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Aller au sommaire du numéro

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Résumé de l'article

Cet article analyse la participation de membres de la Compagnie de la Baie d'Hudson à la collecte de spécimens de l'histoire naturelle des territoires d'Amérique du Nord. A travers ces activités, ces collectionneurs devenaient membres des réseaux sociaux de la science victorienne. Bien que les demandes provenaient d'institutions autres que britanniques et américaines, le sens et la valeur des efforts coopératifs des scientifiques et des collectionneurs originaient d'un héritage culturel commun. Cet héritage, qui comprend, entre autres, les écrits de Sir Francis Bacon, les voyages du Capitaine Cook et de Alexander von Humboldt et la philosophie écossaise des Lumières, forme la matrice de l'activité scientifique de l'ère victorienne. C'est dans cet environnement intellectuel qui prirent forme les politiques de la Compagnie et les activités de ses membres.

THE SPIRIT OF BACON: SCIENCE AND SELF-PERCEPTION IN THE HUDSON'S BAY COMPANY, 1830-1870

Suzanne Zeller[1]

ABSTRACT

This article considers in terms of its larger historical context the participation by officers of the Hudson's Bay Company in the social networks of Victorian science, mainly in the collection of specimens of natural history in the vast northwestern territories of North America. While such specimens were solicited by outsiders from British and American scientific institutions, a common cultural heritage gave meaning and value to the cooperative efforts of both scientists and collectors. A sketch of this heritage, in which the writings of Sir Francis Bacon, the voyages of Captain James Cook, the example of Alexander von Humboldt, the scholarship of the Scottish Enlightenment and other factors were alloyed to form the matrix of Victorian scientific activity, forms the focus of the discussion of both the Company's policies and individual initiatives.

RESUME

Cet article analyse la participation de membres de la Compagnie de la Baie d'Hudson à la collecte de spécimens de l'histoire naturelle des territoires d'Amérique du Nord. A travers ces activités, ces collectionneurs devenaient membres des réseaux sociaux de la science victorienne. Bien que les demandes provenaient d'institutions autres que britanniques et américaines, le sens et la valeur des efforts coopératifs des scientifiques et des collectionneurs originaient d'un héritage culturel commun. Cet héritage, qui comprend, entre autres, les écrits de Sir Francis Bacon, les voyages du Capitaine Cook et de Alexander von Humboldt et la philosophie écossaise des Lumières, forme la matrice de l'activité scientifique de l'ère victorienne. C'est dans cet environnement intellectuel qui prirent forme les politiques de la Compagnie et les activités de ses membres.

Employees of the Hudson's Bay Company often collected specimens for scientific institutions during the late 18th and 19th centuries, and historians have explained this

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participation largely in terms of its immediate Canadian and American contexts.2 Yet there remains a still broader historical context from which these activities derived their intellectual foundations. Longterm external cultural forces shifted gears during the period between the reorganization of the company after 1821 and the end of its monopoly powers in 1870. This transformation encouraged fur traders' increasing involvement in the culture of early Victorian science as Baconian ideals gave meaning to their method.

The Hudson's Bay Company's official support of scientific endeavour harked back to the Royal charter of 1670. Along with the Royal Society of London for the Improvement of Natural Knowledge (1660) it had sprung from the empirical ideology best represented in the writings of Sir Francis Bacon. Bacon (1561-1626) had criticized the speculative deductions of the Scholastics, and legitimized inquiry through inductive methods of reasoning as a practical means of both increasing power over nature and improving the quality of human life. For Bacon the essence of the new science was that it was to be natural, methodical and above all social.

Bacon's empirical message was presented in four major works. *The Advancement of Learning* (1605), supplemented in 1623 by *De Dignitate et Augmentis Scientiarum*, was a pioneer achievement in the organization of knowledge, creating a structure that remains intact even in the 20th century. *Novum Organum or True Directions Concerning the Interpretation of Nature* (1620) was his principal work on the inductive method of acquiring real knowledge of the natural world. *The New Atlantis* (1627) conceived, in a highly original form, of inquiry into the natural world as an essentially cooperative undertaking. Bacon depicted a mythical institution he called Salomon's House which traded only in 'light:' its purpose was 'the knowledge of causes, and secret motions of things; and the enlarging of the bounds of human empire, to the effecting of all things possible.' To this end, Salomon's House possessed a vast array of facilities, from experimental laboratories to gardens, zoos and aquaria, with instruments to aid in

2 See for example Carl Berger, *Science, God, and Nature in Victorian Canada*, The 1982 Joanne Goodman Lectures (Toronto, 1983); Greg Thomas, 'The Smithsonian and Hudson's Bay Company,' *Prairie Forum* 10/2 (Autumn 1985), 283-306; Debra Lindsay, 'Peter Fidler's Library: Philosophy and Science in Rupert's Land,' in Peter F. McNally, ed., *Readings in Canadian Library History* (Ottawa, 1986), 209-29.

making direct observations. The key idea behind Salomon's House was the division of labour in the practice of science,3 with important tasks for all levels of skill and degrees of dedication.

Salomon's House was consciously used as a model for the Royal Society, and sanctioned by a monarch who, like the king in the New Atlantis, encouraged the growth of arts and sciences. And like his mythical forebear, Charles II granted the charter of the Hudson's Bay Company partly on the basis of the Royal Society's eagerness to expand the bounds of natural knowledge. As Lord Bacon's spiritual heirs, the two associations were destined to intertwine through a 'cordial reciprocity' in personnel as well as in philosophy. They cooperated over the next two centuries in the continuing tasks of exploration and discovery, especially in the search for both a northwest passage and a southern continent.4

Bacon had recognized the importance of travel to the processes of discovery and invention. He was concerned that during the age of discovery in which he lived, man's expanding geographic vision be matched by a comparable growth in intellectual vision. The appeal of this outlook did not diminish over time; on the contrary, Bacon left to British culture a popular enthusiasm for classifying, naming and cataloguing which was manifested in the amateur naturalist tradition.5 Far from escaping these intellectual and cultural trends, officers of the Hudson's Bay Company at their isolated northern outposts found in natural history not only continued prestige for the company but also an added source of meaning in their lives and a confirmation of their own importance in the wider world. By joining newer and larger social networks for scientific investigation, fur traders subscribed in various ways and degrees to the 'spirit of Bacon' in its popular 19th-century translation.

I

Bacon's enthusiasm for incremental learning, as opposed to the traditional reverence for past achievements, seemed amply vindicated in the late 17th century by Isaac

3 These ideas are from Anthony Quinton, *Francis Bacon,* Past Masters (Oxford, 1980), esp. 32-3, 60, 67-9, 81-3; see also R.S. Woolhouse, *The Empiricists*, Vol. 5 of *A History of Western Philosophy* (Oxford, 1988), 11, 13-14; John Theodore Merz, *A History of European Thought in the Nineteenth Century* (Edinburgh and London, 1923), III, 26-7, 219-20; and Richard Yeo, 'An Idol of the Market-Place: Baconianism in Nineteenth Century Britain,' *History of Science* 23 (1985), 251-98.

4 For these early interconnections see R. Stearns, 'The Royal Society and the Company,' *The Beaver* (June 1945), 8-13; see also R.H.G. Leveson Gower, 'HBC and the Royal Society,' *The Beaver* (September 1934), 29-31, 66; Woolhouse, Ch. 5; Quinton, 67-8. John E. Caswell, 'The Sponsors of Canadian Arctic Exploration,' *The Beaver* (Spring 1969), 4-13; (Summer 1969), 38-45; (Autumn 1969), 26-33; (Winter 1969): 45-53.

5 David Elliston Allen, *The Naturalist in Britain: A Social History* (London, 1976).

Newton's depiction of the universe as a mechanism whose natural laws could be captured by the language of mathematics. Newtonian physics suggested a regulated system which had been set into motion by its Creator, and supported an optimistic natural theology which witnessed *The Wisdom of God Manifested in the Works of Creation*, as John Ray wrote in 1691. Man's destiny within this context seemed to be to discover the preplanned usefulness of nature and to apply this knowledge for his own benefit. On the other hand, the spirit of inquiry implied as well a growing curiosity about man's place in nature and his relationship to other species around him.6 It was within this dichotomous intellectual framework that fur traders who participated in scientific investigations played out their involvement.

Science expanded its geographical scope during the late 18th century through voyages of discovery motivated by practical goals, such as a navigable northwest passage to the east. Other voyages resulted from more specialized scientific missions, such as those sent by the Royal Society to various locations to observe the transit of Venus in 1769. Among the latter was the first voyage of Captain James Cook, the Newton of geographical discovery. Cook's scientific entourage returned from the South Pacific with an unexpected treasure of observations and specimens which greatly enriched the European vision of the world. On a smaller scale, a related expedition to Hudson Bay returned with plant and animal species collected by Andrew Graham, an officer of the Hudson's Bay Company. Graham's contribution was catalogued for the Royal Society by J.R. Forster, who later became the naturalist on Cook's second and third voyages, and it was considered so significant that Graham was asked to continue his efforts.7

Cook's second and third voyages during the 1770s were scientific investigations par excellence, circumnavigations of 'negative discovery' in search of either a southern continent and a northwest passage, respectively, or proof that these did not exist. The growth of his heroic reputation was immediate, especially after his murder in the Sandwich Islands. Stories of his adventures stirred enormous public response and captured the literary imaginations of several generations to follow. 'Circumnavigations

6 Keith Thomas, *Man and the Natural World: Changing Attitudes in England 1500-1800* (London, 1983).

7 Glyndwr Williams, ed., *Andrew Graham's Observations on Hudson's Bay, 1767-91,* Hudson's Bay Record Society, 27 (London, 1969); The Willughby Society, *Forster's Animals of Hudson's Bay* ed. Philip Luitley Sclater (London, 1882), preface; see also E.E. Rich, ed., *James Isham's Observations on Hudson's Bay, 1743*, The Champlain Society, 12 (Toronto, 1949).

of the globe,' remarked J.R. Forster in an official report, had become 'the universal topics' of conversation at all levels of society.8

The unprecedented scientific and geographical successes of Cook's daring voyages eclipsed those of Magellan and Columbus, and raised Cook to the role of archetypal voyager, a model which struck a familiar chord with many fur traders in the Hudson's Bay Company territories. His voyages contributed to the emergence of the separate scientific disciplines Bacon had called for, as his naturalists and astronomers linked their observations in navigation, surveying and meteorology, as well as the specimens they collected in botany, zoology and geology, to variations in geographical location. Their published reports served as models for descriptions of further voyages which influenced the general scientific outlook over the next hundred years.9

After the Napoleonic Wars new factors both intensified and broadened scientific investigation. First, the Royal Navy and other branches of the British armed forces were underemployed. In particular the Royal Artillery and Royal Engineers, scientifically trained corps of the Ordnance Department, justified their retention by providing personnel who could carry out the sorts of scientific surveys in which the government was renewing its interest. Second, the Romantic movement with its emphasis on unity in nature preconditioned even British sensibilities to accept scientific enterprises as the exercise of mind upon nature. From there it was but a small step to perceive in nature the interrelated historical processes through which the living organism now replaced the older, more static, mechanistic models and analogies. These historical processes received widespread acceptance as scientific orthodoxy in the new geology described in Charles Lyell's *Principles of Geology* (3 vols., 1830-33).10

8 Lewis de Bougainville, *A Voyage Round the World,* trans. John Reinhold Forster (Dublin, 1772), vi; for Cook see Daniel J. Boorstin, *The Discoverers: A History of Man's Search to Know His World and Himself* (New York, 1983), 280-89; Robin Fisher and Hugh Johnston, eds., *Captain Cook and His Times* (London, 1979); Michael E. Hoare, 'The Forsters and Cook's Second Voyage, 1772-1775,' in W. Veit, ed., *Captain James Cook: Image and Impact*, I, 109-13. An excellent account of intellectual responses to Cook's achievements is Alan Frost, 'The Pacific Ocean: The Eighteenth Century's "New World",' *Studies in Voltaire and the Eighteenth Century* 152 (1976), 779-822.

9 Frost, 816; C. Ian Jackson, 'Exploration as Science: Charles Wilkes and the U.S. Exploring Expedition, 1838-42,' *American Scientist*, 73 (Sept.-Oct. 1985): 450-61.

10 Trevor H. Levere, 'Elements in the Structure of Victorian Science or Cannon Revisited,' in *The Light of Nature*, ed., J.D. North and J.J. Roche (Dordrecht, 1985), 433-49; Stephen Jay Gould, *Time's Arrow Time's Cycle* (Cambridge, Mass., 1987); Suzanne Zeller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* (Toronto, 1987).

Yet the basis for the integration of idea and effort had already been laid by the scientific explorations of Alexander von Humboldt, who strongly influenced Lyell. Humboldt (1769-1859), widely recognized in his own time as the 'Prince of Modern Science,' was the supreme explorer-scientist of the 19th century and a true heir of the Baconian tradition. Humboldt was emulating Georg Forster, the son of Cook's naturalist who had accompanied his father on the second voyage, when he undertook to observe the complex interrelations of natural phenomena on a worldwide scale. His *Personal Narrative of Travels to the Equinoctial Regions of America during the years 1799-1804,* published in 1807 and translated into English between 1814 and 1826, was widely admired and formed the basis of modern physical geography.11

Humboldt's broad perspective on nature highlighted the importance of the geographical dimension to the conceptual progress of science. 'I flattered myself,' he confessed,

> that our investigations might add some new species to those already known, both in the animal and vegetable kingdoms: but ... the discovery of an unknown genus seemed to me far less interesting than an observation on the geographical relations of the vegetable world, on the migrations of the social plants, and the limit of the height which their different tribes attain12

in various locations. While the *Personal Narrative* reinforced the empirical approach to nature, it also drew attention to the larger mental framework necessary to comprehend it. Humboldt welcomed narratives by informed voyagers into distant regions, since his own journey had brought to light much which had escaped the notice even of 'discerning' travellers who had pursued the same route before him.13

Of greatest importance, according to Humboldt, was his shift in focus from the sea voyage to overland travel in order for any real natural knowledge to be gained. 'It is not by sailing along a coast,' he pointed out, but by investigating the interior of the continent 'that we can discover the direction of chains of mountains, and their geological constitution, the climate of each zone, and its influence on the forms and habits of organized beings.' In particular, he renewed attention to the American hemisphere as an indispensable field for future investigation: 'On no other part of the globe,' he contended, 'is [man] called upon more powerfully by nature to raise himself to general ideas on the cause of phenomena and their mutual connection.'14

11 See M.J. Bowen, 'Mind and Nature: The Physical Geography of Alexander von Humboldt,' *Scottish Geographical Magazine* 86 (1970): 222-33; Frost, 820-22; on 'Humboldtian science' see Susan Faye Cannon, *Science in Culture: The Early Victorian Period* (New York, 1978).

12 Alexander von Humboldt, *Personal Narrative*, trans. and ed. Thomasina Ross (London, 1907), Vol. I, ix-xi. See also Malcolm Nicolson, 'Alexander von Humboldt, Humboldtian Science and the Origins of the Study of Vegetation,' *History of Science* 25 (1987): 167-94.

13 Humboldt, *Personal Narrative,* Editor's Preface (1851), iii-iv.

14 Humboldt, *Personal Narrative,* Introduction, ix, xxi-xxii.

This focus upon America was narrowed to the hemisphere's more northerly reaches by renewed public interest in the location of the north magnetic pole after several British polar expeditions in 1818 and 1819. By the 1830s Humboldt, now the foremost authority on terrestrial magnetism, encouraged Captain Edward Sabine of the Royal Artillery, who had served as the astronomer on these expeditions, to distribute standardized instruments and methods in order to pursue accurate and comparable measurements of patterns in the earth's magnetism on as grand a scale as possible.

Humboldt also emphasized the importance of institutional, including government, support to the viability and longterm success of largescale scientific investigations. In 1835 he was pleased to see the formation of the German Magnetic Association under the direction of the mathematician C.F. Gauss, and he himself attained the cooperation of the massive Russian empire to the same end. In 1838 Sabine had convinced both the Royal Society and the more recently organized British Association for the Advancement of Science (BAAS) to cooperate by adding a chain of observatories across the entire length and breadth of the British empire. The British government was induced to fund the project under the army's Ordnance Department, with Royal Artillery officers as observers under Sabine's supervision. Within a year the American Philosophical Society at Philadelphia threw its support behind the plan as well. The project was toasted as 'by far the greatest scientific undertaking which the world had ever seen.'15

As the most prominent of many scientific institutions, both formal and informal, in Britain, the BAAS had been founded in 1831 on consciously 'Baconian' principles, to promote just the kind of cooperation among cultivators of science in different parts of the British Empire and elsewhere which the network of observatories represented. As the most important scientific organization in early Victorian Britain, it encompassed the complete range of sciences and met peripatetically, as Bacon had prescribed in The

15 John Cawood, 'The Magnetic Crusade; Science and Politics in Early Victorian Britain,' *Isis*, 70/254 (1979): 493-518; G. Waldo Dunnington, *Carl Friedrich Gauss: Titan of Science* (New York, 1955), Ch. 13; Jack Morrell and Arnold Thackray, *Gentlemen of Science* (Oxford, 1981), 354-70, 517-27; American Philosophical Society, *Proceedings* 1/7 (Aug. 1839): 104, 111; 1/8 (Sept. 1839): 116-17; 1/9 (Dec. 1839): 148, 151-52.

New Atlantis, in order to promote its image as a public expeditionary force dedicated to the 'advancement' of science for the 'relief of man's estate.'16

The association appreciated the obvious importance of the Hudson's Bay Company's territories as a quarry of information about the north magnetic pole. The land lay due south of the north magnetic pole of verticity, where the needle dips 90 degrees, discovered by James Clark Ross in 1831; waiting, to be discovered somewhere in the vicinity lay the pole of intensity, where the magnetic force was greatest. In 1839 the president of the BAAS proudly anticipated an unbroken chain of observations 'from Montreal to Madras.' In the same vein, the institutional awakening of science was marked by the rise and/or increasingly farflung activities of the British Museum, the Royal Scottish Museum, the Royal Botanical Gardens at Kew and Edinburgh and the Smithsonian Institution at Washington during the 1830s and 1840s.17

As important as institution-building was to the promotion of largescale scientific investigation in the early 19th century, so too were the premises which underpinned it. The first was the Baconian assumption that science was primarily a social enterprise, a community activity generated both by a community of co-workers and for the community at large.18 Even a growing philosophical debate over scientific method did not dislodge this most basic assumption about how scientific knowledge could best be gained, and instead confirmed the centrality of Bacon's ideas to such inquiries.19 From the 1820s onward, Baconian doctrines emphasizing empirical observation and collaborative endeavour served as an ideological tool to differentiate science from both theological controversy and the sensitive political problems heightened by industrialization. They appealed to moderate English reformers who abhorred intellectual arrogance and indolence in the universities and who instead stressed careful

16 Roy Macleod, 'Introduction on the Advancement of Science,' in *The Parliament of Science,* ed. Roy MacLeod and Peter Collins (Oxford, 1981), 18-19; A.D. Orange, 'The Beginnings of the British Association 1831-1851,' in ibid., 48-9; see also the discussion in Susan Faye Cannon, 'The Founding of the BAAS,' in her *Science and Culture,* 201-24; and D. R. Stoddart, 'The RGS [Royal Geographical Society] and the "New Geography": Changing Aims and Changing Roles in Nineteenth Century Science,' *Geographical Journal* 146 (1980), 190-202 and S.H. Beaver, 'Geography in the British Association for the Advancement of Science,' ibid. 148/2 (July 1982), 173-81.

17 BAAS, *Annual Report* (1839): xxi, 3-4; (1841), 42. The observatory was actually built in Toronto. See also Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York, 1979); and Edward Miller, *That Noble Cabinet: A History of the British Museum* (Athens, Ohio, 1974).

18 John F.W. Herschel, *A Preliminary Discourse on the Study of Natural Philosophy* (f.p. 1830) (Chicago, 1987), foreword by Arthur Fine, xiii.

19 Cannon, 203-05; Yeo, 'Idol of the Market-Place,' 276; Richard Yeo, 'Scientific Method and the Image of Science, 1831-1891,' in Macleod and Collins, eds., *Parliament of Science,* 65-88.

methods of inquiry as the key to the redemption of man's estate. As such, they also attracted both evangelicals and utilitarians, who noted the cultural and educational value of science as a public activity.20

Just as important to the preservation of the 'spirit of Bacon' in the 19th century was the role of Scottish Common Sense philosophy, which dominated much of British and American thought until the 1860s. A vital component of the Scottish Enlightenment, Common Sense with its strong utilitarian bent held particular respect for the Baconian heritage. In addition, the natural history tradition which had gained in popularity in Britain among the middle and upper classes found reinforcement in the Scottish general public because of the system of popular education which included science as a useful subject, and because of the prominence of natural science at the University of Edinburgh.21

II

The most obvious example of the impact of these broad cultural developments on the Hudson's Bay Company was in the public image projected for the company by its governor, Sir George Simpson (1786 or 1787-1860), after 1821. Surprisingly little is known about Simpson's private life, which he strove to distinguish from the public persona he cultivated so carefully. One reason may have been that he was born out of wedlock; but it is known that he was raised by relatives and educated at a parish school in the Scottish highlands. The resulting impression is somewhat paradoxical: Simpson's reputation as a skilful but ruthless businessmen who behaved liked a pompous 'canoe executive' contrasts with evidence of a 'man of feeling' who also expressed sentiments and sensibilities appropriate to the age in which he lived.22

While on the one hand Simpson eschewed notoriety, on the other hand he also sought out the recognition of both his peers and his betters.23 He reinforced his authority in the company by means of arduous canoe trips of record length completed in record time. Aside from such displays of physical stamina, Simpson publicly supported interests shared by the leaders of the society in which he lived and functioned. He accordingly included scientific activities in his interpretation of the clause of the company's charter promoting endeavours tending to the public good.

20 Yeo, 'Idol of the Market-Place,' 284-286; Allen, *Naturalist in Britain*; Morris Berman, *Social Change and Scientific Organization* (London, 1978).

21 Roy Porter, *The Making of Geology* (Cambridge, 1977), 152, 171-73.

22 John S. Galbraith, 'The Enigma of Sir George Simpson,' *The Beaver* 306 (Spring 1976): 4-9; Galbraith, *The Little Emperor* (Toronto, 1976); DCB X, 812-19; Elaine Allan Mitchell, 'Sir George Simpson: 'The Man of Feeling',' in *People and Pelts*, ed., Malvina Blous (Winnipeg, 1972), 83-101.

23 Galbraith, 'Enigma,' 4.

Simpson had shown himself prepared to aid the social and business elites of Montreal by supporting their Natural History Society. In 1827 the new society appointed an 'Indian Committee' to collect information on the native tribes, the physical geography, and the natural history of the British North American interior, with an eye to assessing its agricultural and commercial potential. Simpson represented the Hudson's Bay Company's willingness to help the society to collect specimens from within its territories, and he permitted the distribution to company posts of printed surveys consisting of 253 questions for a preliminary inventory. Valuable written replies were duly received, but specimens intended for the society were instead ordered home by the London Committee, and bypassed Montreal altogether.24

Nearly a decade later, in 1837, when the society could afford the purchase of only one important work, it chose a ten-volume set of Bacon's works. Having determined, in true Baconian spirit, to record meteorological observations in aid of a larger search for longterm North American weather patterns, the society was again pleased with Simpson's 'ready concurrence.' He promised Judge J.S. McCord that he would have regular meteorological journals kept at company posts, and the Natural History Society thereupon sent standardized instructions for distribution to company officers. It eagerly anticipated these supplements to earlier company donations of information. Meteorological registers from company posts were later published in the *British North American Journal of Medical and Physical Science*, founded at Montreal in 1845, in the hope not only of establishing maximum, minimum and mean temperatures for all of British North America, but also of correlating these statistics with periodic outbreaks of epidemic diseases. Still, the submissions were found to be inaccurate and 'very imperfectly executed,' a problem attributed to their image as 'a task and a bore.' The best way to 'draw forth [more] really useful labour than all the orders and requests of all the wisemen in London' still seemed to be for scientific societies to encourage observers to cooperate, and then to coordinate their activities. The traders, it seemed, had to be gotten to identify with the scientific responsibilities they were being asked to undertake.25

Simpson's active support of scientific inventories in the Hudson's Bay Company's territories echoed in the impression he gave of being *au courant* of the scientific teachings of his time. This image was carefully cultivated in his *Narrative of a Journey Round the World During the Years 1841 and 1842* (London and Edinburgh, 1847), a task

24 McGill University Library [MUL], Natural History Society of Montreal [NHSM], 'First Report of the Indian Committee,' 26 May 1828; NHSM, *Annual Report* (Montreal, 1830), 3-4; Thomas, 285.

25 MUL, NHSM, Minutes of the Council (1833-40), 21 April 1837; Montreal *Gazette* 19 Jan., 25 Apr., and 13 June 1837; 2 Aug. 1838; 3 Jan. 1839; BAJ 1/1 (Apr. 1845): 30, 1/3 (June 1845): 86; 2/4 (Aug. 1846): 89; Public Record Office [PRO], Metrological Office [MO], Part VI, J.H. Lefroy to Edward Sabine, 27 March 1844 (mfm).

Simpson deemed so important that he commissioned ghost-writers to supplement his notes with appropriate background materials. He took great pride in his overland circumnavigation of the globe as a rare combination of Cook's and Humboldt's achievements. Simpson moreover claimed he had surpassed earlier overland attempts not only by crossing both the Russian empire and British America, but also by visiting California and the Sandwich (Hawaiian) Islands. In the few years since his return, he boasted, he had 'nearly doubled' the distance covered during his overland journey.26

Simpson had undertaken the overland circumnavigation in 1841 after assisting the arctic explorations of Thomas Simpson and Peter Warren Dease. He was entrusted with the dual task of settling business affairs between the company and its Russian counterpart, and advising the British government on troubles brewing over the Oregon boundary. After crossing the continent to the Pacific coast he, like Cook before him, visited locations along the western coast and then crossed to the Sandwich Islands, where the company had an agency. From there he returned to Sitka, then continued to Ochotsk and back to England by way of Siberia and Europe.

Indeed, Cook's voyages had preconditioned Simpson to experience the journey in a particular way. With a rare candour the *Narrative* explained that Simpson had made good use of the time at sea by extensive reading. Books, it declared, offered not only 'our best auxiliaries in the grand business of killing time;' they also 'prepare[d] one, by means of reading, to profit by what one [might] see and hear on the land.'27 Since he suffered from serious eye problems, Simpson actually employed Thomas Lowe to read to him on deck. The *Narrative* alludes often to the published narrative of Cook's voyage, and compares it to the report of Vancouver's circumnavigation (1790-95). Georg Forster's published account of Cook's voyage emphasized the importance of the narrative approach, as opposed to the mere 'unconnected philosophical observations' his father had to submit to the Royal Society. The same facts, Forster realized and passed on to Humboldt, evoked different ideas in different people, and voyagers therefore had a particular responsibility to provide a 'philosophical history' of their travels. Cook fascinated Simpson, who reported proudly that even the Russian Baron

26 Simpson, *An Overland Journey Round the World* (Philadelphia, 1847), v; Glyndwr Williams, ed., *Correspondence Inward from Sir George Simpson 1841-42*, Hudson's Bay Record Society, 29 (London, 1973), App. B, 'The Authorship of Simpson's *Narrative*,' 184-96.

27 Frederick Merck, ed., *Fur Trade and Empire: George Simpson's Journal*, reprint ed. (Cambridge, Mass.; 1968), 111. The narrative of the second overland journey is published as Archibald Macdonald, *Peace River*, ed. Malcolm McLeod (Ottawa, 1872). Simpson, *Narrative of an Overland Journey* I, 415; Williams, 'Authorship of *Narrative*,' 187-88.

von Wrangell admitted to the superiority of the British navigator's geographical and scientific achievements.28

Forster's description of Cook's voyagers mentions the landscape painter William Hodges, and Simpson's perceptions too were framed partly in conventional aesthetic terms. 'Our encampment,' he wrote in the language of the picturesque, 'would have formed a rich and varied subject for a painter's brush. ... The foreground consisted of two or three magnificent trees on a slight eminence; and the background was formed by dense woods and a gleaming lake.'29 West of Lake Superior he noted familiar varieties of trees, wildflowers, fruits, birds and butterflies along the Kiministaquoia River that 'reminded us of the rich and quiet scenery of England,' and contrasted all the more sharply with 'the adamantine deserts of Lake Superior.'30

Never far from the surface, it seems, was the darker, fearful side of the sublime, the disorientation in a barren landscape that quite commonly led to an 'aesthetic despondence.'31 Like other travellers of his age, Simpson felt alienated by the 'barren rocks' and 'forbidding wastes' of the north shore of Lake Superior. The grim reality that 'serious disasters had occurred and might occur again 'suggested itself to him in the graves of two recent victims of drowning found near his campsite. Simpson oriented himself in ways calculated to preserve his sense of place, and his identity particularly as a Scot. While in the Rockies he

> met an unexpected reminiscence of my own native hills in the shape of a plant, which appeared to me to be the very heather of the Highlands of Scotland; and I might well regard the reminiscence as unexpected, inasmuch as, in all my wanderings of more than twenty years, I had never found anything of the kind in North America. As I took a considerable degree of interest in the question of the supposed identity, I carried away two specimens, which, however, proved, on a minute comparison, to differ from the genuine staple of the brown heaths of the 'lake o' cakes.'32

Traditional aesthetically based perceptions, Simpson understood, could be modified by science. As early as the 1820s he had shown himself an heir to the Baconian legacy of the division of labour in scientific investigation when he recognized in the Columbia

28 Simpson, *Narrative* II, 215, 418, 422; Georg Forster, *A Voyage Round the World*, 4 vols., (Dublin, 1777), III, vi, viii-ix; this narrative was intended by the younger Forster to supplement his father's *Observations During a Voyage Round the World* (London, 1778).

29 Simpson, *Narrative* I, 17, 79.

30 Simpson, *Narrative* I, 36.

31 Simpson, *Narrative* I, 20; I.S. Maclaren, 'The Aesthetic Mapping of Nature in the Second dition Franklin Expedition,' *Journal of Canadian Studies* 20:1 (Spring 1985), 43, 49; John Barrell, *The Idea of Landscape and the Sense of Place* (Cambridge, 1972); Chauncey C. Loomis, 'The Arctic Sublime,' in U.C. Knoepfmacher and G.B. Tennyson, eds., *Nature and the Victorian Imagination* (Berkeley, 1977), 99-101.

32 Simpson, *Narrative* I 120; Maclaren, 39-57.

River valley 'a wide field for botanical research as there is a very great variety of Plants to be found every where.' He therefore regretted

> exceedingly that my ignorance of that interesting branch of Science prevents my attempting an description of them. Indeed any one of experience in the study of natural history generally would add much to his stock of knowledge therein by a visit to this part of the World. [Nevertheless,] Specimens of every kind within our reach will this season be sent Home as I have given directions to that effect at the different Establishments being unable to attend thereto myself.33

Geology too helped orient the traveller to the lands he traversed. The wastes of the north shore of Lake Superior no longer appeared quite as forbidding after the provincial geologist, [Sir] William Logan, discovered 'inexhaustible treasures both of the precious and of the useful metals' there. In 1847 Simpson joined a consortium, the Montreal Mining Company, to develop copper mines in the region. He viewed the falls of Lake Talon in terms of the Wernerian theory of the aqueous origins of geological formations, a theory prevalent in Scotland during his youth, as 'a striking proof that the waters of this country must once have occupied a much higher level.'34 A later passage suggests familiarity with the more recent theories of [Sir] Charles Lyell. The *Narrative*'s description of the Sandwich Islands speculates about the volcanic origins of the archipelago in uniformitarian terms, as 'the successive gifts of years, and ages, and centuries.' Moreover, the islands are depicted as 'visible laboratories of the subterranean fire' in the earth's core. In borrowing from the phrasing of Lyell's *Principles of Geology*, Simpson's ghost writers at the very least wished to convey that Simpson understood and accepted current theories of both the igneous origins of such formations and the everyday processes constantly reshaping the earth's crust.35

Simpson's travels heightened his awareness of the curiosity and general interest aroused by the natural resources of the Hudson's Bay Company's vast territories, and there is no doubt that he was a master at public relations in this regard, the more so because he found it necessary to enhance his image in the *Narrative* with help from

33 Simpson, *Narrative* I, 415.

34 Simpson, *Narrative* I, 24; for Simpson's mining activities see Zeller, *Inventing Canada*, 68-71.

35 Simpson, *Narrative* II, 420-22; cf. Lyell, *Principles of Geology*, I (London, 1830), 314, on 'the agency of subterranean fire' at work in volcanic regions.

others. But he also presented a set of thoroughbred 'Esquimaux' pups to the London Zoological Gardens and to various British dignitaries, and was 'very desirous' that the British Museum be accommodated in its call for 'fine specimens of all the animals' in the company's territories; reindeer [sic], rabbits, common willows, and the eggs of the Great Auk were in demand from the company's suppliers. Simpson himself took notice of fossils during his voyages; one in particular was 'a log of wood about six feet in length, and four or five in girth; the resemblance being so complete, as even to deceive the eye.' Over the years he also sent boxes of specimens to Sir William Logan, director of the Geological Survey of Canada.36

Simpson's appetite for association with great men and great causes37 was reinforced by the sympathy with large scientific projects such as Edward Sabine's magnetic crusade. After his return to London from Siberia Simpson agreed to the request of the Royal Society for his support of a geomagnetic expedition into the Hudson's Bay Company's territories, to be undertaken by Lt John Henry Lefroy of the Royal Artillery as part of Humboldt's worldwide scheme. Simpson granted Lefroy a *carte blanche* for assistance and provisions, to be charged to the account of the Royal Society. Lefroy's mission was 'important and interesting,' Simpson informed his officers, and he asked that 'every facility and assistance he may request and which the circumstances of the country and services may admit be afforded him.' This included a minimum of two hours per day during which the brigade he travelled with to the Northern Department had to allow Lefroy time to make his observations; the two routines ran inevitably into conflict. Lefroy was also allowed the liberty 'to proceed to any part of the country he may desire,' and was to be treated with the 'kindest personal civilities & attentions.'38

Simpson infected Lefroy with his enthusiasm for overland journeys, much to the chagrin of Lefroy's military superiors. Even before embarking on his gruelling 5000-mile trek as far north as Fort Good Hope near the Arctic Circle, Lefroy confessed later, a conversation with Simpson at Lachine in April 1843 had seen his 'fancy firmly possessed' by dreams of an overland magnetic survey around the globe. Indeed, Simpson had helped him to plan a proposed second phase of the survey to be carried

36 National Archives of Canada, Upper Canada State Papers, Series G83, Lord Glenelg to Francis Bond Head, 14 October 1837, 26; University of Toronto Library, James Hargrave Papers (mfm), Reel 134, Simpson to Hargrave, 8 June 1840, 1844; Reel 135, A. Barclay to Hargrave, June 1844, 2948; Barclay to Hargrave, 6 June 1845, 3273; Reel 138, copy, G.D. Rowley to W.G. Smithby, 11 March 1856, 6060; Simpson, *Narrative* I, 101; McGill University Archives, Sir William Logan Papers, Simpson to Logan, 11 March 1856.

37 George Simpson, *London Correspondence Inward 1841-42*, ed., Glyndwr Williams, Hudson's Bay Record Society, Vol. 29 (London, 1973), xii.

38 Hargrave Papers, Reel 135, Simpson to Gentlemen in Charge of Districts and Posts, 26 April 1843, 2566-70; PRO, MO, Part VI, Lefroy to Sabine, 14 Feb. 1845, #53; 10 Feb. 1845, #51.

out the following year, a replica of Simpson's own overland circumnavigation, complete with stops at the Sandwich Islands and St Petersburg. Simpson's earliest orders regarding Lefroy were addressed even to company officers at the Sandwich island depot. This second phase was never carried out, largely because of embarrassing confusion over who was to foot the bill for the first survey of 1843-44. But Simpson was so interested in filling gaps in the known geography of the company's territories that he did manage to extend the scope of Lefroy's magnetic survey more considerably than the soldier-scientist's orders stated.39

Lefroy's survey firmly integrated the Hudson's Bay Company's territories into scientists' considerations, and the orders to accommodate him henceforth applied as well to 'any person that might be sent to the country for botanical or other scientific pursuits.' The first to benefit from this open policy was Joseph Burke, a plant collector sent by Sir William Jackson Hooker of the Royal Botanic Garden at Kew in 1843. In addition, officers of the company were instructed by Simpson to renew regular meteorological observations, and to add to these observations of any appearances of the aurora borealis, Lefroy's new scientific passion at the Toronto observatory.40

Simpson's obsession with overland travel was transmuted after Lefroy's survey into support for a series of arctic expeditions, including one led by Dr John Rae of the company itself, to search for Sir John Franklin's expedition and to settle the question of the Northwest Passage. The company was entering a period of uncertainty, and by mid-century some of the officers too were identifying with organized scientific interests farther afield, including the Smithsonian Institution in Washington.

III

Both George Simpson's awareness of the political advantages for the company of his support for scientific investigations and his appeal to science in shaping his own images and perceptions were shared by company officers. Donald Ross (1797?-1852) at Norway House recognized in 1845 that :

39 Hargrave Papers, 2566; PRO, MO, Part VI, 'Route for Lt. Lefroy from 1843 to 1846 recommended by Sir George Simpson,' 25 April 1843, #19; Lefroy to Sabine, 28 April 1843, #22; 22 January 1845, #48; 1 May 1845, #67; 25 June 1847, #73; Part IV, Sabine to A. Barclay, HB House, 5 Dec. 1844, 82.

40 *Canadian Journal of Science, Industry and Art* 2 (May 1854): 241-5; Hargrave Papers, Reel 135, 2566; Lefroy to Hargrave, 6 June 1846, 3456; A. Barclay to Hargrave, 2 June 1843, 2608; Reel 141, Hargrave to Simpson, 17 Aug. 1843; Royal Botanic Gardens (Kew), Sir William Jackson Hooker Papers, North American Letters, Simpson to Earl of Derby, 5 Dec. 1843, 558; PRO, MO, Part VI, Lefroy to Sabine, copy addressed to officers of the HBCo, 19 April 1850, #217.

we shall soon require the assistance of the 'strong arm' of the Government, on both sides of the Rocky Mountains, and it can only be, of the liberal use of the means and power we possess, towards the advancement of religion, knowledge, civilization, science, and discoveries, throughout our widespread possessions, that we can hope to receive any sympathy or support from the government or the nation at large, in our true character of 'monopolists' we need expect but little favour.41

While Ross would not be drawn into scientific observing for at least a couple of years, some of his colleagues had already enlisted in the growing armies of collectors of specimens.

Several factors help to explain why fur traders after the company's merger with the North West Company in 1821 allowed themselves to be drawn into larger scientific networks. First, the 1820s had been a decade of reorganization, reorientation and therefore of confusion and redefinition. The feeling of alienation and of the need for attachment to some larger culture found frequent expression in traders' and others' personal letters. 'Some how I feel,' wrote Edward Smith, a senior officer, from Fort Churchill in 1833, 'the want of intellectual *society*.' Still, he concluded, 'it is an era in our lives, [and] there is something even here to learn.' But what would that something be? 'What on earth,' mused the Rev James Evans, a Protestant missionary at Lesser Slave Lake in 1841, 'can make me happy, particularly in this region, where the means of grace are so rarely met with?' John Bell at Fort Simpson judged that it was not to be belles lettres. He shared the fear engendered by a centuries-old myth that northern climates debilitated the mental processes and made northern peoples deficient in both the arts and politics: 'Our cold climate,' he wrote in 1850, 'is not prolifick in producing legends of fiction, which might by acute delineators be palmed on the public for genuine narratives.'42

Cultural historians of science have attempted to explain the popular attraction and role of science in Britain during the early decades of the 19th century by suggesting that during times of dislocation individuals who feel marginalized suffer from a problem of identity. The dislocated attempt to regain their sense of belonging by somehow distinguishing themselves as a social type separate from the whole. In this way, the 'marginal man' utilized the institutions and groupings of science culture, first to gain and then to

41 Hargrave Papers, Reel # 135, Ross to Hargrave, 29 April 1845, 3229.

42 Hargrave Papers, Reel 133, Edward Smith to Hargrave, 10 December 1833, 661-63; Bell to Hargrave, 28 November 1850, 4616; see also William Cochran to Hargrave, 2 May 1832, 420, on 'the strange indolence which seems to pervade the natural constitution of this country'; and Z.S. Fink, 'Milton and the Theory of Climatic Influence,' *Modern Language Quarterly,* 2 (1941): 67-81; Reel 134, Evans to Hargrave, 2162.

propound a social identity.43 Such a model may help to explain the motivation of fur traders who collected specimens for larger networks of scientific investigation. If George Simpson promoted scientific investigations in order to satiate both his private and his public need for acceptance and recognition, how much more natural it was for some of his officers, who had far less control over their lives, to follow suit. Like George Simpson when he was not travelling, other officers seem to have suffered from bouts of depression when they were not engaged in activities they deemed worthwhile or intellectually uplifting.44

Most of those who did turn to science were Scots, and not only because by the 1830s Edinburgh, like London, served as an important metropolis for the diffusion of science into its cultural hinterland, including many Scottish immigrants to British territories in North America. Science appeared to be a value-neutral pursuit in an age when political lines and ideology were becoming increasingly convoluted. 'I cannot for the life of me,' insisted the explorer Thomas Simpson, 'see what a purely scientific undertaking has to do with whig or tory, radical or conservative.' His friend Donald Ross noted more shrewdly, 'From Hudson's Bay to Imperial politics, the *Distance* is great, but the transition may be short.'45

Another reason for the Scots' increasing attention to science was their intense interest in Scottish culture. The death of Sir Walter Scott in 1832 seemed to mark the end of a golden era in Scottish literary achievement. Scott's Waverley Novels in particular had since 1819 delighted readers in unprecedented numbers with their sympathetic reproduction of Scottish national characteristics, their focus on history and legend, their vivid impressions of the scenery and their concern with older social forms broken down by revolution. 'The oftener I peruse these wonderful productions,' wrote Donald Ross in 1834, 'the greater is my admiration of that sublime genius which brought them into existence--compared with them, how miserably poor and barren are the thousand and one volumes which the present day brings forth!' Now, he lamented, 'The great master spirits of the age, Scott and Byron are gone ... There is no want of writers, but who will again shoulder Goliath's staff?' 'Our native country,' added John Bell, 'has lost her brightest genius by the lamented Death of that truly great man Sir Walter Scott. His name and writings will live to posterity, few Scotchmen (if any) have arrived at such

43 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, 1983), 40-41.

44 Cf. Hargrave Papers, Reel 133, George Barnston to Hargrave, 26 March 1826, 83; 14 April 1826, 85; 17 February 1828, 142.

45 Steven Shapin, '"Nibbling at the Teats of Science": Edinburgh and the Diffusion of Science in the 1830s,' in Inkster and Morrell, eds., *Metropolis and Province*, 151-78; Hargrave Papers, Reel 134, Simpson to Hargrave, 30 April 1839; Reel 135, Donald Ross to Hargrave, 10 December 1845, 3371.

eminence in literature, and his demise is a national calamity.' The irreplaceable loss of Scott as a symbol of the best in Scottish culture dealt a blow which had somehow to be eased. The founding of Queen's University at Kingston in 1842, for example, as a 'Scotch College' to foster the sciences as well as the usual ecclesiastical subjects, received financial support among Scottish fur traders as a symbol of the continued presence and impact of the Scots in the New World.46

But the Scottish tradition of natural science connoted above all an active participation in the gathering of useful knowledge, and it was to direct involvement that some fur traders turned. A few examples prior to 1850 included James Keith, who sent plants and minerals to the Natural History Society of Montreal in 1831; Dr William Todd, plants from the shores of Lake Huron to Sir William Hooker's Flora *Boreali-Americana*, published in 1833; John Siveright, a meteorological register for publication in the *British American Journal* in 1845; Dr William Smellie, plants from York Factory to Kew Gardens in 1847; Archibald McDonald, seeds and specimens from the Rocky Mountain region, earning him an honourary membership in the Royal Horticultural Society, and whose daughter later married the son of George Barnston, James, a botanist trained at Edinburgh and first professor of botany at McGill College; Dr William Fraser Tolmie, whose connection with the Hudson's Bay Company began through his friendship with W.J. Hooker; William Mactavish, insects and plants for both British and American scientific institutions; John Charles, who took under his wing the young botanical collector John Jeffery sent to the company's territory by the Botanical Society of Edinburgh in 1850; and even the reluctant Donald Ross, recruited to keep a register of wind directions at Norway House for an American professor, probably James Pollard Espy.

The most fully developed example, however, is that of George Barnston (1800-1883), an Edinburgh native educated at the Edinburgh High School and a former Nor'Wester. Barnston's reputation as a naturalist has been noted by his biographers, but the crucial role played by this activity in Barnston's perceptions of himself, his career and his environment warrants further attention. Noticed early in his career as 'the cleverest young fellow now in the Service,' Barnston showed promise not only as a fur trader but also as an explorer. But he was also a highly reflective, introspective and well read person who compared his life to The Pilgrim's Progress. Barnston fretted about his usefulness in the trade, and although he missed Scotland terribly he refused to return until he had established himself, choosing instead to 'drag out my days in the land of the stranger.' At the age of thirty Barnston looked back with regret and pain on the years he had spent in the 'Indian country,' wishing he had 'improved the advantage

46 Hargrave Papers, Reel 133, Ross to Hargrave, 23 December 1834, 902; Bell to Hargrave, 1 February 1835, 962; Reel 134, James Keith to Hargrave, 11 April 1840, 1821.

which a liberal education' had given him. Instead, he believed, he had devoted too many hours to 'frivolous amusement and unprofitable ease.'47

During these early years in the company Barnston encountered the Scottish botanical collector David Douglas (1799-1834) at Fort Vancouver. Douglas, after whom the Douglas fir was named, had been sent by the Royal Horticultural Society of London to procure every specimen 'likely to prove useful or interesting' to the British gentry's new mania for exotic plants for their gardens. North American plants were particularly sought after because they were more easily assimilated to the British climate than plants from the South Pacific. The two Scots corresponded after Douglas' departure. Douglas, Barnston judged with considerable exaggeration, had 'done more for the promoting of Botanical Science than any one of late times, with the exception of Sir Joseph Banks & the celebrated Humboldt.' He was deeply shocked to learn in 1836 that Douglas had met an untimely death in the Sandwich Islands two years earlier, gored by a bull under mysterious circumstances.48

Douglas's memory never left Barnston, who undertook an extensive obituary published much later in the journal of the Natural History Society of Montreal. Perhaps partly but certainly not solely because of Douglas's example, Barnston began to take an active interest in natural history. He had always worked consciously to keep up his reading, and felt 'edified' by 'the researches of unpretending Wisdom, Deep Knowledge, & modest philosophy' embodied in Alexander von Humboldt's *Personal Narrative.* Recognizing the 'sense of delight, which a Traveller feels, when he stops to regard the Beauties of a verdant and flowering meadow, in the midst of a bleak and inhospitable plain,' Barnston turned first to geology, a pastime which 'makes every step I take through the Country delightful to me, and enables me to draw sparks of satisfaction even from the obdurate Rock & ... Mountain.' Moreover, he noted, 'It puts me beyond the reach of restless care, and softens the gloom of many a tedious and thoughtful hour.'49

Barnston's love for natural history survived several transfers and manifested several focal shifts. At Martin's Falls in 1837 he had amassed a large collection of insects and

47 Hargrave Papers, Reel 133, James Mactavish to Hargrave, 1 January 1824, 17; Barnston to Hargrave, 2 June 1826, 96 and 30 July 1826, 101 and 15 March 1830; Joseph McGillivray to Hargrave, 12 February 1831, 297.

48 Royal Horticultural Society of London, *Transactions* 5 (1821-22): iv-v; William Jackson Hooker, 'On the Botany of America,' *American Journal of Science* 9 (1925):264; Athelstan George Harvey, *Douglas of the Fir* (Cambridge, Mass., 1947); William Morwood, *Traveller in a Vanished Landscape* (London, 1973), 11-12; John Davies, *Douglas of the Forests* (Seattle, 1980), 25; Hargrave Papers, Reel 133, Barnston to Hargrave, 17 July 1834, 825; Reel 134, 5 Feb. 1836, 1161: [Douglas,] 'thy shade is now before me, now shrieks for assistance -- I yet hear the dismal and heart rending moans of my ill fated friend. Was there no hand to help? Could no arm save?'

49 *Canadian Naturalist and Geologist* 5/2 (April 1860):120-32, 208ff.; Hargrave Papers, Reel 133, Barnston to Hargrave, 17 July 1834, 825; 28 January 1833, 501; 11 June 1833, 604.

was learning to classify them with the help of books and a microscope. Entomology was 'not so dry a study as Geology by half,' and taught him more than mere taxonomy. Following tentatively in the footsteps of the much admired Humboldt, Barnston began to doubt the pessimistic old adage concerning the deleterious effects of a cold northern climate upon living species. The unexpectedly large size of the insect genera he collected suggested to him 'that the length and severity of the winter interfere but little with the laws which regulate the amount and variety of insect existence.' Well prior to the general acceptance of Humboldt's isotherms, Barnston observed that the far north was perhaps not quite as inhospitable to civilization as had so long been believed.50

Barnston continued his entomological studies in earnest at Fort Albany at least until 1841, but then made a permanent commitment to botany. As early as 1842 he referred to his growing family as 'a tribe of Biennials,' and was soon teaching his oldest child, James, who developed a passion for botany, from the splendours of the first volumes of the *Naturalists' Library*. The elder Barnston, by 1846 at Tadoussac, tempered his obsession with entomology and was collecting plants. He found a soul mate in William Mactavish, and together they strove to acquire the latest botanical works such as the first instalment of the *Flora of North America* (1838) by John Torrey and Asa Gray, the leading American botanical taxonomists. Barnston exchanged plants with owners of herbaria in Canada, England and Scotland, and collected at first mainly along the lower St Lawrence. He took special pride in news that James, now studying medicine at the University of Edinburgh, attracted the notice of the eminent botanist there, Sir John Hutton Balfour, and he collected all the more furiously in order to keep up.51

Barnston continued his reading and collecting as faithfully as possible, concentrating mainly on plants. One important exception, however, was a new interest in terrestrial magnetism and particularly in the aurora borealis after J.H. Lefroy had passed through the territory. Inspired by the recent publication of Humboldt's masterwork, *Cosmos*, in 1845, Barnston used a pocket compass and two crude handmade dipping needles which he himself magnetized to attempt some magnetic observations at Norway House in 1852. As had been the case with his insects, Barnston found his own conjectures regarding the causes of the aurora in close harmony with the writings of Humboldt.52

But Barnston's life changed with yet another untimely death of a loved one, this time of his son James, now a practising physician in Montreal and the first professor of botany at McGill College, in 1858. Like a driven man he now began to publish his findings in the field in which James had shown much promise. The first piece consisted of 'Remarks on the Geographical Distribution of Plants in the British Possessions of North

50 Hargrave Papers, Reel 134, Barnston to Hargrave, 1 February 1837, 1342; 6 February 1841, 1920.

51 Hargrave Papers, Reel 134, Barnston to Hargrave, 13 February 1842, 2238; Reel 135, 2442 ; Reel 136, 12 April 1846, 3426; 7 April 1848, 3745; Reel 137, 26 March 1850, 4355; 26 August 1851, 4824; 3 January 1852, 4917; 30 June 1852, 5056.

52 Hargrave Papers, Reel 137, Barnston to Hargrave, 14 December 1852, 5239; Reel 138, 28 September 1853, 5940; 25 August 1854, 5728; 16 August 1856, 6074.

America,' in which Barnston singled out the surprising discovery of poppies encircling the Arctic regions of the Hudson's Bay Company's territories. Barnston was following the lead not only of Humboldt, but also of botanists like Joseph Dalton Hooker at Kew and Asa Gray at Harvard, both of whom were interested much more in the geographical distribution of plants than in their simple taxonomies. In 1859 he produced a second essay, this time on the distribution of the Cruciferae in British North America. This family of plants, known colloquially as the cress family which included cabbage, cauliflower, mustard and turnip, held for Barnston both a practical as well as a theoretical importance.

Barnston's interest in Cruciferae lay in their demonstrated ability to adapt to climatic variations. In British North America many Cruciferae of European origin had become completely acclimatized to become 'naturalized Americans and Canadians.' 'Is not this,' wondered Barnston, 'in perfect accordance with the diffusive character of the order, as noted by botanists in those species which exist in the highest latitudes?' In a stunning passage he interpreted Cruciferae as forerunners of civilization's own northward 'diffusion' toward the Arctic. Barnston believed that 'in those dismal regions where ice holds almost eternal empire, and where frost is arrested but for a few short weeks of the year, we still may please ourselves with discovering that wise provision is made, as far as possible under the circumstances, for the wants of man.' For him the northward advance of civilization was no longer a mere pipe dream:

> In whatever quarter of the globe man may be placed, surely by searching he may find what is best calculated to benefit him. Let him only take the trouble and time to investigate, and turn to advantage what has been so liberally -- nay, often so lavishly, we may say -- spread out before him, and he will not fail to discover, that an unseen hand has been long since at work to anticipate his wishes, and supply his needs.53

Barnston believed that botany offered a valuable source for the Canadian historical consciousness, as demonstrated in his explanation in 1858 of the discovery of wild onions growing near Lake Temiskaming. The onions, Barnston explained from evidence of Arctic explorers in the northwest, were, like the Cruciferae, not native to North America. Instead they were naturalized descendants of those once cultivated in the area by Jesuit missionaries. 'These floral bequests,' as he saw them, 'after nearly

53 *Canadian Naturalist and Geologist* 3/1 (Feb. 1858):28-32; 4/1 (Feb. 1859): 1-12.

one hundred years of neglect, have still, by the favor of nature and advantageous situation, kept their solitary hold, beautiful mementoes of the pursuits and recreations of the most intelligent of the first enterprising settlers in the land.'54

Barnston's line of thinking led straight to the older question of human acclimatization in northern lands, and seemed to contradict traditional assumptions about the negative impact of a cold climate upon human society. The northern distribution of plant life could act as a compass should people ever venture there. Barnston's appeal to the argument from design in natural theology represented a valiant attempt to bring conceptual unity to the phenomena he observed, while remaining within the bounds of his traditional understanding that true laws of nature must be 'undeviating and straight, and permanent.' His argument stopped short of any suggestion that differences between the forms of Cruciferae in North America and those in Europe and Asia could ever become great enough to produce new species. Instead of looking to adaptation as the key to these variations, as William Paley's *Natural Theology* (1802) suggested to Charles Darwin, Barnston harked back to John Ray's older, more optimistic natural theology, in which man was intended by God to improve the earth as his dwelling place. Barnston suggested that plants like the Cruciferae were showing the way to accomplish this task.

By the 1860s two new developments had drawn still more fur traders into larger scientific networks. First, greater numbers of institutions were vying for the fur traders' favours. In addition to the British Museum, now the Smithsonian Institution and the Royal Scottish Museum at Edinburgh appealed to them as North Americans and Scots, respectively, to send specimens. Such requests as the Smithsonian's, which included the lure of greater material incentives and public recognition, caused a dilemma for Barnston, who spent his last years in Montreal, and even served as president of the Natural History Society and who felt it more 'patriotic' to continue to collect for British or Canadian institutions. Second, the Baconian heritage of institutional science came home to roost in 1862, with the founding of the Institute of Rupert's Land at Red River, with William Mactavish, now governor, as president.55

54 'Geographical Distribution of the Genus *Allium* in British North America,' *CN&G* 4/2 (April 1859): 116-21. Barnston, it seems, had been preceded by a colleague who had 'long entertained' the opinion that 'the Mac[tavishe]s are to a man, or woman, a sort of climatostatic race, becoming indigenous wherever transplanted, & possessing capabilities to colonize the universe'; Hargrave Papers, Reel 135, J. Macallum to Hargrave, 6 June 1842, 2388. 'Vegetation of the Frozen Regions,' *Canadian Agriculturist* 5/8 (August 1853):249-50; Hooker Papers, British North American Letters 1865-1900, Vol. 195, Barnston to Dyer, September 1875, 182-83. See also David N. Livingstone, 'Human Acclimatization: Perspectives on a Contested Field of Inquiry in Science, Medicine and Geography,' *History of Science* 25 (1987):358-94; and Clarence J. Glacken, *Traces on the Rhodian Shore* (Berkeley, 1967).

55 Smithsonian Institution Archives, HBC Correspondence Collection 1858-69 and undated (mfm), Barnston to S.F. Baird, 26 January 1860; Robert Campbell to Baird, 6 July 1861; Strachan Jones to Baird, 22 April 1867. On the Institute of Rupert's Land see Zeller, *Inventing Canada*, 170, 253.

Keith Thomas has written that 'it is impossible to disentangle what the people of the past thought about plants and animals from what they thought about themselves.' Fur traders' involvement in scientific networks varied with cultural, psychological, and institutional factors, ebbing and flowing also with the visits of professional collectors, such as David Douglas on a small scale during the 1820s and Robert Kennicott of the Smithsonian on a larger scale during the 1850s, into the Hudson's Bay Company's territories. Yet there is an irony in the suggestion that the Baconian spirit which helped to create the Hudson's Bay Company and lent a sense of higher importance to the activities of the company's officers, from the highest levels on down, may also have helped ultimately to end its traditional monopoloy over Rupert's Land. For among those same scientific investigators whom George Simpson strove to accommodate in their work, the most influential testified in 1857 before the British House of Commons Select Committee on the monopoly question. J.H. Lefroy, Dr John Rae and Sir John Richardson offered a crucial defence of the company by raising doubts about the agricultural potential of its territory, doubts which even they did not always share. Yet in the long run the company could not logically hold back the floodgates of further scientific investigations, such as the Dawson and Hind expeditions of 1857 and 1858, born as they were of the same Baconian spirit, and which would ultimately prove the doubters wrong. As for the doubters themselves, Barnston and others had found in the broad Baconian spirit of cooperation a mainstay during stormy times and important scientific tasks to perform: 'Let us,' he had once suggested to his friend and sympathetic soulmate James Hargrave, 'like Boys on the Ice take hold of each other, and slide merrily along to the end of our course. What tho' our stations by different, and our outward apparel of separate hues; a black and ragged tyke like me may be better than he appears.'56

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56 Thomas, *Man and the Natural World*, 16; Great Britain, Parliament, House of Commons, Select Committee on the Hudson's Bay Company, Report (1857), testimony of Lefroy, Rae, and Richardson; Hargrave Papers, Reel 138, Hector to Mackenzie to Hargrave, 5 May 1857, 6243; Reel 133, Barnston to Hargrave, 18 March 1835, 1007.