture as an Instrument of Science Education for Adults - the Case of Great Britain, c. 1750-1850" *Paedagogica Historia* 20, no. 1 (1980): 80-107; J.N. Hays, "The London Lecturing Empire 1800-1850," in *Metropolis and Province: Science in British Culture 1800-1850,* ed. I. Inkster and J. Morrell (London: Hutchinson Education, 1973); and Donald M. Scott, "The Popular Lecture and the Creation of a Public in Mid-Nineteenth-Century America," *The Journal of American History* 66, no. 4 (Mar. 1980): 791-809.

[120] The English astronomy lecturer Robert Goodacre, with his large orrery and other equipment, is reputed to have visited Upper and Lower Canada in the mid 1820s, but I have been unable to trace him here. See Ian Inkster, "Robert Goodacre's Astronomy Lectures (1823-1825) and the Structure of Scientific Culture in Philadelphia," *Annals of Science* 35 (1978): 353-363.

[121] *Montreal Herald,* 18 Nov. 1815. Whitlow was reputed to have discovered a Canadian plant, Urtica Whitlowi, superior to hemp and flax in all their applications.

[122] Hervé Gagnon, *Divertir et Instruire: les musées de Montréal au XIXe siècle* (Sherbrooke: G.G.C., 1999), 34.

[123] *Montreal Gazette,* Mon. 20 May 1816.

[124] For the biographies of these visitors to Canada see Richard A. Jarrell, "Kalm, Pehr," *DCB* VI, J.F.M. Hoeniger, "Michaux, André," *DCB* V and Richard A. Jarrell, "Masson, Francis," *DCB* V.

[125] *Montreal Herald,* 3, 14 Jul., 14 Aug. 1821 and *Ibid.*, 21 Aug., 4, 18 Sep. 1821.

[126] *Ibid.* 11 Sep. 1821.

[127] *Ibid.*

[128] *Ibid.* 23 Feb. 1822.

[129] *Ibid.*

[130] *Ibid.* 21 Aug. 1821. John van Wyhe, "The Diffusion of Phrenology through Public Lecturing," *Science in the Marketplace: Nineteenth-Century Sites and Experiences*, ed. Aileen Fyfe and Bernard Lightman (Chicago: University of Chicago Press, 2007), 60.

[131] See *Montreal Transcript,* 17 Nov.1836 for Barber's advertisement for a course of lectures on Phrenology. *Ibid.* 6, 28 Sep., 17 Nov. 1836, 3, 5 Jan. 1837. The editor lavishly praised him on 5 Jan. 1837. "During the period that Dr. Barber has been among us, he has acquired a popularity far beyond that of any other lecturer, who has preceded him in this city. ... His first course on Phrenology stamped his character as a lecturer." In March 1837 a guarantee fund was raised by fifty-three persons to keep Dr. Barber as a popular lecturer in Montreal. Christopher Dunkin gave the address on the opening of rooms of the newly formed Mechanics' Institution May 14th, 1840 on "Self improvement and the education of the working classes." He presented a series of ten lectures on Phrenology between November 1840 and February 1841 (Minute Book One of the MIM).

[132] *Canadian Courant,* 2 Sep. 1826. Editorial comments also appeared 9 Sep. 1826.

[133] Notice of the four lectures appears in *Canadian Courant,* 26 Aug., 2 and 9 Sep. 1826.

[134] Levine, "The Folklore of Industrial Society: Popular Culture and its Audiences," *AHR* 97, no. 5 (1992), 1369-1399. The quote is from 1395f.

[135] Samuel J.M.M. Alberti, "Objects and the Museum," *Isis* Focus: Museums and the History of Science 96, no. 4 (2005): 568f.

[136] *Ibid.* 571.

[137] Sophie Forgan, "Building the Museum: Knowledge, Conflict, and the Power of Place," *Isis* Focus: Museums and the History of Science 96, no. 4 (2005): 583.

Chapter Three: Informal and Formal Learning of Science

Chapter three shifts from the previous discussion of public exhibitions and spectacles for a broader audience to an examination of how and where individuals learned science and integrated it into their lives. In the course of the chapter I examine informal and formal sites for science education. Informal learning was and still is the means by which most persons acquire the bulk of their skills, knowledge and behavior.[1] In the early nineteenth century there was a network of sites where informal and formal learning took place, including the home, the church, the community and its environs, and the workplace. A recent study states:

> Everyday science learning is not really a single setting at all - it is the constellation of everyday activities and routines through which people often learn things related to science. What distinguishes everyday and family learning ... is that a significant portion of it occurs in settings in which there is not necessarily any explicit goal of teaching or learning science - at least not part of an institutional agenda to engage in science education. In many situations, scientific content, ways of thinking, and practices are opportunistically encountered and identified, without any particular prior intention to learn about science. In this way, science learning is woven into the fabric of the everyday activities or problems.[2]

Accordingly, much informal learning is contextual in nature based on curiosity, interest and a need or a desire to know some-

thing or about some thing. It is usually social in nature arising from a relationship to or an interaction with parents or peers and may occur in varied sites and at unspecified times. Such learning is integrated into everyday life through reflection over a period of time on one's own interests, previous experiences and learning. Formal learning, on the other hand, in the home or in school, is concentrated and subject oriented and occupies only a small portion of one's day and of one's life.[3]

Bernard Bailyn defines education in terms that are larger than mere schooling. He includes both the informal and formal instruction and knowledge gained in the home, the church, the school and the community. This leads him to a definition of education as "the entire process by which a culture transmits itself across the generations."[4] In similar fashion, Chad Gaffield writes of family reproduction as a future-directed process engaged in by families in order to enhance the possibility of their children attaining economic competency as well as to ensure generational solidarity. In the early nineteenth century various means were employed to satisfy this desire: tuition within the home, apprenticeship contracts, Sunday schools and community schools, as well as the sharing of books.

Early nineteenth century schooling, therefore, was important within this process to the extent that it consolidated and furthered this family strategy.[5]

Espousing Bailyn's definition of education as cultural transmission, Sally Kohlstedt argues the need to "examine a range of private and public behaviors - independent study, conversations, group activities, popular publications, and educational institutions" in order to find where and how a knowledge of science was acquired in the period prior to the 1840s and 1850s. She outlines a number of areas to be considered, including, training in skills and behavior received in the home, informal activities and amusements within the community, and the reading of such journals, newspapers and books as were available, in addition to the more formal curriculum offered in the schools.[6] It is this larger pattern of the acquisition of knowledge of science and of the sites where it took place that is explored in what follows.

The chapter begins with an examination of both informal and formal means of learning in the home with family members and others. This includes a discussion of the difficulty involved in deducing direct family influence and the role of home environment in the sci-

ence learning of youth. Following that, the various sites and activities where a child might learn science in the community and its environs with family and other companions are explored. The increase in educational provision for the poor and the changing elementary school curriculum brought increased concern among middle-class families with respect to the formal education of their children.[7] This concern resulted in an increase in the number of secondary schools that were attended by the children of the more affluent families, schools that become the focus of the following section.[8] There, the elementary and secondary schools where science was taught are mentioned. The subject of the next section is the teaching of science at a post-secondary level. Finally, I allude to those among the constant inflow of immigrants and of students returning from Europe who fostered and promoted or taught science.

The Home and Family as a Site for Science Education

Much of the discussion that follows is more pertinent to the more affluent, i.e., middle- and upper-class, households than to those of the popular class.[9] Alison Prentice points out that in the early nineteenth century the middle-class household was often

larger than the family. It frequently included not only the parents and their offspring, i.e., the biological family, but also tutors, clerks or apprentices, relatives, and servants.[10] There usually were formal contractual obligations on the family for the education of clerks or apprentices who lived in the household, including literacy and numeracy instruction, moral education and the monitoring of behavior.[11] Increasingly, as the workplace was established outside the home, the female member of the household assumed some of the educational obligations. Although compulsory attendance was not required, formal schooling came to be viewed as an extension of the family and as a means of consolidating and extending earlier experiences and learning.[12] Another important feature of more affluent families was that they maintained social relationships and correspondence not only with close relatives and friends in the city and its environs but also with distant relations and acquaintances.

Socialization and learning first took place in the home. The household was the site of both formal and informal learning. There the child first learned vocabulary, speech and reading, as well as how to behave and how to converse with others, imitated parental actions and absorbed some of their attitudes and interests. As

Kohlstedt points out, "the social and intellectual life of girls and boys began ... among family members in a home setting." It was in the home that "parents provided the training that they hoped would enhance interpersonal ties even as it provided skills and behaviour appropriate for a productive economic and social life."[13] In other words, strategies of family reproduction began with conversation, literacy and numeracy instruction, moral education, and training in social skills within a family setting.

In this respect recent work on expectations of parent-child relationships during the nineteenth century is relevant. Aileen Fyfe, for example, examines attitudes towards practices of orality and discussion. She states that "literature on education ... frequently included advice on how to teach children to read, and how and what they should read once this had been achieved."[14] As Fyfe points out, the social activity of reading out loud continued to be the norm. "Young children's earliest experiences of reading were generally of reading aloud in a didactic context, but they also participated in family readings."[15] It also has been noted that one of the aims of reading aloud had to do with a current emphasis on rhetoric and the ability to speak before others.[16]

James A. Secord stresses the importance of conversation in the making of formal knowledge and in the diffusion of science.[17] This would be as true of informal intimate family exchanges as it was of the larger more formal social settings that he discusses. Informal conversations in the home, such as the explanation of the use of a scientific instrument, the exhibition of one's collections, or discussions of one's interests and hobbies with family, visitors and fellow enthusiasts would arouse children's interest or enhance their knowledge. Discussion with an adult or with peers of articles or books read could be stimulating. Many of the amusing and instructive reading books for children in the first half of the nineteenth century featured a parent and children, or an adult and a child, or children together, participating in conversation and activities with each other. Such books written in conversational style suggested the manner in which a parent and child should converse, as well as the freedom the child should have to pose questions and to seek answers, and what type of guidance parents should offer.[18]

Conversations on those occasions when visitors were entertained in the home, or when the family visited others, could also be the occasion for informal learning. Victoria Carroll's point about dis-

tinguishing between the different types of visitors would be relevant in such situations.[19] Intercourse and family involvement would differ depending on whether it was an important visitor who had been invited specifically to view a private natural history collection or to see a demonstration of the use of scientific instruments in the home, or if it was a more familiar visit by intimate friends or relatives. In the former instance a child probably would be subject to more restrictions on participation in the visit and the conversation than in the latter case. On the other hand, much informal learning could take place by merely listening and observing in such settings.

Kohlstedt in her study indicates that the availability of books oriented toward family reading and discussion was pertinent. There was an extensive list of such books that were intended for use with children, many of which were written by female writers. For example, M. Susan Lindee traced the American history of thirty-four successive editions and adaptations of Jane Marcet's *Conversations on Chemistry* from 1806 to 1853.[20] Conceived in an English scientific social circle, the book took the form of a conversation between Mrs. B. and two young girls, Carolyn and Emily. It was this type of informal interaction between parent and child, as well as more for-

mal parlor discussions in the presence of other adults that Kohlstedt envisaged as the in-home setting for the acquisition of scientific knowledge and skills by the middle classes. In effect, these books gave a formal structure to conversations between parent and child and made the book central to some learning about science.

The early availability in Montreal of such books for reading in a home setting is difficult to assess. The earliest two books available that I noted were Margaret Bryant, *Astronomy, for the use of Ladies* (1797?) listed in the 1800 Neilson Book Catalogue, from Quebec City, and Thomas Martyn's translation and enlargement of Rousseau, *Letters on the Elements of Botany* (1785), which was listed at an 1815 auction in Montreal.[21] Beyond what was available through local booksellers and at auction, families had access to materials they could obtain from relatives in Britain.[22] Fiona Black listed several means by which individuals would receive books other than through a local bookseller, including packages addressed to individuals by family members abroad and the receipt of individual orders placed with a British bookseller.[23] By 1840 there were a num-

ber of science oriented books and textbooks available from local booksellers.[24]

There are no extant accounts of holdings of books in middle-class Montreal households during the first third of the nineteenth century. One may, however, look at some of the books written for children that were purchased for the NHSM library to see some of what was available for reading by children in members' households after the date of its founding. Among the first purchases in October 1827 were: Elizabeth and Sarah Mary Fitton, *Conversations on Botany* (London 1817); John Lee Comstock, *Conversations on Chemistry* (Hartford 1822) (This was an American edition of Marcet's book mentioned above which bore her name with additions by J.L. Comstock); and, Wilson and Rebecca Delvalle Lowry, *Conversations on Mineralogy* (London 1822). These books had the familiar format of conversations between an adult and children and would suggest a similar practice within the homes where they were used. Those purchased in 1829 included: James Lawson Drummond, *First Steps to Botany* (London 1826), and Thomas John Graham, *Chemical Catechism* (London 1829).

There were also purchases of books that would have been suitable for reading aloud or for private study by more mature youths. Such books included, for example, three works on mineralogy and geology: Parker Cleaveland, *An Elementary Treatise on Mineralogy and Geology, designed for the use of pupils* (Boston 1816); Ebenezer Emmon, *Manual of Mineralogy and Geology: designed for the use of schools, and for persons attending lectures on these subjects ...* (Albany 1826); and, William Phillips, *An Outline of Mineralogy and Geology, intended for the use of those who may desire to become acquainted with the elements of these sciences, especially young persons* (London 1818).

Within the home private libraries and natural history collections as well as scientific instruments would have been available to family members, including women and children, for study, questions and conversation. An examination of a natural history collection, or the use of and experimentation with scientific instruments, such as telescopes, thermometers and anemometers would provide an opportunity for informal learning.[25]

An important source of scientific information for reading and discussion also could be found in the newspapers published in Mont-

real. Some of the newspaper articles dealt with local natural phenomena and events. For example, in 1815 the *Montreal Herald* published, under the section title "Natural Curiosity," notice of a cavern found in St. Michel. Two weeks later a letter from "A Subscriber" described a visit to the cavern.[26] Other newspaper articles were excerpted from British publications or summarized material found there. The *Canadian Courant*, for example, reprinted a number of science articles under the section heading "Scientific." Such articles, ranging from local phenomena to scientific studies would pique the interest of the readers and may be a gauge of some reader enthusiasms.

Locally published books and periodicals also gave some information on science. In 1823, for instance, William Green, of Quebec City, published a book, *Lower Canadian Plants: Outlined and Drawn in Black and White* in Montreal.[27] *The Canadian Magazine and Literary Repository*, published monthly in Montreal from July 1823 to June 1825, had an introductory science essay in April 1824, which argued the importance, utility, healthy aspects and accessibility of the study of Botany for both sexes.[28] This was followed half a year later by an extended essay on Botany in eight successive is-

sues, which went beyond mere classification to treat of the physiology of plants, dealing with plant structure, nourishment, sap circulation, and propagation.[29] Its rival publication, the *Canadian Review and Literary and Historical Journal*, with five issues between July 1824 and September 1826, printed two essays, "Hints and Observations on the Natural History of Canada - Introduction to the Study - Part 1," and "Hints and Observations on the Natural History of Canada. Part 2," which dealt with zoology.[30] It also contained the essay by J.J. Bigsby, "On the Utility and design of the science of Geology, and the best method of acquiring a knowledge of it, with Geological Sketches of Canada," and a review of his article "Notes on the Geography and Geology of Lake Huron."[31]

A lack of direct evidence makes it necessary to rely on inference in order to tease out parental influences leading to an attainment of scientific knowledge in the home in the early part of the period. However, when a parent was involved in some aspects of science, whether in natural history or in natural philosophy, it is possible to posit that some such influence was present in the home, especially when two or more of the children also showed an interest in science as adults. Stephen Sewell, for instance, while Secretary

to the International Boundary Commission in 1817, kept a diary in which he "recorded meteorological observations and commented on geological structures, soil conditions, flora, and fauna."[32] He was founding President of the Natural History Society and his two sons, Stephen Charles Sewell, M.D. and Edmund Quincy Sewell, M.D., shared his interest in natural history, an interest which may have been awakened in the home. This also may have been the case with James Robertson, M.D., son of doctor William Robertson and grandson of Sir William Campbell. The latter had acted as Superintendent of Mines in Cape Breton from 1799 to 1804. In 1827-28, doctor William Robertson, the father, donated iron ore and other minerals from Marmora in Upper Canada to the NHSM, and his son James Robertson, donated "a very fine specimen of the very rare mineral Petalite from a boulder at York, Upper Canada," where his grandfather then lived.[33]

The case for the acquisition of knowledge of science in the family setting is more difficult to arrive at in the case of other father-son combinations. Publisher and bookseller Robert Armour had two sons Robert Armour Jr. and Andrew Harvie Armour, who were later active in the Natural History Society. Whereas Robert Armour

Jr. attended the University of Edinburgh and entered law, his brother Andrew took over the *Montreal Gazette* and the bookstore. Similarly, fur-trade merchant and editor Francis Badgley had two sons who were actively interested in science, William Badgley, a lawyer, and Francis Badgley, M.D. Because both fathers were involved with the *Montreal Gazette*, which extracted articles from various British publications, it is conceivable that some scientific materials led to discussions in the family context.

The influence of the home environment in nurturing an interest in science among children and women, later in the period, might also be inferred by examining the list of specimens donated by them to the NHSM.[34] In the early nineteenth century the practice of science was changing from "gentlemanly science," that is from is a male-dominated activity, to what has been labeled "polite science" which included women and some children. Increasingly women were encouraged to participate in scientific endeavors by the many science primers written in conversational style by female authors for use with children and youth. James Secord notes that in Britain such books "became a dominant feature of the educational literature of the 1820s and 1830s." He suggests that the very title,

Conversations, "involved a claim that scientific knowledge could be a polite accomplishment."[35] One, therefore, could discuss science in mixed company and women could participate in the conversation in informal gatherings as well as attend lectures and demonstrations. The NHSM made a point of acknowledging donations and donors in newspaper reports and minutes, an act that encouraged non-members and wives and children of members to collect and donate specimens to their museum.[36]

Learning Sites within the Community

Family activities in everyday settings outside the home offered possibilities for meeting with scientific knowledge in different sites. Invitations to visit the homes of friends and relatives, where activities similar to those encountered in the home took place, aroused interest. Collecting was a popular pastime for many persons of both sexes.[37] Botanical and zoological specimens as well as geological material and minerals that were amassed as individuals and families explored and assessed the new land would attract the curiosity and attention of visitors. A number of Montrealers kept diaries of the weather, a subject that was then as always a topic of

conversation.[38] There also were visits to friends and neighbors to view the gardens, some of which may have been awarded prizes by the Floral or Horticultural Society. In this way friends, neighbors and relatives contributed to the education and training of local children and youth.

Recreation, leisure time interests, vacations and hobbies provided occasion for science-related conversation and practice. Walks in familiar and unfamiliar areas could give way to informal learning. Excursions to collect specimens of natural history could lead to the child learning to use the net to capture insects and butterflies.[39] At such times a child or teenager could also be helped with the identification of flora or rocks and fossils and encouraged to collect specimens for a home herbarium or geological cabinet or to donate the specimens obtained to the NHSM. Pastimes such as hunting and fishing also could contribute to learning about nature.[40] Linda Ramey-Gassert characterizes such informal learning environments and activities as "motivational, engaging, enjoyable, and non-threatening" and often "hands-on, experiential, and personal."[41]

Visitors to Montreal also may have provided occasions for some of its inhabitants to converse with them about science. Fre-

derick Pursh, author of a North American flora, was based in Montreal from 1816 to 1820 attempting to prepare a Canadian flora. A.F. Holmes met and exchanged specimens with John Goldie who visited Canada in 1817-1819 and stayed with Pursh while in Montreal.[42] Sir John Franklin and his naturalist companion Dr. John Richardson visited the city in 1827 on their return from the second Arctic exploring expedition and met with some of the Montreal elite.[43] Conversation with these men and others like them would provide informal learning opportunities.

There also were possibilities for meeting with scientific knowledge in the more public settings within the community. Knowledge gained at lectures and exhibitions might have been in play in interesting youth in science in some instances. For example, it is possible that in the spring of 1809, Andrew F. Holmes and Benjamin Holmes, teenage sons of the Innkeeper Thomas Holmes, attended the Natural and Philosophical Experiments of Signor Falconi in the Assembly Room of their father's City Hotel. On the other hand, as Skakel's pupil Andrew would have attended his lectures on natural philosophy. Again, given his interest in botany, it is possible

that Andrew F. Holmes was present in November 1815 at Charles Whitlow's botanical lectures in his father's hotel.

Although there was no sharp division between lectures intended to entertain and those devoted to instruction, some seemingly leaned more to one aspect than to the other. Thus performance varied from the seemingly magical or illusionary illustrations to the use of instruments that served instructional aims. The presentation in the lecture courses that were offered by Alexander Skakel on Natural Philosophy, by Andrew F. Holmes on Chemistry and Botany, by Archibald Hall on Chemistry and Botany, were illustrated with many experiments and specimens.[44] John Finch, in his geology lectures sponsored by the NHSM, illustrated his discourses with many specimens. These lectures would appear to have been more focused toward instruction and education affording learning opportunities, particularly for youth.[45]

Visits to museums, horticultural gardens and zoos also held the possibility of increasing interest in science and learning about it. In the menageries, zoos and museums that came to Montreal one could encounter and see live or preserved animals. Some of the animals might have been known through Bible stories or from fa-

bles, adventure stories, or travel narratives. There was the opportunity for families to visit Delvecchio's Museo Italiano with its group rates, or Guilbault's Jardin botanique to view the floral display and to enjoy the music and fireworks. Hervé Gagnon sees Delvecchio's museum as "une enterprise commerciale qui exploite le marché fertile de la curiosité et la sociabilité de la société anglaise."[46] He cites Michel Bibaud on the educational potential of the Italian Museum:

> Nous conseillerions de le voir, non seulement aux personnes qui veulent se récréer agréablement, mais encore à celles qui ont quelque désir de s'instruire, persuadé que des visites à ce Cabinet leur vaudraient autant, et meme mieux, que des leçons d'un professeur d'Histoire Naturelle, qui n'aurait pas les memes objets à mettre sous les yeux de ses élèves.[47]

For children and dependents of NHSM members a visit to the NHSM museum was also possible. Walter Hendrickson sees the reason for establishing natural history museums during this period as "a 'practical school' at which children would learn 'the book of nature'."[48] One may see a hint of this in the words used to explain the founding of the NHSM museum. It was "an institution which experience has proved to have great power in calling the attention to scientific pursuits, and the want of which was forcibly felt by several

members, who looked back upon the causes which in their younger days retarded their own improvement."[49]

Formal Education in Elementary and Secondary Schooling

During the period from 1815 to 1842, in spite of or perhaps even because of the complex web of denominational rivalries and alliances, provision for elementary schooling in Montreal increased and educational expectations rose.[50] The growth of opportunities for schooling and the broadening of the school curriculum were influenced by several factors. The monitorial schools of the National School Society and the British and Canadian School Society provided opportunities for children of the poor. Andrée Dufour documented that 1825 and 1835 the number of scholars receiving free elementary education rose by 60% from 1,202 pupils to 1,921.[51] Her survey, however, does not take into account Sunday Schools that were founded to ensure that Protestants could read the Bible. The readers that were used in the monitorial schools included lessons based on natural history, fables, classical and Biblical stories.[52]

In addition to the two monitorial school societies, there were many Church-sponsored as well as privately run schools, which

charged nominal fees. The *Education Acts* passed by the House of Assembly in 1824 and 1829 were intended to increase literacy in rural areas and applied only to the parishes, seigneuries and townships of the Province.[53] Nevertheless, the 1829 *Education Act* that established a growing number of schools across the province also spurred Montrealers to seek education for their young. The inclusion of grammar and geography in the monitorial school societies' curricula also raised expectations. By 1835 many elementary schools also offered grammar and geography in addition to reading, writing and calculation or arithmetic.[54]

Heightened expectations of elementary schooling may be seen in the late 1830s. The 1836 Act to establish normal schools to prepare teachers for elementary schools advocated reading, writing, arithmetic, grammar, mensuration and geography as subjects of study. Two years later, in September 1838, in his letters under the pseudonym "C.D.," Jean-Baptiste Meilleur (the future Superintendent of Education for Canada East) proposed two levels of education as the basis of the school system, an elementary level offering reading, writing and arithmetic (to the rule of three) and a second level offering reading, writing, arithmetic, bookkeeping,

grammar, rhetoric, mensuration and geography, beginning with North American geography. The second level was intended for the training of elementary school teachers. Meilleur proposed that within six years time no one be allowed to enter upon an apprenticeship for a trade without an elementary education.[55]

In turn the enlarged curriculum of elementary schooling and the rising numbers of scholars among the children of the labouring class led to an increased desire on the part of the middle class for advanced schooling as a means of retaining or advancing their children's social and economic status.[56] For example, John Fleming's "An Essay on the Education and Duties of a Canadian Merchant" advocated an extensive curriculum in addition to apprenticeship. The elementary curriculum was to consist of English grammar, writing, arithmetic and bookkeeping. Subjects to be included at the next level of schooling were mathematics, navigation, geography, ancient and modern languages (especially French), ancient and modern literature, history, natural and moral philosophy, and chemistry.[57] Moreover, the qualifications required for entry to study for the professions of medicine and law included the mastery of the classical languages and mathematics. As the period advanced, ap-

prenticeship alone no longer sufficed for licensing as a professional. Increasingly the regulations governing entry to the practice of law and medicine called for some formal studies.

There were a growing number of schools providing secondary education intended particularly, but not exclusively, for pupils from more affluent homes.[58] Due to inter- and intra-denominational rivalries these included: the Montreal Grammar School, which from 1818 was under the jurisdiction of the Royal Institution for the Advancement of Learning with Alexander Skakel as Schoolmaster; the Union School founded in 1819 run by the Workman brothers, Benjamin and Alexander; the Rev. Henry Esson's Montreal Academical Institution founded in 1822, displaced in the mid-1830s by the Rev. Edward Black's St. Paul's School founded in 1829; and the Church of England Parish School run by the Rev. James Ramsay founded in 1828. There was an attempted rapprochement in the field of secondary education in 1834 when it was proposed that the three leading schoolmasters, Skakel, Ramsay and Black, be appointed professors at McGill College and be permitted to operate a joint Grammar School there.[59] It may be noted that in this period of political turmoil all three apparently belonged to the *British party*. This move

was thwarted by the fact that in 1832, when McGill College had been given the right to grant degrees in medicine, the four professors of the Medical School were appointed to the only available chairs.

Alexander Skakel was the first person to formally teach science in his Montreal Classical and Mathematical School which was founded in 1799. Until 1810 the Classical and Mathematical School was located in a rented house at Place d'Armes, and it subsequently moved to 27 Little St. James Street.[60] In 1811, several Montreal citizens collected the sum of £400 in order to equip Skakel's school with philosophical apparatus to illustrate his teaching of natural philosophy.[61] The instruments thus obtained included "lenses, microscopes, telescopes, models of pumps, and 'a large electrical machine complete,'" which permitted him to illustrate his encyclopedic-like lecture courses on "mechanics, hydrostatics, electricity, galvanism, magnetism, optics, and astronomy."[62] He began an evening series of illustrated lectures on natural philosophy that lasted from November to April, year after year from 1813 into the 1840s.

A further opportunity for pupils at the Grammar School and for the public in general to follow science came with the return of

Skakel's pupil, A.F. Holmes, M.D., L.R.C.S.E., from Europe. In 1820 he advertised a course of elementary lectures on chemistry while in 1821 and 1822 he advertised a course of experimental lectures on chemistry that ran on Saturday evenings while Skakel lectured on Wednesday evenings.[63] It is not possible to say whether he lectured in Skakel's School Room more than three years but his lectures, which became part of the curriculum of the Montreal Medical Institution in the fall of 1823 and of its successor the McGill Medical Faculty in 1829, remained popular and accessible. Dr. Daniel Tracey's letter published in 1827, stated that:

> Dr. Holmes has every winter delivered a course of lectures on Chemical Science. At their commencement *they were entirely popular and attended both by Ladies and Gentlemen* but after the establishment of the Monreal Medical Institution they became in a much more extended form a part of the lectures given annually to that school of Medicine.
> Though more particularly adapted to Students of Medicine, *they are yet sufficiently popular to be fitted to the General Student* especially as the lecturer is careful to illustrate every doctrine and quality of the substances mentioned (so far as they are receptive of it) by experiments in which from the extent of his apparatus and from his assiduous attention he is very successful - I express my hope that since the means of instruction in scientific pursuits are now afforded in Quebec and Montreal, they may excite a corresponding attention and inclination to those Sciences, which though they at present are considered both in Europe and the United States as *a necessary part of a genteel education* have been heretofore almost totally neglected in these provinces.[64] [My italics]

The educational philosophy enunciated by the Rev. Henry Esson, who operated the Montreal Academical Institution from 1822

to 1834 and was one of the founders of the NHSM and the MMI, illustrates where and how scientific material fit into the school curriculum. In a pamphlet outlining the curriculum taught in the school, he stated, "the branches of a liberal education may be comprehended under three capital divisions, viz., Mathematics, Classical Learning and General Knowledge." He claimed that mathematics "while they are of extensive use and application in the Arts, Sciences and Philosophy ... furnish ... the best discipline for the development of the powers of judgment and reasoning," while "Classical Studies ... shed a universal light over the field of human knowledge." As for General Knowledge, in his teaching "the ground work of it is laid, in an acquaintance with the elements of Chronology, Geography, History (Civil and Natural), Antiquities and a general view or *outlook* of Science and Philosophy." The advanced classes also included lectures on natural history, chemistry, and natural philosophy.[65]

There were several other schools, both elementary and secondary, which offered science in the curriculum by 1835. The Montreal Infant School, where tuition was free, offered natural history. Mrs. Westgate's bilingual mixed school in Quebec suburb, offered

physics. Three English middle class schools with mixed classes offered science: the Misses F. and C. Nichol, in St. Antoine suburb, astronomy; Miss M.A. Fisher, in Ste. Anne suburb, physics and chemistry; and Mrs. Fitzgerald and Miss Gale's, in the old City, astronomy.[66] John Bruce, with a middle class school for boys, offered private lessons in astronomy.[67] Miss Felton's Academy in St. Antoine suburb, one of the elite schools for girls, offered astronomy and the Congregation de Notre Dame girls' boarding school offered chemistry. By 1835 three of the advanced boys' schools offered science: St. Paul's School taught applied chemistry; the Petit Seminaire physics and chemistry; while Alexander Skakel, at the Royal Grammar School, continued his evening lectures on natural philosophy, which were open to his pupils.[68] This largely follows Kim Tolley's finding that natural philosophy, astronomy and chemistry were the most common science subjects taught in schools. It does not, however support her thesis that more science was taught to girls than boys.[69] The acquisition of the classical languages and mathematics, moreover, was still key to entry to the professions and to the university study of science.

Moreover, one should note that this survey of science education at the elementary and secondary levels does not take account of students, who were taught by private tutors. The Rev. James Somerville, for example, after he came to Montreal in 1802 had several private pupils, including Archibald Ferguson, who later was editor of the *Montreal Herald.* Other family arrangements are very difficult to trace. Nevertheless, Newton Bosworth writing in 1839 stated, "There is also much private tuition in the families of the more wealthy inhabitants." [70]

Post-secondary Schooling

This section turns from the discussion of secondary education to canvass the availability of post-secondary learning sites. In his essay, Esson highlighted the advantages of an education in Montreal, including the availability of lectures on chemistry, botany and natural philosophy and access to the museum of the NHSM. For medicine he advocated the lectures in medicine and surgery with clinical studies at the MGH and access to the Medical Institution's library. He asserted that "a period of study in Montreal will abridge the period of study otherwise required for taking a degree in Edin-

burgh or Dublin."[71] In other words, there was a network of supporting institutions and sites that would extend what science was learned in his and other schools, and an acknowledgement that the foundation in science provided in Montreal was recognized abroad.

In the absence of a local university or college, it was in the teaching of medicine that science instruction first took root.[72] There mineralogy appeared as part of the chemistry course and botany was important in the study of materia medica.[73] Both A.F. Holmes and Archibald Hall who taught botany had personal herbaria. The link of geology and mineralogy with chemistry was of long standing. Holmes had his personal geological and mineralogical collection to use while teaching chemistry. Hall, on the other hand, while Professor of Chemistry from 1842 to 1849, borrowed geological and mineralogical specimens from the NHSM for his course. From 1847 to 1850 at least three letters were sent Hall requesting the return of the materials. In consequence Hall withdrew from the NHSM in 1852. It must be noted that entry to the lectures on chemistry, mineralogy, and botany was not restricted to medical and pharmacy students.

Medical lecturing had developed out of the initiatives taken by Andrew Smyth [d. 1824], a surgeon, who retired from the army in 1817 and began practice in Montreal.[74] He was an early advocate for a general hospital in Montreal.[75] Then in 1818 he commenced lecturing on anatomy and surgery in his house at 11 St. Joseph Street.[76] It appears from subsequent advertisements that there was also a second course, which began in July 1818.[77]

Subsequent to this, three sessions of medical lectures were offered by a doctor W. Willcocks Sleigh, R.C.S.L.[78] The first session was held in the fall of 1819 in the offices of Dr. Martyn Paine, A.B., M.D. (Harvard) at 68 Notre Dame Street.[79] It consisted of lectures on anatomy, surgery and physic (medicine).[80] A second course was announced at Sleigh's Scola Medicinae in his Anatomical Theatre at 18 St. Paul Street in March 1820.[81] In early 1821 he announced the postponement from January to May 1821 of a course on physiology.[82] He then advertised for what would appear to be a Lecturer in Botany to complement his lectures. [83] A third annual course of anatomical lectures and dissections was to take place in the fall of 1821.[84]

The return from study in Europe of Andrew F. Holmes, M.D., R.C.S.E., in 1819, and of John Stephenson, M.D., R.C.S.L., in 1820, and their appointment to the medical board of the Montreal General Hospital led to the founding of the Montreal Medical Institution. In August 1822 Stephenson obtained permission from the medical officers of the MGH to give a course of lectures on anatomy and physiology followed by a course the following spring on surgery.[85] That same fall A.F. Holmes announced his third course of lectures in Skakel's schoolroom on experimental chemistry to begin on December 15th.[86]

The provision of these lectures prompted the medical officers of the MGH to consider establishing a medical school. At a meeting held October 20th 1822, doctors Stephenson and Holmes were asked to draw up the plans. A week later, a proposal for a school modeled on that of Medical Faculty of Edinburgh University was approved and forwarded to Governor-General Dalhousie for his approbation. Accompanying the proposal were two letters, one from Dr. William Robertson suggesting a reform of the Montreal Medical Examining Board, and another from the Rev. Henry Esson proposing a "classical and philosophical seminary," or college, for Montreal.[87] By

December the medical officers had received a favourable reply to their proposal for a medical school and a reform of the examining board appointed the medical officers of the MGH as its members. Esson later wrote that there was nothing that came of his proposal.[88] Given the coincidence of dates, it is possible that the beginnings of medical teaching at Montreal and Esson's proposal for a college here played a part in the decision of the Bishop Jacob Mountain to name the first pro forma professors for McGill College late in 1823.

The medical officers of the MGH and the faculty of the Montreal Medical Institution were predominately doctors trained in Edinburgh. Two former army doctors William Caldwell and William Robertson were appointed senior lecturers. The former lectured on the Practice of Physic (later known as the Principles and Practice of Medicine) and the latter on Midwifery and the Diseases of Women and Children as well as serving as Treasurer of the institution. John Stephenson, M.D. (Edin.), R.C.S.L., a former pupil of the Collège de Montréal and apprentice of Robertson, was Lecturer on Anatomy and Physiology, and on Surgery, as well as Secretary of the Montreal Medical Institution. Andrew F. Holmes, M.D. (Edin.), R.C.S.E., a

former pupil of Skakel and an apprentice of J.D. Arnoldi, was Lecturer on Chemistry, Pharmacy and Botany. Dr. William Lyons, M.D. (Edin.), a military doctor, was also on staff from 1823 to 1825, replacing Henry Loedel who resigned.

On Wednesday June 24th 1829 there was a ceremony marking the formal taking of possession of the late James McGill's Burnside estate. Among those present were the lecturers at the Montreal Medical Institution. Archdeacon G.J. Mountain, titular Principal of the College, in his remarks indicated that the Governors of the Royal Institution would establish a system of collegiate education, and engraft upon the College the well-known and respectable Medical Institution now in existence in the city.[89] Immediately after the ceremony the latter arrangement was consummated and the staff of the Montreal Medical Institution became the Medical Faculty of the University of McGill College, and thus the first teaching faculty.

After Caldwell's death in 1833, Robertson became Professor of the Practice of Physic, Stephenson became Professor of Midwifery and Diseases of Women and Children, while retaining Anatomy and Physiology, and John Racey M.D. (Edin.), R.C.S.E., a pupil of Daniel Wilkie in Quebec and Henry Esson in Montreal, as well as

apprentice of William Caldwell and former student of the Montreal Medical Institution, was appointed Lecturer in Surgery and Institutes of Medicine. When Racey resigned two years after his appointment to return to Quebec, George W. Campbell, A.M., M.D., R.C.S.E., a graduate of Glasgow University, was appointed to succeed him.[90] Archibald Hall, M.D., R.C.S.E., a pupil under Skakel at the Grammar School, an apprentice of Robertson and former student of the McGill Faculty, was appointed Lecturer in Pharmacy, relieving Holmes of one of his responsibilities.[91]

The political troubles of the times overtook the Faculty and there were no graduates listed for the years 1837 to 1840. Further changes came in 1842, precipitated by the death of John Stephenson and the resignation of William Robertson due to health problems, which left only Holmes of the original four teachers still on staff.

Study Abroad

The practice of enhancing one's knowledge and skills by pursuing advanced studies in Europe or the United States had developed early because of the lack of higher education facilities in the

Canadas. Medical students particularly, and especially pupils and apprentices of two of the Montreal Medical examiners, J.D. Arnoldi and William Robertson, went to Great Britain to obtain degrees and the recognition afforded by the medical licensing bodies there. Several of those mentioned below also visited or attended one or more institutions in several countries, Scotland, Ireland, England, France and Germany. In large part it was these students who brought back more recent scientific and medical knowledge to the Canadas and sought to interest others in the sciences, and who also were responsible for the continuing links to Britain and Europe.[92]

Edinburgh was an early mecca for such Montreal students. Jacques Labrie, René-Joseph Kimber, Peter Diehl and William Dunbar Selby went there in the first decade of the 1800s. Andrew F. Holmes and John Stephenson followed them late in the second decade. The third decade saw J.-B.-C. Trestler, F.T.C. Arnoldi, Francis Badgley, and Francis W. Porter there. John Racey, James Robertson, Thomas Walter Jones, Archibald Hall, the brothers Stephen Charles and Edward Quincy Sewell, Aaron Hart David and William Macnider followed in the 1830s. Most of these men had apprenticed and studied for a period in Montreal and sought a recognized degree

and the status, which was obtained by one or more years of study abroad.[93] Among the non-medical students to attend Edinburgh University was Robert Armour Jr.

Other Montreal medical students sought training at London Hospitals and the recognition conferred by the licences of the Royal colleges of London. Among them were the brothers Henry-Pierre and Pierre-Charles Loedel, E. Henry Mount and Christopher Carter. John Stephenson also had obtained such recognition along with his degree from Edinburgh.

Conclusion

In the family circle and through family activities children learned both informally and formally about science. Leisure pastimes and activities within the community added to their knowledge. Visiting and conversing with neighbors and friends, collecting natural history specimens, visiting museums, zoos and horticultural gardens, attending spectacles and lectures excited curiosity, aroused interest and enriched their experience and knowledge. In these ways science entered into Montreal's urban culture and sup-

port for the teaching of science and for scientific activities was engendered.

The development of elementary, secondary and post-secondary education allowed for the consolidation and enhancement of what had been learned informally. In the absence of a university, the teaching of medicine provided an opportunity to those who wanted to study botany, mineralogy, and chemistry more intensely. In this regard, those who had studied abroad and taught in Montreal after their return played an important role in the diffusion of scientific knowledge.

The next chapter moves from this sketch of individuals learning science in informal and formal settings to the effects that civic pride and various ethnic, political and religious conflicts had on the attempts to erect a building that would symbolize the role of science and literature in Montreal culture.

End Notes

[1] John H. Falk, "Museums as institutions for personal learning," *Daedalus* 128, no. 3 (Summer 1999) "It has long been recognized, but rarely publicly acknowledged, that most people learn much if not most of what they really know outside the formal education system," and J. Randall Crockett, "Training and development for informal science learning" *Public Understanding of Science* 6 (1997), 88. "Informal education has been the traditional way by which the human race has educated its young," 259.

[2] National Research Council, *Learning Science in Informal Environments: People, Places and Pursuits,* (Washington, D.C.: National Academies Press, 2009): 93.

[3] *Ibid.* 29.

[4] Bernard Bailyn, *Education in the Forming of American Society,* (Chapel Hill, N.C.: University of North Carolina Press, 1960): 14 cited by Sally Gregory Kohlstedt, "Parlors, Primers, and Public Schooling: Education for Science in Nineteenth-Century America," *Isis* 81 (1990): 428.

[5] Chad Gaffield, "Children, Schooling and Family Reproduction in Nineteenth-Century Ontario," *CHR* 72, no. 2 (1991): 157-191.

[6] Kohlstedt, *art. cit.* 427f.

[7] Andrée Dufour, "Diversité institutionelle et fréquentation scolaire dans l'Ile de Montréal en 1825 et en 1835," *RHAF* 4, no. 4 (1988) writes "Par la création de nouvelles écoles essentiellement gratuites, patronnées par des Société d'éducation et de bienfaissance, la bourgeoisie montréalaise montre un souci d'instruire les defavorisées, plus nombreux depuis la décennie 1830," 522. I have used the term "middle-classes" in this chapter in spite of the difficulties involved because it occurs in the literature dealing with education in both Lower and Upper Canada during this period. Alternatively, I sometimes have employed "more affluent class/classes." Dufour, for example, uses "classes moyennes" with French-Canadians and "bourgeoisie anglophone" with English-Canadians and "classe ouvrière" without a language distinction. I have used popular class and working class to denote those whose livelihood was tied to a daily or weekly wage, viz., day labourers, domestic servants and others without a trade skill. See note 9 *infra.*

[8] Dufour, *art. cit.* notes "Beyond the power struggles for control of elementary education, the concern of certain members of the English-speaking bourgeoisie of the Island to inculcate their values by the agency of the school seems to us to be the source of this disparity in the rate of scolarity of the English-speaking

population," 528.

[9] It is important to note that there were English-speaking Montreal families that may be classified as middle-class, i.e. they did not belong to the top 10% or most affluent families. Families from which three of the most active members of the NHSM came, for example, would appear to be such: A.F. Holmes' father was an innkeeper and later boardinghouse keeper; John Stephenson's father a tobacconist; and Archibald Hall's father a hatter.

[10] See Alison Prentice, "Education and the Metaphor of the Family: The Upper Canadian Example," *History of Education Quarterly* 12, no. 3 Special Issue: Education and Social Change in English-Speaking Canada (Autumn 1972): 283.

[11] R. Tremblay, "*La nature des process de travail à Montréal entre 1790 et 1830* (Thèse de maîtrise, Université de Montréal 1979) "Apprenticeship contracts required the master to provide instruction in reading, writing and arithmetic as well as a knowledge of the trade," 103f.

[12] For Quebec compulsory school attendance of children was more than a century in the future. See Alison Prentice for the school as an extension to the family.

[13] Kohlstedt, *art. cit.* 428f.

[14] Aileen Fyfe, "Reading Children's Books in the late Eighteenth-Century Dissenting Families," *The Historical Journal* 43, no. 2 (June 2000): 453-473. Her survey suggests that the understanding of reading practices in dissenting families in the eighteenth century had by the early nineteenth century become common in Church of England families as well. The quotation is from page 464.

[15] *Ibid.* 466.

[16] Lindley Murray, *The English Reader, or, pieces in prose and verse: selected from the best writers, designed to assist young persons to read with propriety and effect, to improve their language and sentiments, and to inculcate some of the most important principles of piety and virtue. ... to which are prefixed the definitions of inflexions & emphasis and rules for reading verse, ...,* (London 1824) was a popular school text in use in Montreal that had the aim of having children read aloud. Bruce Curtis "Some Recent Work on the History of Literacy in Canada," *History of Education Quarterly* 30, no. 4 Special Issue on the History of Literacy (Winter 1990) writes "Reading was primarily an oral activity and popular reading books, such as Lindley Murray's English Reader, were filled with selections meant to be read aloud," 616. Curtis also points out that Upper Canada authorities purchased schoolbooks through John Neilson in Quebec City,

which would suggest the ready availability of such texts in Lower Canada. ("Joseph Lancaster in Montreal (bis): Monitorial Schooling and Politics in a Colonial Context," *Historical Studies in Education/ Revue d'histoire de l'éducation* 17, no. 1 (2005): 12 n. 27.

[17] James A. Secord, "How Scientific Conversation Became Shop Talk," in *Science in the Marketplace: Nineteenth-Century Sites and Experiences,* ed. A. Fyfe and B. Lightman (Chicago: University of Chicago Press, 2007) "Oral performance ... has been and remains at the heart of the making of knowledge," 14.

[18] Fyfe, *art. cit.* 464. For the availability of this type of book see the discussion *infra.*

[19] Victoria Carroll, "Natural History on Display: The Collection of Charles Waterton," in *Science in the Marketplace: Nineteenth-Century Sites and Experiences,* eds. A.Fyfe and B. Lightman (Chicago: University of Chicago Press, 2007), 271-300.

[20] M. Susan Lindee, "The American Career of Jane Marcet's Conversations on Chemistry, 1806-1853," *Isis* 82, no. 1 (March 1991) 8-23.

[21] Sandra Alston, "Canada's First Bookseller's Catalogue," *PBSC* 30, no. 1 (1992): 7-26. The astronomy book in question is listed on page 18, which is the reproduction of page 8 of the catalogue. See *Montreal Herald,* 8 Jul. 1815 advertisement for auction by M.C. Cuvillier & Co. The same auction listed Erasmus Darwin's works: *Temple of Nature, Botanic Garden,* and *Loves of the Plants.*

[22] Some of the auction sales of books were extensive but without a catalogue it is impossible to say how many books on science were included among them. For example: *This was Montreal 1815* excerpt from *Montreal Herald,* 16 Sep. 1815. "10,000 VOLUMES. French and English books. ... Ten thousand volumes BOOKS, forming probably the most extensive Collection that ever has been offered at public sale in this city. ... Catalogues of the Books will be printed, and ready for delivery on Wednesday next," 43.

[23] Fiona A. Black, "Importation and Book Availability," *History of the Book in Canada, volume one, Beginnings to 1840,* ed. P.L. Fleming et al. (Toronto: University of Toronto Press, 2004), 115-124.

[24] For example, *Montreal Gazette,* Sat. 26 Dec. 1840 "SCIENTIFIC WORKS" listed for sale by Armour & Ramsay 141 titles of which 67 were related to science. Among them were the following related to reading by/to children: Mrs. A.H. Lincoln, *Familiar Lectures on Botany,* Mrs. A.H. Lincoln Phelps, *Familiar Lectures on Natural Philosophy,* and John L. Comstock, *Introduction to Mineralogy.*

The list also included: 15 volumes of the series of Natural History relating to various forms of animal life, P.H. Gosse, *The Canadian Naturalist*, John Torrey and Asa Gray, *Flora of North America*, Sir John Herschel, *Treatise on Astronomy*, the Bridgewater Treatises (available as a set or individually), Thomas Nuttall, *Ornithology of the United States and Canada*, and Wilson and Bonaparte, *American Ornithology*.

[25] Telescopes and mathematical Instruments were listed at auction in Montreal as early as 1815. See *Montreal Herald,* 7 Oct. 1815 sale by Warwick & Sanford, and *ibid.* 4 Oct. 1817, Sale by Stewart Spragg.

[26] *Montreal Herald,* 15 and 29 Jul. 1815. The letter was dated 21 July.

[27] Cited in *Chronology: Andrew F. Holmes and his time.* On line at <http:epe.lac-bac.gc.ca/100/205/301/ic/cdc/holmes/english>

[28] "On the Study of Botany," *The Canadian Magazine and Literary Repository* 2, no. 10 (April 1824): 319-325.

[29] "On Botany," *Ibid.* 3, no. 17 (Nov. 1824): 385-388; "Chapter I. On the Structure of Plants," 3, no. 18 (Dec. 1824): 484-487, 4, no. 19 (Jan. 1825): 6-10, 4, no. 20 (Feb. 1825): 135-138, 4, no. 21 (Mar. 1825): 196-203, 4, no. 22 (Apr. 1825): 289-296; "Chapter II. On the Nourishment of Plants," 4, no. 23 (May 1825): 409-413; "Chapter III. On the Circulation of Sap; Chapter IV. On the Propagation of Vegetable Bodies; Chapter V. On the Physiology of Vegetables; Of Classification," 4, no. 24 (Jun. 1825): 501-515.

[30] *Canadian Review and Literary and Historical Journal,* 2, no. 3 (Mar. 1825): 205-208 and 2, no. 4 (Feb. 1826): 319-336.

[31] *Ibid.* 1, no. 2 (Dec. 1824): 377-395 [attributed to Bigsby] and 2, no. 4 (Feb. 1826): 319-336.

[32]. F. Murray Greenwood, "Sewell (Sewall), Stephen," *DCB* VI.

[33] R. J. Morgan and Robert Lochiel Fraser, "Campbell, Sir William," *DCB* VI. It also may be noted that James Robertson died at his grandfather's home in 1833. See NHSM Minutes 30 Jul. 1827 for William Robertson's donation and *ibid.* 27 Aug. 1827 for James Robertson's donation.

[34] See, for example, the following donations: NHSM Minutes 25 Feb. 1828 Mrs. Judge Ogden "23 valuable shells"; *ibid.* 28 Jul. 1828 Mrs. Valentine "a most splendid collection of insects (about 200) from the East Indies"; *ibid.* 26 Oct.

1829 Mrs. Michael and Miss F. Hays "a large collection of shells collected by themselves on the sea coast of the United States, another collection from the West Indies, a specimen of mica from Oyster bay, Long Island, and the perfect skeleton of a crab."

[35] James A. Secord, 14.

[36] Some examples of donations by children of members are given in the notes in the next section of this chapter. See, for example, the note 39 *infra.*

[37] See note 32 *supra.* The NHSM asked persons known to have personal collections to deposit them in the museum. See details in Chapter Five.

[38] For example, Robert Cleghorn, Doctor William Robertson, William Skakel, and John S. McCord are known to have kept such diaries.

[39] One might point, for example, to the sixty-nine specimens of butterflies and other insects collected by Masters William and George Cleghorn during the summer and presented to the NHSM (NHSM Minutes 28 Nov. 1831) or the 26 specimens of fresh water shells from Master Farquhar (NHSM Minutes 24 Nov. 1828).

[40] For example, Master Brown, of Beauharnois donated two stuffed squirrels to the NHSM museum (NHSM Minutes 29 Mar. 1830), Master David Connell presented a gull shot at Longueuil (NHSM Minutes 21 Sep. 1831) and Master Honslow gave 4 snakes, 4 insects and a frog from St. Helens (NHSM Minutes 28 Sep. 1829).

[41] See Linda Ramey-Gassert, "Learning Science Beyond the Classroom," *The Elementary School Journal* 97, no. 4 (Mar. 1997): 433-450. She lists a number of public spaces and occasions where such learning might take place today such as the playground with the bug found on the sidewalk. The quote is found on page 434. Other similar contemporary materials include Lauren B. Resnick, "Learning in School and Out," *Educational Researcher* 16, no. 9 (Dec. 1987): 13-20; Robert J. Semper, "Science Museums as Environment for Learning," *Physics Today* (Nov. 1990): 433-450; and the National Research Council publication *Learning Science in Informal Environments: People, Places and Pursuits,* (Washington, DC: National Academies Press, 2009).

[42] It is unclear whether Goldie returned to Montreal in 1819. The website <http://collections.gc.ca/holmes/english/holmes_bio.htm> states that the Scottish explorer Goldie gave specimens to A.F. Holmes.

[43] Stephen Sewell, President of the NHSM, met with Sir John Franklin and Sir John Richardson, M.D., showed them the NHSM Museum and asked them to allow the NHSM to name them Honorary Members (see NHSM Minutes 27 Aug. 1827). Franklin and Richardson also visited the Rideau Canal with Governor Dalhousie at this time for the laying of the first stone.

[44] Alexander Skakel gave a season long lecture series (extending from late November to early May) on natural philosophy annually from 1813 to the 1840s with equipment provided by Montrealers in 1813. After his return from Europe in 1820 Andrew Holmes lectured on Chemistry in Skakel's schoolroom for at least three years. His lectures on chemistry continued under the Montreal Medical Institute where he also lectured on botany during the summer. Holmes lectured on geology and mineralogy and Skakel lectured on natural philosophy for the NHSM in 1828-29 and Holmes lectured for the NHSM on chemistry in January-February 1829. Holmes had his own chemistry apparatus, a geological and mineralogical collection and a herbarium. Archibald Hall lectured on botany in 1835 and on popular chemistry in 1837; both series were given in the NHSM rooms. See note 57f. *infra.*

[45] The Council of the NHSM mentioned the benefits for "the younger portion of the community" presented by the Finch lectures on geology in 1833 and the hope that "the youthful portion of the community, both male and female" would avail themselves of Hall's lectures on botany in 1835.

[46] Gagnon, "Du Cabinet de curiosités au musée scientifique ..." 426.

[47] Michel Bibaud, "Cabinet de curiosités naturelles et artificielles. On y voit réunis l'utile et l'agréable," *Bibliothèque canadienne* 2, no. 1 (juillet 1825): 54 cited Gagnon, *ibid.*

[48] Walter Hendrickson, "Nineteenth-Century State Geological Surveys: Early Government Support of Science," *Isis* 52, no. 3 (Sep. 1961): 364.

[49] NHSM, *First Annual Report* (18 May 1828).

[50] Dufour, *art. cit.* characterizes the first third of the 19th century as a period of multiple rivalries centering on control of elementary education (de multiples rivalités entourant l'instruction primaire) although conceding a place for cultural factors and parental demand [family attitudes, family economy,] she argues that school attendance was more a question of accessability of schooling, i.e., availability [or presence], proximity and cost, 509.

[51] Dufour, *art. cit.* 507-538.

[52] The Montreal British and Canadian School Society, which reprinted readers used by the parent society in England, the British and Foreign School Society, also supplied the National School for a short period.

[53] Andrée Dufour, "Le reseau scolaire de l'Ile de Montréal, 1825-1835" (Mémoire de maîtrise, UQAM, 1987), 92.

[54] See Dufour, *op. cit.* 161-162. She remarks that at level three in addition to reading, writing, and addition some added grammar and arithmetic, sometimes geography; at level two to the 3 Rs, grammar and geography, some added history and bookkeeping; and at level one schools added mathematics , algebra, geometry, physics, use of globes ancient and modern languages. For girls sewing, knitting, embroidery, dancing, music, drawing were provided.

[55] Louis-Philippe Audet, "Jean-Baptiste Meilleur était-il un candidat valable au poste de Surintendant de l'Éducation pour le Bas-Canada en 1942?" *Les Cahiers des Dix* 31 (1966): 194.

[56] Dufour, *op. cit.* "En 1825, l'enseignement sécondaire est surtout offert dan des établissements anglais ou bilingue. Le phenomène est accentué dix ans plus tard; consequence probable de l'immigration britannique et de l'anglicisation de la cite, la plupart des grandes écoles sont uniquement anglaises. On peut aussi remarquer que l'enseignement de niveau élémentaire avancé se donne surtout dans les écoles anglaises," 142.

[57] *The Canadian Review and Literary and Historical Journal* 1, no. 1 (July 1824): 73-80.

[58] See note 53 *supra.*

[59] C. MacMillan, *McGill and its Story, 1821-1921*, (Toronto: Oxford University Press, 1921): 97. The joint Grammar School was to provide their salaries.

[60] *Montreal Gazette,* 12 Feb. 1810, "To be sold or let and possession given on the first of May next, That house, on Place d'Armes, at present occupied by Mr. Alex Skakel. Mlle Rouville."

[61] S.B. Frost, "Skakel, Alexander," *DCB* vol. VII. In 1805 the Upper Canada Legislature appropriated £400 for the purchase of scientific apparatus for the use of the reverend John Strachan in his Academy at Cornwall, which was attended by the sons of several Montrealers. Strachan, who was a graduate of King's College in 1797, taught and lectured on Natural Philosophy at Cornwall and York (To-

ronto). Presumably, having both attended King's College Aberdeen, he and Skakel would teach a similar Natural Philosophy course.

[62] *Ibid.* See *Montreal Transcript*, 24 Nov. 1836. "Last evening our highly esteemed fellow citizen Mr. Alexander Skakel, opened the Royal Grammar School Room, for the season, with a lecture introductory of a series, to be delivered in the course of the winter, and embracing under the general heading of "Natural Philosophy" a variety of subjects properly therein comprised. Although Canada is truly said to be still in its infancy, her society at present disjointed and unsettled, the character of her population still requiring to be formed through the medium of education, yet it is consolatory to observe what *considerable means of education are within the reach of our young people*, if they are themselves disposed to profit by them. We conceive ourselves quite safe in asserting, that all those who attended the introductory lecture, went away in the fixed resolve to attend the whole course, which comprehends Astronomy, Mechanics, Optics, Pneumatics, Electricity, Magnetism and Galvanism. Being the acknowledged master of these different branches of philosophy, Mr. Skakel, unless he has lost much of his perspicuity of style, cannot fail to impart considerable knowledge to his attentive listeners; while numerous and beautiful experiments, for which he is fully prepared, will be alike amusing to all." [My italics]

[63] The first notice of Holmes' lectures is found in the *Montreal Herald,* Sat. 23 Dec. 1820 Lectures on Chemistry. See also *Montreal Herald,* 15 Dec. 1821 and *Montreal Gazette,* 4 Oct. 1822 Lectures on Natural Philosophy and Chemistry.

[64] *Canadian Courant,* 22 Jan. 1827.

[65] Henry Esson, *A Sketch of the System of Education and Course of Study Pursued in the Montreal Academical Institution,* (Montreal: Montreal Gazette, 1827): 5f.

[66] See *Montreal Transcript,* 13 May 1837.

[67] *Montreal Herald,* 13 Dec. 1823.

[68] The information on science subjects taught is taken from Dufour, *op. cit.* in the list of Schools in 1835, which I have cross-referenced with various newspaper advertisements.

[69] Kim Tolley, "Science for Ladies, Classics for Gentlemen: A Comparative Analysis of Scientific Subjects in the Curricula of Boys' and Girls' Schools in the United States, 1794-1850," *HEQ* 36, no. 2 (Summer 1991): 129-153.

[70] Newton Bosworth, *Hochelaga Depicta ...,* (Montreal: Wm. Greig, 1839; reprint, Toronto: Coles Publishing Company, 1974), 205f.

[71] Esson, *op. cit.* 18.

[72] The first teaching faculty at McGill College was the Medical faculty (formerly the Montreal Medical Institution begun in 1823, which was united to McGill in 1929). The Arts courses at McGill did not begin until 1843. The teaching of science (i.e., chemistry, that included geology and mineralogy, and botany) in the Arts faculty was supplied by the Medical faculty until the mid-1850s. Natural philosophy, on the other hand, was allied to the teaching of mathematics.

[73] Sir John William Dawson, *On the course of collegiate education adapted to the circumstances of British America: the inaugural discourse of the principal of McGill College, Montreal,* (Montreal: H. Ramsay, 1855) "Chemistry, whose claims are equally great with those of any department of Natural Philosophy, has not hitherto formed a part of the undergraduate course in this institution, but it is hoped that, before next session, arrangements will be made to make the course now delivered in connection with the Medical Faculty, accessible to the students of arts in one of the sessions of their course. ... Zoology and botany have for some time been necessary parts of medical education ... and they will henceforth be accessible to students here." Dawson indicated that he would teach Geology and Mineralogy in a course of lectures on Natural History, 19.

[74] *This was Montreal in 1816,* 109 extracted from *Montreal Herald,* 22 Jun. 1816.

[75] *Montreal Herald,* 31 Aug. 1816 - Letter signed "A Friend to Humanity" detailing the need for a hospital which will admit the Poor. On 20 Sep. 1818 Smyth sent a Memorial to Major Bowles, the Governor's Military Secretary detailing the need for a public infirmary or general hospital. Subsequent to this a meeting was held in Clamp's Coffee House to establish a hospital. *Montreal Herald,* 17 Oct. 1818. "A Meeting will be held in Mr. Clamp's Coffee House on Tuesday, next the 20th, at 8 o'clock Evening, to take into consideration *a plan for Establishing a Public Hospital in this Town.* It is requested that those who feel a wish to promote so benevolent an undertaking will attend. Montreal, 16th October 1818." [My italics] See also *Montreal Herald,* 24 Oct., and 26 Dec. 1818. It was this Petition that John Molson presented to the House of Assembly in January 1819. *Montreal Gazette,* 13 Mar. 1819 reported the debate on John Molson's motion "to resolve that it was necessary to establish a public hospital at Montreal." Michael O'Sullivan opposed the motion at length. The Committee of the whole House of Assembly on the Report of the Special Committee to whom was referred the Petition of divers Inhabitants of Montreal, praying for the erection of a Public Hospital in that City, rose on the 6th of March 1819 without reporting on its deliberations. The duel between Dr. William Caldwell, an ardent propo-

nent of the hospital, and Michael O'Sullivan, its strong opponent, took place at Windmill Point on April 11, 1819.

[76] *Montreal Gazette,* 26 Nov. 1817 and 2 Jan. 1818.

[77] *Montreal Herald,* 25 Jul. 1818.

[78] See the earlier ad in *Canadian Courant,* June 1819 "Medical Tuition. Dr. Wm. Willcocks Sleigh, Member of the Royal College of Surgeons in London, &c. &c., having arrived from Europe, proposes devoting a *considerable* portion of his time to the Instruction of a few young Gentlemen in the various branches of the Medical Profession, viz. Anatomy, Surgery, Physiology, the Theory and Practice of Medicine, &c. &c. Doctor S. Will take either apprentices or yearly pupils. - Application to be made to Doctor S. at his residence in Three Rivers. June 19th 1819." The biography of his son, Burrows Willcocks Arthur Sleigh [1821-1869] in *DCB* vol. IX mentions a return of the family to England. It later returned to North America and the father's movements can be traced.

[79] Martyn Paine was licensed April 1816 and practiced in Montreal from 1816 to 1822. He moved to New York, and in the late 1830s promoted the founding of the Medical College of University of City of New York, and in 1841 was a member of the first Faculty [Professor of Institutes of Medicine 1841-1850; Professor of Therapeutics and Materia Medica 1850-1865]. He was a Corresponding Member and contributor of the NHSM and the author of several publications.

[80] *Montreal Gazette,* 15 Sep. 1819.

[81] *Ibid.* 27 Mar. 1820.

[82] *Montreal Herald,* 6 Jan. 1821. "Physiological Lectures. Doctor Sleigh regrets his being under the necessity (in consequence of press of business,) of postponing the above lectures till the month of May."

[83] *Ibid.* 10 Mar. 1821.

[84] *Ibid.* 18 Sep. 1821 "Scola Medicinae. The third Annual Course of Anatomical Lectures and Dissections in the above Establishment will commence the first Monday in October, and continue till the month of May - 10 Guineas for the Course."

[85] H.E. MacDermot, *A History of the Montreal General Hospital,* (Montreal: Montreal General Hospital, 1950): 2f. The advertisement appeared in both the *Mont-*

real Gazette and the *Montreal Herald,* 10 Aug. 1822 and subsequently ran with little change until October 1823.

[86] *Montreal Gazette,* 4 Oct. 1822.

[87] See Maude Abbott, *A Historical Sketch of the Medical Faculty of McGill University*, (Montreal: 1902): 657f. Henry Esson, "Answer of the Rev. Henry Esson to the charges and statement of a committee of the Session of St. Gabriel Street Church," (Montreal: James A. Starke, 1832).

[88] H. Esson, *op. cit.*

[89] *Montreal Gazette,* Mon. 29 May 1829 - McGill College [Opening Ceremony]

[90] John Racey's resignation was noticed in the Faculty announcement in *Montreal Gazette,* 5 Sep. 1835 and the name of George W. Campbell replaced his in subsequent announcements.

[91] The account of the 1836 McGill Convocation indicates that Hall lectured in the 1835–1836 session. See *Montreal Gazette,* 26 May 1836. "Dr Hall, one of the lecturers during the last winter."

[92] For example, Andrew F. Holmes, Archibald Hall M.D., James Robertson M.D., Stephen Sewell M.D. brought back herbaria and geological and mineralogical specimens from Europe. Holmes and Hall, in particular, sent Canadian material back to Scotland. Others such as F.T.C. Arnold, who had twice studied in Scotland, corresponded with relatives and former classmates In Scotland

[93] Details are drawn primarily from NAC reels one H1733 and two H1734 volumes 47 to 54 covering the years from1788 to 1848. I have also used Maude Abbott, *History of Medicine in the Province of Quebec*, (Montreal: McGill University, 1931) and the *British American Journal of Medicine*, as well as the various Montreal Almanacs and Directories.

Chapter Four: Civic Pride and Conflict

Beginning in the last quarter of the eighteenth century various literary societies, libraries, and museums appeared in Great Britain and the Americas. Until that time most libraries and nearly all collections of artifacts had been private holdings. Cabinets of curiosities, that contained heterogeneous collections, were amassed by travelers and by amateur scientists.[1] Among the earliest societies were the American Philosophical Society founded in Philadelphia in 1766 and the Lunar Society of Birmingham in 1775.[2] Early public museums include the British Museum and the Royal Scottish Museum (originally the University Museum, later the Edinburgh Museum of Science and Art), which can trace their history from the seventeenth century.[3]

In the first quarter of the nineteenth century literary and philosophical societies, many of which had scientific interests, multiplied in Great Britain. Natural history, literature, and philosophy were subjects that provided middle-class gentlemen with common ground for discussion and exploration in these societies while eschewing religion and politics.[4] These literary and philosophical societies formed libraries and collections of local natural history materi-

als. Their museums were seen as civic adornments that enhanced the status of the institutions to which they belonged.

These proprietary libraries, museums, and literary institutions, which were housed in large edifices erected by a literary and mercantile elite, were seen as showpieces of civic pride and civic cultural achievement.[5] For families and individuals the accumulation of a collection of books and natural history materials was viewed as a symbol of taste and cultural attainment, a token of security and affluence.[6] The founding of a civic library or a literary institution and museum displayed these traits on a larger stage. By fostering learning and encouraging the development of moral and intellectual qualities, the elite displayed its munificence and enhanced the reputation of its members as civilized and cultured men. Nevertheless, in most cases access to the library was either limited to an elite group or closely controlled by the elite.[7] The erection of such a building to house a library, a literary institution, or a museum was meant to engender civic pride in the citizens of the city. In turn the edifice enhanced the reputation of the mercantile and literary elite and gave a public face and civic status to their social aspirations.[8]

The second quarter of the nineteenth century saw a widening of access to science and learning through the rise of the Mechanics' Institutes. Beginning with the Mechanics' Institutes of Glasgow, Edinburgh and Liverpool in 1823, the movement for instruction of mechanics in the arts and sciences then took hold in London. Responding to the challenge, Dr. George Birkbeck and Henry Brougham promoted and fostered the growth of the institutes in Great Britain and abroad. By 1826 there were more than one hundred Mechanics' Institutes in Britain. Most of these institutes also were housed in a building erected for that purpose.[9] The first mechanics' institute in British North America was founded in 1828 in Montreal.

This chapter details some of the factors, which affected the literary, scientific and cultural institutions in Montreal, in particular the Montreal Library (ML) and the Natural History Society (NHSM), and which frustrated the desire to provide a prestigious structure to house the ML and the NHSM museum. Among these factors was the emulation and rivalry between Montreal and Quebec City and the desire of Montrealers to achieve a certain autonomy. This competition served to enhance civic pride. Partisan politics and religious

conflicts played a large role in the difficulties faced by such institutions in the 1820s and 1830s. Reasons for the failure of attempts to bring the several institutions together and to house them in a public edifice of sufficient status and grandeur to symbolize their social and cultural role are examined. The lack of a patron and an inability to finance the various proposals apparently doomed any such union to failure. The main question treated throughout the chapter is why the ML and the NHSM, and in 1840-41 the newly-founded Mechanics' Institute of Montreal (MIM) were unable to procure a civic building or buildings which would enable them to adequately symbolize the role of science and learning.

A significant number of other public buildings were erected in Montreal in the period from 1815 to the 1840s. There was a range of edifices that were seen as markers of commerce, culture and civilization. Commercial buildings expressed the pride of the mercantile elite in their success in turning Montreal into the leading commercial centre of the two Canadas.[10] Church buildings erected during this period bore witness not only to the moral and religious dimensions of the people but also to the growing denominational diversity and rivalry. Each of the buildings erected, therefore, pre-

sented not only a visible sign of institutional presence in the city, but often also pointed up certain elements of civic pride, rivalry and conflict. Some of the public buildings were due to the efforts and vision of individuals. James McGill, for example, left his Burnside estate and £10,000 to found McGill College.[11] John Molson Sr. owned the largest number of shares in the Theatre Royal at its founding in 1825 and eventually his son John controlled all of them.[12] These men were seen as patrons of the institutions mentioned.

Other public edifices were seen as indications of the munificence and benevolence of the leading citizenry toward the poor. The Montreal General Hospital (MGH), which was intended to house the ailing poor, was one such building.[13] John Richardson and William McGillivray were liberal contributors to its erection and to the elimination of its debt.[14] Alexander Skakel left part of his estate to the MGH.[15] The two rival school societies, the National School Society and the British and Canadian School Society, erected buildings for the education of children of the poor. The number of such public buildings erected with commercial, religious and philanthropic import raises the question why a civic building, which symbolized science and learning, failed to appear in Montreal.

The Montreal Library

The spirit of emulation mixed with civic pride was certainly evident in the founding of the Montreal Library. The Quebec Library, an elite proprietary library with two classes of members, shareholders and annual subscribers, was founded in 1779 at the urging of Governor Frederick Haldimand.[16] The cost of proprietorship in the Quebec Library was £5 sterling with an annual membership fee of £2 sterling. Its first Secretary, lawyer and later Judge, Arthur Davidson, frustrated in his ambitions to succeed George Pownall as Clerk of the Legislative Council, moved to Montreal in October 1780, and promoted the founding of a library.[17] Meanwhile, in 1779, Sheriff Edward William Gray had attempted to found a similar library in Montreal.[18]

The ML, however, was not established until 1796. A joint stock association like the Quebec Library, its shares cost 10 guineas each. New proprietors were subject to the approval of the library's directors. Proprietorship in the library was open to anyone who was approved at a special meeting, provided he paid the price of a share and signed the rules.[19] The stated purpose of its foun-

ders was that of establishing a public library in Montreal in order to diffuse knowledge. The first advertisement in 1796 read:

> Those who are or wish to be Subscribers towards a fund for *establishing a Public Library* in this Town are requested to meet at Dillon's Coffee House on the 6th of this month at 12 o'clock in order to hear and examine the rules drawn up by a committee appointed for that purpose, and to elect such officers as shall be found necessary for the direction of the Library.[20] [My italics]

The founders' intention of establishing a public library was recognized by the editor of the *Montreal Gazette* in 1808. Writing about the origin of the Athenaeum in Liverpool, he made reference to the ML, stating, "The origin of the Montreal Library reflects equal honor on the liberality of its proprietors. To them the public is much indebted for an establishment so well calculated to diffuse knowledge."[21] Guy Kitteringham, in a study of scientific institutions in Liverpool, suggests that growing affluence in northern England led to civic pride, which in turn was responsible for the founding of many literary institutions in the provincial towns.[22] The editorial remarks cited here, by comparing the ML with the Liverpool Athenaeum founded in 1797, attest to a certain pride in the civic nature and the public benefit of the ML.

After the ML changed hands in 1828, the new proprietors also sought to portray it as a civic institution and urged the public to subscribe in order to support a public library:

> The proprietors, having liberally come forward and advanced their money for the benefit of their fellow-citizens, and seeking no further advantage to themselves than the gratification of seeing the Library flourish, believe, they cannot be accused of selfish motives in calling upon its well-wishers to come forward and subscribe toward its support ...
>
> To enter into any detail of the advantage held out by such a Library to a rising city, a city so peculiarly situated as Montreal, placed at a distance from the marts of learning in Europe, and at the same time filled with *young people*, most of them incapable of obtaining the necessary books, would be supererogatory and useless. By the increased prices of books and the diminished facilities of obtaining them, occasioned by the distance from Europe and other causes, a Public Library containing all the standard works in the French and English languages, becomes of immense importance, and when to *the solid advantages it thus holds out to youth*, it adds the promise of the lighter works of daily production, it cannot, surely be too much to expect that the Montreal Library will meet with support from the citizens of Montreal.[23] [My italics]

The library, therefore, provided access to literature and books on science throughout its existence for some Montrealers, including youth.

Nevertheless, the elite control and restricted nature of the ML was shown in the first instance by the nature of the relationship between proprietorship and subscription. The first proprietors of the ML all appear to have been drawn from English- and French-Canadian notables among the liberal professions and leading mer-

chants, a literary and economic elite. Among the early directors of the ML one finds Justice Louis Charles Foucher, lawyer Pierre Louis Panet, Prothonotary John Reid, doctor Robert Jones, and merchants James Caldwell, Thomas Forsyth, Joseph Frobisher, James McGill, John Richardson, and James Walker. It would appear from an examination of known proprietors throughout the life of the ML that the proprietors continued to be drawn from a literate elite among the members of the professional and mercantile classes.[24] In the first phase of its history there were between seventy and seventy-five proprietors. [25]

There was a second class of members, that is, annual subscribers to the ML, who were subordinate to the proprietors. The first regulations stated that in order "to contribute to the Utility of the Library Annual Subscribers will be admitted" at the rate of 40 shillings a year or a guinea a half year. A subscriber had to be introduced by a proprietor, who became surety for him, and also had to be approved by two of the library's directors.[26] The intent of the proprietors of the library in permitting subscribers was evidently to allow members of the public, and probably more especially their families and dependents, i.e., apprentices and clerks, to have access

to the library's resources and thereby to contribute to the increase of learning and useful knowledge.[27] The subordinate status of the annual subscribers may indicate the inclusion of women and teenagers as well as apprentices and clerks.[28] It is, however, impossible to say how large the subscriber class was at any given moment.

The location of the ML also attests to its civic and elite status. It opened May 3, 1796 in a room in the old courthouse and then moved to the new courthouse (see Figure 4 no. 1), where it remained until December 1818.[29] In April 1816 the Directors had received notice to vacate the room in the courthouse.[30] The committee, which was appointed at a special meeting to seek new accommodations either didn't find suitable quarters until the later date, or was awaiting the development of an alternative proposal of John Molson Sr.[31]

Molson, who had purchased the residence of Sir John Johnson, intended to develop it as an elite hotel with accommodation for both the ML and the Montreal News Room (see Figure 4 no. 2).[32] This would be the first instance of an attempt to bring the literary institutions in Montreal together. The ML moved to the Mansion House Hotel late in 1818, where it merged with the Montreal

Newsroom in early 1819.[33] Thomas Doige described the Mansion House Hotel and the library's place in it:

> The Mansion-House Hotel is a superb building, situated near the north end of St. Paul Street, fronting back on the River St. Lawrence, from which there is a very handsome prospect of the river and the adjoining country. The assemblies are held in this house, in a room which is not surpassed in size and elegance by any in the province; in fact, the whole house is very superiorly fitted up, and first rate accommodations are to be found in it.
>
> The principal library in the town is one established by subscription, called the Montreal Library; it is kept in the lower room of the north wing of the Mansion-House Hotel, and belongs to a number of public spirited gentlemen, who subscribed for shares to form a capital, to purchase it, for the laudable purpose of affording every information to the inhabitants, that might be obtained through so valuable a channel. It contains upward of 7000 volumes, among which are found, many very scarce and expensive works.[34]

The directors of the ML, however, were desirous of erecting a civic building in a more central location, which would enhance the library's status and stand as a civic adornment. Consequently they petitioned the legislature for incorporation of the ML, in order that it might hold property.[35] They also sought permission to build on a portion of the lot on which the courthouse stood. Apparently there had been desires for the inclusion of a museum expressed to the directors of the ML from an early date. The committee of the House of Assembly considering the petition for incorporation and for the

grant of a lot in 1819 gave as its reasons for granting the prayer of the petition:

> Your Committee having examined the Plan of the Ground, and the part of the same prayed for by the Proprietors of the Montreal Library, and considering the great utility of *an extensive Public Library* in the City of Montreal, and that the construction of a Building for that establishment, *and eventually for a Museum*, must be a public benefit, and *a means of instruction to the rising generation, as well as ornamental to the City*, are of opinion, that the prayer of the Petition ought to be granted.[36]
>
> [My italics]

Thus the *Act of Incorporation (Act 59 Geo. III ch. 22)*, which received Royal Assent April 24th 1819, authorized the ML to open reading rooms and a natural history museum.

Finding the location of the Mansion House Hotel, on St. Paul Street near Bonsecours, too far to the northeastern end of the Old City, the proprietors at their Annual Meeting in December 1820 decided to seek a more central location.[37] Subsequently, the library and reading room made arrangements to move to the former Methodist Chapel on St. Joseph Street, where provision also was made for a mercantile stock exchange (see Figure 4 no. 4).[38] Prior to the move the Mansion House Hotel was destroyed by fire March 16, 1821, but the library's books were saved and it opened in its new home June 11, 1821.[39] After the ML had moved into the renovated

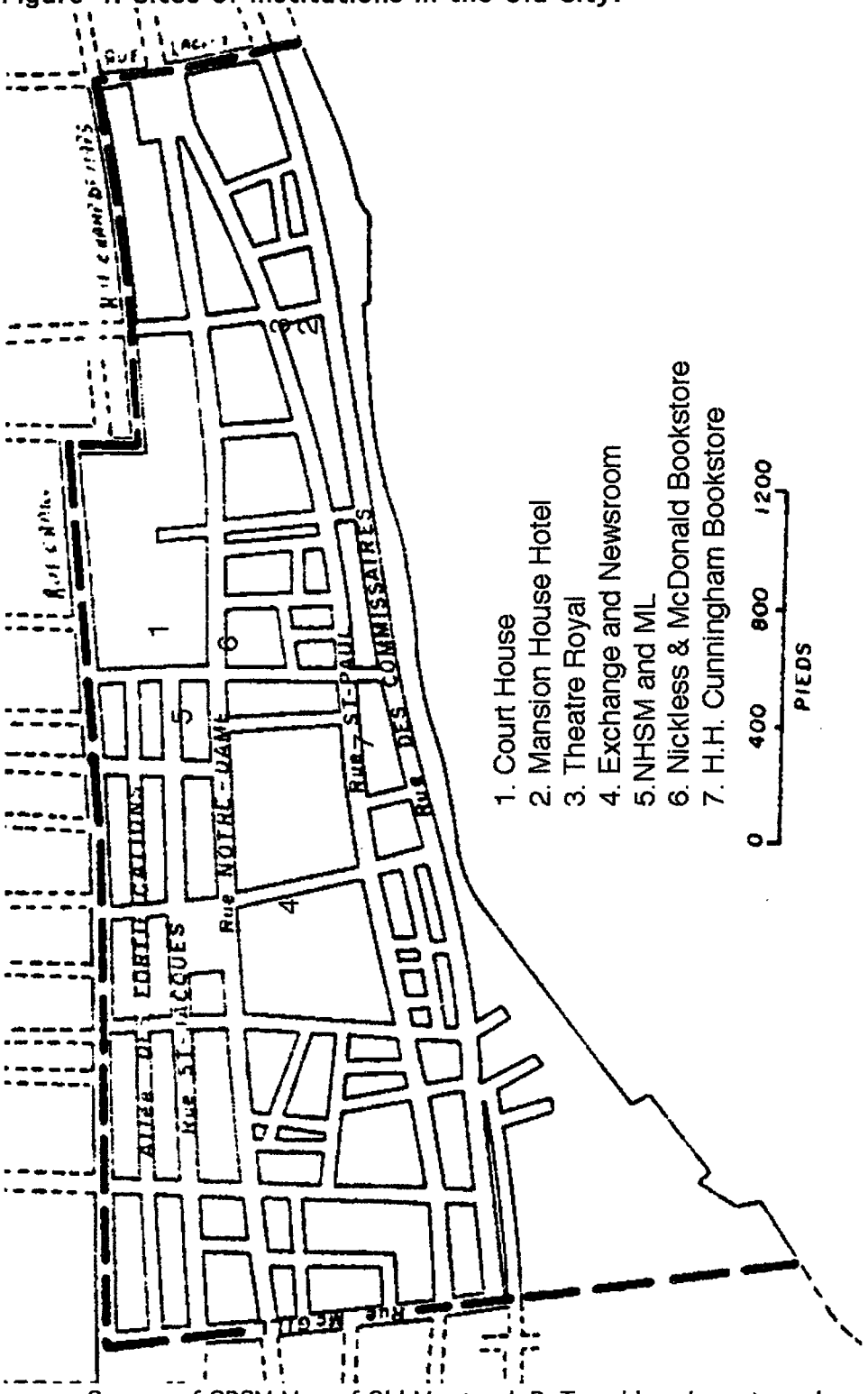
chapel, the directors announced that they were prepared to receive materials for a museum until such time as "a more suitable place" could be found.[40]

The search for a permanent building, which would present the ML as an ornament to the city, continued throughout much of the library's life. The petition to the House of Assembly, read on December 9, 1824, cited "unavoidable circumstances and the general depression of the times" for the directors' inability to erect a building and sought an extension of the five year term for taking advantage of the previous grant of a lot.[41] Tensions between English- and French-speaking Montrealers aroused in 1822 by the *Union Bill* also may have played a part in the ML's circumstances.

In this context several of the actions of the directors and proprietors of the ML appear to have been related to a desire to increase the number of proprietors and annual subscribers. The decision to receive materials for a public museum in late 1822, the modification of the lending rules for country subscribers in late 1823, and the publication of a catalogue of the books in the library in 1824 may all relate to this aim. A meeting was convened in March 1825 to deal with a proposal to find twenty-eight new pro-

prietors at £20 each to bring their number of proprietors to one hundred, and to assess each of the present proprietors an additional £10.[42] The economic difficulties of 1825, which brought financial stringency to a number of businesses because of the bankruptcies of several large firms, may have prevented this and exacerbated the financial situation at the library. Hence in March 1826 the directors gave notice of the independence of the library from the newsroom, which was offered to the merchants and gentry "on advantageous terms."[43]

Figure 4: Sites of Institutions in the Old City.



Source of GRSM Map of Old Montreal: R. Tremblay. *La nature des process de travail à Montréal entre 1790 et 1830* (Thèse de maîtrise, Université de Montréal, 1979), 43. [The site approximations are my work.]

The museum in the ML had grown rapidly and encompassed many diverse items as may be seen in the article which appeared in the *Montreal Herald* February 22, 1823. In addition to a large number of curios and coins, the collection included a growing number of mineralogical specimens and petrifications found during construction of the Lachine canal. No doubt overwhelmed by the custodial care of donations and concerned about the safeguarding of materials on loan to the museum, the directors published a notice in December of the same year attempting to bring it all under their care and management.[44] It is not clear, however, how successful this attempt was because in 1827 Stephen Sewell's consent apparently was obtained for the transfer of his collection from the ML to the NHSM.[45] In July 1827, during the period of its financial difficulties, the ML, having found "a more suitable place," transferred the contents of its Museum to the NHSM.[46]

Tensions and Conflicts in the 1820s and early 1830s

The beginnings and early history of the MGH increased the religious, ethnic and political tensions of the period that affected the subsequent history of the literary and scientific institutions. The

petition to the legislature asking for financial aid to launch the proposed hospital, which was presented in the House of Assembly by John Molson in January 1819, was opposed by supporters of the Roman Catholic hospital, the Montreal *Hôtel-Dieu*. A subsequent exchange of letters in the newspapers led to a duel between Dr. William Caldwell (head of the medical personnel serving the Montreal Dispensary, who would become a senior member of the hospital staff) and the Roman Catholic lawyer Michael O'Sullivan (who had strongly opposed the Hospital petition in the House of Assembly). In the duel, April 15th 1819, both contestants were seriously wounded.[47] Relying on resources raised within the Protestant community, the MGH opened on Craig Street in 1819.[48] The hospital building was erected in 1821-22, and in May 1822 patients were moved to the new location on Dorchester Street in St. Lawrence suburb. In 1831-32 the Richardson Wing was added to the hospital, commemorating its major benefactor.

The governorship of Lord Dalhousie from 1820 to 1828 was a divisive period that affected several Montreal institutions. For example, the Governor-in-Chief added to the tensions in the medical field by authorizing the staff of the MGH to open the Montreal

Medical Institution. At the same time he named the medical personnel of the MGH to the Montreal Medical Examining Board. This effectively gave them a monopoly on the instruction and licensing of new medical personnel. On the other hand, it served to isolate the MGH staff within the medical profession and later would narrow the appeal of the NHSM of which the MGH staff would become the continuing core of *cultivators* of science.[49]

In June 1829, requiring affiliation to a university in order to be able to grant medical degrees, the staff of the Montreal Medical Institution became the Medical Faculty of McGill College. This affiliation with McGill College allied it to the Royal Institution for the Advancement of Learning, an institution that was dimly viewed by Roman Catholic authorities. There were benefits for both parties as this union allowed the Royal Institution to claim the legacy from the McGill estate for the establishment of a College and permitted the Medical Faculty to offer degrees.

Opposition to the dual role of the MGH staff as both the lecturers in medicine and the examiners for the licensing of medical personnel took several forms. In 1823 Montreal and area doctors presented a petition to the House of Assembly critical of the

method of appointment of examiners and suggesting reform. Signed by more than half of the practitioners in the District of Montreal, it demanded the total recall of the 1788 *Medical Act*. Among those who signed were not only French-Canadian but also English-Canadian and American-born practitioners. Barbara Tunis characterizes the situation saying:

> this unilateral action was opposed bitterly by many in the profession. Furthermore, the exclusion of non-British-educated medical men from appointment to the medical staff of Montreal's only teaching hospital further restricted opportunity for professional advancement among other members of the profession, and drew attention to the inferior position seemingly accorded them by the British-educated officers of the Hospital.[50]

The petition's signatories suggested that the medical boards should be elective and chosen at a general assembly of all the doctors in the district.

The Broadening Base of Science

Subsequent actions by Lord Dalhousie aroused a mixture of class challenge and civic pride that led to the founding of rival scientific institutions. In 1823, during the mission of Louis-Joseph Papineau to Britain to protest against the *Union Bill*, the Governor

corresponded with and invited several eminent citizens to form an historical society of about twenty-four members in order to preserve the early historic documents of the province and to promote research on the natural history and the early civic and literary history of British North America. Among those prominent in its founding were the Lieutenant-Governor Sir Francis N. Burton, the Hon. William Smith, Chief Justice Jonathan Sewell, the Rt. Hon. Jacob Mountain, Bishop of the Church of England, and Joseph-Rémi Vallières de St. Réal, who had been elected Speaker of the House of Assembly during Papineau's absence.

The newly formed Literary and Historical Society of Quebec (LHSQ) began as a small, elite society consisting of the civil and military elite, that is, persons of high social standing. The society had an entrance fee of £5 with an annual subscription of £3.[51] The LHSQ met in the Chateau Saint-Louis, the residence of the Governor, who subsidized it with an annual gift of £100. Although there were members who resided outside the capital, Vallières persuaded the members at the first meeting in January 1824 that the name ought to be Literary and Historical Society *of Quebec*, rather than *of Lower Canada*.[52] This angered both Lord Dalhousie and Mont-

realer John Richardson.[53] During its first years the meetings and activities of the LHSQ included much science-related material, receiving specimens, essays and reports on geology, meteorology, botany and biology.[54]

The reaction to the practice of science by an exclusive elite society centered in Quebec City was not long in coming. As in Great Britain, the aristocratic nature and exclusivity of the society was challenged by a rising middle-class that sought a wider diffusion of scientific endeavor in order to establish its social and cultural identity.[55] The exclusive nature of the LHSQ led to the formation of the *Société pour l'encouragement des Science et des Arts* of Quebec and the NHSM, which each contested the elite and exclusive nature of the practice of science in the LHSQ.[56]

In Quebec City, the *Société pour l'encouragement des Science et des Arts au Canada* was formed in May 1827. It had as its aims to encourage science and the arts and to obtain financial assistance for Pierre Chasseur's museum. The society consisted of two doctors, who were active in seeking medical reform in Quebec City, namely, F.-X. Tessier, and F. Blanchet, a large number of French-Canadians, as well as several persons, who were also mem-

bers of the LHSQ, such as, Lt.-Col. Joseph Bouchette, Hon. William Sheppard, Joseph-Rémi Vallières de St. Réal, William Green, and Andrew Stuart. Membership was open to all citizens of Lower Canada by ballot, and clergymen, legislators, and women were automatically approved upon request.[57] The annual subscription was one guinea.

In the same month, May 1827, the NHSM was founded. Taking as its model the Wernerian Natural History Society of Edinburgh, it boasted to the House of Assembly "This Society was instituted on the most liberal basis, being open to all ranks of the community, the sole qualification being a desire to promote the cause of science in the country."[58] The NHSM, therefore, was born not only from a desire to acquire knowledge of natural history but also in reaction to the elite nature of the LHSQ. Given the political and commercial rivalry between Montreal and Quebec City, there was probably a large element of civic pride evident in the use of the term *Montreal* in its name.

The politics of the era played their part in the challenge to elitism as well. The majority of the House of Assembly, which was allied to the *Parti canadien*, sought to present itself as more enlightened and more generous than the Governor.[59] Members of the

Assembly voted early Legislative grants to both the NHSM and Pierre Chasseur for his natural history museum and became involved in the exploration of Quebec's territory and in the investigation of its natural resources.[60] In this latter connection the House of Assembly voted £500 for the exploration of the province's eastern territory. Andrew and David Stuart, members of the Assembly, were appointed commissioners to explore the area north of the St. Lawrence River and its Gulf. In July and August 1828, with Governor Dalhousie's approval, a team of nine volunteers explored this area known as the King's Posts.[61] The funds that remained after the initial exploration were designated for use in 1829 to further explore the remaining region north of the St. Lawrence below Quebec City, and the area between Quebec City and the St. Maurice River. The NHSM asked Andrew Stuart one of the commissioners for this exploration if the society might be allowed to provide the exploring party with the queries drawn up by its Indian committee.[62]

In 1829 members of the House of Assembly voted £500 and appointed Toussaint Pothier, P. De Rochblave and Francis A. Larocque commissioners for the exploration of the area between the St. Maurice River and the Ottawa River. The NHSM Council met with the

commissioners of the Ottawa survey to ask their assistance in collecting natural history materials in order to increase the number of provincial specimens in their museum.[63] Surveyor John Adams, Lieutenant Ingall, 15th Regiment, and Ensign Nixon, 66th Regiment, who explored the area, mapped the terrain and collected natural history specimens.[64]

Politics and the Montreal Institutions

In the meantime the political situation existing in the first half of 1828 had exerted its influence upon the cultural institutions in Montreal. In November 1827, after a general election Governor Dalhousie had refused to recognize Louis-Joseph Papineau's re-election as Speaker of the House of Assembly and prorogued the legislature. The *Parti canadien* circulated for signature a petition calling for the governor's recall. It received over 87,000 signatures and marks. A trio of politicians, John Neilson, Denis-B. Viger, and Austin Cuvillier went to England in January 1828 with the petition that contained the House of Assembly complaints against Lord Dalhousie.

The difficulties at the ML had come to a head in 1826 and 1827. To satisfy its debts the contents of the library itself were

sold to a new group of proprietors, which included a number of members of the former ownership. They took over the ML and elected directors on March 16, 1828.[65] This sale apparently brought the ML under the control of the adherents of the *British Party*. The new directors petitioned the House of Assembly November 28th 1828 for a further extension of the time in which to erect a building, a more favorable location on the court house lot, and for the advantage of including all the Montreal literary institutions in the same building.[66] The sale of the ML, however, was not without controversy and the committee of the House of Assembly recommended that former proprietors, who were not part of the new ownership group, be permitted to purchase an interest in the library.[67] The dominance of members of the *British Party* among the library's proprietors as well as political tensions in the 1830s may have been responsible for the omission of the list of French books in the 1833 book catalogue, whereas the list reappeared in the 1842 catalogue.

In Montreal, which was deeply divided over the petition for the Governor's recall, the Hon. John Richardson chaired a dinner party in June 1828 during Lord Dalhousie's visit to Montreal offer-

ing support for the Governor. The dinner was attended by what one newspaper termed "partisans and officials." John Richardson proposed a toast to the Governor's health, to which his Excellency replied. After the usual toasts there followed a long laudatory partisan speech by Peter McGill in favor of Lord Dalhousie.[68]

In preparation for the visit of the Governor, the NHSM management committee had circulated for signature by the members an address for presentation to the governor, without having sought approval for this action at a prior meeting. There was controversy within the NHSM that this action had been taken without consulting the membership.[69] In order to justify its action the council wrote:

> The Council thinks it right to mention at this time what is already generally known and what will be more specially reported hereafter that upon the late visit of the Governor in Chief to this city an Address was presented to him in the name of this Society. Previously a meeting was directed to be called by the Council to consider the propriety of this proceeding but the notice not having been delivered, no meeting took place and in consequence, the members of the Council were obliged to draw up an Address and submit it for signature to the individual members. It is to be regretted that from the shortness of the time allowed, several members were precluded from signing - There were, however, about 50 names appended, signing for themselves and their fellow members.[70]

Some Scottish liberals, who supported or sympathized with the *Parti canadien*, apparently withdrew from the NHSM until the 1830s.[71] A *British Party* bias may be seen in the choice of NHSM

presidents in subsequent years, namely, the Hon. John Richardson 1829-30, the Hon. Louis Gugy 1830-31, the Hon. Toussaint Pothier 1831-32, the Hon. Charles W. Grant 1832-33, the Rev. John Bethune 1833-33, and William Robertson, M.D. 1834-35. Thus it appears that from early 1828 the *British Party* controlled both the NHSM and the ML.

Founding of the Montreal Mechanics' Institute

Subsequent to the difficulties in the NHSM, the Rev. Henry Esson initiated the founding of the Montreal Mechanics' Institute (MMI) in November 1828.[72] This institute, which was the first of its kind in British North America, effectively further broadened access to literary and scientific activity.

One of the aims of the MMI was to provide education for sons and apprentices of its members.[73] The 1829 *Education Act* spurred the institute to set up an Education committee on March 24th of that year. This committee is of interest because it reflected the coming together of non-Anglican Protestants with an interest in education. It included the Rev. Henry Esson, Horatio Gates, president of both the British and Canadian School and the Infant School

societies, and John Molson Sr., president of the Society for the Promotion of Education and Industry in Canada.[74] The school opening, however, was delayed by the difficulties within the MMI until December 1833. In addition to interruptions to the continuity of the MMI, which curtailed institutional finances, there was a clash of interests with John Bruce who operated a school for middle-class children and Robert Howden a drawing teacher, both of whom were Esson opponents.[75]

Both the political situation and the dispute that had erupted within the St. Gabriel Street Church in 1829 had repercussions for the MMI. It was in the MMI that the struggles between adherents of the *Parti canadien* and the *British Party* were most strongly experienced. At the second anniversary meeting of the MMI in January 1831, a number of known *British Party* supporters who were opponents of the Rev. Henry Esson were elected to the management committee.[76] On February 22, 1831 Daniel Tracey, an Irish Roman Catholic doctor who was a *Parti canadien* partisan, was rejected for membership. Then on April 12th a second ballot was taken and Tracey was declared an ordinary member. The following week the second ballot was declared null and void because it was deemed

unconstitutional. Tracey was renominated at the subsequent meeting. On April 26th, a proposal to postpone voting until Tracey had been contacted to see if he wanted to be a member was defeated and on the subsequent ballot Tracey was rejected 17 votes to 5.[77] As events surrounding the charges against Esson played out in the spring of 1831 within the St. Gabriel Street Church, the MMI ceased to function.

In November 1831, when the MMI recommenced activities, the *Irish Vindicator* published an editorial on the "New Mechanics' Institute." It characterized the earlier membership as "persons of the most illiberal sentiments" and found that it mixed "religion and politics" with the objects of the institution.[78] The renewal, however, did not last. There were no meetings from early March 1832, although throughout the spring members were exhorted to pay their subscriptions. It was during this interval that the divisive 1832 by-election in Montreal West was held. Dr. William Robertson was accused of ordering the troops to fire on the parade of Daniel Tracey's victorious followers, which resulted in the death of three French-Canadians.

First Attempts at Erecting a Building

Meanwhile the NHSM sought to erect a building that would enhance its prestige and its civic status. Having begun in a room over H.H. Cunningham's Bookstore on St. Paul Street (see Figure 4 no. 7), the increase of specimens in its museum quickly outgrew the available space. The first annual report in 1828 recognized the cramped nature of the society's accommodations.[79] In April 1829 Cunningham offered to erect a building provided the NHSM would bind itself to a three-year lease at £30 per annum and pay the first year in advance.[80] Concerns about space were expressed throughout early 1829 and resulted in the request that Cunningham make the entire second storey of the building over for the use of the NHSM.[81]

Then in April 1830 the ML directors approached the NHSM with a proposed set of plans drawn by John Try for a building to accommodate both the ML and the NHSM. The NHSM offered to pay £30 annual rent provided it obtained a long-term lease.[82] Nothing more appears to have come of this initiative.

By January 1831, with the advent of the mineralogical collection the NHSM had purchased with a legislative grant, there was

again discussion of moving to a larger, more convenient place.[83] A petition to the House of Assembly was read February 9, 1831 seeking aid "to enable the Society to procure a place fitted for the accommodation of the Museum, and for other purposes of the Society."[84] The legislature responded with a grant of £50 "towards enabling them to procure a fit place to deposit their Museum."[85] Due to insufficient funds to build or buy a property, the NHSM in May 1831 arranged to rent a portion of the building at 20 St. James Street, which housed the Medical Faculty of McGill College. Council reported that "this change has allowed the various articles of value in the different divisions of the Museum to be displayed to advantage, ... [but] notwithstanding its enlarged premises, there is yet considerable difficulty in giving place to all the objects of interest in the Society's collection."[86]

Further Tensions and Conflict in the 1830s

The Governorship of Sir James Kempt, from August 1828 to August 1830 brought a lessening of political tensions in what has been called "an era of good feelings" in Lower Canada.[87] He attempted to promote harmony and signaled this by effecting the

merger of the LHSQ and the *Société pour l'encouragement des Sciences et des Arts*. The results were perhaps not what was anticipated because French-Canadian participation in the newly merged LHSQ declined.[88]

There had been few French-Canadian members among those who joined the NHSM in the first year.[89] A number of French-Canadians, however, joined the NHSM during this period when Kempt was Governor.[90] After Kempt's departure in 1830 there also would appear to have been little French-Canadian participation.[91] This may have been due in part to control of Montreal cultural institutions exercised by the *British Party* and by the move of the NHSM in 1831 to the building occupied by the McGill Medical Faculty.[92] Given the animosity toward the medical faculty on the part of many medical practitioners and *Parti canadien* adherents as well as the *British Party* bias of the NHSM, its appeal to French-Canadians and other medical practitioners was understandably narrow.

The issue of medical reforms was brought to the fore in the 1830s. In the fall of 1830 and 1831 there was an attempt to set up a series of medical lectures to rival those of the McGill Medical Faculty.[93] On March 3, 1829, Drs. Robert Nelson and Pierre

Beaubien had been appointed to replace Dr. Selby as Physician to the *Hôtel-Dieu* hospital. Opposed to the McGill monopoly on the teaching of medicine and the licensing of doctors, they announced medical lectures on surgery and materia medica in French, but after the courses had run for two years the efforts of the two dissident doctors were apparently thwarted by the McGill faculty.[94] Nevertheless, there was an advertisement in 1833 for lectures at the *Hôtel-Dieu* on anatomy, physiology, medicine, surgery, chemistry, midwifery, materia medica and botany by doctors Robert Nelson, J.-Pierre Beaubien and J.B. Johnston.[95]

In 1831 the *Physic and Surgery Act* made the medical examining boards elective. In the voting for the new board of medical examiners in Montreal and District the staff of the McGill Medical Faculty were shut out by those who opposed the monopoly on the dual functions of teaching and licensing. Among those elected were the two doctors appointed to the *Hôtel-Dieu* and the *Hôpital général*, Robert Nelson, M.D. (Harvard) and J. Pierre Beaubien, M.D. (Paris), as well as J.D. Arnoldi, who had been displaced as a medical examiner in 1823.[96] Alexandre Demers, M.H.A. [d. 1831], and G.J. Vallée, M.D. (Paris) were also Montreal practitioners. Seven of the twelve

elected, including Wolfred and John D. Nelson [d. 1833], brothers of Robert Nelson, practiced in the villages and countryside of the Montreal District.[97] Most of the medical practitioners elected to the board were not only opposed to the McGill monopoly but were active supporters of the *Parti patriote* in politics.[98]

The *Canadian Courant* July 13th 1831 copied the editorial comments from the *Montreal Gazette* concerning the partisan nature of the election:

> In the election of these gentlemen, *we regret that* where professional merit only ought to have been the test and qualification required of candidates for the honorable situation of examiner, *party politics should have been introduced, and the whole proceedings conducted in a manner resembling that of a party association, striving to put their partisans into authority.* Still more do we regret that the assembled faculty should so far have forgotten the professional exertions of the late Board of Examiners in the establishment of a Medical College, & other facilities for the acquirement of a good medical education as not to have paid them the poor compliment of having only one member of it on the new Board, or not to have expressed their sense of gratitude for their past labours. In the new Board, it will appear that there are three brothers; may not this fraternal union be injurious to the prospects of many young men, if politics are to rule the practice of physic.[99] [My italics]

La Minerve, on the other hand, set out the opposition argument the next day:

> L'ancien bureau composé sous l'ère dalhousienne, tenant non seulement en main et sans appel le sort des aspirans à la profession; il se faisait encore un moyen de revenu de la faveur ou de la désfaveur qui accompagnaient les récipiendaires, suivant qu'ils avaient suivi ou non leur leçons

> desquelles ils s'étaient eux-mêmes constitués juges - le monopole de la médecine clinique, et l'exclusion des médecins canadiens de cette institution - l'assemblée ait été très animée - une épuration totale.[100]

When McGill University conferred its first medical degree on William Logie in May 1833, there ensued a long legal dispute before the courts between the McGill Faculty of Medicine and the medical board over Logie's qualifications. The issue was eventually decided in McGill's favour.[101]

The political and religious turmoil in the Montreal business community in the early 1830s led to the increase in the number of newsrooms. A second newsroom, the Commercial Newsroom, opened in May 1831 at 2 St. Nicholas Street. It boasted upward of one hundred twenty newspapers and invited subscribers to pay $4.00 per year and merchants' clerks $2.00.[102] The original newsroom in St. Joseph Street was placed under the charge of A.H. Armour & Co. with the hope that "these gentlemen will both merit and raise a liberal increase in their Subscription List; and thus the Room may become an interesting place of resort for the man of business as well as the man of letters, and where Subscribers may with satisfaction introduce respectable strangers who may visit Montreal."[103] Another potential rival, the Merchant's Hall, was announced by John

Lukin at 27 Notre Dame Street, but apparently didn't remain open long.[104]

During this period a special meeting of the MMI was held in September 1832, ostensibly to award a prize to John Pigott of Three Rivers for a model of improvements to steamboats.[105] In the meantime, cholera had ravaged the city and the Reform Bill had passed in England. The moderate reformers, who earlier had supported the *Parti canadien*, and the *British party* drew closer together after the Montreal West Ward by-election in the spring of 1832, in opposition to *Parti patriote* demands for control of provincial revenues and an elected Legislative Council.[106] The partisans of the Rev. Edward Black, formerly co-minister of St. Gabriel Street Church, had recently commenced religious services and established St. Paul's Church. Regular meetings of the MMI recommenced in November 1832 and continued until April 8th 1835.

The decreased political rivalry among English-speaking Montrealers and other declining tensions, including religious tensions, within their community were sufficient to elicit a proposal in February 1833 to unite the Commercial and the Exchange news rooms.[107] A committee was formed to attempt to find four hundred subscrib-

ers. The resulting Exchange News Room was to move to the upper floor of the former chapel in St. Joseph Street and the lower floor was to be the stock exchange. The committee reported within a fortnight that the subscriber goal had been attained. Despite the expressed intentions about the use of space the ML remained in the St. Joseph Street building until 1837. The newsroom was supported by annual subscriptions and was open only to subscribers or to persons introduced by a subscriber.[108]

Attempts at a Union of the ML and NHSM and the Erection of an Edifice

Upon receiving notice in December 1832 of the death of Sir Walter Scott, and of York's (that is Toronto's) intent to contribute toward relieving his debts, the leading citizens of Montreal called a meeting "to consider the propriety of uniting in a tribute to the great Minstrel of the North."[109] After learning that the author's debts had been acquitted, attention turned to erecting a civic monument to his honor, namely an edifice adapted to literary purposes, such as, furnishing accommodations for a public library, reading room, museum, lecture rooms, etc.[110] As a result of several meetings it was resolved to form a joint stock association, consist-

ing of shares at £5 each, in order to erect a building to be called the Waverley Institute, which was to house the literary, scientific and mercantile associations of Montreal.[111] The writer of a letter to the editor perhaps was prescient in stating:

> that our public institutions of all kinds, with the exception perhaps of the General Hospital, are in a languishing state, nay, even a public meeting for any purpose however laudable, is got up with difficulty, and attended by scarcely one in fifty of those whom we might expect to are [sic = be] interested in the welfare and credit of our city ...
> The subscription list will prove whether I have done the public wrong in supposing them careless about such a praiseworthy object; and I hope it will refute that often repeated charge, that the inhabitants and merchants of Montreal care for nothing but individual interest.[112]

Evidently the author thought that the munificence and civic pride required to achieve such a project were lacking. In the end, the Scottish community and other admirers of Scott did not muster the necessary £30,000 to honor its literary hero.

Several NHSM members were prominent in this unsuccessful effort in late 1832 through to mid 1833 to establish the memorial to Sir Walter Scott in the form of an edifice to house Montreal's literary societies. Businessmen on the other hand, had only recently succeeded in supporting the union of the two newsrooms. At the same period the extensive valuable personal library of the late John Fleming was advertised for sale.[113] There were suggestions that it

should be purchased and become part of the ML.[114] Perhaps to allow time for such a proposal to mature the sale was postponed indefinitely and only took place in 1843.[115] Both the failure of the Waverley Building project and the failure to purchase the Fleming collection of books lead one to conclude that there was neither the desire nor the financial commitment required to accomplish these ends.

In August 1833, therefore, the NHSM executive proposed to raise £500 or £600 among the members and other interested persons and to petition the legislature for the lot granted to the ML, in order to erect a building for the exclusive use of the NHSM and the ML.[116] Petitions from the NHSM and the ML were read in the House of Assembly January 17, 1834 asking that the grant of a building lot on the court house grounds be transferred from the ML to the NHSM, that the time period for erecting a building be extended once again, and that a sum of £750 currency be granted to cover half the cost of a building.[117] The timing of the appeals was hardly propitious. Reinforced by a series of popular assemblies promoting its demands for radical political reforms, the *Parti patriote* introduced the ninety-two resolutions in February. Its grievances in-

cluded the heavy immigration from Great Britain, and the subsequent cholera epidemic of 1832, the founding of the British American Land Company under the control of Montreal English-speaking merchants, and the growing power of the chartered banks, also under the control of Montreal English-speaking merchants. From October to April 1834 the NHSM circulated a subscription list to obtain pledges toward a building. By the latter date the promised sum amounted to £775.[118] From the state of the finances after the NHSM purchased a building in 1836 it does not appear that much of the sum pledged was collected.[119]

In March 1835 and again in November 1835 the NHSM petitioned the legislature for the now-expired grant of the lot on the courthouse grounds and for a grant of money towards the erection of a building.[120] Once again conditions were not favorable. The summer of 1834 had witnessed a second cholera outbreak and the radical wing of the *Parti patriote*, shorn of its moderate followers, had won a larger mandate in the 1834 election. The House of Assembly's special committee, chaired by James Leslie, reported on neither the January 1834 petition nor the March 1835 petition to which they were referred. In 1835, however, the committee of the

House of Assembly declared that "they considered the support of such societies should depend upon private contributions, and, consequently that they should not look to legislative aid."[121] In effect, burdened by the cost of the rapid growth of the rural school network, there would be no government patronage in support of literary and scientific institutions.[122]

The NHSM council in its ninth annual report, in May 1836, once again lamented the confined space of the society's rooms that prevented the display of the valuable items of the cabinet to advantage.[123] Then in October of that year the council reported having received an offer from Mr. Regnier to sell a house at 10 Little St. James Street belonging to the heirs Cadieux (see Figure 4 no. 5). The NHSM offered £2,000 on terms, a £500 down payment and the remainder to be paid in annual amounts at interest.[124] The sale was agreed upon and the society obtained possession of the property in December 1836. On December 31st the NHSM offered accommodations to the ML and the various national societies. Thereby the ground floor and half of the second floor were leased to other groups and the NHSM museum was installed on the third floor.[125]

Despite the rental income which was received from its building, the financial situation of the NHSM was precarious.[126] In 1838 the James Somerville legacy of £1,000 to establish a natural history lectureship was drawn upon to satisfy the terms of the purchase agreement. To fulfil the terms of the Somerville bequest members furnished public lectures on natural history without receiving a fee.[127] The building itself was in constant need of repairs.[128]

Conflict in the mid to late 1830s

The political situation from the mid to late 1830s increasingly affected all institutions in Montreal. At the July 1834 elections to the Montreal medical examining board seventy-one doctors were present. Having lost the vote (46-25) on the motion that Dr. J. Daniel Arnoldi be president of the new board, the minority group led by the McGill faculty doctors John Stephenson, William Robertson and Michael McCulloch withdrew. Eight members of the 1831 board were then re-elected along with four new members. Several of the members of the board would be involved in the 1837 or 1838 rebellions.[129] The Chairman, J.D. Arnoldi, resigned four months after

the election at odds with the political views of the other more radical board members.[130]

The formation in the mid 1830s of the several national societies fed into the *Constitutional associations*, the *Rifle Corps*, and the *Doric Club*, on the one hand, and to the radical *Committees of correspondence* and *Sons of Liberty*, on the other. This appeal to ethnic and national origins and the formation of political associations served to further politicize the Montreal community and led to clashes in the city and eventually to the rebellions of 1837 and 1838.[131]

One instance of how politics influenced Montreal institutions in these years may be seen in the election of the ten-member management committee for the Montreal Normal School in April 1836. Earlier that year, on March 21st, an *Act for the Establishment of Normal Schools* had received Royal Assent. Two slates were drawn up in Montreal with three persons common to the two slates, namely, Jacques Viger, and the Revs. Henry Esson and Patrick Phelan. In the voting the so-called *Canadian slate* won over the *British slate*. Among those elected were the *Parti patriote* members, Louis-Joseph Papineau, president, Thomas Story Brown, treasurer,

Dr. E.B. O'Callaghan, James Leslie and Jacob DeWitt. Also elected were the three men, who had been common to the two nominated slates, and the Rev. P. Viau. Among the defeated were Monseigneur J.J. Lartigue, Monseigneur J.-V. Quiblier, the Rev. John Bethune, Peter McGill, William Lunn, P. De Rochblave, and Toussaint Peltier, Jr. The results were in large measure a split along political rather than ethnic lines.

Amid the uncertainty of the times the MMI insured its property for £200 and closed in April 1835.[132] British Party adherents dominated the Mechanics' Institute of Montreal (MIM), a new foundation in 1840 with a new name. To forestall any rivalry, the MIM insisted the former institute, the MMI, merge with the new entity.[133]

The NHSM maintained a lecture program throughout the period. The lack of written minutes after 1832 means that knowledge of its other activities must be obtained from brief newspaper reports of meetings, notices of Essay Competitions and some sketchy Council Minutes.

The Medical Faculty of McGill College closed during the years 1836 to 1838, and resumed lectures in 1839.[134] In the 1840s wid-

ened access to staff positions at the MGH lessened some but not all of the tensions in the medical field.

A Last Attempt to Unite the ML and NHSM and Erect an Edifice

An elaborate plan for a public edifice to house literature, science and the arts arose from a proposal of the ventriloquist philanthropist Alexandre Vattemare who visited Montreal from December 1840 to early 1841.[135] The plan called for the NHSM, the MIM and the ML to amalgamate as the Montreal Institute of Literature, Science and the Arts and cede their libraries and collections to City Council. Entry to the institute was to be free for all Montreal citizens. In turn the city was to assume the NHSM mortgage debt, to borrow £50,000 to erect a five-storey building and to provide an annual appropriation of £300 for new books and specimens. The edifice was to contain a conference room on the ground floor, the stock exchange, Post Office and Trinity House on the first floor, city hall and its services on the second floor, the library and art room on the third floor, and a museum on the upper floor.

The Board of Trade petitioned City Council on January 7th, 1841 to proceed with the plan. After approving the proposed cul-

tural institute, the council petitioned the Governor. The proposed institute received enthusiastic approval at a meeting of English-speaking citizens on January 21st, 1841 and a similar approval of French-speaking Montrealers the following evening. The *Montreal Gazette* lauded the project as "the foundation of a monument, not less creditable to the spirit and enterprise of the city of Montreal, than commemorative of the noble exertions made by Mr. Vattemare to endow us with institutions worthy of an enlightened and enterprising community."[136] A Grand Mass was to be held in Notre Dame Church January 28th, to celebrate the "mutual good feeling which at present exists between the inhabitants of different races, in this city, as brought about by the exertions of Mr. Vattemare, in the prosecution of his noble project of uniting all mankind in peace and good feeling toward one another."[137]

The requested ordnance was duly passed by the Special Council and sanctioned by the Governor-General (*IV Vict. Cap. XXVII, 6 Feb. 1841*).[138] The scheme, however, was overtaken by the political changes of the period. The Governor-General, Lord Sydenham, proclaimed the *Union of the Canadas Act* on February 10th and called for elections to the new Parliament on the 19th. With

these actions the Special Council was dissolved and the project fell through.[139] Sydenham himself, the patron of Vattemare, died September 19th, 1841.[140]

The ML, which appears to have fared ill during the period of the Rebellions, sold some of its books by auction in the latter part of April 1843.[141] The Mercantile Library Association (MLA) founded late in 1841 purchased the balance of the ML books late in 1843.[142] The MLA represented an extension of access to literature for merchants' clerks who had declined to join the MIM formed earlier in 1841.

Conclusion

The answer to the question why there was no elegant civic building or buildings to give a public face and civic status to the social and cultural role of the ML, the NHSM, and in 1840 the MMI is complex. It includes not only the economic difficulties of the period, but also the political rivalry and conflict between the *Parti canadien/patriote* and the *British party*, the division within the medical profession, the sectarian divisions between liberal and evangelical religious groups, and the contest between the Church of England

and the Church of Scotland, as well as that between Protestants and Roman Catholics. In effect the base of support for such a building was too divided and too narrow.

The answer also may lie in the inability of the literary and scientific institutions to cooperate and to muster the support and the finances required to erect such a building. In this respect one may contrast the sums raised to erect Church buildings with the ineffectiveness of the various proposals for a building to house the literary institutions. The first attempt at a merger was that of the ML and the Montreal News Room in Molson's Mansion House Hotel in 1818. Differences of vision and lack of support for the united library and newsroom led to a divorce in 1826. Businessmen apparently were more interested in the newsroom and stock exchange than in the library.

The numerous attempts in 1828 and throughout the 1830s to erect a building to house the ML and the NHSM apparently failed because the base of support was too narrow. The proposal to house all the literary institutions in a single building arose a second time with the proposed Waverley Institute in 1833 and a third time with the Vattemare proposal in 1840-1841. The former failed to

raise the funds required and the latter apparently failed because the proposal died during the political union of the Canadas. Nevertheless in 1840-41 there would appear to have been wide support in the whole community for such a municipal edifice that would make literature and science available to all citizens.

The next chapter brings together the threads of this and the previous two chapters. In the program of the two institutions, the NHSM and the MMI, the display of natural history specimens and the learning and dissemination of science were part of an ambitious desire to catalogue the natural resources of the two Canadas. The practice of science within its institutional setting is explored there.

End Notes

[1] Silvio A. Bedini, "The Evolution of Science Museums," *Technology and Culture* 6, no. 1 (Winter 1965): 1-29.

[2] A listing of these societies, including many others world-wide, appears on the web page of the Scholarly Societies Project, sponsored by the University of Waterloo Library: <http://www.Scholarly-societies.org>.

[3] Bedini, 19.

[4] For example, see Donal Sheehan, "The Manchester Literary and Philosophical Society," *Isis* 33, no. 4 (Dec. 1941) "It was decided, 'that the subjects of conversation comprehend natural philosophy, theoretical and experimental chemistry, polite literature, civil law, general politics, commerce and the arts. But that religion, and practical branches of physic, and British politics, be deemed prohibited, and that the chairman shall deliver his veto whenever they be introduced,'" 520. Jan Golinski, "The Literature of the New Sciences," in *The New Cambridge History of English Literature: The Romantic Period*, (Cambridge: Cambridge University Press, forthcoming), traces the prohibition to the legislation against seditious meetings in 1795 and following years. Accessed on <http://www.unhedu/history/golinski/paper7.htm>.

[5] For example, see Ronald Story, "Class and Culture in Boston: the Athenaeum, 1807-1860," *American Quarterly* 27, no. 2 (May 1975): 178-199. The Boston Athenaeum founded in 1807 had as its prototype the Liverpool Athenaeum.

[6] *Ibid.* 188f. In Montreal the example of John Fleming and John Gray might be cited. See NHSM, *Minutes* 28 Dec 1829. "The Library had also experienced a large increase. Authority was given to the Recording Secretary to purchase at the sale of the Library of the late John Gray, Esq. such scientific books as might be useful, provided the cost was low. In consequence upwards of 100 volumes were purchased, many of them excellent works and some of them rare."

[7] Eric Glasgow, "Two Public Libraries in Victorian Liverpool," *Library History* 19 (July 2003) cites the Liverpool Athenaeum founded in 1797 as an example of "elitist culture" and indicates it was essentially "a gentleman's club." The same was true of the Boston Athenaeum founded in 1807, 130f.

[8] See Sophie Forgan, "Building the Museum: Knowledge, Conflict, and the Power of Place," *Isis* Focus: Museums and the History of Science 96, no. 4 (2005): 572-585.

[9] T. Kelly, *George Birkbeck: Pioneer of Adult Education,* (Liverpool: University Press, 1957) and Mabel Tylecote, *The Mechanics' Institutes of Lancashire and Yorkshire before 1851,* (Manchester: Manchester University Press, 1957).

[10] E.A. Talbot, *Five Years' Residence in the Canadas,* vol. 1 (London: 1824) wrote "Montreal, when regarded in a commercial light, may be said to be the capital of Canada," 78.

[11] J.I. Cooper, "McGill, James," *DCB* vol. V.

[12] Owen Klein, "The Opening of Montreal's Theatre Royale, 1825," *Theatre History in Canada* 1, no. 1 (Spring 1980), 25f.

[13] The MGH was seen as a "Public Hospital" that "confers unfading honour on every individual connected with it and which is at once an honour to them and to the city which it embellishes." *Montreal Herald,* 20 Apr. 1822.

[14] John Murray Greenwood, "Richardson, John," *DCB* vol. VI.

[15] Stanley B. Frost, "McGill, James," *DCB* vol. VII.

[16] Citing A. Fauteux, "Les bibliothèques canadiennes et leur histoire," *Revue canadienne* 17 (février, mars 1916): 97-114, 193-217, and A. Drolet, *Les bibliothèques canadiennes, 1604-1960,* (Ottawa: Le cercle du livre de France, 1965), Daniel D. Reicher, "Les Bibliothèques Québecoises d'avant 1970," *Canadian Libraries in their changing environment*, eds. L. Spencer-Garry and C. Garry (Downsview: York University Centre for Continuing Education, 1977) indicates that Haldimand wished to eliminate the ignorance of the inhabitants in order to bring them to know their duty but was frustrated in this by the high entry fee required for proprietorship and the subsequent high subscription fees, 26.

[17] G.P. Browne, "Davidson, Arthur," *DCB* vol. V.

[18] Myron Momryk, "Gray, Edward William," *DCB* vol. V.

[19] Before 1797 one could become a proprietor of the library by contributing 5 guineas or more in currency or in books acceptable to the directors of the library. In 1798 the price of a share was set at 10 guineas and the proprietor's annual subscription at 5 Spanish dollars. See the rules printed in the *Catalogue of English and French books in the Montreal Library with the rules for the same, made & agreed in general meetings of the proprietors* (Montreal: E. Edwards, 1797).

[20] *Montreal Gazette,* 27 Feb. 1796.

[21] *Ibid.* 10 Oct. 1808.

[22] Guy Kitteringham, "Science in Provincial Society: The Case of Liverpool in the early nineteenth century," *Annals of Science* 39 (1982): 329-348. There is a more recent brief study by Eric Glasgow, which includes the Athenaeum, "Two Public Libraries in Victorian Liverpool," *Library History* 19 (July 2003): 129-131.

[23] *Montreal Gazette,* 3 Apr. 1828.

[24] The MLA in 1844 paid £200 and granted 35 Life Memberships to proprietors of the ML in exchange for receipt of the remnants of the library after several days of auction sales. The twenty-sixth Annual Report of the MLA in 1867 listed 38 names of persons who had been granted life memberships, mostly in connection with the 1843 transfer of the ML remnant to the MLA; this number, however, did not include some ML proprietors who had been on the executive. A.F. Holmes and John Try, for instance, are not found on the list.

[25] In 1819 when the Library was incorporated there were 71 proprietors (58 English- and 13 French-Canadians) and in 1824, when there was an attempt to bring the number to 100, there were 72 proprietors.

[26] For early Libraries the security of their books was always a concern. See for example:
Montreal Herald, 27 May 1815. "The Proprietors of the Montreal Library are requested to meet at the Library, on Tuesday the 30th inst. at the hour of 10 in the forenoon, for the purpose of taking into consideration certain *Rules to be proposed for the more effectual security of the Books*, and to prevent their being taken out of the Library without authority. Wm. Langhorn, Librarian. May 20, 1815."
In the same issue there was the following notice: "Public Notice. All persons having in their possession any Book or Books belonging to the KINGSTON LIBRARY are requested by the proprietors to send them to the Post Office, at this place without delay. Kingston, 17th March 6 wks."

[27] See *Montreal Gazette,* 10 Oct. 1808 cited *supra.*

[28] This is suggested by analogy with the Boston Athenaeum. See Story and the citation from the *Montreal Gazette,* 3 Apr. 1828 in the text *supra.*

[29] See the Petition of the Montreal Library read in the House of Assembly 8 Feb 1819, "That after the building of the said Court House, one of the Rooms therein was for some years occupied with the Books belonging to an institution called the Montreal Library, but which lately have been removed, the said Room being now required by the Prothonotaries for other purposes." *JHALC* (Quebec 1819) 8 Feb. 1819, 66f.

[30] *Montreal Herald,* 6 Apr. 1816. "MONTREAL LIBRARY. A Meeting of the Proprietors is requested, on Friday Morning, the 12th inst. at 11 o'clock precisely, to choose a Committee, for the purpose of fixing on some place, to where the Books may be removed, the Directors having received notice to quit the apartments at present occupied as a Library. Montreal, 6th April, 1816."

[31] *Ibid.* 9 Dec. 1815. ""We understand that John Molson, Esqr. who has lately purchased the House and extensive premises of Sir John Johnson, Bart., in St. Paul Street intends making great improvements on that beautifully situated lot of ground. It is in contemplation to erect a building on the Street of about 180 feet in length, three or four stories high, the front to be of cut or smoothed stone. ... The whole will form both in regard to extent and elegance, the most complete Hotel in North America. It is proposed to have a separate building for the Library, and News Room, with accommodation for the Librarian, who can also attend the News Room."

[32] The Montreal News Room appears to have been founded in December 1814. Early notices of its existence include the following: *Montreal Herald,* Sat. 10 Dec. 1814. "The subscribers to the NEWS ROOM, are requested to meet at Gillis' Coffee House, on Monday next at 2 o'clock, to appoint a Committee and to take into consideration the objects of the institution." See also *ibid.* Sat. 24 Dec. 1814; *ibid.* 9 Mar. 1816; *ibid.* 17 Mar. 1817; and *ibid.* 20 Dec. 1817. This founding date is earlier than that which appears in several accounts of the Montreal News Room that are apparently based on Newton Bosworth's account in *Hochelaga Depicta* ..., (Montreal: William Greig, 1838; reprint, Toronto: Coles Publishing Co., 1974) which places the News Room's founding in 1821, 152. Early notices attesting to its existence are also found in advertisements by the stationer Joseph Nickless, *Montreal Herald,* 1 July 1815 and 13 Sep. 1817.

[33] See *Montreal Gazette,* 30 Dec. 1818, 6 and 30 Jan. 1819.

[34] T. Doige, *An Alphabetical list of the merchants, traders, and housekeepers, residing in Montreal. To which is prefixed, a descriptive sketch of the town.* (Montreal: James Lane, 1819): 24f.

[35] *JHALC* (Quebec 1819) 8 Feb. 1819, 66f,

[36] *Ibid.* 13 Feb. 1819, 86.

[37] *Montreal Herald,* 23 Dec. 1820. Cited by H. Gagnon, "Le projet avorté du Musée d'histoire naturelle de la Montréal Library (1822-1827). Note de recherché sur l'histoire des premiers musees au Québec," *Cahiers d'Histoire* 12 (1992): 82.

[38] *Ibid.* 20 Jan. 1821. "Montreal Library. Persons desirous of contracting to make certain Alterations in the **Old** Wesleyan Chapel, St. Joseph Street so as to make it answer the purpose of a **Library,** Reading Room, and Exchange, will please send in sealed Proposals to the Treasurer, addressed to the Directors of the Montreal Library, on or before Monday the 29th inst. at Twelve o'clock, at which time the Tenders will be opened in the Library. A Plan and Specifications of the work to be done may be seen by applying to Norman Bethune, Treasurer. Montreal 20th Jan. 1821." The refurbished building was sometimes referred to as the Exchange. See for example, the notices for the Committee of Trade in the *Montreal Herald,* 21 Aug. 1821, 6 Apr. 1822.

[39] For the fire see *ibid.* 17 Mar. 1821 and for a list of missing books after the fire see the *Montreal Herald,* 25 Aug 1821.

[40] *Montreal Gazette,* 22 Nov. 1822. "The Directors take this opportunity of acquainting those Gentlemen at whose instance they undertook to receive into the Library Donations for the formation of a Public City Museum, that their arrangements are ready for the reception of such articles of curiosity as they or the Public are willing to bestow for so laudable a purpose, and they may remain in the Library until a more suitable place of deposit can be provided for them."

[41] *JHALC* (Quebec 1824) 9 Dec. 1823, 38f. and Act 4 Geo. IV ch. 36 (9 Mar. 1824).

[42] For the modification of the lending rules for country subscribers see *Montreal Herald,* Sat. 10, 24 Jan. 1824. The report of the meeting to find new proprietors is found in the *Canadian Spectator,* Sat. 25 Mar. 1825. Prior to this meeting some Law Students in Montreal had collected funds to form a Law Library, which was to be housed in unoccupied rooms in the Courthouse (*Montreal Herald,* 22 Feb. 1825).

[43] *Canadian Courant,* 25 Mar. 1826.

[44] *Montreal Gazette,* 6 Dec. 1823.

[45] *First Annual Report of NHSM,* 15 May 1828: "The collection originally formed by S. Sewell, Esquire, and deposited in the charge of the Montreal Library was by the liberality of that gentleman, and with the consent of the Directors of the Library, transferred in full rights to the Society, by which donation possession was obtained of a large number of specimens of every kind."

[46] For the phrase "a more suitable place" see note 32 *supra.*

[47] E. H. Bensley and B. Tunis, "The Caldwell-O'Sullivan Duel: A Prelude to the Founding of the Montreal General Hospital," *Canadian Medical Association Journal* 2 (1969): 1092-1095. For O'Sullivan's opposition to the hospital petition see *Montreal Gazette*, 13 Mar. 1819.

[48] This building, which replaced the House of Recovery opened by the Female Benevolent Society of Montreal in October 1817, received the patients who were in the House of Recovery.

[49] Dalhousie's insistence that the Montreal medical examiners hold British degrees or testimonials and be medical officers of the MGH was thought by many practitioners to denigrate their personal qualifications.

[50] B. Tunis, "Medical Education and Medical Licensing in Lower Canada: Demographic Factors, Conflict and Social Change," *Hs/SH* 14, no. 27 (1981): 88.

[51] See William Sheppard, an original member of the LHSQ, in *Canadian Naturalist and Geologist,* new series 1 (1864) "The Society was in the first instance composed of high officials and courtiers, and the fee was fixed at a high rate, for some end which can only be guessed at," 55f. Luc Chartrand et al., *Histoire des Sciences au Québec*, (Montreal: Boréal express, 1987) write that the society was intended to elevate the cultural level of the colony and furnish a bit of amusement for high society. (... relèverait le niveau culturel de la colonie et fournirait un peu de divertissement à la bonne société. À la meilleure société, faudrait-il plutôt dire, car lord Dalhousie entend bien réserver l'accès de l'institution à ses courtisans et aux dignitaires de l'administration coloniale, en fixant par exemple à cinq livres ... le droit d'entrée), 80.

[52] Among the original members of the LHSQ, Justice James Reid and John Richardson were from Montreal and Edmund William Romer Antrobus was from Three Rivers.

[53] James H. Lambert in collaboration with Jacques Monet, "Vallières de Saint-Réal, Joseph Rémi," *DCB* vol. VII.

[54] Richard A. Jarrell, "The Rise and Decline of Science at Quebec, 1824-1844," *Hs/SH* 9, no. 1 (1977) suggests that the LHSQ throughout its lifetime "was a class phenomenon, and that the class was bourgeoisie ... merchants of some standing and such professionals as physicians, lawyers, officials, educators, surveyors, churchmen, and military officers," 86.

[55] Compare for example, Morris Berman, *Social Change and Scientific Organization: The Royal Institution, 1799-1844*, (Ithaca, N.Y.: Cornell University Press, 1978).

[56] Chartrand et al., *op. cit.* "L'apparition de la LHSQ ne satisfait pas tout le monde. Les Montréalais, notamment, qui se sentient un peu exclus, fondent, en 1827, la Natural History Society of Montréal. ... À Québec même, beaucoup n'ont pas apprécié le caractère aristocratique et les allures trop britanniques de la LHSQ. Au printemps de 1827 quelques jeunes Canadiens et une poignée des Britanniques aux opinions trop liberals au gout du gouverneur, fondent la Société pour l'encouragement des sciences et des arts au Canada," 81.

[57] *Ibid.* 81f.

[58] *JHALC* (Quebec 1829) 2 Dec. 1828, 60.

[59] Chartrand, et al., *op. cit.* comment "Habilement, les auteurs de la 'pétition' font d'abord appel aux sympathies démocratiques de plusieurs deputes en rappelant que leur société 'a été fondée sur des principes les plus libéraux, toutes les classes de la société y étant admises, le désir d'avancer les sciences dans le pays étant la seule qualification requise'," 100.

[60] *JHALC* (Quebec 1829) 26 Nov. 1828, 26 Chasseur's petition for aid was introduced and *ibid.* 14 Mar. 1829, 692 the grant received Royal Assent; *ibid.* 2 Dec. 1828 the NHSM petition was introduced, *ibid.* 14 Mar. 1829, 690 the grant received Royal Assent.

[61] Appendix to the XXXVIIIth volume of the *JHALC* session 1828-29, Appendix V (1829).

[62] The report of the exploration party is found in Appendix to the XLth volume of the *JHALC* session 1831, Appendix C (1831). The NHSM request to the exploring party is mentioned in Report of the Indian Committee May 1828.

[63] NHSM Minutes 25 May 1829.

[64] The report of the exploration party is found in an Appendix to the XXXIXth volume of the *JHALC* session 1830, Appendix S (1830) and in Appendix to the XLth volume of the *JHALC* session 1831, Appendix Z (1831). The insects collected were added to the NHSM museum collection. The botany specimens were examined and named by A.F. Holmes but were in such poor condition that they were of little value. (NHSM Minutes 30 Nov. 1829 and Third Annual Report 18 May 1830.)

[65] *Canadian Spectator*, 22 Mar. 1828.

[66] *JHALC* (Quebec 1829) 28 Nov. 1828, 37, and Act 9 Geo. IV ch. 45 (14 Mar. 1829).

[67] The Special Committee of the House of Assembly heard F.A. Quesnel and reported "Your Committee next called before it, F.A. Quesnel, Esquire, who informed your Committee that prior to the formation of the present Company within the last eight months he was a proprietor and held ten shares in the said Library: That he has reason to believe that the books then forming the Montreal Library were sold for the purpose of relieving the Library from serious embarrassments, and that by an arrangement with the purchasers, the present Petitioners and others have re-entered into the possession of the said Library, by contributing the amount of the purchase money in shares of twelve pounds ten shillings per share: That he also has a knowledge that many others besides himself were original proprietors in the said Library, and who now under the new arrangement are understood by the present Proprietors to be excluded from property in the said Library.

Your Committee having taken the matter referred into consideration, and also the information furnished by Mr. Quesnel, are of the opinion that the Prayer of the Petitioners ought to be granted, but that in justice to original Proprietors who may find themselves excluded from property in the said Library by reason of the new arrangement, that it should be made a condition in the Act prayed for, to further extend the provisions of the fifty-ninth of His late Majesty, chapter twenty-second, making it competent to any such original Proprietor to become so, on signifying his wish to be a Proprietors (!) under the new arrangement within twelve months, on paying the sum of twelve pounds ten shillings per share." *JHALC* (Quebec 1829) 2 Dec. 1828, 64.

[68] *Canadian Spectator,* 28 Jun. 1828, has an account of the dinner derived from the "Montreal Authority Gazette." When Peter McGill later supported the conciliatory actions of Governor Sir James Kempt, he was called a "weathercock."

[69] P.J. Bowler, 328 n. 12, writes "In Montreal there was some doubt at first as to whether the Natural History Society could be held together," citing Report of the Governing Committee in Minute Book I, p. 65. I could not find the reference

in my search of the Council Minutes, which include many loose and unnumbered pages.

[70] NHSM Minutes 30 Jun. 1828. The draft minutes read: "Dr. Robertson then read the Address which a deputation of the members of the Society consisting of Alex Skakel, Esq. Vice-President, A.F. Holmes Corresponding Secretary, S. Sewell Esq., R. Armour Jr., W. Pardy had presented to the Governor in Chief, their Patron, and his answer as follows: ...
Dr. Robertson then stated that the Council of the Society at the suggestion of several members had directed a Meeting of the Society to be called, for the purpose of preparing the said address but as some accident had prevented the Corresponding Secretary [preparing?] the necessary notice, the Council on their own responsibility had prepared the preceding address, procured the signatures thereto, and had presented it to His Excellency."

[71] The names of the Rev. Henry Esson, Dr. William Caldwell, Campbell Sweeny, and other Esson followers do not appear on the attendance lists for the subsequent meetings.

[72] MMI Minute Book has a General Meeting in Esson's rooms November 21st and a founding meeting on the 25th.

[73] The fifth aim enunciated at the opening session was: "An Academy or School for teaching Arithmetic - Algebra - Geometry and Trigonometry and their different applications, particularly to Perspective, Architecture, Mensuration and Navigation, to which may be added Ancient and Modern languages." MMi Minute Book second page (unnumbered).

[74] Other members of the committee were the MMI President Louis Gugy and William Shand, Treasurer, as well as eleven members of the institute, Aaron Hart, lawyer, Charles Wand, innkeeper, Robert Cleghorn, gardener, George Holman, navigator, Joseph Clarke, building contractor, William Holwell, ordinance department, William Boston, painter, Alex Gray, auctioneer, Frances Howson, William Buchanan and one of the Warwick brothers, founders.

[75] H. Esson, *Answer of the Rev. Henry Esson, to the charges and statement of a committee of the session of St. Gabriel Street Church, Montreal,* (Montreal 1832). Esson asserted that both Bruce and his late wife, who died in April 1831, took the lead in mid 1829 with accusations of drunkenness against him out of pique "on account of some supposed interference with the interest of their school."

[76] Esson was not elected but five of his opponents were: John Whitelaw, James Carswell, Henry Johnson, Peter McGill and Benjamin Workman.

[77] Information and dates concerning the proposed membership of Daniel Tracey are from the MMI Minute Book.

[78] *Irish Vindicator,* 22 Nov. 1831. The editor, Dr. Daniel Tracey, was not unbiased in that he was the subject of the disputed ballot the previous spring.

[79] NHSM, *First Annual Report* 18 May 1828 remarks on "the present confined state of the room."

[80] Minutes of Council 7 Apr. 1829. Council accepted the offer on behalf of the Society.

[81] NHSM Minutes 31 Aug. 1829.

[82] NHSM meeting 29 Mar. 1830 (*Montreal Gazette* 5 Apr. 1830), Minutes of Council 1 Apr. 1830 and Minutes of Special Meeting 6 Apr. 1830.

[83] NHSM Minutes 31 Jan. 1831. Council spoke of "the removal, which must before long take place, to a more convenient situation."

[84] *JHALC* (Quebec 1831) 9 Feb. 1831, 139.

[85] *JHALC* (Quebec 1831) 18 Mar. 1831, 400.

[86] NHSM, *Fifth Annual Report* 18 May 1832.

[87] Peter Burroughs, "Kempt, Sir James," *DCB* VIII.

[88] Pierre Rajotte, "Les pratiques associatives de la constitution du champ de production littéraire au Quebec (1760-1867)" RHAF 45, no. 4 (1992) writes "le fusion ne semble pas avoir très bien réussi aux Canadiens de langue française, qui participent peu à l'activité de la nouvelle societe,"560.

[89] That there was an interest in science among some French-Canadian persons in Montreal may be seen in the donation of mineralogical specimens by Jacques Viger to the Mineralogical Cabinet of Washington College, *Canadian Spectator,* 30 May 1827. Nevertheless, there were only two French-Canadian founding members, namely, Benjamin Berthelet, M.D. (Edin.) and Guillaume Vallée, M.D. (Paris).

[90] French-Canadian membership increased during the period when Sir James Kempt was Governor-General: Jacques Viger joined 28 Oct. 1828 and Gabriel

Franchère 24 Nov. 1828. Francis Larocque, Jules M. Quesnel, Hon. Toussaint Pothier and Hon. Denis B. Viger joined 28 Sep. 1829, and Hon. Louis J. Papineau joined 26 Oct 1829. Pothier served as Vice-President 1830-31 and President 1831-32 and Quesnel as Vice-President 1831-32.

[91] Among those French-Canadians, who replied to the letter of acceptance of their membership application, there was little mention of active participation. Thus the Hon. Denis-B. Viger wrote 14 Sep. 1829 that "he regretted that the nature of his occupation would prevent his being so useful to the Society as he could wish." (NHSM Minutes 28 September 1829). Similarly, the Hon. L.-J. Papineau wrote 29 Oct. 1829 that he was "obliged to confess that he would prove but a very inefficient member but he would be a sincere friend and supporter of the praiseworthy objects of the Society." (NHSM Minutes 30 November 1829).

[92] Later French-Canadian members were: Pierre Beaubien, M.D. (Paris) joined 28 Jan. 1833 and Tancred Bouthillier joined 23 Nov. 1833. Leon Gosselin joined c. 1837 and Hon. Roch St. Ours joined 31 Jul. 1837.

[93] *La Minerve,* 9 Dec. 1830 "On doit voir avec une vive satisfaction que Messieurs les Docteurs Nelson et Vallée veuillent bien prendre sur leurs loisirs de donner des leçons médicales en langue française dans le cours de l'hiver, savoir M. Nelson sur la Chirurgie, et M. Vallée sur la Matière Médicale et la Thérapeutique." The editor noted that they charged a modest sum to cover expenses only and each had about 30 students; he lauded "l'utilité de leur patriotique entreprise." See *The Vindicator,* 10 Dec. 1830. Here too the editor noticed that Doctor Nelson was to deliver course of lectures on Surgery in French at Hôtel-Dieu and Dr. Vallée was to lecture on Materia Medica. *The Vindicator,* 4 Oct. 1831 "Surgical Lectures. Dr. Robert Nelson will continue to deliver his Surgical lectures."

[94] There was a long debate over Robert Nelson's qualifications in 1831 when he and other doctors displaced the McGill doctors as Medical Examiners. Cf. *Irish Vindicator,* 15 Jul. 1831. The letter writer hailed the end of the monopoly of the former examiners and lauded Robert Nelson as having more knowledge than the four McGill lecturers together. The writer then went on "they have shown themselves very sensitive when a respectable individual had the hardihood to give a few private lectures" and complained that the faculty had excluded eligible candidates from attending the hospital. He also remarked on "the underhanded manner in which the two old members of the Board were so unceremoniously turned to the right about." One may wonder if this quashing of, or attempt to quash, lectures for French-Canadian medical students played a part in the dispute over the issue of a license to McGill's first medical graduate.

[95] *Le Canadien,* 30 octobre 1833.

[96] Dr. J. D. Arnoldi had received a letter dated Feb. 11, 1823 from A. W. Cochran, the Governor's Civil Secretary, stating that Medical Examiners were required to have British diplomas or British testimonials and to be an officer of the Montreal General Hospital. See Gilles Janson, "Arnoldi, Daniel," *DCB* vol. VII.

[97] B. Tunis, "Medical Education and Medical Licensing in Lower Canada: Demographic Factors, Conflict and Social Change," *Hs/SH* 14, no. 27 (1981) "The dominant feature in the political and professional drive for new medical legislation was the strength of the rural practitioner. Medical representatives piloting the Bill in the Legislative Assembly came from rural counties, and rural medical practitioners were subsequently elected to the new medical boards," 89.

[98] Previously known as the *Parti canadien* the name change to *Parti patriote* in 1832 accorded with its agenda of more radical change.

[99] *Canadian Courant,* 13 Jul. 1831.

[100] *La Minerve,* 14 Jul. 1831.

[101] See B. Tunis, "Medical Licensing in Lower Canada: the dispute over Canada's first medical degree," *CHR* 55 (1974): 489-504.

[102] *Canadian Courant,* 2 Apr. 1831.

[103] *Montreal Gazette,* 3 and 7 May 1832.

[104] *Montreal Gazette,* Thu. 2 May 1832 "MERCHANT'S HALL. The Subscriber begs leave to inform the MERCANTILE community, and the Citizens of Montreal, that his large room will be open from Nine in the Morning till Ten in the Evening, where Merchants and others may meet to discuss any interesting subject that may relate to the health or improvement of the city, &c. &c. The Newspapers of the day will be found in the room. JOHN LUKIN, No. 27 Notre Dame Street." See also *Montreal Gazette,* Thu. 14 Jun. 1832. In later advertisements apples and pears were for sale at that address with no mention of the newspapers.

[105] See *Canadian Courant,* 15 Aug. 1832.

[106] France Galarneau, "L'élection partielle du Quartier-ouest de Montréal en 1832: analyse politico-sociale," *RHAF* 32, no. 4 (mai 1979): 565-584.

[107] *Canadian Courant,* 16 Feb. 1833.

[108] *Ibid.* 6 Mar. 1833.

[109] *Montreal Gazette,* Tue. 18 Dec. 1832 "SIR WALTER SCOTT." The meeting was reported at length in the *Montreal Gazette* Sat. 22 Dec. 1832 "TRIBUTE TO SIR WALTER SCOTT."

[110] *Montreal Gazette,* Sat. 2 Feb. 1833 "MONUMENT TO SIR WALTER SCOTT."

[111] See the *Montreal Gazette,* 12 Feb., 9 Mar., 6 Apr. 1833.

[112] *Montreal Gazette,* Thu. 14 Feb. 1833 "NEWS ROOM AND LIBRARY."

[113] *Canadian Courant,* 17 Apr. 1833.

[114] La Minerve, 16 Sep. 1833. "La vente des livres de feu M. Flemming (!) qui devait commencer aujourd'hui a été remise indéfiniment, en conséquence du desir manifesté aux héritiers par un grand nombre de personnes. Nous apprenons qu'il sera prochainement convoqué une assemblée des citoyens pour aviser aux moyens d'acheter la collection entière pour en faire une Bibliothèque publique; celà parait practicable et bien à désirer, et nous espérons que dans cette circonstance on mettra de côté tout esprit de parti pour procurer à cette ville l'avantage d'avoir une des plus belles bibliothèques du pays."

[115] *Ibid.* 2, 5, 16 Jan. 1843.

[116] *Montreal Gazette,* 17 Sep. 1833.

[117] *JHALC* (Quebec 1834) 17 Jan. 1834, 57. The NHSM Minutes 27 Jan. 1834 state that a Committee report indicated that the Society had pledges of £675 toward the erection of a building.

[118] NHSM *Seventh Annual Report* 18 May 1834.

[119] Undated clipping pasted in the back of the Minute Book of Council referring to a NHSM meeting held 27 Mar. [1837]. "In consequence of representation of the Chairman of the Council, as to the necessity of the sum required for the first installment on the building being immediately raised, Dr. Hall, Mr. A.H. Armour, Dr. David, Mr. Badgley and Dr. Campbell volunteered to act as a Committee, to collect additional subscriptions for the building, as well as to get the arrears due to the Society by its members." See also the Minutes of Council 28 May, 5 and 25 Jun. 1838. On June 5th it was resolved to hire a man to collect the outstanding pledges and on the 25th it was reported that he had only collected £25.

[120] *JHALC* (Quebec 1835) 4 Mar. 1835, 76 and *JHALC* (Quebec 1836) 3 Nov 1835, 35.

[121] NHSM *Ninth Annual Report* (*Montreal Gazette* 21 May 1836).

[122] The Standing Committee on Education and Schools had it as their first rule "Not to make any grant except in case of urgency, and to diminish as far as possible those made in former years." See Appendix O,O 1835-1836. This rule was also in effect in previous sessions.

[123] NHSM *Ninth Annual Report* (*Montreal Gazette* 21 May 1836). "The Library and Cabinet of the Society are both extensive and valuable, but unfortunately, for want of proper accommodation, cannot be displayed to advantage."

[124] NHSM Minutes 31 Oct. 1836, *Montreal Gazette,* 17 Nov. 1836.

[125] NHSM *Tenth Annual Report* (*Montreal Gazette,* 13 Jun. 1837). "The Council ... have leased the ground floor and half of the second ... Considerable expenses have, of course, been incurred in the removal of the museum, and the adaptation of the third floor to the purposes of displaying the collection to the best advantage, although the strictest economy has been observed."

[126] The annual installment due on the building was £200 plus interest while rental income was £95. See note 119 *supra.* The situation had changed by May 1840. In the NHSM *Thirteenth Annual Report* (*Montreal Gazette* 28 Jul. 1840). "While the Council rejoice at being enabled to direct the attention of the Society to its literary and scientific improvements, it is with great gratification that they are also enabled to state, for the information of members and friends of the institution, its equally improved prospect in pecuniary point of view, and its liberation from present incumbrances (!)."

[127] NHSM Minutes Extraordinary Meeting 11 Feb. 1839. "An extract from the will of the Rev. J. Somerville was laid on the table. It was resolved that the Lectureship on Natural History established by the Society, embrace the various branches of Natural History, in the most comprehensive sense of the term. On motion, duly made and seconded, and carried on division, it was resolved, that an annual course of Lectures on Natural History be delivered in the Rooms of the Society, by gentlemen in the mean time, voluntarily offering their services for this purpose; whereupon, Dr. Sewell, Dr. Hall, and J.S. McCord, Esq. severally offered to Lecture, the first on Mammalia, the second on Popular Chemistry, and the third on Meteorology, subject to the control of the Council of the Society. NHSM *Thirteenth Annual Report* 28 Jul. 1840. "Before closing this annual Report, the Council take the liberty of particularly directing the attention of the

Society to the gratuitous and valuable services of two of its members, Dr. Sewell and the Rev. Mr. Findlater, who, with equal zeal and ability, devoted a large portion of their time and talents to the delivery of courses of Lectures in the Rooms of the Institution, upon subjects within the range of natural history, thereby promoting the cause of science and of general information."

[128] NHSM Minutes 25 Nov. 1839. "That the President of this Institution be authorized to take up to £600 of an account of Mr. Somerville's legacy to be [used?] upon the real estate of the institution to be repaid with interest from upon the settlement with the Hospital for the Legacy.

[129] Among those arrested or sent into exile were: Robert and Wolfred Nelson, Timothée Kimber and Guillaume Vallée.

[130] Gilles Janson, "Arnoldi, Daniel," *DCB* VII.

[131] The St Patrick's Society was founded 17th March 1834, the St. Jean-Baptiste Society 24 June 1834, the St. Andrew's Society 1st December 1834, the St. George's Society 19 December 1834, and the German Society later in 1835.

[132] MMI Minute Book Meeting 7 April 1835.

[133] Members of the old Institute (MMI) met 25 Feb. 1840 appointed five members (J. Cooper, J. Allison, J. Poet, J. Woodhouse, Alex Stevenson) to negotiate with the MIM committee (J. Redpath, B. Holmes, J. Smith, H. Taylor). *Montreal Transcript,* 8 Aug. 1840. "Semi-Annual Report of the Montreal Mechanics' Institute (sic) August 4, 1840. Your Committee have already reported that negotiations had been opened between themselves and the gentlemen forming the Mechanics' Institution, formerly existing in this city, for the union of the two bodies. Your Committee were anxiously desirous of preventing the evils arising from any rivalry, and consequent dissension, likely to be produced [by] the operation of two similar but separate bodies, occupying the same sphere of action."

[134] J. Hanaway and R. Cruess, *McGill Medicine, volume 1; The First Half Century 1829-1885,* (Montreal & Kingston: McGill-Queen's University Press, 1996): 27.

[135] It would be "un édifice convenable et monumental" according to Romuald Trudeau, *Mes Tablettes*, cited Elisabeth Revai, "Le Voyage d'Alexandre Vattemare au Canada: 1840-1841," *RHAF* 22, no. 2 (1968): 269.

[136] *Montreal Gazette,* 26 Jan. 1841.

[137] *Ibid.*

[138] *Montreal Gazette,* 13 Feb. 1841 "Ordonnance pour autoriser et pour mettre la Corporation de la Cité de Montréal en état d'ériger un Edifice public dans ladite Cité, pour certains objets."

[139] Claude Galarneau, "Vattemare, Nicholas-Marie-Alexandre," *DCB* vol. IX.

[140] Elisabeth Revai, 275 cites G.-B. Faribault to Vattemare, "Le projet a été enterré avec Lord Sydenham."

[141] *La Minerve,* 17 Apr. 1843. *Montreal Gazette,* 20 Apr. 1843. Notice of dissolution of the ML.

[142] Mercantile Library Association, *Third Annual Report* 7 Feb. 1844. See note 24 *supra.*

Chapter Five: Institutions and Science

In a sense this chapter brings together the themes which were treated in the preceding three chapters, namely, science seen as display and spectacle, informal and formal opportunities for learning science, and elements of civic pride and conflict. This chapter will centre largely on the NHSM with a lesser focus on the MMI. Due to political and religious conflict the latter had a much shorter and very interrupted history. Civic pride, the desire to participate in scientific practice and to increase one's scientific knowledge led to the founding of the NHSM in 1827. Members of the NHSM saw their institution as the means of calling attention to scientific pursuits and of increasing public awareness of and knowledge of natural history. Political and religious conflict in 1828 lay behind the beginnings of the MMI and reverberated throughout its short life. Both societies defined their purposes in the educational terms in use at that period, that is, in terms of self- and mutual-improvement. Inherent in the latter term was a belief in the efficacy of collective effort.

This chapter looks first at the events and publications preceding the founding of the NHSM and then examines the society

beginning with membership and participation. Next it looks at the museum and library and the activities connected with them. After that it turns to the educational aims inherent in the museum and library, both those aims that were related to membership and those that were intended for a wider public audience. It is in these latter aims that the NHSM is most analogous to a literary society. Finally, the efforts of the NHSM to influence the government to institute a survey of the geology of the Canadas are reviewed. The founding and purposes of the MMI conclude the latter part of this chapter.

Background to the Founding of the NHSM

The earliest literary society in Montreal was the Symmathetical Society, which was begun in 1809 by the Rev. James Somerville, M.A.[1] Somerville owed his interest in science and literature to his studies with John Anderson, the Professor of Natural Theology at Glasgow University.[2] Founded to promote mutual improvement and social intercourse, the society flourished for several years.[3] Members collected artifacts, furnished and read essays, which were discussed at the meetings. Written comments were provided afterwards. According to an account of the society, the subjects dis-

cussed were chiefly scientific, literary and commercial. Several papers were reportedly published in 1824 in the *Canadian Review and Literary and Historical Journal.*[4] James Somerville's friends, Alexander Skakel and John Fleming, were probably among the members of the society.[5] A.F. Holmes reported that the society's members later joined the NHSM and its collections and its funds were donated to the same society.[6]

Interest in the collection and public display of natural history specimens, however, didn't cease when the Symmathetical Society did.[7] Instead it found expression in the desire for a public museum in connection with the incorporation of the ML in 1819.[8] In November 1822 after its move to the former Methodist Chapel on St. Joseph Street the ML advertised that it would receive such materials intended for a public museum and the collection grew rapidly. In June 1827 when the NHSM was founded this collection was passed to it.[9]

In February 1824, David Chisholme, editor of the *Canadian Magazine and Literary Repository*, published a general questionnaire, containing one hundred thirty-five questions dealing with the physical and political state of the country. He claimed to be influ-

enced by the statistical methods of the Scottish economist Sir John Sinclair and hoped to find such information as would effect "the improvement of agriculture, ... the extension of commercial industry, ... [regulate] the conduct of individuals, ... [extend] the prosperity of the state ... [and] tend to promote the general happiness of the species." He wanted his readers to forward such information as would "contribute to the information of the public, and the general improvement of the British Provinces."[10]

The founding of the LHSQ in 1824 elicited an essay from Chisholme, "On Literary and Historical Societies."[11] He saw the number and importance of institutions for the promotion and diffusion of useful knowledge as an index of civilization and political stability. Distinguishing between literary societies that focused on one particular branch of knowledge and those that contemplated the arts and sciences in general, he favored the latter, in other words a general literary society, which included arts and science, literature and the various branches of history (ancient and modern, natural and civil). Such societies, by bringing literary men together, would become a focal point for the diffusion of knowledge throughout the country and one of the most effective means of extending educa-

tion. Chisholme, therefore, saw a strictly scientific society as a more singularly focused form of literary society.

Two years later, in February 1826, an article entitled, "Essay on the advantages that might be derived from the establishment of a Literary Association in Montreal," appeared in *The Canadian Review and Magazine*.[12] The writer, probably the magazine's editor Chisholme, stated that meeting with fellow members to converse and discuss literary subjects would induce one carefully "to collect, increase and arrange his ideas on such subjects." This would lead one to improve his taste, emulate what was excellent in others, and promote friendship between kindred minds. Members would furnish compositions, discuss particular set questions and keep a record of the proceedings.[13] According to the author, the society in time would possess a collection of essays and papers that would strengthen the bond between the members and spur them to fresh exertions. Publication of its literary productions would be of benefit to their fellow citizens.[14]

NHSM - Founding, Membership and Participation

In May 1827, a little over a year after the publication of that essay, a group of Montrealers met in the Rev. Henry Esson's rooms to found a society, which would call attention to scientific pursuits, and permit its members to devote themselves to self-improvement and scientific research as well as to extend scientific knowledge within the community. It was resolved:

> to found a Museum, an institution which experience has proved to have great power in calling the attention to scientific pursuits, and the want of which was forcibly felt by several members, who looked back upon the causes which in their younger days retarded their own improvement. But the mere collection of the productions of nature would leave the design of the Society imperfect without the possession of books, which treat of such objects. They are actually dependent on each other. One without the other leaves the work half done, but both connected give the greatest facilities for instruction, which can be afforded. In addition therefore to the possession of a Museum, it was one of the first objects of the Society to secure a Library of books on Science in general.[15]

The intent of the society, therefore, was to be an educational or literary institution devoted largely to research on the natural history of Canada and to fostering the knowledge of science among its members and the public.[16] Dr. Andrew F. Holmes and the Rev. Henry Esson drew up the prospectus, which set out the aims of the society and established a $5.00 annual subscription.[17] The rules and

regulations were adopted and the NHSM received from the ML a large collection of minerals, other natural history specimens and curiosities, some of which had belonged to Stephen Sewell.[18]

The NHSM was modeled in large measure on the Wernerian Natural History Society of Edinburgh. That society had been founded in 1808 by Robert Jameson, Professor of Natural History at the University of Edinburgh, and had as its aim the promotion of the study of the sciences, particularly natural history. Several Canadians had studied at Edinburgh. There they would have met not only Robert Jameson but also other botanists, William Jackson Hooker, who developed an interest in North American flora, Robert Kaye Greville. Daniel Rutherford, M.A., M.D., and Robert Graham, M.D., were Professors of Botany at Edinburgh University as well as being Regius Keepers of the Royal Botanic Garden from 1787 to 1819 and 1819 to 1845 respectively.[19] These men conducted botanizing expeditions. Andrew F. Holmes, Robert Armour Jr., and Archibald Hall, who brought Scottish flora specimens back to Canada, were possibly among those who botanized on such field excursions.[20] After returning to Canada both Holmes and Hall sent Canadian plant specimens back to Edinburgh.[21]

There were twenty-six founding members of the NHSM. Among them there were eleven doctors, three or possibly four lawyers and a law student, and three Scottish-born clergymen.[22] Eight of the founding members had attended Edinburgh University, and the society continued to attract persons who had studied there. Ten of the first members, and a number of the most active members who joined in the next few years, were born in the last decade of the eighteenth century or the first decade of the nineteenth.[23] In other words, they were young men in their thirties or early forties. One other feature of the early members was the network of family relationships among them.[24] As well several of the more active members of the society had been educated by Daniel Wilkie, Alexander Skakel, or Henry Esson, while John Stephenson had attended the *Petit Séminaire* de Montréal. Several of the *cultivators* of science came from families who had supported them in advanced studies abroad as well as on a tour of European cities.

In July and August 1827 the society listed those who were to be approached for ordinary membership. The list contained many of the leading professionals and businessmen of the time as well as some middle class artisans. At the end of the first year there were

90 members and in subsequent years the total of ordinary members hovered around 100. If one examines the activities of the society, however, one finds a small core of *cultivators*, and a larger number of supporters, whose adherence and financial contributions were essential to the society's ongoing life.[25] Most of those who were invited to join in the summer of 1827 fell into the category of supporters rather than *cultivators.*

Foremost among the original members who were *cultivators* manifesting an interest in science, while pursuing their own occupation, were members of the Medical Faculty of McGill College. Andrew F. Holmes, M.D. (Edin.), was corresponding secretary and chairman of the council from 1827 to 1836, and then president of the society from 1836 to 1841. Dr. William Robertson had an interest in meteorology and presented a number of mineralogical specimens. John Stephenson, M.D. (Edin.), who had studied in Europe with Holmes, offered the society lectures on comparative anatomy in 1828-29.[26]

Several other members, who had studied at Edinburgh, were active *cultivators* in the early years of the Society. Editor and lawyer Robert Armour Jr. maintained a number of British contacts, in-

cluding Thomas Thompson, Regius Professor of Chemistry at Glasgow University.[27] Armour also had ethnological or anthropological interests and lectured on topical issues. Benjamin Berthelet, M.D. (Edin.), donated minerals from Europe and a copy of William Phillips, *Elementary Introduction to the Knowledge of Mineralogy,* (London: 1819).[28] James Campbell, M.D. (Edin.), had an interest in physiology and offered lectures on the subject to the society as well as donating books, including a copy of George Adams, *On the Microscope,* (London: 1787). James Robertson, M.D. (Edin.), son of doctor William Robertson, donated mineral specimens and a collection of dried plants assembled during studies in Berlin.[29]

Two doctors who returned to Montreal in 1834 also played a large role in the society in the late 1830s. Archibald Hall, M.D. (Edin.), proved to be a leading member after his return. He offered a series of lectures on botany with excursions into the countryside around Montreal to illustrate the material in the summer of 1835.[30] In 1839 Hall was awarded the society's silver medal for his essay on the mammals and birds of district of Montreal.[31] Stephen C. Sewell, M.D. (Edin.), son of the founding president, contributed ornithological specimens and gave the first Somerville lectures in February and

March 1839 on mammalia.[32] He delivered a second course on the same subject in the period from January to April 1840.[33]

Other members of the Montreal community played important roles in the early history of the NHSM. Lawyer John S. McCord, had an interest in meteorology and pursued it through the NHSM. Nurseryman Robert Cleghorn, son of Dr. Robert Cleghorn one-time Professor of Medicine at Glasgow University, was active in the Montreal Floral and Horticultural societies and presented meteorological records to the NHSM and the MMI.[34] He also was acknowledged by W.J. Hooker as a contributor of plants. Alexander Skakel delivered a course of public lectures on behalf of the society in the winter 1828-29.[35] Bookseller Henry Cunningham leased rooms to the society from 1827 to 1831 and acted as librarian and cabinet keeper. Publisher Andrew H. Armour contributed many books and mineral specimens. Surveyor Alexander Stevenson, who had served as assistant surveyor on the International Boundary Commission, donated a copy of the *Encyclopedia Britannica*, and read several papers, including one describing a stratum of fossil shells found on Montreal mountain.[36] Lawyer Alexander Buchanan, who had been a student of Daniel Wilkie, was active. Doctor Michael McCulloch,

R.C.S.L. a nephew of educator Thomas McCulloch of Pictou, N.S., donated zoological and mineralogical specimens to the museum. The Reverend Andrew Findlater, teacher at the Montreal Normal School 1837-40, gave a course of lectures on natural philosophy, consisting of the properties of matter, heat and its various applications, pneumatics, etc., from February to April 1840.[37]

There were other persons who contributed to the program of the NHSM, though only a few were *cultivators*. Among the military members were: William Pardy, M.D. (Edin.); Daniel Bolton, R.E., superintending engineer on the Rideau Canal from 1832 to 1843; Lieutenant W.H. Denison, R.E.; James M. Holwell, Ordnance Department; William A. Holwell, Ordnance Department; and Captain William King, R.S.C. Members of the Indian Department who were important to the NHSM in relation to ethnology and anthropology included: Lieutenant-Colonel William McKay, superintendent of the Indian Department; Lieutenant-Colonel Duncan C. Napier, resident agent and secretary of Indian Department; Thomas G. Anderson, Indian agent on Drummond Island. From the Hudson's Bay Company there were: George Simpson, governor of the Hudson's Bay Company; and James Keith in charge of the Company's office in Lachine. The trib-

ute to Keith respecting donations, which appeared in the 1832 annual report, might well have been repeated most years in the 1830s. Company traders, including Joseph McGillivray, George Barnston, John Clarke, Colin Robertson, and John Siveright, no doubt were responsible for forwarding many of the specimens attributed to Keith.[38]

NHSM Museum and Library

The primary aim enunciated by the NHSM was to investigate the natural history of the Canadas and to collect specimens to form a museum.[39] It was envisioned that it would be "a Collection of the Natural Productions of the country of every kind, viz., Minerals, Plants, Shells, Insects, Birds, Fishes and other Animals, and to facilitate the accurate knowledge of these by affording opportunities of comparison, similar productions of other countries will likewise be considered a proper part of the Collection."[40] Moreover, the museum's role was to be a visible sign of the existence and utility of the society, to call attention to scientific pursuits and to promote a public understanding of science and the natural world. Concern for the growth and utility of the museum continued throughout the life

of the society. This section of the chapter will focus on the activities that were connected with the NHSM museum. These included the collection, conservation, identification and classification, research, labeling and display of specimens.

Collecting natural history specimens was a popular pastime for middle class families in the late eighteenth and early nineteenth century. Aware of the fact that many in the community possessed natural history material, the NHSM requested that members deposit their personal collections and enlist their friends and correspondents as donors to the museum. All donations to the museum were to be acknowledged and the donors' names were to be attached to their gifts. Persons in Quebec City and elsewhere in the Canadas were appealed to, asking them to use their commercial or other ties to obtain specimens.[41]

The society also appealed directly to known collectors. For example, the NHSM attempted to persuade Richard Williams of Fort George to donate the mineral collection held for him by J. and P. Ross of Montreal. Williams responded that he was unable to do so because it was destined for England.[42] The Society also appealed to Dr. John Munro of Drummond Island to make a collection for the

museum. He replied that, in addition to forming his own personal collection, he had committed to forming one for Britain.[43]

In addition, the NHSM sought to extend its reach by enrolling a network of corresponding and honorary members, similar to what had been done by its prototype in Edinburgh and by the Geological Society of London, which was founded some twenty years previous. In enrolling these members the NHSM appears to have been aware of the botanical and geological explorations, as well as natural history work and publication, both in the United States and Great Britain. The council's report to the first annual meeting stated, "The Society enrolled on its list many of the most scientific men of the neighbouring States and of Britain, and from them has received assurances of support. Correspondence was commenced with all willing to assist the undertaking."[44] Some of these members were enrolled then and later because their expertise or their donations proved useful to the NHSM. Still others were elected because their influence might encourage others to assist the society. Some of the Montrealers living or studying abroad and relatives or classmates of Montrealers also were recognized in this way.[45] Before long the So-

ciety had corresponding members not only in British North America but also in the United States, Great Britain and Europe.

The society expected collectors to be knowledgeable about the countryside near their residence, to collect and label with proper scientific names the plants, animals and minerals that they found. In order to assist them in the preservation of such material the society published a guide in 1828, *Directions for Preserving and Forwarding Objects of Natural History*, and forwarded it to friends and corresponding members.[46] Incentives to collect specimens for the NHSM, therefore, were a mixture of intellectual curiosity, self-instruction, individual recognition by the NHSM, and a desire to discover the material riches of the Canadas.

When natural history materials arrived at the NHSM there was much work still to be done. Zoological specimens, for example, required the most preparation and entailed the most expense. Specimens of wild animals often were damaged in transport.[47] This was true of many of the preserved animals sent from a distance. To obviate this difficulty, Edward Glen, after the gift of a skin arrived in poor condition, sent a live tiger cat from South America.[48] On another occasion a bald eagle was received and kept alive over winter

to permit it to grow to maturity before it was killed and prepared for display.[49] To fulfil the need for their preservation and conservation the society engaged George Broome as taxidermist to ready these materials for display.[50]

At a period when most museums were characterized as heterogeneous jumbles of *curiosities* entirely devoid of methodical purpose or arrangement, the NHSM divided its museum into four departments in order to describe the contents and the annual increments to the museum.[51] These Departments were listed as zoology, botany, geology and mineralogy, and finally miscellaneous donations.

The zoological division included quadrupeds, birds, fish and reptiles, insects, shells and corals. Pride of place was given to Lady Dalhousie's gifts of 27 large shells and some minor specimens in 1828-29 as well as colorful birds from India and a large number of shells, of 68 distinct species, from her own Cabinet in 1833-34.[52] Broome's absence in England for two years to bring his family to Canada was said to have curtailed the increase in quadrupeds and birds in the early years.[53] On his return from England in 1829, the NHSM purchased a large number of ornithological specimens and

shells, which he brought back.[54] Sea captains and members of the Hudson's Bay Company were active donors of zoological specimens.

The botanical division included European and North American plants. Although it was acknowledged that there were many persons engaged in botanical pursuits in the Canadas, the museum only received the basis of a *flora canadensis* in its third year.[55] This collection of 500 native species and 250 cultivated species was one of several herbaria collected and arranged by A.F. Holmes. In the seventh annual report council summarized the society's holdings as "a considerable collection of plants from Europe, from the United States and from Canada."[56] The European specimens had been presented by two Montrealers, Robert Armour Jr., and James Robertson, M.D., who had collected them while studying in Europe, and by James Holwell, who had collected plants in the Pyrenees while stationed there with the army.[57] American specimens came from Dr. L.C. Beck, of Albany, Miss D.L. Dix, of Boston, and from a subscription to explorations of the Lyceum of Natural History of New York.[58] Canadian plants had been contributed by members Robert Cleghorn, Robert Armour Jr., and Dr. A.F. Holmes, as well as by William Shep-

pard, of Quebec, Joseph Wallace, of Brockville, and the St. Maurice Expedition under Lt. Frederick Lennox Ingall of the 15th Regiment.[59]

The mineralogical division contained both minerals and geological specimens, including fossils. Such specimens required little in the way of preparation or preservation other than identification and an indication of where they had been found. There were numerous individuals who contributed many donations. The large number of duplicates received proved useful for exchange with other collectors and institutions. The task of identification, however, required much recourse to books and other previously named specimens. An acknowledged collector of geological and mineralogical specimens, Dr. A.F. Holmes interpreted these subjects to the Society.

What was classified as miscellaneous included Indian artifacts, foreign and other curiosities of great age or of association with famous persons, art objects, animal parts and other natural products, *lusus naturae*, as well as coins and medals. Miscellaneous donations to the Society's museum may be subdivided into a number of differing categories. The largest number of such articles was undoubtedly coins and medals and some bank notes. A second category would consist of objects of natural history, mostly animal but also

including some other objects. The animal objects comprised parts of animals, dried skins, bones, antlers, etc., which didn't belong in other areas of the collection. The other objects included curiously shaped or coloured stones, petrified objects, unusual growths, etc. Art objects formed a third category. Among these objects were autographs, paintings, marble busts and plaster casts of well-known statues. Nathan Gould, for example, presented plaster casts of the ancient statues of Discobolus, Antinous, Fawn, and Piping Boy, while Dr. James Crawford presented the statues of Psyche and Bacchante.[60] There were busts of His late Majesty George III, the Hon. Enos T. Throop, Governor of the State of New York, and Lord Nelson.[61]

Perhaps the category, which was largest in physical size among the miscellaneous donations was that of curiosities, some of which would later be important as elements in the study of anthropology. There were a large number of Indian curiosities, including dress, weapons, tools and utensils from across North America. James Keith and other members of the Hudson's Bay Company were the donors of a large part of this collection. In addition there were foreign curiosities of the same sort from India, Burma, China,

the Sandwich Islands, the East Indies, New Zealand, the Caribbean and South America. Other curiosities would include objects that came from the European settlement of North America and remnants of past wars fought here as well as some historical curiosities from Europe.[62]

From an early date an element of civic pride in the NHSM museum was demonstrated by inviting important visitors to Montreal and notables to visit the collection. The society's first President, Stephen Sewell, showed the collections to Sir John Franklin and Dr. John Richardson of the Arctic exploration expedition in August 1827, to its Patron Governor Lord Dalhousie in October 1827, and to Messire Roque Superior of the Roman Catholic Seminary in April 1828. Lord Dalhousie again visited the rooms in June 1828.[63] Several successive Governors were invited to view the collections: Sir James Kempt in July 1829, Lord Wentworth-Aylmer in the summer of 1831, and Lord Durham, the Society's second Patron in July 1838.[64] Other distinguished visitors to the Province or to Montreal were elected honorary members of the NHSM including: Captain Basil Hall, R.N., in 1827, Captain George Back, R.N., of the Arctic

expedition, in 1835, and Professor George Daubney, of Oxford University, in 1838.[65]

The society's library was meant to complement its museum, which was to form the main focus of its efforts aimed at scientific self-improvement and the dissemination of scientific knowledge to the younger generation. The first annual report emphasized the necessity of the library along with the museum.[66] The scientific nature of library purchases was enunciated in the same report, which stated "It is a standing rule of the Society to allow no books to be purchased, but those treating of some subject, connected with science, or the arts. They do not, however, exclude from their Library, works on general literature, provided they are offered as donations."[67] The museum was central but could not accomplish is purpose without the Library.

In order to obtain the necessary books and exemplars, which would facilitate the task of identifying natural history objects, the NHSM had recourse to the government for financial aid. The legislature responded in 1829 with a grant of £200 for books and equipment.[68] In 1830, the legislature responded with another grant of £200 to purchase a cabinet of minerals properly named and ar-

ranged.[69] The society saw the latter grant and purchase of the cabinet as a powerful incentive toward the study and practice of mineralogy.[70]

The library contributed to the identification and classification of specimens. The European works of Linnaeus, de Candolle, Buffon and Loudon would be useful in this regard for zoology and botany.[71] The works of André Michaux and Amos Eaton's book on American botany could augment these books.[72] For identification and classification of mineralogy and geology there were the European works by Bakewell, Jameson and Haüy, as well as the American works by Maclure, Cleaveland and Robinson.

In some instances there was recourse to the expertise of persons, who resided elsewhere, for the identification and classification of materials. In August 1828 the society was unable to identify the many shells in the collection. Duplicates were taken to the United States by a member and identified by Isaac Lea of Philadelphia, the Rev. Daniel H. Barnes of New York, and Dr. Seth Bass of Salem, Massachusetts.[73] Thomas Thompson, Professor of Chemistry at Glasgow University named mineral specimens for the NHSM and sug-

gested that sending numbered duplicates would obviate the need for their return.[74]

Recourse to experts and the exchange of duplicates for other specimens linked the NHSM museum to other persons and other institutions. Dr. Seth Bass, of the Boston Athenaeum, offered to use his influence with the Salem Society to affect an exchange of shells.[75] Mr. Lea was willing to exchange specimens for shells from the Delaware River and the vicinity of Philadelphia.[76] Pierre Chasseur of Quebec City offered a stuffed seal and a Mexican starling for duplicate specimens of minerals. In return some duplicates of the Bytown minerals were donated to Chasseur's museum in Quebec.[77] Chasseur later sent an asterias or starfish.[78] Messire Roque of the Roman Catholic Seminary in Montreal presented a number of mineral specimens and shells from the Seminary collections.[79] The Belfast Natural History Society sent a large piece of basalt and sought Canadian birds, mammals and the seeds of American plants in return.[80] The Albany Institute, through Professor T.R. Beck, from July 1828 sent its *Transactions* and offered to exchange duplicate specimens.[81] Charles B. Taylor, proprietor of the Buffalo Museum, also proposed an exchange.[82] Alexander McNabb, of Kingston, formerly a

large contributor of specimens from the Rideau Canal, sought an exchange on behalf of the Kingston Mechanics' Institute.[83] Dr. John Bachman of Charleston, SC (son-in-law of Audubon) wrote on behalf of the literary and philosophical society there.[84] These exchanges raised the profile of the NHSM and gave members to a sense of pride in its work.

The NHSM also received various gifts of seeds for experimentation as to their possible cultivation in the Canadas. Late in 1829 Nathan Gould, a London merchant, sent 150 varieties of flower seeds from Nepal and Calcutta. The honorable James Cuthbert of Berthier, who had supplied the NHSM with ochre to satisfy a request for it in exchange for William Kirby and William Spence's book *Introduction to Entomology: or, elements of the natural history of insects*, solicited a share of the seeds.[85] In 1833 Professor John Torrey of New York sent seeds of Himalayan Corn, a species of barley from Sweden. The secretary forwarded some of it to Cuthbert and the rest to the Agricultural Society for cultivation. Cuthbert reported on the results achieved.[86] Early in 1839 the Secretary of State for the colonies forwarded through the Governor-General a parcel of mountain rice for experimentation.[87] These instances be-

long to the history of various attempts to acclimatize and grow plants in a new habitat.[88]

Research or study by the society or by individual members should not be overlooked. The collection of natural history, the library of books, and the society's instruments presented opportunities for study and reflection. Members requested that a copy of the first two papers read by Dr. Holmes on the nature and qualities of the fossil remains and the minerals in the possession of the Society be provided "for the use and guidance" of the members.[89] The society also purchased scientific instruments to be used for meteorology (pluviometers, barometers, thermometers, hygrometers, etc.) and others for detecting and analyzing the quality and the quantity of minerals that were present in mineral waters.[90] There were pamphlets and books on chemistry in the library that would exemplify and aid in such analyses.[91]

In December 1827 in response to anthropological concerns of some of the members, the NHSM appointed a committee of seven members "to prepare a series of questions connected with the manners, habits, customs, language and institutions of the native inhabitants of the two Provinces, and with the physical geography

and natural history of the Interior and its fitness for the purposes of commerce and agriculture and to direct the said questions to such Individuals as they may deem most advisable." The committee drew up a document with 257 questions.[92] It was also responsible for drawing up the publication on the preservation of specimens and for proposing certain questions about natural history to members of the Provincial exploring expeditions. Called the Indian Committee, it reported a week after the first annual meeting in May 1828 then appears to have lapsed.[93]

John S. McCord provides an example of an individual member, who proposed a research project to be pursued by the society using the scientific instruments that the NHSM possessed. While several other Montrealers were known to have had an interest in meteorology, McCord was an associate member of the London Meteorological Society and later published several articles on the weather using data gathered in this period.[94] While chairman of the NHSM council in 1836-37 he set out an ambitious plan for the study of the meteorology of British North America. In this capacity he approached George Simpson, governor of the Hudson's Bay Company, to ask his assistance and received the promise that meteorological

observations would be kept at all of the company's remote posts. He then had printed a circular of instructions for the weather observers. The circular was also sent to NHSM corresponding members in the other provinces.[95] McCord also was responsible for the installation and manning of a meteorological station on St. Helen's Island during the years 1836 through 1841.[96] He apparently borrowed the society's instruments for the project and as late as January 1854 the NHSM attempted to ascertain if any NHSM philosophical instruments were still in his possession.[97]

The display of the items in the NHSM museum always raised concerns about crowding and the inability of the society to show the collection to best advantage.[98] Botanical specimens, however, could not be displayed because of their fragile nature. The collection of coins and medals also could not be displayed because there was no way to ensure their security, while allowing inspection of both sides. There were worries that unfavourable impressions of the museum and its contents might reflect on the care and attention the society gave to the objects it had received.[99] On the other hand, the eye-catching gifts of Lady Dalhousie, comprised of large shells and the eleven brightly colored birds from the mountains and

plains of India, were often singled out for remark.[100] A large eagle dominated the museum display. Thus the display of scientific objects represented in large measure a visual spectacle in the museum of the NHSM.[101]

Educational Aims of the NHSM

This section treats the educational aims of the NHSM, beginning with informal education of members, and then turning to the activities meant to encourage a public knowledge of science. The latter included public access to the essays and discussions in the second half of the regular meetings, to public lectures, to the museum collections, and to the essay competitions.

The informal education of NHSM members could take several forms. Both mutual instruction and self-guided instruction had their place. There were the regular monthly meetings, the possibility of visits to the museum and the loan of books, individual research, a discussion with a more knowledgeable member or members, as well as the more public activities of the society. As noted by James Secord, conversation, discussion and the verbal presentation of an

essay or paper were the chief means of conveying science from one person to another.[102]

Monthly meetings were divided into private business and public sessions. The private meeting which was to last no longer than one hour included: reading of the minutes of the previous meeting; committee reports; correspondence; reading of the council report; tabling and notice of donations and additions to the museum and library; election of new members and proposal of others for the next meeting.

Before each meeting donations and purchases of natural history specimens and scientific books had been examined by the members of the council. Donations and additions to the museum and library were reported in the council report and at every meeting the specimens and books were laid on the table. One can picture that they were examined, analyzed, compared to existing specimens and discussed.[103] Specimens for the museum, therefore, received the attention of those members, who were knowledgeable, and became the instrument of instruction to others.[104] Similarly, new books and pamphlets reported by council were presented to members at the regular monthly meetings.

The NHSM had ambitious educational aims. It sought to encourage the study of science and the acquisition of a general scientific knowledge by the public in a number of ways. For example, after the private business portion of the meeting had been completed, meetings were open to the members and their guests. From the society's beginning, essays and papers were read and discussed, and, in the absence of an essay or paper, set topics were discussed.[105] It is unclear, but appears probable, that youth, family members and guests sat out the business part of the meeting and waited to hear the essay or lecture and to participate in the discussion, which usually followed.[106]

The NHSM also sponsored various series of lectures that were open to its members and the public. The first of these was the concurrent series given by Alexander Skakel, A.M. on natural philosophy and by A.F. Holmes, M.D. on mineralogy and geology in the winter of 1828-29. The double course of lectures raised £72. The following winter, 1829-30 A.F. Holmes, M.D. gave notice of a series of six lectures on chemistry to raise funds for philosophical instruments devoted to meteorological observations because he deemed the £20 allocated from the government grant insufficient. This course

of lectures raised £42-1-6.[107] In the fall of 1830 John Finch, formerly of Birmingham, England, then in New York, gave a series of sixteen lectures on geology illustrated by drawings and specimens, which was "fashionably and numerously attended" "by nearly 50 gentlemen and about 30 ladies."[108]

Convinced of the efficacy of public lectures the NHSM petitioned the Legislature in 1831 seeking aid to establish a lectureship on chemistry and natural history.[109] Because of the drain on the Treasury due to the large expenditure devoted to the increasing number of schools in the Province the request was unsuccessful. In the 1832-33 session individual members of the NHSM presented a miscellaneous series of single public lectures. This type of series was not repeated until the 1850s. In the late spring of 1835 Archibald Hall, M.D. gave notice of a series of lectures on botany illustrated by field excursions in the second half of the series.[110] Then in the winter of 1837-38 Hall gave a series of twenty-four illustrated lectures on popular chemistry.[111] Again the proceeds were devoted to the purchase of scientific instruments.

The will of the Reverend James Somerville, who died in 1837, designated a legacy of £1,000 for a lectureship on natural history.

Because receipt of the money was delayed, it was resolved to ask members to lecture gratis in order to carry into effect the object desired by the will.[112] Thus Stephen C. Sewell lectured on mammalia in February and March 1839 and again in 1840 while Andrew Findlater gave a course on natural philosophy in the latter year. Although the NHSM sponsored no classes for youth, members were urged to have their sons and daughters attend the various lecture series.[113]

Public access to the museum was obtained through the society's members. From its founding, the members had access to the museum during the hours which it was open. They were allowed to bring visitors to view the collections. On the other hand, the books, which the library committee allowed to circulate, could only be borrowed by a member of the NHSM. The stipulations of the legislature in connection with its two major grants in 1829 and 1830, that the museum and library shall be kept open for the public under the regulations of the society, did not change this policy. The society's third annual report, after noticing this grant, which permitted the NHSM to obtain the cabinet of minerals, boasted of its liberal con-

duct in allowing free access upon all occasions to the public, a policy that it saw as conferring a public benefit.[114]

In April 1831, however, the NHSM, aware of its imminent move to the Medical Faculty building at 20 St. James street, resolved "that after the 1st day of June next, no person be admitted to the Museum and Library of this Society, except on the written order of one of the Members thereof, addressed to the Keeper, or in the company of a Member."[115] A register of visitors was to be kept and the museum was to be open every day from eleven to three o'clock.[116] Accordingly, visitors to the museum and library had to be accompanied by a member of the NHSM or be introduced to the keeper by a letter from a member.

Yet another means of calling public attention to scientific and literary knowledge lay in the proposal that the NHSM sponsor essay contests. Although the NHSM continued to emphasize its role as a proponent of natural history, it also saw itself in the larger role of a literary society. In its first annual report, for instance, the council wrote:

> As the object of the founders was to foster a general spirit of scientific and literary research, they did not make their Society an exclusive one.

> It was their intention to admit, whenever circumstances should call for it, an extension of the plan, and to join the more ostensible object with other departments of Science and Art, and with literature in general.[117]

Accordingly in March 1829 the committee, which was appointed to suggest topics for conversation and discussion at meetings, recommended that "medals be annually offered for prize essays, the competition not being limited to Members of the Society, but open to the public generally."[118] It was held that "Nothing appears better qualified to rouse a spirit of research, or to create (what it is the principal aim of the Society to do) a taste for scientific pursuits than such a plan. The Society, true to its principle of encouraging *general* talent, has not confined the contention to members of its own body. The contest is open to all, and the prize attainable by all."[119] A number of different essay topics, both scientific and literary, were announced in the newspapers each year and a committee or committees were named to judge the merits of the submissions.[120]

In 1832-33 and from 1835-36 on special mid-month meetings were held solely for the reading of papers and prize essays, because the business portion of the meetings had become too extended. Public notice of such meetings was given and the prize-

winning essays were read. A glance at the prize winners through the years with essays on scientific subjects reveals that they were for the most part persons with known scientific interests: William Sheppard in botany for his essay "A brief and popular sketch of the trees of Canada," and Col. John Covert, of Cobourg, U.C., for "A Treatise on the Culture &c. of Hemp," in zoology, Charles Fothergill for "An essay descriptive of the Quadrupeds of British North America," William Cormack for "The political and commercial value of the Newfoundland and other North American Fisheries," William Evans for "An Essay on the Natural History of the Wheat Fly," and Archibald Hall for "An Essay on the Zoology of the District of Montreal."[121] The Reverend George Maynard, author of the meteorological essay "On Climate in general, and the Climate of Lower Canada in particular," was reportedly an eccentric Master at Upper Canada College.[122] Prize winning literary essays were contributed by John Strachan, Jr. of Toronto, the Rev. A.N. Bethune of Cobourg, U.C., and George Beaumont of Compton, L.C. and Matthew F. Workman.[123]

NHSM Efforts to Influence Government Policy regarding Science

I turn now to the efforts of the NHSM to influence public policy and garner state support for the investigation of the geology of the Canadas. The geological and mineralogical collection of the museum was seen by the society as a most valuable asset.[124] In autumn 1829 the Society received correspondence from Dr. William Meade, of Newburgh, offering "a complete collection of minerals, all properly named, described and arranged" at a reasonable price.[125] As a consequence the society petitioned the legislature for a grant in order that it might purchase such a valuable collection, given that "In no science is the inspection of specimens more necessary than in mineralogy, where from the great variety, and frequent similarity of very different substances, great care in distinguishing characters and frequent comparison with known specimens, are absolutely required."[126] The legislature voted a sum of £200 currency "to enable the Society to purchase a Cabinet of Minerals," and the act received Royal Assent 26 March 1830.[127] In the annual report this donation was seen as "the desire always manifested by the

Legislature to facilitate Education."[128] For the society it would provide:

> a chief step toward exciting a love for Mineralogical Science, and as removing one of the most powerful obstacles to its cultivation. An arranged collection of well characterized and authentically named specimens must form a powerful incitement towards the cultivation of Mineralogy, and the liberal conduct of the Society, in allowing free access upon all occasions to the public, will render the expected benefit available in the highest degree.[129]

In May 1830 A.F. Holmes visited the United States to inspect the mineralogical collection offered and to conclude such arrangements as were expedient. After seeing Meade's cabinet he concluded that the collection was not what he had been led to expect. Holmes then proceeded to New York, where he inspected the collection of Major Joseph Delafield, who had been agent for the American team on the International Boundary Commission, and requested his assistance in procuring a superior collection. Delafield suggested that Holmes treat (i.e., negotiate) with C.U. Shepard of New Haven for the American minerals. There he inspected the collection that Yale College had received from Colonel George Gibbs through the efforts of Benjamin Silliman, Sr. Finding Shepard's collection deficient in European and foreign minerals, Holmes arranged

to purchase only American minerals from him and returned to New York where he arranged for Major Delafield to procure the foreign minerals.[130]

In the 1835-36 NHSM session A.F. Holmes presented a manuscript copy of a *Catalogue Raisonnée* of the mineralogical cabinet. In it the collection was divided into four classes. The first was a general mineralogical one, for simple minerals from all other parts of the world except Canada, containing 1,681 specimens, many of which had been obtained from Professor C.U. Shepard. The second contained 308 specimens of the simple minerals discovered in Canada. The third was a general geological class, for the compound minerals or rocks of other countries with 481 specimens. The fourth contained 441 specimens of the geological or rock specimens constituting the earth's crust in Canada. This made a cabinet of 2,911 specimens, exclusive of duplicates.[131]

The appearance of this catalogue led the council of the NHSM in the ninth annual report in May 1836 to suggest the necessity of a geological exploration of Canada. Council made reference to the new minerals discovered in the Canadas and to the various American state government appropriations for geological surveys and

suggested that a more thorough geological survey of the Canadas was needed.[132] The next annual report in May 1837 noted that the Upper Canada legislature had examined a proposal for a geological survey of that province.[133] Convinced that a survey involving the two Provinces would be advantageous as well as more efficient the NHSM petitioned the Governor-General Lord Durham to that effect.

In the next several years, efforts to this end were redoubled with government officials. In December 1838 a committee composed of Dr. A.F. Holmes, lawyer J.S. McCord and notary Frederick Griffin was named to press the case for a geological survey.[134] The LHSQ was contacted and in November 1839 agreed to add its voice to the plea.[135] Thus in March 1841, after resolving that "a Geographical Survey of Canada would be of the greatest service to the cause of science, and the utmost utility to the Province, by developing its resources," another committee was named, composed of Dr. A.F. Holmes, lawyer William Badgley, Gatlin, and lawyer J.G. Scott.[136] In 1841, A.F. Holmes, businessman J.T. Brondgeest, and J.S. McCord presented to the Governor-General and to the legislature a petition.[137] On the Governor's recommendation the legislature made an appropriation of £1,500 for a "full and complete geo-

logical survey of Canada." The Act received Royal Assent on September 9th 1841.[138] The death of Lord Sydenham, however, left the proposal without issue.[139]

Renewing its efforts to obtain state support for a geological survey, in February 1842 the NHSM presented a memorial to Governor-General, Sir Charles Bagot. Recalling that a sum of money had been appropriated for the survey, the memorial asked Bagot to carry into effect the measure adopted in the first session of the legislature of the United Canadas.[140] Bagot then proceeded to appoint William E. Logan to the task.[141] Given the success of its lobbying the NHSM laid claim to having brought the Geological Survey of Canada into being.[142] This effort should be seen as a major contribution to the history of scientific practice and knowledge in the early Victorian period.

Founding and Purposes of the MMI

This last section of the chapter deals with the second institution with an expressed scientific and educational intent. On November 21st 1828 a group of men met in the Rev. Henry Esson's house to discuss the formation of a Mechanics' Institute, which would "in-

struct the members in the principle of the Arts and in the various branches of Science and useful knowledge."[143] The curriculum outlined appears to have signified a more general education rather than a strictly vocational one.[144] A Committee was appointed to draw up a constitution and laws for the government of the institution. There were already about one hundred such institutes in Great Britain. Adopting a compilation of the documents of the British institutes, the Constitution and Laws governing the Institution were adopted at a general meeting held December 2nd and the institute was under way in Esson's Schoolroom.[145]

After its opening meeting the MMI sought to enroll members at $2.00 per annum and at a meeting on January 6, 1829 resolved that members would be allowed to enter without being subject to ballot until February 1st of that year. After the initial enrollment of members there were no new members proposed until the meeting of April 21, 1829. At the second half-yearly meeting of July 13, 1830, 140 ordinary members were reported. What is noticeable, is that with some exceptions, such as the Rev. Henry Esson and lawyer Aaron P. Hart, and later James Allison, the Institute's active membership was made up of master craftsmen and tradesmen, who

were employers of labour, rather than those who worked for wages. This appears to be true of the MMI throughout its short life. Moreover, most of the members had sufficient social standing that vital statistics concerning them and their families can be traced in the Montreal newspapers.

On the other hand, the members of the executive of the MMI were from a higher class. Judith Fingard in examining the British and Foreign Bible Society remarked that many such institutions attracted a figurehead patronage "because acceptance of posts in such societies was seen to be fashionable in England, where they drew support from a broad spectrum of the upper and middle classes of England." She contends, however, that the active members of local societies were usually drawn from a slightly lower rung on the social ladder.[146] Such was certainly the case in the MMI.[147]

When the activities of the Montreal Mechanics' Institute are examined it can be seen that the educational context is very pertinent and that the desire to provide literary and cultural facilities for a particular segment of the population may be taken as the foremost aim of the Institute. This desire manifested itself in two ways: first, in a form of mutual instruction and intellectual stimulus among

the adult members of the institute in its meetings, lectures and lending library, and secondly, in a school for youth intended for the dependents of the members. The provision of the facilities for members was more continuous than those for youth, in spite of the difficulties that interrupted the operation of the MMI.

The first of the stated means of achieving the goals of the MMI was to be the "Voluntary Association of Mechanics." This took the form of social intercourse and discussion to complement individual reading and to help in the assimilation of knowledge. Informal conversation allowed members to introduce interesting information on inventions or improvements in the arts or sciences. A number of essays and topics were discussed. There was a book in which members could inscribe remarks and queries meant to provoke thought and discussion and there was to be the possibility of classes for members desirous of pursuing a particular subject. The presentation of models for examination by a committee in order to gain recognition and distinction was part of the regular program.[148] There are indications, however, that the number of persons, who took advantage of the opportunity to meet and to exchange with each other on a variety of topics in the weekly meetings, was at times small.[149]

Moreover, the MMI illustrates that the ban on discussion of religion and politics in the Mechanics' Institutes was related to practical functioning rather than to any theory of social control.[150] Religion was a very divisive matter in the early 1830s in Montreal. Certainly it was this mixture of religion and politics that lay at the heart of much of the difficulty experienced by the MMI. The MMI functioned during three distinct periods: November 1829 to early June 1831; November 1831 to March 1832; and, January 1833 to early April 1834.

During the second hiatus in the life of the MMI a group of young men formed a debating club, known as the Philomathic Society. It functioned from September 1832 until February 1834 in the MMI rooms. Topics for debate were listed in the newspapers and the rooms were referred to at times as those of the society. One can only surmise that it was an effort on the part of some of the members of the MMI to keep alive the social intercourse that they had enjoyed in the institute itself.

Another of the ways by which the MMI was to instruct its members was by means of a library and reading room. The library and reading room of the Institution opened December 4th 1828 in

Esson's schoolroom. This suggests that the institute possessed from its very beginning by way of gift or loan a number of books that do not appear on the list of donations that can be compiled from the minutes.[151] Jonathan Topham asserted that "The establishment and maintenance of a library was not only the most expensive item involved in the formation and running of a mechanics' institute, but it was often the main attraction, and a major source of recruitment."[152] The popularity of the MMI library is shown by the fact that in December 1829 members requested that James Huddell, who had accommodated the Institute in two rooms over the Post Office "light the fire in the Reading Room every night except Sunday."[153] The 1833 constitution of the MMI translated this aim into a "Library of reference and circulation, and a Reading Room." There is evidence, however, that books circulated earlier than 1833.[154]

The MMI was also to possess a museum of machines and models, minerals and natural history as a means to further its ends. The museum grew quickly. The first annual report in 1830 stated that it consisted "of about 500 specimens of the mineral kingdom, principally collected in this country." The museum included a num-

ber of models and machine improvements built by members. One of the most promising models was foundryman James Spence's improvement of the printing press in order to supply the type with ink, which was brought into commercial production.[155] An experimental workshop and laboratory, however, failed to appear.

A school for the sons and apprentices of its members with a broad almost classical curriculum was envisioned by the constitution. Mostly mechanics' apprentices attended the MMI school, which went into operation in December 1833. William Durie taught classes in English and arithmetic, writing, and geometry and there were advanced classes in architectural drawing. On December 14th 1833 the editor of the *Canadian Courant* noted that 15 pupils attended, "who are nearly all mechanics' apprentices." He continued with the observation that "No class of our youth called more for attention than mechanics' apprentices, and we rejoice to find that the Institution has taken up this important matter."[156] A committee was to be appointed to procure the necessary apparatus for illustrating the sciences of mechanics, natural philosophy and chemistry. What may be noted from this outline of the MMI school is that the sons of mechanics probably attended the existing day schools, while the

MMI offered an elementary education for apprentices who may have lost the benefit of an education within the master mechanic's household.[157] To this elementary education it was proposed to add those subjects that for well over a century formed the basic elements of technical education, namely, drawing, geometry and mathematics with some science.[158] The institute's school, however, only lasted for a term of less than four months.[159]

The MMI statement of purpose mentioned as a means of instruction for members lectures on "Natural and Experimental Philosophy, Practical Mechanics, Astronomy, Chemistry, Civil History, Political economy, Philosophy of the human mind, Literature and the Arts."[160] There were several series of lectures at the MMI. On December 6th 1828, Alexander Stevenson surveyor and former teacher, proposed to give a course of lectures on mineralogy. The prospectus was referred to the general committee and was not acted on. After Stevenson had given a series of three papers on limestone a year later in December 1829, Joseph Clarke moved that a paid lecturer be hired. A series of lectures on the substances used in building was announced for Thursday evenings beginning in January 1830. Dr. A.F. Holmes offered the use of his mineral cabinet for

the building lectures.[161] At the same time, members of the Mechanics' Institution were invited to attend at a reduced cost the NHSM lectures "on the most interesting and popular portions of the Chemical sciences to be illustrated by numerous experiments," given by Dr. A.F. Holmes.[162] From February 1st to April 19th 1831 Benjamin Workman lectured on geometry and its application to mechanics.[163]

When the MMI recommenced meeting in 1833, Alexander Skakel offered to deliver a series of lectures on natural philosophy, in order that the institute might use the proceeds for the purchase of models.[164] In November 1833 Thomas Mitchell offered a course of lectures on political economy. Pupils of the school were invited to attend the lectures gratis.[165] Concurrent with the Mitchell lectures was a series of two lectures on chemistry by Horatio Carter, delivered January 28 and February 4, 1834. The *Canadian Courant* reported that Carter, lately from England, had a "crowded audience in the rooms of the Philomathic Society." It may be that curiosity about the latest scientific experimentation contributed to this response. Following the second lecture it was announced that Carter was returning to England and would bring out books, apparatus,

etc. for the institute.[166] Insuring its property during the build up of political tensions in mid-April 1835 the MMI ceased to function after its meeting April 7th, 1835.[167]

Conclusion

The NHSM was largely the work of a small core of middle class professionals of Scottish origin or of Scottish education. Its members proposed to catalogue the natural resources of the Canadas and to extend scientific knowledge in Montreal and beyond. To support its aim of mutual improvement and an increase in public awareness of science the society's focus was on its natural history museum and a related library. In the museum the most spectacular items, a large bald eagle and colorful foreign birds and large conches, were displayed in a prominent manner.

The NHSM was the site for the informal and formal learning of science. Donations were received and acknowledged and members were involved in discussion of them. The society attempted to reach beyond its membership with public lectures and readings. It also held an annual essay competition on subjects of scientific or literary interest that engaged a number of young persons as well as

known naturalists in the two Canadas. In these ways it sought to fulfil its educational aims. After the receipt of the Somerville bequest in 1837 members provided without fee an annual series of lectures because the capital had been diverted to the purchase of a building. The expenses incurred in the payment and upkeep of their new home, however, required that much of the space be rented out to other groups and this limited the space available for display of the various museum specimens.

Civic pride was displayed in several ways by the NHSM. Important visitors to Montreal were invited to view the society's museum and received honorary membership. Members were also able to point to the exchange of specimens with other groups and the receipt of the transactions and publications from others.

The MMI, which was formed to allow mechanics and others to enjoy mutual improvement, consisted mainly of employers, that is master craftsmen and tradesmen. With its concern for improvements in the arts, the MMI was practical in its orientation and its outlook. While it shared a certain interest in natural history, its emphasis was on the building trades and the materials that they employed. This was certainly appropriate for the period of the 1830s

when many new buildings were erected and stone buildings were replacing the older wooden buildings in Montreal. The collection of mineral specimens in its museum was largely related to this orientation. Similarly, the courses offered to apprentices were akin to what later was known as technical education.

End Notes

[1] Robert Campbell, *A History of the Scotch Presbyterian Church, St. Gabriel Street, Montreal* (Montreal: W. Drysdale, 1887) "In 1809, he succeeded in establishing a literary society having its headquarters in this city. Citing Dr. Wilkie : 'He coveted the society of well informed persons and the free communication of ideas. Hence sprung up in his thoughts the conception of the SYMMATHETICAL SOCIETY, formed for the purpose of promoting mutual improvement, and possibly to be the germ of some greater association. He laid hold of the thought with eagerness, and communicated it to a very few gentlemen, in whom he had confidence, in Montreal, and to one or two residing at a distance,'" 157f.

[2] *Ibid.* Campbell wrote of the impression of Professor [John] Anderson of Glasgow University, who taught Natural Philosophy, on the Rev. James Somerville : (citing the sketch of Dr. Daniel Wilkie of Quebec) [He] "had more particularly fixed his attention; and had led him to direct his thoughts so much to objects of external nature as to derive from the view of their magnificent arrangement a large share of his enjoyments. By a regular contemplation of the beauty, wisdom and beneficence, which they indicated, he confirmed his trust in the Divine protection, and promoted that equanimity of temper for which, through life, he was remarkable. His habitual contemplation of the works of nature, and of matters of fact, contributed, we may well suppose, to foster that love of truth, that total absence of exaggeration, that simplicity of manner, for all which he was most happily distinguished," 154f. It might be noted thatJohn Anderson left a legacy for the founding of Anderson College in Glasgow and Somerville left a legacy to the NHSM.

[3] *Ibid,* 154f., 157f. citing Daniel Wilkie, of Quebec, who may have been one of "the members at a distance."

[4] *Ibid.* 157f. For example, John Fleming's essay that appeared in the publication in 1824 may have been one of those written earlier. See "An Essay on the Education and Duties of a Canadian Merchant; containing various directions and rules of conduct, calculated to improve the mercantile character and extend the sphere of its utility in British America, No. 1," *Canadian Review and Literary and Historical Journal* 1, no. 1 (Jul. 1824): 73-80; and "The Canadian Merchant, No. 2," 1, no. 2 (Dec. 1824): 346-361. This is the only identified essay that belonged to one of the probable members of the earlier society, Peter Deslauriers, "John Fleming," *DCB* vol. VI writes "Fleming had strong cultural interests. He corresponded with Daniel Wilkie, a Quebec scholar, and was a friend of Montreal educator Alexander Skakel. In 1824 he published 'An essay on the education and duties of a Canadian merchant,' ... Fleming wrote patriotic poetry and songs, but his only known published verse is an ode entitled 'On the birth day of

His Majesty King George the Third,' which won a gold medal offered by the Literary Society of Quebec in 1809."

[5] See S.B. Frost, "Alexander Skakel," *DCB* vol. VII "Skakel was active in Montreal intellectual circles ... He was a friend of John Fleming and of the Reverend James Somerville, whom he accompanied on scientific rambles, and undoubtedly was acquainted with their Quebec friend Daniel Wilkie." Robert Campbell, *op. cit.* wrote of Skakel, "He was a fast friend of Mr. Somerville's and used to share in the Minister's scientific rambles; so that when that gentleman afterwards ceased to be responsible for his acts, Dr. Skakel was appointed as one of his guardians," 236. It is of interest to note that Wilkie a fast friend and author of Somerville's obituary, which was cited at length by Robert Campbell, was Somerville's successor as schoolmaster in Quebec. Wilkie also helped organize a Quebec Philosophical Society in 1809, the same year in which the Montreal society came into being.

[6] NHSM Minutes 27 April 1829 and Holmes' speech at the opening of the new NHSM Building 23 Feb. 1859 cited in *Canadian Naturalist and Geologist* 4, no. 2 (April1859): 141-155.

[7] The date is unknown but it may have closed about the time of the 1812-1814 War.

[8] Act of Incorporation (*Act 59 Geo. III ch. 22*) sanctioned 24 April 1819 noted in Chapter Four.

[9] NHSM Minutes 2 Jul. 1827. "Dr. Holmes then announced to the Meeting that the Directors of the Montreal Library, had with great liberality transferred to the Society, a very large collection of Minerals and curiosities, which had been deposited with them." NHSM *First Annual Report* 19 May 1828. "The Committee cannot omit to mention that the collection originally formed by S. SEWELL Esquire, and deposited in the charge of the MONTREAL LIBRARY was by the liberality of that gentleman, and with the consent of the Directors of the Library, transferred in full right to the Society, by which donation possession was obtained of a large number of specimens of every kind."

[10] *Canadian Magazine and Literary Repository* 2, no. 7 (Jan. 1824): 9-13. Sir John Sinclair [1754-1835] was a Scottish political economist who introduced the word statistics into the English language from German. Enlisting the help of clergy of different parishes by means of regional questionnaires, he wrote *Statistical Account of Scotland*, 21 vols. (1791-1799). He defined statistics as an "inquiry into the state of the country, for the purpose of ascertaining the quantum of happiness enjoyed by its inhabitants and the means of its future improvement." The significance of the questionnaire in this publication may lie in

its focus on the state of the country, which was similar to that of the later questionnaire by Joseph Skye, M.D. of Quebec on natural history of the Canadas and that of NHSM Indian Committee questionnaire.

[11] *Ibid.* 2, no. 8 (Feb. 1824): 111-113.This was Chisholme's last issue as editor of the publication. (See Mary Lu MacDonald, "Some Notes on the Montreal Literary Scene in the mid-1820s," *Canadian Poetry* 5 {Fall/Winter 1979}: 29-40). Chisholme then founded and edited *The Canadian Review and Magazine,* which appeared under several names in its five issues.

[12] *The Canadian Review and Magazine* 2, no. 4 (Feb. 1826): 367-373.

[13] *Ibid.* 368 footnote.

[14] *Ibid.* 372.

[15] NHSM, *First Annual Report* 19 May 1828.

[16] The word "Canada" was used by the NHSM and is found in contemporary publications in contexts where it refers to the two Canadas - Upper and Lower Canada. NHSM Minutes 16 May 1827. First resolution: "That a Society shall be formed, the chief object of which shall be the investigation of the Natural History of Canada in all its branches, and which shall be called for the present 'the Natural History Society of Montreal.'" See for a contemporary example of this usage, the review of the Reverend William Bell, Hints to Emigrants ..., (Edinburgh 1824) in *Canadian Review and Literary and Historical Journal* 1, no. 2 (Dec. 1824): 287-303.

[17] NHSM *Minutes* 12 May 1827.

[18] *Ibid.* 16 May 1827 and 2 Jul. 1827.

[19] The NHSM Library had W.J. Hooker and T. Taylor, *Muscologia Britannica* (1818), R.K. Greville, *Flora Edinensis* (1824), and the following books by R. Jameson, *Characters of Minerals* (1816) donated by R. Armour Jr., as well as *System of Mineralogy* (1820), *Manual of Mineralogy* (1821) donated by a member, and G. Cuvier, *Theory of the Earth*, ed. R. Jameson (1817). R.K. Greville, W.J. Hooker and Robert Jameson were elected Honorary Members of the NHSM on 25 Feb. 1828.

[20] Edward Horton Bensley, "Holmes, Andrew Fernando," *DCB* VIII. "From his early sojourn in Edinburgh he brought to Canada an extensive herbarium of plants and a large collection of minerals and geological specimens." NHSM Min-

utes 27 Aug. 1827. Donation of Robert Armour Jr. "From his early sojourn in Edinburgh he brought to Canada an extensive herbarium of plants and a large collection of minerals and geological specimens." *Ibid.* 29 Oct. 1827. Donation "a Collection of Plants made by him in Scotland amounting to _ among which are many fine Seaweeds." [There was no number given.]

[21] Holmes was acknowledged by Hooker in his *Flora Borealis Americana* (1833) as a contributor of plants from North America. As for Hall, "The subject of his doctoral thesis was the respiratory function of plants. Two years after graduation he forwarded to Edinburgh a collection of Canadian plants." E.H. Bensley, "Hall, Archibald," *DCB.* IX.

[22] The doctors were William Caldwell, M.D., A.F. Holmes, M.D., J. Stephenson, M.D., and William Robertson, who together constituted the faculty of the Montreal Medical Institution, William Belin, Benjamin Berthelet, M.D., David Brown, James Campbell, M.D., Peter Diehl, M.D., J.R. Spooner and G.J. Vallée, M.D. The lawyers were Alexander Buchanan, J.S. McCord, Stephen Sewell, and possibly James M. Cairns, while law student Robert Armour Jr. was licensed in 1829. The clergy were Henry Esson, Alexander Mathieson and James Somerville, all of the Church of Scotland.

[23] R. Armour, Jr., B. Berthelet, M.D., A. Buchanan, the Reverend H. Esson, A.F. Holmes, M.D., the Reverend A. Mathieson, J.S. McCord, J.R. Spooner, J. Stephenson, M.D., and G.J. Vallée, M.D. Later active members born in these decades included: A.H. Armour, F.T.C. Arnoldi, M.D., W. Badgley, George Bent, the Reverend John Bethune, James Crawford, M.D., Leon Gosselin, A.P. Hart, Benjamin Holmes, Michael McCulloch, and Arthur Ross. Born in the 1810s were: Aaron H. David, the Reverend Andrew Findlater, Archibald Hall, M.D., James Robertson, M.D., and Stephen C. Sewell, M.D.

[24] For example, Benjamin Holmes, elected in September 1827, the brother of Andrew F. Holmes, married a daughter of Dr. J.D. Arnoldi, and was therefore brother-in-law to F.T.C. Arnoldi, M.D., elected in October 1827; William Caldwell, M.D., the reverend Henry Esson and lawyer Campbell Sweeney Jr., were brothers-in-law. One could also cite the family connections centered on David Ross.

[25] Nathan Reinhold, "Definitions and Speculations: The Professionalization of Science in America in the Nineteenth Century." In *The Pursuit of Knowledge in the Early American Republic ...* ed. A. Oleson and S.C. Brown (Baltimore: John Hopkins University Press, 1974), 38ff., uses the term "cultivator" rather than "amateur" to designate "a member of the learned culture who participated in a variety of scientific enterprises, always without remuneration. Some cultivators acquired scientific instruments and engaged in meteorological or mineralogical analyses; others built up natural history collections." (The definition cited is taken from Oleson's "Introduction: To Build a New Intellectual Order," *ibid.* xxii).

[26] Charles G. Roland, "Stephenson, John," *DCB* VII. Stephenson studied at Edinburgh, visited Paris where Dr. Joseph-Philibert Roux operated on his cleft palate, and received his membership in the Royal College of Surgeons in London for his dissertation describing the operation that had been performed on his palate.

[27] NHSM Minutes 30 Nov. 1829. Letter from Professor Thomas Thomson, Glasgow (to R. Armour Aug 10) offering to name mineral specimens. "Mineralogy is still rather in an imperfect state, owing to the improper separation of Mineralogy and Chemistry. I am endeavouring at present to introduce greater precision by analyzing the whole mineral Kingdom ..." Thomson was elected an Honorary Member of the NHSM 30 Jun 1828.

[28] NHSM Minutes 27 Aug. 1827. Donation of "19 specimens of valuable minerals." *Ibid.*, 26 May 1828. Donation of "Phillips, Mineralogy."

[29] NHSM Minutes 26 Jul. 1830. Donation of "42 specimens of minerals from Scotland." *Ibid.* 31 Oct. 1831. "A donation of dried plants, in number 220, collected by James Robertson, M.D. of this city, and a Corresponding Member of the Society, during his studies at the University of Berlin, arranged since his return to this city and generously presented to the Society. The specimens were intended to form a *Flora Berolensis*, and were arranged according to the natural orders of *Willdenow*, being the classification followed at that eminent school."

[30] *Montreal Gazette,* Tue. 5 May 1835 "BOTANY. Dr. Hall proposes to deliver, in the months of June, July and August ensuing, in the Large Room of the Natural History Society, a series of Lectures on the above Science. The Lectures will be delivered twice a week, on Wednesdays and Saturdays, and after the first part of the course has been finished, excursions with such of the class as may feel inclined, will be made into the country around Montreal. Such Ladies and Gentlemen as are desirous of becoming Subscribers, will have the goodness [to] signify the same to Dr. H., at his residence, Grey Nun's Street."

[31] NHSM Minutes 29 Apr. 1839.

[32] *Montreal Gazette,* Thu. 21 Feb. 1839. "The Natural History Society is proposing to give an Annual Course of Lectures, on Natural History, S.C. Sewell, M.D. &c. will deliver a Course of Six Lectures on the Mammalia, with an Introductory one, to begin on Wednesday, the 27th instant, at Eight P.M. precisely, to be continued weekly. Members and their families admitted gratis. Strangers 5s for the Course. Money to be applied to increase the Society's Library."

[33] *Montreal Gazette,* Sat. 8 Feb. 1840. "The Natural History Society of Montreal. The Annual Lectures established by this Institution, upon the bequest of the late Rev. James Somerville, will commence on Saturday, the 8th instant. A Course of Lectures on Mammalia, by Dr. Sewell, every successive Saturday. A

Course of Lectures on Natural Philosophy, consisting of the Properties of Matter, Heat and its various applications, Pneumatics, &c. by the Rev. Mr. Findlater, every successive Tuesday. Both at Half-Past Seven, P.M., each evening. Members of the Society and their families, and Ladies admitted free. Tickets for strangers, not Members, 5s for each Course. Tickets to be had from the Librarian of the Montreal Library. * In consequence of an unavoidable circumstance, the Course of Lectures on Natural Philosophy will only commence on Tuesday the 17th (!) instant."

[34] Dr. Robert Cleghorn, father of Robert Cleghorn of Montreal, practiced in Glasgow 1785-1818; he was the first Physician nominated Visitor to Glasgow Royal Asylum; member of the Faculty of Physicians and Surgeons in Glasgow, lecturer at University of Glasgow.

[35] *Montreal Gazette,* 30 Oct. 1828. "Dr. Holmes stated to the society that the course of Lectures to be delivered during the Winter, on Natural Philosophy by A. Skakel, Esq. and on Mineralogy and Geology by himself would commence about the middle of November on the following terms. A Lecture of about 1-2 hours on each subject to be delivered weekly, provided twenty subscribers to each course were obtained - the fees for each course separately to be a guinea and a half, or two guineas conjointly, and Individuals not members, to be allowed to attend on the same terms - Ladies may attend without a fee - the Lectures to be delivered in the Royal Grammar Schoolroom of this city, and gentlemen to enroll their names with the Lectures as speedily as possible."

[36] NHSM Minutes 28 Apr, 1828. "This very generous donation was a copy of the Encyclopaedia Britannica [1797] by Dr. W. Pardy, which (in itself a Library of Science) would form a most valuable addition to the Library of the Society." *Ibid.* 29 Dec. 1828. Donation of "three marine shells found on the Mountain of Montreal, near Cote des Neiges, 300 feet above the level of the river." At that meeting he read a paper on the shells.

[37] *Montreal Gazette,* 8 Feb. 1840 cited supra note 31.

[38] This supposition is based on the wide provenance of the items donated. For example, the donations listed on 30 May 1831 were from: Lake Superior, Rocky Mountains, River Columbia, Lake Huron, Mackenzie's River, Hudson's Bay, Temiscamengue and St. Andrews.

[39] See note 16 *supra.* Although I have indicated the Canadas the society used the word Canada.

[40] Resolution number 6 at the Organization Meeting of 16 May 1827.

[41] NHSM Minutes 16 May 1827. Resolutions concerning the Museum: "Resolved

7th, That, with a view to accomplishing the objects of the Society, the members shall be requested to use their influence by correspondence and otherwise, to induce their friends to contribute to the enlargement of the Museum. Resolved 8th, That, Donations to the Museum be properly acknowledged, and the names of the Donors inscribed. Resolved 9th, That, Members and others be requested to deposit in charge of the Society, whatever they may not wish to present permanently to the Museum. For an example, NHSM Minutes 3 July 1828: "A letter was also read from Jeremiah Laycraft, Esq. of Quebec, acceding to a wish expressed by the Society that he would interest his correspondents in the West Indies and the Bermudas to send him for the Society, specimens of the shells, corallines and sea weeds which are procured in those places."

[42] NHSM Minutes 28 Jul. 1828. Correspondence from Richard Williams.

[43] NHSM Minutes 29 Sep. 1828. Correspondence: "Dr. John Munro, Drummond Island (dated Jul 29) 'must, however, in justice to himself and in candour to the Society, remark, that he has for a considerable time been employed in forming, and at no trifling expense a collection of Natural History, etc., for himself, and that he was also engaged in forming one for England. He had made this statement lest it might be inferred by those acquainted with the nature of his favorite pursuits, that he felt a reluctance in complying with the wishes of the Society. Though these circumstances must prevent him from contributing so largely as he could wish and would otherwise have done he has no doubt he should be able to afford some little assistance'."

[44] NHSM, *First Annual Report*, 19 May 1828, *Montreal Gazette,* 22 May 1828 and *Canadian Spectator,* 4 Jun. 1828.

[45] For example, Montrealers living abroad enrolled as Corresponding Members were: John Auldjo, London; Francis Badgley, M.D., London; Lt. James Badgley, R.N.; Edward Glen of Chambly, in Columbia, South America; Archibald Hall, Edinburgh; William Edmond Logan, Swansea, England; James Robertson, Edinburgh; and Edmund Q. Sewell.

[46] NHSM Minutes 25 Feb. 1828. The decision to append directions for preserving specimens to the bylaws caused a delay in printing. *Report of the Indian Committee* 26 May 1828. "The Committee first directed their attention to the preparation of a set of instructions for preserving objects of Natural History, whereby persons at a distance might be enabled with perfect certainty, to transmit, to the Society, specimens of any of the three kingdoms of which they might become possessed." For the publication itself see: *Constitution and bye-laws of the Natural History Society of Montreal: with directions for preserving and forwarding objects of natural history,* (1828). Microfiche FC19 C36 no.39508.

[47] NHSM Minutes 26 Apr. 1830. "Mr. [George] Simpson stated that a collection

of Animals and Birds prepared in the interior, and intended for the Society's Museum, had been transmitted last fall from Hudson's Bay to London, and would have been shipped for this place this spring, had they not been found to be destroyed by moths and insects."

[48] Edward Glen was elected as a Corresponding Member 28 Apr. 1828. He was the son of Captain Glen of Chambly, and contributed to the NHSM many specimens of various kinds from Columbia, South America.

[49] NHSM Minutes 28 Apr. 1828. "Among the Birds is a large bald headed Eagle, given last autumn to the society by Mr. Beckett, and which had been kept alive all winter during which it grew considerably."

[50] NHSM, *First Annual Report.* "The Society has engaged a regular artist in this department [i.e., a taxidermist], who is in constant employment."

[51] Lynn Barber, *The Heyday of Natural History, 1820-1870* (Garden City, N.Y.: Doubleday, 1980), 152.

[52] NHSM, *Seventh Annual Report,* 19 May 1834. "The Council cannot resist, however, the mention of some of the donors, who, during the time they have directed the affairs of the Society, have enriched the Museum with their gifts. Among these, the Right Honorable the Countess of Dalhousie is pre-eminently distinguished. The love of the natural sciences, which characterizes that noble lady, renders any gift from her peculiarly acceptable, because, guided by her discriminating taste and knowledge of the subject, they cannot fail to be valuable. It is only necessary for the members to cast their eyes upon the case enclosing the rare, richly colored and beautiful birds presented by her Ladyship, to bear out the Council in the estimation in which they hold these precious objects. Her Ladyship is also the giver of a number or fine shells from her own cabinet, besides having, previous to her leaving this country, presented a considerable number." See also *Montreal Gazette,* 26 Jul. 1838. "The members of the Society have had recently to lament the death of their Patron, the Earl of Dalhousie who, from its first institution, has held the office which he kindly accepted at the period of its establishment, and his Lordship, as well as his excellent Countess, did not fail to demonstrate the interest they felt in its success, by repeated testimonials of regard, and some of the most important objects in its Museum, serve as mementos of the kind recollection and fostering care of the Countess of Dalhousie, while a resident on the far distant banks of the Ganges.

[53] NHSM, *Second Annual Report,* 18 May 1829. "The increase in Quadrupeds and Birds would have been greater had not the Artist employed to prepare them found it necessary to return to England, under the promise, however, of returning again with his family and of establishing himself in this city." NHSM, *Third Annual Report* 18 May 1830. "In the first sub-division, that of the *Animal King-*

dom, the Council have not been able to carry the augmentation to the extent contemplated by the last Annual Report. This is occasioned in great degree, by the want of a person properly qualified to prepare the specimens; a want which it was not thought necessary to remove at the time, because the return of the Artist, who had already been employed and had given satisfaction, was early looked for; circumstances causing delay prevented his return from England till a late period in the last year, and, in consequence, the Museum has not exhibited the rapid increase which was expected. This is, however, only a temporary evil, which the ensuing year will probably remedy."

[54] NHSM Minutes 28 Oct. 1829.

[55] NHSM, *First Annual Report,* 19 May 1828. "In the second department, that of *Botany*, the collection is as yet small, consisting of Plants collected in the vicinity of Montreal and Quebec, and of a few from the British Isles. The society anticipates considerable additions in this department." NHSM *Second Annual Report* 18 May 1829. "In the department of Botany, the increase has fallen short of the expectations of the last Annual Report. ... The Council would look upon this as a matter of regret, were it not confident that the loss might be supplied by our own members, and it has reason to know that other causes than want of inclination, have alone prevented the Society from possessing a complete Flora of the country surrounding this city, besides a number of specimens from other parts of America and from Europe. It is hoped that the next Annual Report will show that the expectations of the Council have not been disappointed."

[56] NHSM, *Seventh Annual Report,* 19 May 1834.

[57] For Robert Armour Jr., NHSM Minutes 29 Oct. 1827, "a Collection of Plants made by him in Scotland amounting to _ among which are many fine Seaweeds." For James Robertson, M.D., *ibid.* 26 Jul. 1830 "A donation of dried plants, in number 220, collected by James Robertson, M.D. of this city, and a Corresponding Member of the Society, during his studies at the University of Berlin, arranged since his return to this city and generously presented to the Society. The specimens were intended to form a *Flora Berolensis*, and were arranged according to the natural orders of *Willdenow, being the classification followed at that eminent school."* For James Holwell, Esquire, Ordnance Department, Isle aux Noix, *ibid.* 26 Sep. 1831 "a large collection of dried plants, procured by him during his residence in the Pyrenees."

[58] For Lewis Caleb Beck, Professor of Botany and Mineralogy, Renssalaer Institute, Troy, N.Y. NHSM Minutes 25 Aug. 1828. "54 specimens of plants, chiefly mosses and ferns." *Ibid.* 21 Sep. 1830. "Several specimens of Moss." Miss D.L. Dix of Boston, *ibid.* 28 Feb. 1831. "A large number of fuci or sea-weeds, collected by herself in Rhode Island." *Ibid.* 28 Nov. 1831. "A large number of sea weeds from the Island of St. Croix, W.I., and a number of lichens from Rhode Is-

land." Lyceum of New York, *ibid.* 29 Oct. 1832. "A collection of dried plants from the state of Alabama."

[59] For Robert Cleghorn, NHSM Minutes 28 Jan. 1828 "Botanical specimens." Robert Armour Jr., An undated clipping pasted into the NHSM Minutes "a collection of Canadian plants." A.F. Holmes, M.D. *ibid.* 26 Apr. 1830 "Dr. Holmes exhibited some finely preserved plants, as specimens of a collection of 500 species, which he presented to the Society, all from the vicinity of Montreal and collected by himself, and (exclusive of grasses, grass-like plants, and trees) comprising nearly all the indigenous plants of this neighbourhood. Dr. Holmes also presented 250 species (collected and preserved by himself) of the plants cultivated in the gardens around the city. These, he remarked, would form the ground work of a *Flora Canadensis*, to which future contributions might be added." William Sheppard, of Quebec, *ibid.* 26 May 1828 "A box containing 119 dried plants from the vicinity of Quebec [Listed in *Canadian Courant* 15 Sep. 1830 as "One hundred and one species of Plants collected near Quebec."] *Ibid.* 26 May 1828 "A box containing 119 dried plants from the vicinity of Quebec" (duplication?). Joseph Wallace of Brockville, *ibid.* 31 Aug. 1829 "Some mosses collected near Brockville." Lt. F.L. Ingall *ibid.* 30 Nov. 1829 "190 specimens of plants, comprising 98 species. NHSM, *Third Annual Report,* 18 May 1830. "The Council regret to state that a small collection of Plants, made by the gentlemen of the St. Maurice and Ottawa Expedition, owing to the difficulties of the journey arrived in too bad a condition to be of any advantage."

[60] Nathan Gould NHSM Minutes 31 Oct. 1831 "This donation consisted of four casts in plaster from the Antique, viz. The Discobolus, Antinous, Fawn, Piping Boy." James Crawford *ibid.* 30 Apr. 1838 "the statue of Bacchante. The thanks of the Society were then given to Dr. Crawford, for his present donation of the Bacchante, and former one of Psyche."

[61] NHSM Minutes 29 Sep. 1828 Samuel Gerrard, "a Marble bust of His late Majesty George the III." *Ibid.* 26 Oct. 1829, Mrs. Lancaster Lupton of Albany "A bust of the Hon. Enos T. Throop, Governor of the State of New York, modelled by herself." *Ibid.*, 21 Sep.!830 J.M. Perkins, R.N. "A bust of Lord Nelson, to which is affixed his autograph."

[62] For example, NHSM Minutes 28 Sep. 1835 from Robert Armour, Jr. "Some bullets and buttons, a camp spoon and other articles, found on the battle-field near Lake George."

[63] NHSM Minutes 27 Aug.1827, 29 Oct. 1827, 28 Apr. 1828, and 30 Jun. 1828.

[64] NHSM Minutes 31 Aug. 1829 record the visit of Kempt in that month but *Bibliothèque canadienne*, 15 Jul. 1831, 43 states the Kempt dined 'chez Louis-Joseph Papineau' and visited the NHSM museum on July 8th. NHSM Minutes 27

Jun. 1831 discuss a request that Lord Aylmer visit the museum but that [due to its recent move] it was not ready at that time. He was to be asked on a visit to Montreal later in the season. *Montreal Gazette,* 26 Jul. 1838 NHSM delegation met Lord Durham and asked him to be the society's patron succeeding Lord Dalhousie. He promised to send specimens from England.

[65] NHSM Minutes 27 Aug. 1827, 26 Oct. 1835, and 25 Jun 1838.

[66] Cited note 15 *supra.*

[67] *Ibid.*

[68] *JHALC* (Quebec 1829) 2 Dec. 1828, 59 Petition read; 19 May 1829, 690 Royal Assent to "An Act to authorize the advance of a certain sum of Money, to the Natural History Society of Montreal."

[69] *JHALC* (Quebec 1830) 5 Feb. 1830, 106f Petition read; 26 Mar. 1830, 400 Royal Assent to "An Act to authorize the advance of a certain sum of Money, to enable the Natural History Society of Montreal, to purchase a Cabinet of Minerals."

[70] NHSM, *Third Annual Report,* 18 May 1830.

[71] The NHSM library had Linnaeus' three works: *Genera Plantarum* (1737); *Philosophia Botanica* (1751); and *Systema Natura* (1735) dates of accessions unknown. In January 1828, R. Armour Jr. donated the works of two Linnean authors, Robert Kaye Greville, *Flora Edinensis* (Edinburgh: 1824) and Sir James E. Smith, *Compendium of Flora Britannica* (London: 1800), then in June 1828 another Linnean author, John Kingston Galpine, *A Synoptical Compend of British Botany* (3rd edition 1829). He also donated Augustus de Candolle, *Elements of the Philosophy of Plants* (1821) in January 1828. This would suggest that he had used these works in identifying and classifying botanical specimens.

[72] André Michaux, *Flora Borealis Americana* (Paris: 1803) date of accession unknown; Amos Eaton, *Manual of Botany for the Northern and Middle States* (1817) purchased 1827 and received Dec. 1827.

[73] NHSM Minutes 25 Aug. 1828.

[74] NHSM Minutes 30 Nov., 28 Dec. 1829, and 28 Oct. 1830.

[75] NHSM Minutes 25 Aug. 1828. This would appear to have been the East India Marine Society. Seth Bass had been appointed in 1824 to organize and oversee the growing collection of that society.

[76] *Ibid.*

[77] *Ibid.* 24 Nov. 1828.

[78] *Ibid.* 23 Feb. 1829.

[79] *Ibid.* 28 Jan. 1828. He also donated other items 31 Mar., 28 Apr. and 30 Jun. 1828.

[80] *Ibid.*, 28 Jun. 1830. Correspondence between the two societies began 31 Aug. 1829.

[81] *Ibid.* 8 Nov. 1831.

[82] *Ibid.* 29 Aug. 1831.

[83] *Ibid.* 29 Dec. 1834.

[84] *Ibid.* 28 Nov. 1836.

[85] *Ibid.* 31 Aug. 1829 and 28 Dec. 1829.

[86] *Ibid.* 24 Jan. 1833 and 27 Jan. 1834.

[87] *Ibid.* 28 Jan. 1839.

[88] For example, see the instances documented in Lucille Brockway, *Science and Colonial Expansion: the role of the British Royal Botanic Gardens* (New York: Academic Press, 1979).

[89] The papers were read the 2nd and 30th Jul. 1827. After the first was read R. Armour, Jr. moved "That the thanks of the meeting are due to Dr. Holmes for the essay he has just read, and that he be requested to continue his essay and present a copy thereof to the Society for the use and guidance of its members." NHSM Minutes 2 Jul. 1827.

[90] NHSM, *Second Annual Report,* 18 May 1829. Council wrote about the allocation of the funds received from the Legislature, "Your Committee likewise

thinks, that the Society should be in a condition to allow its members to undertake other searches necessary for determining the quality and ingredients of Minerals and of Mineral Waters."

[91] There were two pamphlets in the library, which consisted of such studies: William Meade, "Treatise on the Mineral Waters of Ballston, Saratoga and Lebanon," (1817) donated by the author Jan. 1830; and J.H. Steel, "Analysis of the waters of Saratoga and Ballston Springs," (1817, 2nd ed. 1819) both donated by the author in Sep. 1828 and Jul. 1831.

[92] The question sections were: 1-4 General; 5-24 Of the Geography of the Country; 25-102 Of the Inhabitants; 103-238 Of the Natural Productions of the Country; 239-253 Of the Climate, etc., of the Country.

[93] The only report was given a week after the first annual meeting, i.e., on the 26th of May 1828. It is extant in folio form and is also engrossed in Minute Book One. There is no further reference to an Indian Committee report or to meetings of the Committee.

[94] "Meteorological Observations on Mean Temperature, City of Quebec," *British American Journal of Medicine* 1, no. 2 (May 1845); "Mean Quantity of Snow Fallen on the Island of Montreal for Six Years 1830-1836," *ibid.* 2, no. 4 (Aug. 1846); "Observations on Meteorology," *ibid.* 3, no. 5 (Jan. 1848).

[95] NHSM Minutes of Council 21 Apr. 1837, NHSM Minutes 24 Apr. 1837, NHSM, *Tenth Annual Report,* 18 May 1837.

[96] John S. McCord, "Meteorological Summary of Weather at Montreal 1836-1840," *American Journal of Science* 41 (1841): 330-333; *Report of meteorological observations made on the Island of St. Helen, in the river St. Lawrence, opposite the city of Montreal, province of Canada ... for the Natural History Society of Montreal by the military guard stationed there under the superintendence and direction of John S. McCord* (Montreal: J. Lovell, 1842).

[97] NHSM Minutes 5 Jan. 1853. "The Curator Dr. Wright was requested to communicate with Judge McCord to ascertain if he had any instruments belonging to the Society."

[98] This concern began with the NHSM, *Second Annual Report,* 18 May 1828. "From the large number of specimens in the Society's possession, the room hitherto occupied by the Cabinet, has been found already too small to allow them to be exhibited in the manner they should be, and if they should increase to the number that is expected, the room will not only not allow their proper exhibition, but be absolutely inadequate to contain them."

[99] See NHSM, *Fourth Annual Report,* 20 May 1831. "The Society has laboured under a considerable disadvantage during the last year, in being compelled to remain in a room, by no means fitted for the purpose of a Museum, and in consequence there have been no means of keeping up that due regularity, arrangement and attention, which are necessary ingredients in conducting such an institution. The Cabinet must have suffered in the eyes of visitors, because from the impossibility of avoiding the crowding together or a great number of objects, and the consequent difficulty of any thing like a classification, *unfavourable impressions might have been taken up regarding the care and attention bestowed upon the Society's duties.*" [My italics]

[100] See note 52 *supra.*

[101] Raymond Duchesne and Paul Carle, "L'ordre des choses : cabinets et musées d'histoire naturelle au Québec (1824-1900)," *RHAF* 44, no. 1 (1990) point out that Logan also depended on visual spectacle. "Logan veille à ce que le musée réponde non seulement aux besoins du service et des scientifiques qui le visitent, mais également à la curiosité du public." and cites Logan "The object will be to produce an effect on the members [of Parliament]. With the same view, I must get a house or a set of rooms for our collection. Managing this, we must put our economic specimens conspicuously forward; and it appears to me that in the exhibition of these, *large masses will make a greater impression on the mind than small specimens,*" 14. [My italics]

[102] James A. Secord, "How Scientific Conversation Became Shop Talk," in *Science in the Marketplace: Nineteenth-Century Sites and Experiences,* ed. A. Fyfe and B. Lightman (Chicago: University of Chicago Press, 2007), 23-59.

[103] This was certainly later practice and there is no indication that there was a change between the early years and the later period. In addition there are indications that the time of the private meeting extended beyond its allocated time. NHSM Minutes 29 Jul. 1829. "It has also appeared matter of complaint that the private business of the Society is by the necessary accumulation of a whole month, extended to an inconvenient length." The by-laws indicate "6. Donations and additions to the museum or Library shall be exposed on the table and noticed by the presiding officer."

[104] Sally G. Kohstedt, "Essay Review: Museums: Revisiting Sites in the History of the Natural Sciences," *Journal of the History of Biology* 28 (1995) "Natural history museums were the principal location for dialogues and the exchange of specimens among those debating the identification and connection among natural objects," 151.

[105] For example, NHSM Minutes 30 July 1827. "The ordinary business being dis-

patched, Dr. Holmes continued the reading of the Paper on the minerals in the collection. After which the Society adjourned." The by-laws read "9. The minutes of the meeting shall then be read and private business shall cease. 10. Visitors (if any) may be introduced by permission of the presiding officer. 11. The chair shall then be taken (if necessary) for public business. 12. Any essay presented shall be read, and time being allowed for conversation thereon, the society shall adjourn."

[106] See NHSM Minutes 30 Jul. 1829. It was a "matter of complaint that the private business of the Society is by the necessary accumulation of a whole month, extended to an inconvenient length. "*Montreal Gazette,* 7 Mar. 1837. "NATURAL HISTORY SOCIETY. The time occupied at the Monthly Meetings of this Society, in transacting the routine business, having been found to trespass upon that portion allotted to public business, and the reading of scientific papers, a change in the Bye-laws was effected in the month of December last, by which the President or senior Vice President may appoint any number of meetings for the reading of Essays, &c. The Society will, in consequence, hold its first meeting, under the amended law, on Thursday, the 16th instant, at its New Rooms, St. James Street, when two Essays on the Entomology of Canada will be read. The Members of the Society are requested to be punctual in their attendance. The Lecture Room will be open to visitors. A.H. Armour, Rec. Sec."

[107] NHSM Minutes 28 Dec. 1829, "a popular series of Lectures on Chemistry, at a charge of 10s to Members of the Society and of the Mechanic's Institute, 15s to individuals not of either of these Institutions, and 7s 6d to such Ladies as might be disposed to attend." *Ibid.* 22 Feb. 1830 and NHSM, *Third Annual Report.*

[108] *Canadian Courant*, Wed. 29 Sep. and 3 Nov. 1830.

[109] NHSM Minutes 31 Oct. 1831; *JHALC* (Quebec 1832) 21 Nov. 1831, 36 Petition read; *ibid.* 10 Dec. 1831 152f. Petition referred to Standing Committee on Education and Schools.

[110] *Montreal Gazette*, 5 May 1835; NHSM, *Eighth Annual Report*, 18 May 1835.

[111] *Montreal Gazette,* 2 Nov. 1837.

[112] NHSM Minutes 28 Jan. 1839; Extraordinary Meetings 4 and 11 Feb. 1839 "An extract from the will of the Rev. J. Somerville was laid on the table. It was resolved that the Lectureship on Natural History established by the Society, embrace the various branches of Natural History, in the most comprehensive sense of the term. On motion, duly made and seconded, and carried on division, it was resolved, that an annual course of Lectures on Natural History be delivered in the Rooms of the Society, by gentlemen in the mean time, voluntarily

offering their services for this purpose"; NHSM Minutes of Council 25 Nov. 1839 "That the President of this Institution be authorized to take up to £600 of an account of Mr. Somerville's legacy to be [used?] upon the real estate of the institution to be repaid with interest from upon the settlement with the Hospital for the Legacy."

[113] For example NHSM Minutes 31 Aug. 1830. "The Council has secured a remuneration for Mr. Finch's services, but was very desirous of still further increasing the number of his Lectures, and therefore mentioned that a subscription list was left at Mr. Cunningham's bookstore, to which those members, or other persons desirous of participating in the instruction and amusement these Lectures would afford, were requested to affix their names. The Council took the liberty of particularly pointing out to the Members the importance of directing the attention of the younger portion of the community to these subjects, as it was chiefly through them that any advancement in science could be expected to take place. The Council therefore earnestly desired to urge upon the Members the utility of procuring the attendance of the younger branches of their own or their friend's families. By engaging the attention of their minds at an early period, many doubtless might be expected afterward to be well inclined to the further pursuit of scientific studies." From *Montreal Gazette*, 6 Sep. 1830).

[114] NHSM, *Third Annual Report,* 18 May 1830.

[115] NHSM Minutes 25 Apr. 1831.

[116] *Ibid.* and *Montreal Gazette,* 28 Apr. 1831 and *Canadian Courant,* 4 May 1831.

[117] NHSM, *First Annual Report,* 19 May 1828.

[118] NHSM Minutes 30 Mar. 1829.

[119] NHSM, *Second Annual Report*, 18 May 1829, *Montreal Gazette,* 1 Jun. 1829.

[120] See for example, *Canadian Courant,* 13 Jul. 1829; *Montreal Gazette,* 26 Jul. 1830; *Canadian Courant,* 17 Jul. 1833; *Montreal Gazette,* 23 Oct. 1834; *ibid.* 2 Aug. 1836; *ibid.* 25 Jun. 1837; *ibid.* 20 Jan. 1838; *ibid.* 2 Oct. 1838; *ibid.* 27 Jun. 1839; *ibid.* 30 Jan. 1840.

[121] The essays were deemed worthy on the following dates: NHSM Minutes 29 Mar. 1830, Charles Fothergill; *ibid.*, 18 May 1831, William Sheppard and Col. John Covert; *ibid.*, 29 Oct. 1832, William E. Cormack; *ibid.*, 29 Apr. 1839, Archibald Hall and William Evans.

[122] See "Jameson, Robert Simpson," *DCB* vol. VIII. See NHSM Minutes 24 Apr. 1837 for prize award.

[123] NHSM Minutes 30 Mar. 1835, John Strachan Jr. and the Reverend Alexander Bethune were judged worthy of prizes; and *ibid.*, 24 Apr. 1837, George Beaumont and Matthew F. Workman were cited for a prize.

[124] NHSM, *Seventh Annual Report,* 19 May 1834. "Its mineralogical cabinet is extensive, and the specimens of the finest description." See also Holmes to Doratt, cited by S. Zeller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* (Toronto: University of Toronto Press, 1987), 36.

[125] NHSM Minutes 31 Aug. 1829 list a letter of 17th Aug., while subsequent meetings list 5, 12 and 17 Sep. 15 Oct. 25 Nov, 1829, correspondence from Dr. William Meade of Newburgh. The Council reported at the NHSM Meeting 22 Feb. 1830 that Dr. Meade would sell his Cabinet for £200. The dates for all of the correspondence concerning the mineralogical collection are listed together in Minute Book Three immediately before the engrossed Fourth Annual Report.

[126] *JHALC,* 5 Feb. 1830, 106f. Petition of the Natural History Society of Montreal read.

[127] *Ibid.* 26 Mar. 1830, 400.

[128] NHSM, *Third Annual Report*, 18 May 1830.

[129] *Ibid.*

[130] NHSM Minutes 31 May 1830. A.F. Holmes' report detailing his trip and conclusions.

[131] Citing from NHSM, *Ninth Annual Report,* 18 May 1836, which summarizies the results in the Catalogue. [I inserted the comments and totals in order to condense the material.]

[132] *Ibid.* "The recent discoveries of many interesting, and some entirely new minerals, in Canadian localities, afford the most pleasing anticipations as to the mineralogical riches of the country, when it shall have been explored; and it is to be hoped that the recent liberal appropriations made in several of the United States for geological surveys, may stimulate the Canadian Legislatures to a similar dedication of a small part of their revenues, than which few things can be pointed out likely to produce more valuable consequences."

[133] NHSM, *Tenth Annual Report,* 18 May 1837 "The Council beg leave through your Society, to call the attention of the proper authorities within the Province to the great advantages which would result to science and the community in general from a geological survey of the Province. This important subject was mooted in the Provincial Legislature of Upper Canada last season, and it is highly probable the measure will be adopted in the next. Such an undertaking would be more efficiently carried into execution, if both Provinces were to join in the commission."

[134] *Montreal Gazette,* 3 Jan. 1839.

[135] Letter read at NHSM meeting 25 Nov. 1839.

[136] *Montreal Gazette,* 6 Apr. 1841.

[137] S. Zeller, *op. cit.* 40.

[138] *Ibid.* citing *Debates of the Legislative Assembly of United Canada*, vol. 1 (1841), 910.

[139] Morris Zaslow, *Reading the Rocks: The Story of the Geological Survey of Canada 1842-1972* (Ottawa: Macmillan Co. Of Canada, 1975) states that at this time the NHSM was "the prime mover," 17.

[140] *Montreal Gazette*, 24 Feb. 1842. The reply of the Governor's Secretary is noted in the *Montreal Gazette*, 3 Mar. 1842.

[141] *Montreal Gazette,* 16 May 1842.

[142] See the claim in the letter to the Provincial Secretary requesting copies of various government documents, including "Mr. Logan's Geological Report." NHSM Minutes 30 Mar. 1846. "I may point to the Geological Survey now in progress as a right step in this direction which has been undertaken chiefly through their [i.e., NHSM Members] repeated representation to the Legislature."

[143] MMI Minute Book, first page: "(The) object shall be to instruct the members in the principles of the Arts and in the various branches of Science and useful knowledge and the means of obtaining this object shall be" (followed by a list of seven means).

[144] The proposed subjects to be taught in the school included "Arithmetic, Algebra, Geometry and Trigonometry and their different applications particularly to Perspective, Architecture, Mensuration and Navigation, to which may be

added Ancient and Modern Languages." The lecture subjects suggested for members included "Natural and Experimental Philosophy, Practical Mechanics, Astronomy, Chemistry, Civil History, Political Economy, Philosophy of the Human Mind, Literature and the Arts."

[145] For a fuller exposé of the MMI history consult my thesis "The educational Work of the Two Montreal Mechanics' Institutes" (M.A. Thesis, Concordia University, 1993).

[146] J. Fingard, "Grapes in the Wilderness': the Bible Society in British North America in the Early Nineteenth Century," *Hs/SH* 5 (1972): 9. Cf. G. Crossick, "The Labour Aristocracy and its Values: a Study of Mid-Victorian Kentish London," *Victorian Studies* 19, no. 3 (1976) who points out that similar groups in England gained social approval and status recognition for themselves by appointing social leaders to executive positions, 310.

[147] Newton Bosworth, *Hochelga Depicta, or the History and Present State of the Island and City of Montreal* (Montreal: William Greig, 1839; reprint, Toronto: Colkes Publishing Co., 1974) writes "The institute of this city was founded after the model of those at home; the greater part of its members being artisans, by whom its affairs were chiefly conducted," 192.

[148] Among the models presented were a model of improved watch keys, a baking machine to obviate the need to use one's hands in mixing dough, an improved brick-making machine, a machine for boiling grain to feed cattle. One later produced commercially was Spence's model of improvements in supplying ink to type in the printing process.

[149] For example, June 29th, 1830 James Cooper invited the members to his home to examine the geometrical staircase he had built.

[150] See Chapter Four note 4 *supra.*

[151] The First Annual Report indicated that there were "370 choice works" in the Library but the receipt of fewer than one quarter of that number can be traced in the Minutes.

[152] Jonathan R. Topham, "Science and Popular Education in the 1830s: the role of the *Bridgewater Treatises*," *BJHS* 25 (1992): 407.

[153] MMI Minutes 8 Dec 1829.

[154] When Thomas Cliff was replaced on the General Committee March 30, 1830 it was stated that he was absent from Montreal, not paid up and had no books out from the library.

[155] See R. Tremblay, "La nature des process de travail à Montréal entre 1790 et 1830" (Thèse de maîtrise, Université de Montréal, 1979) who cites a notarial contract dated May 31, 1830 in the records of George D. Arnoldi for John Fellows to produce an inking machine of William John Spence, 112. C. Galarneau, "Les métiers du livre à Québec (1764-1859)" *Les Cahiers des Dix* 43 (1983) cites *Gazette du Québec* 4 janvier 1833, "Thomas Tweddle (ou Tweedle), forgeron devenu propriétaire d'une fonderie en 1830, annonce trois ans après qu'il fabrique et vend des Spence patent machine press and self-inking machine," 160.

[156] *Canadian Courant*, 14 Dec. 1833.

[157] The remarks of the Reverend Henry Esson that John Bruce thought that there was "some supposed interference with his school" are pertinent. Bruce ran a school with mid-range fees and taught reading, writing, arithmetic, grammar, mathematics, geography, history and bookkeeping. He also had evening classes. By 1835 Bruce had added Latin, Greek and Algebra to the curriculum.

[158] *Ibid.*

[159] On April 8, 1834 the MMI, which was seeking other accommodations, notified the schoolmaster John Durie to discontinue the school "due to building repairs and alterations."

[160] MMI Minute Book, first page: "(The) object shall be to instruct the members in the principles of the Arts and in the various branches of Science and useful knowledge and the means of obtaining this object shall be: ... 6thly Lectures on Natural and Experimental Philosophy, Practical Mechanics, Astronomy, Chemistry, Civil History, Political economy, Philosophy of the human mind, Literature and the Arts."

[161] *Canadian Courant*, 30 Dec. 1830. Holmes offer of the use of his Cabinet was made on January 12th, two days before the lectures began.

[162] *Canadian Courant*, 30 Dec. 1829, *Montreal Gazette*, 31 Dec. 1829.

[163] *Canadian Courant*, 1 Feb. 1831.

[164] *Canadian Courant*, 9 Mar. 1833.

[165] *The Vindicator*, 10 Jan. 1834.

[166] *Canadian Courant*, 25 Jan., 12 Feb. 1834 (Letter to the Editor).

[167] The House of Assembly had been prorogued by Lord Aylmer on March 18, 1835.

Conclusion

David Livingstone argues that geography is important in both the production and the consumption of science. Local economic, social and cultural circumstances shape scientific practice and knowledge. Science, therefore, is to be seen as local practice.[1] Similarly, researchers urging the necessity of an urban history of science point out that cities play an active role in shaping both scientific practice and scientific knowledge.[2]

This thesis breaks fresh ground in that it examines science in the period from 1815 to 1842 in the city of Montreal. Hence it looks for the sites and experiences in the life of English-speaking Montrealers where public curiosity about science was aroused, where scientific knowledge was learned, how science was practiced and how scientific knowledge was diffused. In a word, the thesis explains how science entered into the culture and life of the city in such a way that later professional institutions could find support from the population. This exposition also demonstrates how science as practiced and learned in Montreal was shaped by the city's location and the events of the period. In particular, geology and

mineralogy in the urban setting owed much to Montreal's geographical location.

The city of Montreal as site for science

The city of Montreal, therefore, is studied as the primary site, the locus for the production, application and diffusion of the knowledge of science. Here science is to be seen against its local background and understood in its local context.

The city was in a favorable position, located on the Montreal plain at the confluence of two major rivers, the Ottawa and the St. Lawrence, leading to Upper Canada and the interior. The old fur trade route to the prairies and the northwest interior began in Montreal. European botanists had passed through or botanized out of Montreal and several had followed this old route to the interior. Pehr Kalm, André Michaux, David Douglas, Francis Masson, Frederick Pursh, and John Goldie – these names suggest a botanical tradition that took form in the collection of plant specimens and the nurturing of exotic plants in gardens. Blink Bonny Nursery of Robert Cleghorn and the Jardin botanique of Joseph Guibault displayed and sold spectacular imported and domestic flowering plants and

shrubs. The Floral and Horticultural societies of Montreal encouraged the cultivation and display of floral plants, shrubs and vegetables.[3]

The International Boundary Commission established the border between the United States and the Canadas, from St. Regis, Quebec through the St. Lawrence River and the Great Lakes to the north-west angle of the Lake of the Woods in the years 1817 to 1825.[4] Two of the Commission members from Montreal, Stephen Sewell and Alexander Stevenson were natural history collectors who played a role in the later practice of science and the diffusion of scientific knowledge through Montreal's science institutions. Both were collectors of geological and other natural history specimens and shared information and specimens with their fellow citizens.

Canal work and dredging on the rivers around Montreal was instrumental in drawing attention to geology and mineralogy. The construction of the Lachine Canal to bypass the rapids on the St. Lawrence River and work on the Ottawa River Canals and the Rideau Canal for defense purposes exposed the substrata of the earth opening sites for geological and mineral exploration.[5] Con-

tacts between Montrealers and members of the Army Ordnance Department and personal excursions into the countryside provided opportunities for geological and mineralogical collecting.[6]

Trade and information about science traveled the same route. The merchants who had been active in the former fur trade or in the army provisions trade had extensive contacts both with other merchants in Upper Canada and suppliers and financial institutions in Britain and Europe. The dredging of the St. Lawrence, the designation of Montreal as a port of entry with responsibility for collecting custom duties in 1832 solidified the city's position as a central transshipment point between Europe and the Montreal hinterland (including Upper Canada and the Montreal plain). Mercantile contacts permitted the easy flow of goods and scientific information. Montrealers were, therefore, aware of those who had natural history interests and collections as well as of those who were preparing materials for transport to the British Isles. It was also possible to elicit information from persons who resided elsewhere to solicit specimens for the NHSM museum.

In Montreal, as in the United States and Europe, science was presented as a visual culture of display and spectacle. Montreal as

an urban centre on defined transport routes was accessed easily from the United States and Europe and various expositions, novelties, zoos and menageries and lecturers came. Audiences expected to be amused and edified, entertained and educated. These shows held in public spaces – hotels, taverns, assembly halls, rented houses, places of business, circuses - and the Museo Italiano provided a shared experience for a mixed audience of differing social and economic status. Brought by curiosity members of the audience experienced the showmanship and spectacle of science.

The culture of display and spectacle was not limited to sites with ease of public access. Lectures frequented by the middle and upper classes also required illustration and experiments to acquire and hold an audience. The natural philosophy lectures of Alexander Skakel which extended from late November until the end of April on two nights a week were illustrated by equipment originally purchased by Montrealers and further enhanced by Skakel's own purchase. Both A.F. Holmes and Archibald Hall illustrated their lectures on chemistry with illustrative experiments and their botanical lectures with a period of fieldwork. Museums also relied on the

element of spectacle to attract visitors and interest them in science.

The diffusion of the knowledge of science began in some of Montreal's schools. There were Scottish teachers, such as Alexander Skakel, and Henry Esson, who, influenced by Scottish educational ideals, saw science as an essential part of the life of a civilized and cultured person. Some elements of natural history and natural philosophy, therefore, found their way into school curricula.

More advanced education was a facet of family reproduction. From 1823, when the Montreal Medical Institution opened it was possible for young men to attend classes in chemistry, which into the 1840s included mineralogy, or botany. From 1829 this institution functioned as the Medical Faculty of McGill University. For others attendance at a British or American University, or alternatively at the teaching hospitals in London provided a medical degree or recognition of standing. One might cite the example of the brothers, Stephen C. and Edward Q, Sewell, whose education at Edinburgh University Medical School was assured by their uncle,

Jonathan Sewell, after their father died in 1832 and his estate was found insolvent.

Linguistic, ethnic, political and religious tensions abounded in Montreal. Nevertheless, life in the city permitted groups of like-minded individuals to associate and to pursue common ends. Montreal had an increasing number of professionals who had received some scientific training in Europe. Included in this number were former army personnel who took up residence here as well as men born in the province, who had visited Europe for advanced credentials. Some medical men and others brought natural history specimens back from Europe and sent indigenous specimens back. Those who studied abroad continued to correspond with European mentors, colleagues, classmates, family and friends.[7] I turn now to NHSM, the site where these professionals and others with an interest in science came together to practice science, to extend their scientific knowledge and to diffuse science in the wider community.

The NHSM as a site of the production of scientific knowledge

Within the city the NHSM with its museum, library and lecture series was the major site or venue for the collection, preparation, classification and display of natural history specimens. Simon Naylor in an account of natural history in Victorian Cornwall cites C. Withers' urging that natural history societies:

> should be understood as local *sites* for making natural and national knowledge, that the members valued *local knowledge* for its own sake *and* as part of scientific understanding more generally, and that their members' fieldwork and publications should be seen as the means by which given *localities* were examined. [Original italics][8]

It appears that interest in the practice of science in the NHSM during the period studied was largely a middle class activity. Figurehead upper class presidents, who attended few if any meetings, gave the society access to the Legislative Council. Many, if not most, of the cultivators within the NHSM came from a middle class background and found sociability and support within a network of friends and relations.

The NHSM museum was one of the sites within the organization where science was produced. The museum was to be a reposi-

tory of the natural products of the Canadas that would enable one to obtain an understanding of the local setting. Many of the specimens were donated and all required preparation, identification, classification and labeling for display. Display would enable one to compare or contrast an exemplar with other specimens. In this way the museum was the focus of self-improvement, a place to assist one to gain scientific knowledge. In addition, the museum by emphasizing local productions gave importance to the city and the area surrounding it. Another of the roles assigned to the museum was that of being a visible sign of the utility of the NHSM and of its scientific pursuits and of its desires to promote a public understanding of science and the natural world.

The library was another site for the production of scientific knowledge. The contents of the library were a mixture of donations and purchases. Books could provide information to supplement what was gained by the examination of museum specimens. In addition, a book would assist in the identification and classification of specific objects. A book also might aid in the diffusion of scientific knowledge by providing entry to the study of an entire field or subfield of science.

The third site, the lecture hall or room was important in the diffusion of science. It was in the lecture hall that the society interfaced with the community. There by words and demonstration the public was entertained and informed in such a way that science became a known element.

The Region as of molder of the culture of science

The second element in David Livingstone's geographies of science is the region with its sense of selfhood, its traditions, its networks of communication. In the region, the prevailing intellectual culture and the means by which it is sustained influences the culture of science. In this sense the region encompassed a large area of the Canadas.

Suzanne Zeller points out that there were certain inherent elements in the English Canadian culture that underlay the practice of science. One such element arose from the writings of the Englishman Francis Bacon [1561-1626]. His essays promoted the collecting and amassing of facts and the use of observation and experiment to generate by induction new scientific concepts and theories on the premise that the universe operated in rational

fashion. Livingstone points out that the emphasis on the accumulation of facts established the collection of specimens "as a valuable and valid way of knowing."[9]

A second inherent element, which underlay the practice of science, may be traced to the British mathematician Sir Isaac Newton [1642-1727]. Newton's formulation that universal laws governed the operations of nature led to a static, machine-like view of the universe. The rationality of his philosophy would permit men to predict and control the operations of the universe. The utility of this view lay in that it would enable one to improve on nature.

The third element involved was the Scottish enlightenment. Zeller states that it "emphasized the importance of collecting, cataloguing and disseminating scientific information as widely and as rationally as possible."[10]

It is in this framework derived from Europe, and more particularly from Scotland, that Canadians could make sense of the new world. The practice of science continued or adapted practices that were current in Europe. Collecting natural history specimens was but one of the practices that British immigrants brought to the Canadas. Leisure activities, such as walking in the countryside or

hunting and fishing, provided opportunity to extend one's knowledge of the flora and fauna to be found in the new world and to collect natural history specimens. Zeller remarks, "Natural history made it fashionable to go on nature walks, to observe plants and animals in their seasonal cycles, and to collect and classify natural specimens." She contends "Members of the aristocratic and rising commercial and professional middle classes habitually recorded sightings of flora and fauna, weather conditions, planting and gardening routines, and other eclectic information."[11] The NHSM request that the public deposit personal collections into its museum underlines this fact.

Importance of the period 1815 to 1842

The period from 1815 to 1842 left its continuing mark on succeeding periods. The lobbying of the members of the NHSM was important to the establishment of the Geological Survey headed by William Logan.[12] Logan in assuming the task in 1842 acknowledged the work of various cultivators, who had preceded him in the field of mineralogy and geology in the Canadas.[13] The practice of geology and mineralogy in the NHSM and the public dif-

fusion of knowledge about the science helped to create the support needed to sustain the Survey. In the 1840s the Survey had its headquarters and museum in rented quarters in the NHSM building. There Logan assembled his specimens in such a way that they displayed in spectacular fashion the fruits of his labours.

In addition, the dissemination of general scientific knowledge enabled William Dawson in 1855 to outline a collegiate course, which was not wholly centered on classical learning. Instead he proposed and received general acceptance for the inclusion of the teaching of science in the Arts program.

Moreover, after fire in February 1856 destroyed Burnside Hall and Dawson's personal natural history specimens, McGill University purchased A.F. Holmes' personal collection of minerals and geological specimens to replace what had been lost. At the same time Holmes presented his personal herbarium of over five hundred plant specimens, collected in the vicinity of Montreal, identified and labeled with the location where each had been found.[14] These two collections, still extant, bear witness to the knowledge of science and the scientific practice of the second quarter of the nineteenth century.

End Notes

[1] David N. Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge* (Chicago: University of Chicago Press, 2003).

[2] Sven Dierig, et al., "Introduction: Toward an Urban History of Science," *Osiris* 2nd series 18, Science in the City (2003): 1-19.

[3] Susan McGuire, "Robert Cleghorn: Nurseryman and Man of Culture," Montreal History: Writings about Montreal, Quebec and Canada. "By 1812, Robert Cleghorn was listed in the Montreal Herald as secretary of the Montreal Floral Society (which became the Montreal Horticultural Society in 1818.)" <http://montrealhistory.org/>

[4] Robert McElroy and Thomas Riggs, ed., *The Unfortified Boundary (diary of Major Joseph Delafield)* (New York: 1943) and H. George Classen, *Thrust and Counterthrust: The Genesis of the Canada-United States Boundary* (Toronto: Longmans Canada, 1965).

[5] The museum in the Montreal Library, which was donated to the NHSM, had geological specimens from the Lachine Canal and the NHSM museum received many boxes of geological specimens from the digging of the Ottawa and Rideau Canals.

[6] Lt.-Col John By was resident in the city during several winters and was elected a member of the NHSM 27 Aug. 1827 but was removed to the non-resident list in 1830. Similarly, John McTaggart, Clerk of the Works on the Rideau Canal elected 30 Jul. 1827, Capt. Daniel Bolton, R.E. elected 27 Aug. 1827, Capt. William Barlow, R.E. and Capt. William King, R.S.C. both elected 27 Sep. 1827, and Capt. Edward J. Cleather elected 26 Nov. 1827 were removed to the non-resident list in 1830.

[7] For example, FTC Arnoldi, M.D. spent two periods in Edinburgh and married a daughter of William Telfer. Two of the Corresponding Members of the NHSM were John Coldstream, M.D. (Edin. 1827) and W.G. Telfer, both from Leith. Sir William Jardine who attended Robert Jameson's classes c 1817-1820 (i.e., at the time when A.F. Holmes and J. Stephenson were there) and William Cormack A.M. (Edin. c 1818) of Newfoundland were Corresponding Members. The same might be true of John Almon, M.D. of Halifax.

[8] Simon Naylor, "The field, the museum and the lecture hall: the spaces of natural history in Victorian Cornwall," *Transactions of the Institute of British Geographers* new series 27 (2002): 495 citing C. Withers, *Geography, science and national identity* (Cambridge: Cambridge University Press, 2001), 187.

[9] Livingstone, *op. cit.* 30.

[10] Suzanne Zeller, *Land of Promise, Promised Land: The Culture of Victorian Science in Canada* (CHA Historical Booklet no. 56, 1996), 2.

[11] *Ibid.* 4.

[12] Logan is difficult to classify. Although he was employed on the survey, he had a large personal fortune and used it to advance the survey's work. He was a sort of professional cum gentleman amateur or vice versa.

[13] Bernard J. Harrington, *Life of Sir William E. Logan, kt., LL.D., F.R.S., &c., First director of the geological survey of Canada. Chiefly compiled from his letters, journals and reports* (Montreal: Dawson brothers, 1883), 333.

[14] Edward Horton Bensley, "Holmes, Andrew Fernando," *DCB* vol. VIII. The botanical collection has recently gained increased attention and prominence because it displays plants that are no longer part of the flora of the Island of Montreal.

Bibliography -

Acronyms

AHR	American Historical Review
APS	American Philosophical Society
BJHS	British Journal for the History of Science
CHA	Canadian Historical Association
CHR	Canadian Historical Review
CIHM/ICMH	Canadian Institute for Historical Microreproductions/Institut canadien de microproductions historiques
CJEPS	Canadian Journal of Economics and Political Science
GRSM	Groupe de recherche sur la société montréalaise au 19e siècle
HEQ	History of Education Quarterly
Hs/SH	Histoire sociale/Social History
HSTC	History of Science and Technology in Canada
IQRC	Institut québécois de recherche sur la culture
IREP	Institut interuniversitaire de recherches sur les populations
PBSC	Papers of the Bibliographical Society of Canada
RHAF	Revue d'histoire de l'Amérique française
UHR	Urban History Review
UQAM	Université de Québec à Montréal

Primary Sources -

Archival Materials for the MMI at the Atwater Library, Montreal

Minute Book of the General Weekly Meetings of the Montreal Mechanics' Institution Established November 21st, 1828.

This Minute Book as well as later Minute Books of the MIM are now on line; this volume is located at: <http://www.atwaterlibrary.ca/sites/default/files/MechanicsInstituteofMontreal(AtwaterLibrary)-1825to1835.pdf>.

Some of the Archival Materials are available on microfiche.

Constitution and Laws of the Montreal Mechanics' Institute (established 1828). Montreal: T.A. Starke, 1833. *CIHM/ICMH Microfiche series = CIHM/ICMH collection de microfiches : no. 60190.*

I consulted a copy of this document in the Lande Collection at McGill University Library in 1992.

Archival Materials for the MIM at the Atwater Library, Montreal

Minute Book of the Mechanics' Institute of Montreal, February 11, 1840 to January 25, 1845. (Includes the Annual Reports 1841 to 1845) *This Minute Book as well as later Minute Books of the MIM are now on line; this volume is located at:* <http://www.atwaterlibrary.ca/sites/default/files/MechanicsInstituteofMontreal(AtwaterLibrary)-1840to1845.pdf>.

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