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"Early Scientific Writing in Canada"

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Early Scientific Writing in Canada

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The forthcoming *Literary history of Canada* (English language) will contain one chapter on writings in the field of science.

Prior to 1800 very little scientific writing in English was done in Canada. A few almanacs and some practical instructions in agriculture, husbandry, dentistry and public health were published. But by the 19th century well educated professional men came from the British Isles in increasing numbers as physicians, teachers, ministers of religion, army officers and surveyors. The fauna and flora and the geology of Canada presented a fresh field and a stimulating challenge to many of these men. Scholarly articles and a few books on scientific subjects began to be written in Canada.

In Nova Scotia as early as 1818, the *Letters of Agricola* appeared weekly in the *Halifax Recorder*. Their author, John Young, stimulated farmers of the Maritimes to improve their methods, studying climate, soils, manures and advocating the application of lime to the fields, describing the various types of occurrence of lime in Nova Scotia and how best to prepare it for spreading. So highly were these letters regarded and so great was their influence that they were published as a book under the same title in Halifax in 1822.

One manifestation of growing intellectual activity was the formation in Montreal, Quebec and the Maritimes of Natural History Societies or Literary and Scientific Societies. The Montreal Natural History Society was founded in 1827, shortly after the Literary and Historical Society of Quebec; a museum was established and the papers read at its meetings were published subsequently in the *Canadian Naturalist*. This magazine undoubtedly helped to form the intellectual atmosphere of those early years.

In Upper Canada a similar function was performed by the *Canadian Journal*, organ of the Royal Canadian Institute which was established in Toronto in 1849. Through its public lectures, its *Journal* (1852-78), and its subsequent *Proceedings* and *Transactions*, the Institute has richly contributed to the intellectual growth of this country. In its *Centennial Volume* (1949) are found ten essays on "One Hundred Years of Science" in Canada.

The Nova Scotia Literary and Scientific Society was established in January 1859. One of the first papers read before the Society was on the "Fossiliferous Rocks of Arisaig" by the Rev. David Honeyman.

This somewhat too comprehensive society was modified in 1863 when the Institute

of Natural Science was founded and commenced publication in its *Transactions* of the papers read at its meetings. The seventh paper for that year was by R. G. Haliburton, F. S. A., (son of Judge Haliburton, satirist) on "The Festival of the Dead," afterwards published in Halifax as the first part of his book *New Materials for the History of Man* (1863). In this he showed that ancient and more recent inhabitants of four continents regulated their Festival of the Dead and their date of the beginning of the new year from the heliacal rising or the midnight culmination of the Pleiades. Haliburton communicated these ideas to Professor Piazzi Smith which led the latter to base one of his dates for the construction of the Great Pyramid on the present altitude of the Pleiades at culmination relative to the inclination of a passage to the south face, up which, due to the precession of the equinoxes, the Pleiades might have been seen in B.C. 2170.

In 1862, the Principal of Queen's University, Rev. Dr. William Leitch, published in London a good account of the astronomical knowledge of the day with reproductions of the Earl of Rosse's drawings of galactic, elliptical and spiral nebulae. The tone of the book is set by its title, *God's Glory in the Heavens*. Published also in New York, it ran to a third edition in 1866.

H. Beaumont Small was the author of *The Animals of North America* (Montreal 1864) illustrated with many attractive woodcuts and written to meet "a growing desire for further acquaintance with... the pleasing study of Natural History."

A striking feature in our development is the early interest in Canada in the repercussions of advancing scientific knowledge upon religious beliefs. One evidence of this is the work of Henry Taylor which seems to have had considerable influence in Great Britain. Published by Coates in Toronto 1836, it bears the title "*An Attempt to Form a System of the Creation of our Globe, of the Planets and the Sun of our System.*" The author attempted "to reconcile the present Geological appearances of our Earth with the Mosaic account of creation" by taking literally "the waters" of the first chapter of Genesis and explaining them in the light of "the wonderful discoveries in pneumatic chemistry, and the gaseous bodies and... the component principles of water." Out of this "Universal ocean" sun, moon, planets are born, the "days of creation" being successive cycles of time. His manuscript, composed between 1819 and 1825, was shown to Archdeacon Mountain, and the Bishop of Quebec, who encouraged him to take it to England where he gave a copy to the Lord Bishop of London, to a theologian named Fairholme, and in 1833, to the Royal Institution in London. When he learned in 1836 that Professor Buckland and the theologians Pusey, Chalmers and Gleig were advocating these very ideas, he hastened to publish his work, fully believing that he was the originator of the ideas.

The same serious motive led Thomas Trotter, Minister of the Presbyterian Church of Antigonish, to publish in 1845 in Pictou his *Treatise on Geology*, "in which the discoveries of that science are reconciled with the Scriptures." The Rev. Moses Harvey of St. John's Newfoundland, with eloquence and many poetic references reviewed current advances in geology and astronomy in *The Harmony of Science and Revelation*, Halifax and St. John's, 1856. In this book he upheld the speculative musings of Sir David Brewster on the plurality of inhabited planets in the universe. A different treatment of this theme was T. W. Goldie's *Mosaic Account of Creation of the World and the Noachian Deluge Geologically Explained*, which ran to two editions in Quebec in 1856.

Thoughtful and scholarly men in Canada viewed with the same grave concern the great wave of new biological knowledge and speculation which swirled around the words

Evolution and Natural Selection throughout the latter half of the 19th century and far into the 20th. The concern was of two kinds—unreasoned opposition to the new knowledge on the assumption that it was undermining spiritual faith; and honest acceptance leading to earnest and often ingenious efforts to reconcile new scientific knowledge with biblical cosmology. In 1859, the same year in which *The Origin of Species* appeared in London, Dr. James Bovell, M. D. published in Toronto *Outlines of Natural Theology* of which Professor Chapman wrote in the *Canadian Journal*, "It deserves the attention of all interested in the progress of Canadian literature." In this book the author, who believed "that a Being exists who through his works reveals himself, as an author in his volume," outlined the current state of knowledge in geology, zoology, and physiology, quoting numerous authorities such as Lyell, Humboldt, Darwin, Murchison, Huxley, Solly and Agassiz, stating unequivocally where he agreed or differed with their metaphysical or theological deductions. The influence of Dr. Bovell on the thinking and activities of the youthful William Osler (afterwards Sir William Osler, M. D.) continued to be a potent factor throughout Osler's life.

The proponents of reconciliation of science and religion had an eloquent champion in that distinguished and prolific Canadian scholar, Sir John William Dawson. His classical *Acadian Geology*, Edinburgh and London, 1855, is far from being in the category of an ordinary textbook. Dawson's *Archaia (Studies of the Cosmogony and Natural History of the Hebrew Scriptures)* Montreal and London 1860, was so widely read and valued that he revised it in 1877 and it reappeared under the title *The Origin of the World according to Revelation and Science*. His prestige both in Canada and in Great Britain was indicated by the reception accorded to *The Chain of Life in Geological Time*, London 1880, 2nd edition 1885, 3rd. edition 1888.

During the latter half of the last century the official government reports of the Geological Survey and the Department of Agriculture grew in number and in range. Scientific magazines like the *Canadian Naturalist*, the *Canadian Journal*, the *Anglo-American Magazine* were providing well written articles on a wide range of scientific topics: lithology, ocean currents, fossils, the Niagara suspension bridge (1852), the Victoria bridge at Montreal (1855), the age of timber trees and ethnological investigations.

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The growth of productive scholarship in Canada was greatly stimulated by the increase in the number of universities across the country in the latter part of the 19th century. These with their faculties of letters, social, and scientific studies attracted and encouraged able, ambitious scholars. To provide new outlets for the publication of their ideas the *Queen's Quarterly* was founded in 1893. Other somewhat similar magazines followed in the 20th century. In these Canadian periodicals much excellent writing is to be found, including expositions of current scientific ideas and achievements designed for the enlightenment of the intelligent general reader.

This century has seen an ever increasing flow of Canadian books and papers on scientific subjects, especially Natural History, geology, biology, the history of medical advances and biographies of men of science. It is a healthy sign. The chasm that too often exists between the disciplines of the literary men and sociologists on the one hand and the scientists on the other, is wholly deplorable. An urgent obligation rests upon scientist and historian of science to make every effort to bridge that chasm.

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