

THE CANADIAN

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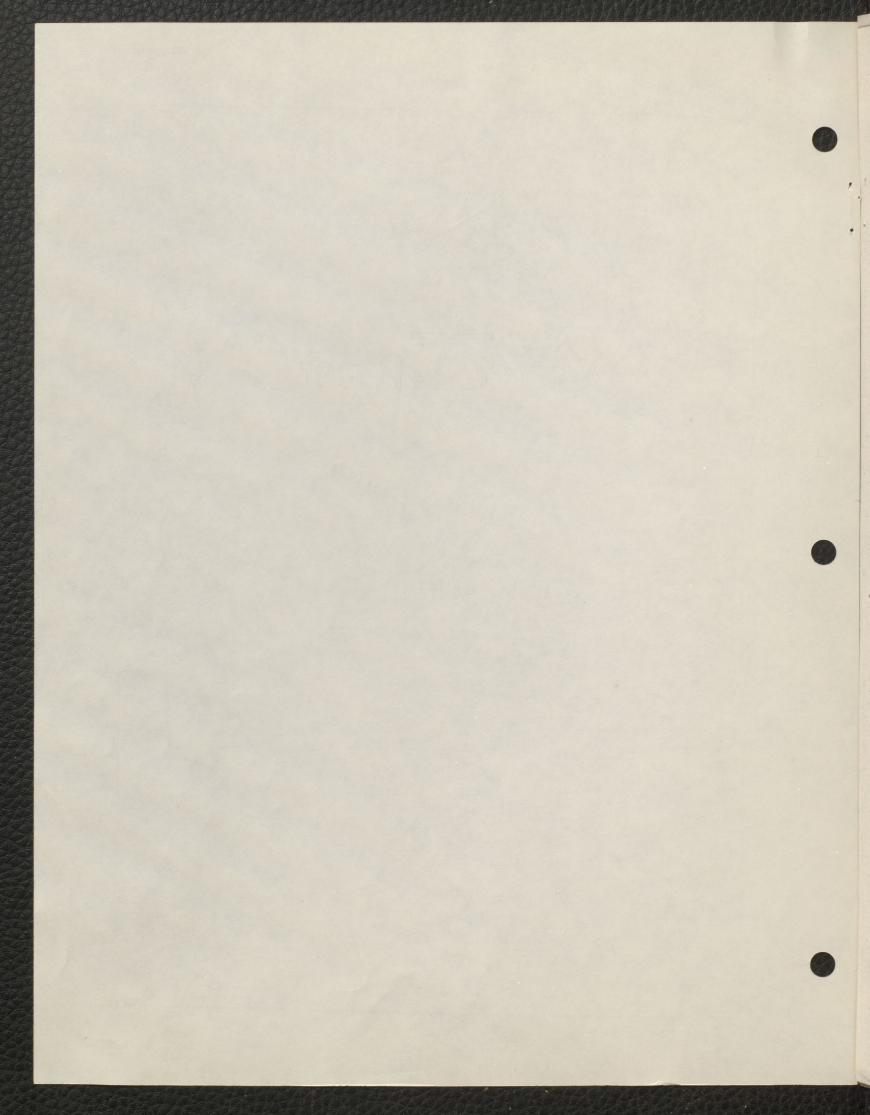
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JOHN WILLIAM DAWSON, M.A., LL.D., F.R.S., &c.,

PRINCIPAL OF McGILL COLLEGE AND UNIVERSITY, MONTREAL.

WE have other names in Canada of more or less eminence in the scientific world, but Principal Dawson is one of the very few living Canadian scientists who can justly claim a place in the front rank. As a naturalist, and more especially as a geologist, his reputation has long been established on two continents, and at the present day is as wide as civilization itself. The works embodying the results of his patient labours are in the hands of every scholar who pretends to keep abreast of the scientific thought of his time. They have done much to stimulate and sustain original inquiry, and have opened up new fields of thought in quarters which once were barren. They have made the author's name known to and respected by persons who know nothing of Canada beyond the fact that it is the abode of Professor Dawson. It is noteworthy, too, that Professor Dawson is one of the few scientific men of universally acknowledged eminence who find no necessary antagonism between the teachings of science and the teachings of the Bible. Since the death of Professor Agassiz, he is one of the most formidable opponents of the doctrine of evolution, as propounded by Darwin and Herbert Spencer. The great facts of geology, according to Professor Dawson, furnish no argument for the rejection by the scientific world of the Mosaic account of the Creation. The conflict between religion and science, of which we have heard so much during the

last few years, is, in the Professor's opinion, rather a conflict between opposing schools of thought, and is no necessary or legitimate result of conscientious scientific inquiry. The Bible, he tells'us, has nothing to dread from the revelations of geology, but much to hope, in the way of elucidation of its meaning, and confirmation of its truth. That a scholar whose training has been exceptionally thorough and comprehensive, and whose natural powers of mind are confessedly of a very high order; whose original researches in his own particular department have been second to those of no investigator of his time; and whose purpose has always been to arrive at the truth: these facts afford sufficient proof that the doctrine of evolution is not, as many of its votaries claim for it, a demonstrable proposition. The Professor's arguments on this important question were first given to the world many years ago. They have been sharply criticised, but it may at least be said that they have not yet been demolished. They have since been repeatedly reiterated and enlarged upon, and have lost none of their. force by repetition. It is a good sign when a man's mind continues to grow after he has passed middle life, and Professor Dawson's most recent works furnish abundant evidence that their author's mind has never been more keenly progressive than now.

His life has been one of remarkable diligence and mental activity. He is of

Scottish origin. His father, the late Mr. James Dawson, was a younger son of a Scottish farmer in comfortable circumstances, who emigrated to Nova Scotia during the early years of the present century, and embarked in business at the seaport town of Pictou. Here the subject of this sketch was born on the 13th of October, 1820. His father was a man of cultured mind, with a taste for scientific pursuits, and to this predilection the Professor is doubtless in some measure indebted for the direction given to his own studies. The latter received his primary education at the Grammar School and College of his native town. The latter institution enjoyed a deservedly high reputation throughout the Maritime Provinces, and was then under the direction of the late Principal McCulloch. The boy was father to the man, and was an indefatigable student of natural history. When he was only twelve years of age he began to make a collection of fossil plants of the coal period. From the College at Pictou he proceeded to the University of Edinburgh, where he devoted special attention to natural history and practical chemistry. After a winter's study he returned to his native Province, and devoted himself with ardour to geological research. He was the companion of Sir Charles Lyell during that eminent man's tour in Nova Scotia, in 1842, and followed up his researches by studies of the Carboniferous rocks of Nova Scotia, on which he contributed two important papers to the Geological Society of London. In the autumn of 1846 he returned to Edinburgh, and remained there until he had completed his University course. On returning he pursued his geological investigations with renewed energy. The results of these investigations were from time to time published in scientific periodicals, and attention soon began to be directed towards the author. He was requested by the authorities of Dalhousie College, Halifax, to deliver a course

of lectures on natural history in the Nova Scotian capital. His compliance was the means of establishing his reputation as a lecturer, and from that time forward he has been pretty constantly before the public in that capacity. Of his platform style, it has been said that "Language, with him, seems to wait upon, thought; and no matter whether the occasion be trivial or important, the right word always appears to be ready to fill the right place."

In 1850 he was appointed by the Government of Nova Scotia to the then newlycreated office of Superintendent of Education for that Province, an office which he held for over three years, during which he rendered valuable service to the Province at a time of special interest in the history of its schools and educational institutions. He also took an active part in the establishment of a Normal School in Nova Scotia, and in the regulation of the affairs of the University of New Brunswick, as a member of the commission appointed by Sir Edmund Head. In connection with these educational labours he published several elaborate Reports on the Schools of Nova Scotia, and a work on Agricultural Education entitled "Scientific Contributions toward the improvement of Agriculture," which went through two editions, and was of much practical utility. His special work in connection with the University and the Normal School took up much of the time which would otherwise have been devoted to his favourite pursuits.

In 1855 he was called to the position of Principal and Professor of Natural History in McGill College and University, which he has ever since retained. At the time of his appointment the affairs of the University were in a state of much confusion. Its Medical Faculty was the only one which could be said to be in a flourishing condition. The Faculties of Arts and of Law were in their infancy. There were,

however, a number of enterprising and influential men in Montreal, who, by their efforts and their wealth, nobly aided in raising the University to a position of assured usefulness. It has prospered under his management amazingly, and has long since outgrown the effect of the depressing influences under which it laboured at the time of his appointment. He from the first laboured to secure in the University that recognition of Science as an element of liberal culture which its own essential character and the needs of modern life demand. "His lucid and interesting lectures," says a contemporary writer, "as well as his personal popularity, have won for Natural History a place and an importance in McGill not usually accorded to it in University culture." A School of Civil Engineering was established in 1858, which, after a struggling existence of five years, succumbed to unfriendly legislation. This school was resuscitated and placed on a more comprehensive basis in 1871 as the Department of Practical and Applied Science. In this portion of his work Principal Dawson has taken deep interest, and it must be matter of great satisfaction to him to see that its increased efficiency attracts year by year an increasing number of students, and that its success is now fully assured. Those who are most intimately acquainted with the history of the University during the past twenty-five years feel most strongly the importance of the wise and arduous labours of Principal Dawson.

At the time of his appointment to the position of Principal of the University, one of the great drawbacks to its success was the want of efficient elementary and superior schools to prepare pupils for matriculation. In co-operation with the Superintendent of Public Instruction for the Province of Quebec, and aided by the influence of Sir Edmund Head, then Governor-General, Dr. Dawson secured the establishment, in 1857,

of the McGill Normal School, a training school for Protestant teachers. In addition to his arduous and engrossing duties in the University, he assumed the position of Principal of this institution, and continued for thirteen years to preside over its work, and to lecture to its pupils. Though compelled to withdraw from his position in 1870, he has ever since maintained an active supervision of its affairs as Chairman of the Normal School Committee of the Corporation of the University.

During the last eight years, Dr. Dawson has been a valued member of the Protestant Board of School Commissioners of the city of Montreal. He is also a member of the Protestant Committee of the Council of Public Instruction of the Province of Quebec, and took an active part in devising the measures adopted by that body several years since, with a view to securing an effective inspection of the schools of the Province. He is an M.A. of the University of Edinburgh, and an LL.D. of the University with which he is immediately connected. He is also a Fellow of the Geological Society of London (since 1854), and of the Royal Society (since 1862), and is a member of an exceptionally large number of learned societies, both at home and abroad.

Dr. Dawson is perhaps best known to the general public of this country through his success in the organization and management of educational institutions. His reputation abroad, however, rests mainly on his geological investigations and discoveries, more especially in relation to the Carboniferous and Post-pliocene formations, to fossil plants and the fossils of the Laurentian rocks. On these subjects he is the author of a number of memoirs in the proceedings of various learned societies, in scientific journals, and in official reports. He is also the author of a number of standard works, covering a large field of scientific elucidation, and more especially relating to the

earliest known fossil remains, and to the discovery and nature of the now celebrated Eozoon Canadense.

A review of his more important scientific labours proves how much may be done even in the midst of engrossing educational occupations, by a man of active mind, when his heart is in his work. In 1841 he contributed to the Wernerian Society of Edinburgh his first scientific paper, on the species of field-mice found in Nova Scotia. In 1843 he communicated a paper on the rocks of Eastern Nova Scotia to the Geological Society of London; and this was followed in 1844 by a paper on the newer coal formation. In 1845, besides exploring and reporting on the iron mines of Londonderry, Nova Scotia, he published a paper on the coal formation plants of that Province. During the winter of 1846-'47, while studying in Edinburgh, he contributed to the Royal Society of that city papers on the "Formation of Gypsum," and on the "Boulder Formation," and an article to Jameson's Edinburgh Philosophical Journal, on the "Renewal of Forests destroyed by Fire." From 1847 to 1849 we find him pursuing his geological researches, and giving the results to the world in frequent papers. The most important of these are: "On the Triassic Red Sandstones of Nova Scotia and Prince Edward Island;" "On the Colouring Matters of Red Sandstones;" "On Erect Calamites found near Pictou;" and "On the Metamorphic Rocks of Nova Scotia." He also published his "Handbook of the Geography and Natural History of Nova Scotia," and delivered courses of lectures on Natural History and Geology in the Pictou Academy, and in Dalhousie College, Halifax, and reported to the Nova Scotia Government on the coal-fields of 'Southern Cape Breton.

In 1852, in company with Sir Charles Lyell, he made a reëxamination of the "Joggins" section, and visited the remarkable deposit of Albertite at Hillsborough,

New Brunswick. A memoir soon appeared on the former district, giving a full exposition of the structure and mode of formation of a coal-field. The Albert Mine was also made the subject of a paper. In the further study of the "Joggins" section, microscopic examinations were made of coal from all its beds, as well as of coal from other sources, the results being published in papers on the "Structures in Coal," and on the "Mode of Accumulation of Coal." It was during the visit to the "Joggins," just referred to, that the remains of Dendrerpeton Acadianum and Pupa vetusta were found. With the exception of Baphetes planiceps, which Dr. Dawson had discovered in the previous year at Pictou, but had not described, Dendrerpeton Acadianum was the first reptile found in the coal formation of America; and Pupa vetusta was the first known Palæozoic land snail. These discoveries were followed by the finding and describing of several other reptiles, and of the first carboniferous millipede (Xylobius sigillariæ). About this time, also, a second report on the Acadia Iron Mine was prepared, and an elaborate series of assays of coal made for the General Mining Association.

In 1855 he published the first edition of his "Acadian Geology," a complete account, up to that date, of the geology of the Maritime Provinces of British North America. In 1856, though trammelled by the arduous duties incumbent upon the Principal of a University, he still continued his geological work in his native Province, and prepared a description of the Silurian and Devonian rocks. During the same summer he visited Lake Superior, and wrote a paper and report on the copper-regions of Maimanse and Georgian Bay, in which he discussed the geological relations of the then little known copper-bearing rocks of the North Shore of Lake Superior, and the origin of the deposits of native copper. In the two

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following years he made a number of contributions to the Canadian Naturalist and the Journal of the Geological Society, and commenced the study of the Post-pliocene deposits of Canada. In 1859 his "Archaia, or Studies of Creation in Genesis," appeared, a work showing not only a thorough knowledge of Natural History, but also considerable familiarity with the Hebrew language and with Biblical Literature. In 1860 he issued a supplementary chapter to his " Acadian Geology." He also continued his work in fossil botany and in the Post-pliocene, publishing several papers on these subjects, as well as desultory researches on such subjects as the "Flora of Mount Washington," "Indian Antiquities at Montreal," "Marine Animals of the St. Lawrence," "Earthquakes in Canada," "Classification of Animals," etc.

In 1863 he issued his "Air-Breathers of the Coal Period," a complete account of the fossil reptiles and other land animals of the coal of Nova Scotia. This publication was followed, in 1864, by a "Hand-book of Scientific Agriculture." It was in 1864, also, that Dr. Dawson made what may be considered as one of the most important of his scientific discoveries—that of Eozoon Canadense. This fossil had already been noticed by Sir William Logan, but Dr. Dawson, to whom Sir William submitted his specimens, was the first to recognize its Foraminiferal affinities, and to describe its structure. Previous to this time the rocks of the Laurentian age were looked upon as devoid of animal remains, and called "Azoic." Dr. Dawson now substituted the term "Eozoic." In 1865, at the meeting of the British Association at Birmingham, he gave illustrations of his researches on the "Succession of Palæozoic Floras," the "Post-pliocene of Canada," and the "Structure of Eozoon."

In 1868 appeared the second edition of "Acadian Geology," enlarged to nearly 700

octavo pages, with a great number of illustrations from the author's drawings. This still remains the standard work on the geology of the Maritime Provinces, while it also treats of many of the more difficult problems of geology generally.

While in England, in 1870, Dr. Dawson lectured at the Royal Institution. He also read a paper on the "Affinities of Coal Plants" before the Geological Society, and one on the "Devonian Flora" before the Royal Society. The same year his "Handbook of Canadian Zoology" appeared, being followed in 1871 by a "Report on the Silurian and Devonian Flora of Canada," and a "Report on the Geological Structure of Prince Edward Island." His studies of the Devonian plants were begun as early as 1858, and Gaspé, St. John's, and Perry in Maine, were twice visited in order to collect material to aid in their prosecution.

His "Notes on the Post-pliocene of Canada" were published in 1873. From them we learn that the number of known species of Post-pliocene fossils had been raised, principally by his labours, from about thirty to over two hundred. We also find that Dr. Dawson is still what he has always been, a staunch opponent of the theory of general land glaciation. "The Story of the Earth and Man," issued in 1873, was a republication of papers published in the Leisure Hour in 1871 and 1872. It gives a popular view of the whole of the Geological ages, presented in a series of word-pictures, and with discussions of the theories as to the origin of mountains, the introduction and succession of life, the glacial period, and other controverted topics. A report on the "Fossil Flora of the Lower Carboniferous Coal Measures of Canada," and communications to the Geological Society of London, on the probable Permian age of beds overlying the coal-measures of Nova Scotia, and also occurring in Prince Edward Island; on recent facts as to the mode of occurrence of

to over two hundred. We also find this

Eozoon in the Laurentian rocks, and on the Phosphates in the Laurentian rocks, are still more recent labours. A course of six lectures delivered in New York in the winter of 1874-'75 has been largely circulated both in America and England, under the title "Science and the Bible;" and in 1875 there also appeared in London and New York, a popular illustrated résumé of the facts relating to Eozoon and other ancient fossils, entitled "The Dawn of Life." At the Detroit meeting of the American Association, Prof. Dawson, as Vice-President of Section B, delivered an address in which he vigorously combated the doctrine of evolution as held by its more extreme supporters.

In 1877 appeared his "Origin of the World," which may be regarded as a modernized and in great part re-written edition of his former work "Archaia." A still more recent work, "Fossil Men," applies the history, manners and customs of the aborigines of America in illustration of the questions agitated respecting prehistoric man in Europe; and a popular work, intended to give a clear view of the actual succession of life as known to geologists, is to appear in London in the present year with the title "The Chain of Life."

Dr. Dawson married on the 19th of March, 1847, Miss Margaret A. Y. Mercer, of Edinburgh. They have five surviving children, the eldest of whom, Dr. George M. Dawson, has followed up his father's pursuits. He graduated as Associate of the Royal School of Mines, London, in 1872, taking the highest distinction, as Edward Forbes Medallist, and after spending two years as geologist of the Boundary Commission, and preparing an elaborate Report on the Geology of the 49th Parallel, was appointed on the geological survey of Canada. Of this he is now one of the Assistant Directors, with special charge of the survey of British Columbia, on the geology and resources of which he has issued several reports, besides occasional papers in the Journal of the Geological Society and the Canadian Naturalist. He is a Fellow of the Geological Society, and has received the Degree of Doctor of Science from the University of Princeton. Professor Dawson's second son, Mr. W. B. Dawson, after graduating in honours at McGill, entered the celebrated Ecole des Parts et Chaumées in Paris, and after studying for three years, had the honour of graduating at the head of his class. He is now in practice as a civil engineer.

