Margaret A. G. Dawson
April 1901.

GEORGE MERCER DAWSON.

Buffalo March 7th 1901.

The death of Dr. George Mercer Dawson, C.M.G., F.R.S., director of the Canadian Geological Survey, which occurred at Ottawa, Ont., on March 2d, removed one of the most distinguished scientists of the continent, and marks an epoch in the history of what has long been recognized in Canada and Great Britain as a most useful organization. Dr. Dawson and his father, Sir J. William Dawson of McGill University, Montreal, contributed very largely to the Dominion Geological Survey, and in Sir William's later contributions he proudly cites his gifted son as an authority. Father and son were inveterate workers. Both had the literary as well as the scientific gift and both employed these gifts to the advantage of the governmental department to which the younger man was attached. Dr. Dawson also wrote a great deal on the native races of Canada, their origin, languages and folk lore, and his reports to the Government were models of statistical information and interesting description.

George Mercer Dawson, a prominent Canadian Scientist, died at Ottawa yesterday afternoon, after forty-eight hours' illness with bronchitis. Mr. Dawson was director of the Geological Survey. He was appointed to the staff in 1875. He gradually progressed to the leading position and finally became an acknowledged authority on geological matters in the West. His principal work was in British Columbia and the territories. He was the eldest surviving son of Sir J. W. Dawson, and was born in Pictou, N. S., Aug. 1, 1849.

"News" Buffalo, 1901.

Dr. Dawson, cut off at the untimely age of 52, was a hard worker, whose steady office employment as director of the Geological Survey, was varied by little save private scientific study and writing. That he was not a weak man constitutionally seemed to be proved by the fact that before becoming director of the Survey he had conducted or shared in many extensive and sometimes severe exploratory campaigns. Possibly the relinquishment of out-door work and increase of office employment told against his constitutional reserve power and no man engaged in sedentary occupation can afford safely to disregard such omens.

DR. DAWSON'S FUNERAL.

Toronto March 5 1901

A Large Number of Professional and Scientific Men Were in Attendance.

Montreal, March 4.—The funeral of the late Dr. G. M. Dawson took place from the residence of his mother, Lady Dawson, 293 University-street, at 3 o'clock this afternoon, and was very largely attended by professional, business and scientific men, McGill University, of which he was a distinguished graduate, being particularly well represented.

A short service was conducted by Rev. F. M. Dewey, pastor of Stanley-street Presbyterian Church. There were no pallbearers. The chief mourners were Mr. W. Bell Dawson and Dr. Rankine Dawson, brothers; Prof. B. J. Harrington, brother-in-law, and Messrs. Victor Dawson, Owen Dawson, Heber Dawson, Conrad Harrington and Bernard Harrington, nephews.

DR. DAWSON'S FUNERAL.

(Special to the Sun.)

MONTREAL, March 4.—The funeral of the late Dr. G. M. Dawson took place from the residence of his mother, Lady Dawson, University street, this afternoon and was very largely attended by professional, business and scientific men, McGill University, of which he was a distinguished graduate, being well represented.

A short service was conoducted by Rev. F. M. Dewey, pastor of the Stanley street Presbyterian church. There were no pallbearers. The chief mourners were W. Bell Dawson and Dr. Rankine Dawson, brothers, Professor B. J. Harrington, brother-in-law, and other near relatives.

DR. DAWSON LAID AT REST.

"Star" March 4th 1901.

Large Number of Friends Followed Deceased to Last Resting Place To-day.

The funeral of the late Dr. George Mercer Dawson took place this afternoon from the residence of his mother, Lady Dawson, 293 University street, and although of a private character, was largely attended by many friends. The body was brought from Ottawa this morning by the regular C. P. R. fast train, and was at once taken to the family residence, University street. Accompanying the body were Lady Dawson, Mrs. Hannington, W. Bell Dawson, Dr. Whiteaves, Mr. G. W. Selwyn and Master Victor Dawson. Among those who met the body at the station here were Mr. Rankin Dawson, Prof. Harrington and Mr. Andrew Taylor. Dr. Whiteaves and Mr. G. W. McConnell were selected by the members of the geological survey to represent that body at the funeral.

DR. GEORGE M. DAWSON.

Sun St John N.B. 1901

The unexpected announcement is made today of the death of Dr. George M. Dawson, head of the geological survey of Canada. The late director inherited from his father his taste and aptitude for scientific research and exploration, without sharing the disposition and faculty which made Sir William Dawson a pillar of theological orthodoxy. The younger Dr. Dawson did not concern himself with the theological bearing of his observations or those of other people. He did not discuss the questions to which his father gave so much thought, and none of his writings show that he was much interested in them. He concerned himself only with the scientific side of scientific subjects.

Dr. Dawson was a more effective director that his predecessor, Dr. Selwyn, because he was a practical man and kept the survey more in touch with the requirements of the country. But so far as could be seen his heart was never in the adminstration of the department as it had been in field exploration. The best of his work was done as an explorer in new fields, as he was expert in half a dozen departments of natural history, and was a man of indefatigable energy. The specialist, who is only a specialist in one small area of knowledge, has his place in a geological survey, but he is not fit to go out to an unknown region to bring back a report of the land. No one would have supposed that the frail appearing body of the little director was capable of the immense labors and great feats of endurance involved in his expeditions into the polar regions of the far northwest. But the records of his twenty years in the outside service of the survey speak for themselves.

DR. G. M. DAWSON DEAD.

Head of the Geological Survey Passes Suddenly Away.

A painful sensation was caused both in Ottawa and Montreal by the unexpected death at the capital on Saturday evening of Dr. George M. Dawson, C.M.G., F.R.S., director of the Dominion Geological Survey, and eldest surviving son of the late Sir J. W. Dawson. Dr. Dawson was attacked by grippe early in the week, and bronchitis supervened, but no danger was at first apprehended. It was not until Saturday that Dr. Powell telegraphed that the patient had developed capillary bronchitis, and had had a bad night. Lady Dawson and her daughter, Mrs. Harrington, took the next train to Ottawa, but death took place before their arrival, or that of Dr. Rankine Dawson, Dr. Dawson's other brother. Mr. W. Bell Dawson was fortunately in Ottawa during Dr. Dawson's illness, and was able to make arrangements for his care. Dr. Dawson was unmarried. He has many friends all over Canada, especially in Montreal and Ottawa, where his loss will be very deeply regretted. The funeral takes place this afternoon from Lady Dawson's residence on University street.

George Mercer Dawson was the distinguished son of a distinguished father. Born at Pictou, N.S., he received his early education in Montreal and attended classes at McGill College, of which his father was principal. In 1869 he entered the Royal School of Mines, London, and had a brilliant career, taking the Duke of Cornwall's scholarship, the Edward Forbes medal and prize, and the first place in his year. Returning to Canada, he was for two years engaged as geologist and botanist to the royal commission then occupied in fixing the international boundary from the Lake of the Woods to the Rocky Mountains, and took the opportunity of writing some important papers on scientific problems, including the fluctuations of the great lakes. He was appointed to the Dominion Geological Survey in 1875, becoming assistant director in 1883, and director at the beginning of 1895. He has been exceedingly active in the exploration of the Canadian West, and made a canoe trip of 1,300 miles from the basin of the Liard river to that of Yukon. His surveys in the Yukon territory have been of very great importance since the discovery of the gold deposits there and the subsequent international negotiations as to the boundary. In the Behring Sea arbitration proceedings his investigations of the conditions of seal life were of great service, and won the C.M.G. He received the degree of LL.D. from Queen's University in 1890, and from McGill in 1891. In the latter year the London Geological Society awarded him the Bigsby gold medal, and he was elected a fellow of the Royal Society. In 1893 the Canadian Royal Society elected him president, and he has received many other honors from English and American scientific societies, one of the most recent being the gold medal of the Royal Geographical Society. His contributions to scientific literature were numerous and important, and his strong and genial personality will not be easily forgotten. The name of Dr. Robert Bell, assistant director of the Geological Survey, is mentioned as Dr. Dawson's probable successor.

Ottawa, March 3.—At a meeting of the Geological Survey, held this afternoon, when Dr. Whiteaves presided, it was arranged that a delegation should accompany Dr. Dawson's body to Montreal, and Dr. Whiteaves and Dr. Richard McConnell were chosen to represent the directorate and staff.

DR. DAWSON.

OTTAWA DAILY FREE PRESS MONDAY, MARCH 4, 1901

The almost sudden death of Dr. G. M. Dawson causes the country a loss scarcely second to that which resulted from the death of his late distinguished father, and makes a gap in the scientific world of very large proportions. It is not necessary to enter into any lengthened sketch of his life and professional career at this point. A full synopsis appears elsewhere and will be read with regretful interest by the public. So many of our people met Dr. Dawson, within a few hours of his death, that the bulletins announcing his death caused a shock to pass over the entire community, the sad news spreading with the speed with which bad news usually travels. Personally Dr. Dawson was popular and his amiable disposition and high breeding caused him to be regarded with affection by those with whom he was professionally engaged and there is probably no branch of the public service in which so much harmony and mutual good will exists as was always found in the Geological department under the deceased's headship. His death will be regretted as a national loss. It will be lamented as a personal loss by those acquainted with him. His brief summons suggests a line which the deceased had himself inscribed on the cover of a book he once showed an acquaintance. And let us hope that he has found what it says is true: "Life's good night is God's good morrow to eternal light."

Engineering & Mining Journal New York City March 23. 1901

GEORGE MERCER DAWSON.

George Mercer Dawson, for six years past director of the Geological Survey of Canada, died at his residence in Ottawa, March 2d, after a brief illness. Acute bronchitis was the immediate cause of his death. He was the son of the late Sir J. W. Dawson, the eminent geologist, and was born in Truro, Nova Scotia, in 1849. He graduated from McGill University, Montreal, in 1869, and in the same year entered the Royal School of Mines, London, where he remained for three years. He was first in his class to pass, being awarded the Edward Forbes medal and prize in palaeontology and natural history. Returning to Canada he was engaged in mining surveys in Nova Scotia and also lectured in Morrin College, Quebec. In 1873 he received the appointment of geologist and botanist to Her Majesty's North American Boundary Commission, which was engaged in fixing the boundary line between Canada and the United States from the Lake of the Woods to the Rocky Mountains. In this capacity he served for two years, and prepared a highly satisfactory report, with plates and maps, on the geological and other resources of the country. In this connection he also prepared a report on the Lignite of the Tertiary Formation, a memoir on the superficial deposits of the great interior plains of America. On the termination of his labors on the boundary survey, he was appointed to the staff of the Geological Survey of the Dominion in 1875. He became assistant director in July, 1883, and in January, 1895, he was appointed director of the Survey to succeed Dr. A. R. C. Selwyn.

His work for the Geological Survey was chiefly in British Columbia and the Northwest Territories, and while in the discharge of his official duties he explored a large portion of the western country, including in one case a boat journey of 1,300 miles. He rendered important services to Canada in calling attention to the mineral resources of the Rocky Mountain region and British Columbia, and he was one of the first to appreciate their great importance to the Dominion. His explorations in the Yukon Region were found to be of great value later, when gold was discovered there.

In 1891 he was appointed one of the Behring Sea Commissioners, and in this connection visited the western coast of Alaska, the eastern coast of Siberia and the intervening islands. In the following year he was a member of the joint commission which met in Washington to deal with the fur-seal question and his investigations were of very great service. He is the author of many reports, most of which were published by the Canadian Survey. Among the more important of these are: On the Queen Charlotte Islands, including, as an appendix, a monograph on the Haida Indians (1878). On an Exploration from Port Simpson on the Pacific Coast to Edmonton on the Saskatchewan (1879). On the Region in the Vicinity of the Bow and Belly Rivers (1882-4). On the Physical and Geological Features of Part of the Rocky Mountains (1885). Notes to Accompany a Geological Map of the Northern Portion of the Dominion of Canada (1886). Author (with Dr. Selwyn) of Descriptive Sketch of the Physical Geography and Geology of Canada (1884). Author (with Dr. W. F. Tolmie) of Comparative Vocabularies of the Indian Tribes of British Columbia, with an Ethnological Map (1884). Also numerous and valuable papers and geological, geographical and ethnological observations made in the course of his explorations and contributed to the Survey Reports and to various technical journals. He wrote a brief article on the Coals of the Canadian Northwest for Volume VII of "The Mineral Industry."

Dr. Dawson's life work was in connection with the Geological Survey of Canada, and for that he was honored in his lifetime and will be remembered. He received the degree of LL. D. from Queen's University in 1890, and a similar degree from McGill University in 1891. In the same year he was awarded the Bagsby gold medal from the London Geological Society for his services to the science of geology. He was also a fellow of the Royal Society of Geology of London. In 1893 he was elected president of the Royal Geological Society of Canada; in the following year was made a corresponding member of the Zoological Society of London, and in 1895 was elected a fellow of the American Association for the Advancement of Science. In 1896 he was appointed by the Council of the British Association president of the geological section for the Toronto meeting of the association, and in the next year was awarded the yearly gold medal of the Geological Society for his work as a whole.

"Times" March 4th 1901

OBITUARY.

DR. GEORGE MERCER DAWSON.

Our Ottawa Correspondent telegraphed on Saturday:—"Dr. G. M. Dawson, director of the Geological Survey of Canada, one of the most brilliant men of science the country has produced, died to-night after two days' illness."

Dr. George Mercer Dawson was a son of the late Sir John William Dawson, the distinguished geologist and naturalist, and was born in Picton, N.S., on August 1, 1849. He received his early education in Montreal, where he studied in McGill University as a partial student. In 1869 he entered the Royal School of Mines, London, taking its full course of study extending over three years, and passed as an associate, being first in his class and taking the Edward Forbes medal and prize in palæontology and natural history. He had previously won the Duke of Cornwall's scholarship in his second year. Returning to Canada, he was engaged for a year in mining surveys in Nova Scotia and in lecturing in Morrin College, Quebec. In 1873 he was appointed geologist and botanist to the North American Boundary Commission engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. In this capacity he served for two years, and prepared an elaborate report, with plates and maps, on the geology and resources of the country in the vicinity of the 49th parallel. In connexion with this work he also prepared a report on the lignite tertiary formation, a memoir on the superficial deposits of the great interior plains of America, and papers on the locust visitation, on the fresh-water sponges of Canada, and on the fluctuations of the great American lakes.

On the termination of his labours on the boundary survey Dr. Dawson was appointed in July, 1875, to the staff of the Geological Survey of the Dominion. He became assistant director in July, 1883, and director and deputy head of the department of the Geological Survey on January 1, 1895. While attending the School of Mines he devoted special attention to geology and palæontology under the tuition of Ramsay, Huxley, and Etheridge; and to chemistry and metallurgy in the laboratories of Frankland and Percy. His work on the Geological Survey was done chiefly in British Columbia and the North-West Territory, and in the discharge of his official duty he explored a large portion of the western country, including a journey by boat of 1,300 miles, with one portage of 50 miles, from the basin of the Liard river to that of the Yukon. One of the most important of Dr. Dawson's public services was in connexion with the Behring Sea Arbitration. As one of the British Commissioners he spent the summer of 1892 in the Behring Sea region for the purpose of inquiring into the conditions and facts of seal life. The report of the Commissioners constituted the case of the British Government on this part of the subject, and was of great service. For his services on this occasion he received the thanks of the Governor-General in Council and was made a C.M.G. In addition to his official reports Dr. Dawson was the author of a large number of notes and papers on geological, geographical, and ethnological subjects. He received the degree of LL.D. from Queen's University in 1890, and from McGill University in 1891. In the same year he was awarded the Bigsby gold medal by the London Geological Society for his services to the science of geology, and was elected a Fellow of the Royal Society. In 1893 he was elected President of the Royal Society of Canada, in 1894 he was elected a corresponding member of the Zoological Society of London, and in 1895 a Fellow of the American Association for the Advancement of Science. In 1896 he was appointed by the council of the British Association president of the geological section for the Toronto meeting of the association, and in 1897 he was awarded the yearly gold medal of the Royal Geographical Society for his work as a whole.

DR. DAWSON IS DEAD.

Vancouver, B.C. 1901

Canada's Foremost Geologist and Name-Giver of Britain's Most Northern City Passes Away

Ottawa, March 4.—The country sustained a great loss by the death on Saturday night of Dr. G. M. Dawson, director of the geological survey. He was at his office as recently as Thursday, when he caught cold, and death resulted from bronchitis.

The funeral too place here to-day, and the remains were sent to Montreal.

[George Mercer Dawson was the eldest surviving son of Sir J. W. Dawson, and was born in Pictou, N. S., August 1, 1849. He received his early education in Montreal, where he studied in McGill University as a partial student. In 1869 he entered the Royal School of Mines, London, taking its full course of study, extending over three years, and passed as an associate, being first in his class, and taking the Edward Forbes medal and prize in palaeontology and natural history. He had previously taken the Duke of Cornwall's scholarship in his second year. Returning to Canada, he was engaged for a year in mining surveys in Nova Scotia, and in lecturing in Morrin College, Quebec. In 1873 he was appointed geologist and botanist to H. M.'s North American boundary commission, engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. In this capacity he served two years, and prepared an elaborate report, with plates and maps, on the geology and resources of the country in the vicinity of the 49th parallel. In connection with this work he also prepared a report on the lignite tertiary formation, a memoir on the superficial deposits of the great interior plains of America, and papers on the locust visitation, on the fresh water sponges of Canada, and on the fluctuations of the American great lakes. On the termination of his labors on the boundary survey, he was appointed, July, 1875, to the staff of the geological survey of the Dominion. He became assistant director in July, 1883, and director and deputy head of the department on January 1, 1895. While attending the School of Mines, he devoted special attention to geology and palaeontology, under the tuition of Ramsay, Huxley and Ethridge; and to chemistry and metallurgy in the laboratories of Frankland and Percy. His work on the geological survey has been chiefly in British Columbia and the North West Territories, and in the discharge of his official duty he has explored a large portion of the western country, including a boat journey of 1,300 miles, with one portage of 50 miles, from the basin of the Liard river to that of the Yukon. One of the most important of his public services was in connection with the Behring Sea arbitration. As one of the British commissioners, he spent the summer of 1892 in the Behring Sea region,, for the purpose of inquiring into the conditions and facts of seal life. The report of the commissioners constituted the case of Her Majesty's government on this branch of the subject, and was of great service. For his services on this occasion he received the thanks of the Governor-General-in-Council, and the C. M. G. from Her Majesty. In addition to his official reports, he was the author of a large number of notes and papers on geological, geographical and ethnological subjects, of which a list is given in the "Bibliography of the Royal Society of Canada." He received the degree of L. L. D. from Queen's University, 1890, and from McGill University in 1891. In the same year he was awarded the Bigsby gold medal by the London Geographical Society for his services to the science of geology, and he was elected a fellow of the Royal Society. In 1893 he was elected president of the Royal Society of Canada. In 1894

Before purchasing BOTTLED "MINT," be held at Windsor, Ont., on the 30th instant, for the purpose of considering the accounts of the liquidator.

DR. G. M. DAWSON DIES IN OTTAWA.

Mail & Empire, Toronto

One of the Most Noted Geologists of the Day.

March 4th 1901

ILLNESS WAS A SHORT ONE.

Was Able to be at His Office Up Till Last Thursday—Sketch of His Services to Science.

Special to The Mail and Empire.

Ottawa, March 3.—By the death last evening of Dr. George Mercer Dawson, director of the Geological Survey of Canada, the country has sustained a great loss. Early in the week the doctor suffered from grippe, but was at his office as recently as Thursday evening. On Friday, however, he was attacked by illness, and died shortly before 6 o'clock yesterday evening from capillary bronchitis. His brother, Mr. W. Bell Dawson, Director of Tidal Surveys, was with him at the time, and his mother, Lady Dawson, and sister, Mrs. Harrington, arrived from Montreal a few minutes after his death. Deceased was unmarried.

The flag on the Rideau Club is at half-mast in memory of the deceased. The funeral takes place in Montreal to-morrow afternoon.

Dr. Dawson was born in Pictou, N.S., in 1849. He was educated in Montreal, and was a partial student at McGill University. In 1869 he went to London and took a three years' course in the Royal School of Mines, where he captured several honours. On his return to Canada he spent a year in mining surveys in Nova Scotia and in lecturing at Union College, Quebec. In 1873 he was appointed geologist and botanist to the North American Boundary Commission, between Lake of the Woods and the Rockies. He was engaged two years in this work and prepared several valuable reports on the geology and resources of the country.

In 1875 he was appointed on the staff of the Geological Survey of the Dominion, becoming assistant director in July, 1883, and director and deputy head of the department in 1885. During his work on the survey he explored a large area of the Western country. He prepared a report on fur seals for the British commissioners, spending the summer of 1892 in Behring's sea for the purpose, and for his services received the title of C.M.G.

He received the degree of LL.D. from Queen's University in 1890, and from McGill in 1891. In the same year he was awarded the Bigsby gold medal by the London Geological Society, and was elected a fellow of the Royal Society. In 1893 he became president of the Royal Society of Canada, in 1897 he became a corresponding member of the Zoological Society of London, and in 1895 a fellow of the American Association for the Advancement of Science. In 1897 he was awarded the yearly gold medal of the Royal Geographical Society for his work as a whole.

Few men knew as much of the topography and resources of North and Western Canada as the deceased. For years Dr. Dawson's field work was performed in British Columbia or in the Peace river country. He went to the Yukon with Wm. Ogilvie as his companion in 1894, being the first scientist to visit that now famous district. The capital of the Yukon, Dawson, was named after him by Joe Laduc, who located the original town site.

deeply deplored.

Head of the Geological Survey of Canada.

A Distinguished Scientist and an Enthusiastic Explorer—Death Due to Acute Bronchitis.

(Special Despatch to The Globe.)

Ottawa, March 3.—Mr. George Mercer Dawson, head of the Geological Survey of Canada, died at 6.15 o'clock last evening, at his rooms in the Victoria Chambers, from acute bronchitis. The deceased was ill for only 48 hours, and his sudden death was a great shock to his numerous friends. On Thursday he was apparently in good health, and dined, as was his custom, at the Rideau Club. When attacked with bronchitis he was unable to shake it off, and succumbed after only a short struggle. His mother, Lady Dawson, arrived from Montreal just about the time he was breathing his last. The remains will be taken to Montreal for interment. The late Dr. Dawson, while physically a man of delicate frame, had displayed great capacity for enduring hardship, and was an enthusiastic and courageous explorer. He possessed mental gifts of the highest order, and his gentle disposition endeared him to all with whom he came in contact.

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Dr. George Mercer Dawson, C.M.G., LL.D., A.R.S.M., F.R.S., F.G.S., F.R.S.C., etc., Director of the Geological Survey of Canada, was the son of Sir William Dawson, F.R.S., for many years Principal of McGill College, Montreal. Dr. Dawson was born at Pictou, Nova Scotia, August 2, 1849, and was educated in Canada, Scotland, and in the Royal School of Mines, Jermyn street, of which he is an associate, and where he was also awarded the Murchison and Edward Forbes medals. His first scientific appointment was as geologist and botanist to the British North American Boundary Commission in 1873-4, which marked out the international boundary between the United States and the Dominion of Canada for a distance of eight hundred miles in length, from the Lake of the Woods to the Rocky Mountains. His report on the geology and resources of the region in the vicinity of the forty-ninth parallel, published in 1875, clearly proved his capability as a field geologist, and in the same year he was appointed to the Geological Survey of Canada, with which he remained, first as Assistant Director, under Dr. A. R. C. Selwyn, F.R.S., and afterwards as Director, on the retirement of Dr. Selwyn in 1894.

Dr. Dawson's geological work was mainly carried on in the Northwest Territories of the Dominion and in British Columbia. In the course of his explorations Dr. Dawson visited such outlying regions as the Queen Charlotte Islands (1878), the northern part of British Columbia and Peace River (1879), and the Yukon district (1887). Our present knowledge of the geology of these districts is largely from the observations carried out by Dr. Dawson. Even in British Columbia, apart from the preliminary reconnaissance of Dr. Selwyn in 1871, and the work of the late Mr. J. Richardson on the cretaceous strata of the coast areas, we are almost entirely indebted to Dr. Dawson for establishing the taxonomic relations of the rocks.

On the great plains of the northwest Dr. Dawson investigated more particularly the relations of the cretaceous and the Laramic formations; and he discovered the presence in the first-named formation in southern Alberta of an important series of fresh-water rocks, the Belly River group, which has not been noticed in the section of the cretaceous worked out by Meek and Hayden on the upper Missouri. In the adjacent Rocky Mountain region another distinct group, the Kootanaie, was likewise reorganized by Dr. Dawson as representing a period in the early cretaceous.

Among the more ancient rocks of Canada Dr. Dawson ascertained that a great part of the Huronian formation in the Lake of the Woods district is composed of metamorphosed volcanic rocks. In British Columbia also, after a detailed examination of over 6,000 square miles of the interior plateau region, he made known the existence of a thick series of mica schists and gneisses of presumed archaean age, which are succeeded by Cambrian, Ordovician, Silurian and carboniferous strata. In the Cordilleran region of this Province he further noted the occurrence of great deposits of contemporaneous volcanic rocks, in various stages of metamorphism.

At the other end of the geological scale Dr. Dawson largely contributed to our knowledge of the glacial phenomena, which in Canada are so strikingly developed. He was the first to describe the glacial origin of the Missouri Couteau; and in the interior plateau of British Columbia he showed that at one period of the ice age there was a confluent ice-mass, the surface of which stood at a level of 7,000 feet above the sea, and that it might have been at least from 2,000 to 3,000 feet in thickness. He further established the fact that the movements of the glacier ice in this region were not only to the south and southeast, and through the transverse valley and gaps of the coast ranges to the ocean, but that it had also a northerly flow, and passed down the valleys of the Pelly and Lewes branches of the Yukon River.

Dr. Dawson's services to science and the State were not limited to geology, for in 1891 he was appointed one of H. M. Bering Sea Commissioners, and made an extended cruise in that sea, investigating matters relating to the life and history of the fur seal. Afterwards Dr. Dawson took part as one of the commissioners in the conference held at Washington, and he subsequently assisted in the preparation of the British case, which was laid before the Bering Sea Arbitration Commission at Paris.

The value of Dr. Dawson's work was duly recognized by geologists in England as well as in Canada. The Geological Society of London awarded to him the Bigsby medal in 1891, and in the same year he was elected a fellow of the Royal Socety. For his services on the Bering Sea Commission he also received the title of C.M.G. He served as President of the Royal Society of Canada in 1894. Dr. Dawson was the recipient in 1897 of a gold medal from the Royal Geographical Society, a well-deserved honor.

THE CITIZEN OTTAWA.
ONDAY, MARCH 4, 1901

EMINENT GEOLOGIST.

Dr. George M. Dawson, C.M.G., Died on Saturday Evening After a Brief Illness.

Dr. George M. Dawson, C.M.G., director of the Geological Survey of Canada, died at his rooms in the Victoria Chambers, at 6.15 o'clock Saturday evening, from the effects of acute bronchitis, after forty-eight hours' illness. He was in his office on Thursday and at night dined at the Rideau club. On Friday he was taken seriously ill and although a hard fight was made for life, he proved unequal to cope with the disease which had attacked him in a virulent form. His brother, Mr. W. Bell Dawson, of the department of marine and fisheries, and Dr. R. W. Powell were present when the end came. His mother, Lady Dawson, of Montreal, was telegraphed for Saturday morning and arrived on the 6.30 p.m. express fifteen minutes after he had passed away. She was accompanied by her daughter, the wife of Prof. Harrington, of McGill university.

The announcement of Dr. Dawson's death caused a great shock to the community. He was widely respected and honored, not alone for his great talents, but because he was a man of an exceptionally genial and loveable character. His colleagues on the staff of the Geological survey were almost prostrated with grief. There was a warm attachment between the director and his staff and his unexpected demise has caused a genuine sorrow. In the Rideau club there is also grief. There he had dined for many years and formed warm friendships. He was a delightful companion. His fund of knowledge seemed inexhaustible, and he could converse on nearly every subject.

His death was stated by several last night to be a national loss.

From Morgan's Canadian Men and Women of the time is is learned that George Mercer Dawson, C.M.G., D.S., LL.D., F. R.S., was a son of the late Sir William Dawson, and was born at Pictou, Nova Scotia, Aug. 1st, 1849. He received his early education in Montreal, where he studied in McGill university. In 1869 he entered the Royal School of Mines, London, taking its full course, extending over three years, and passed as an associate, being first in his class, and taking the Edward Forbes medal and prize in palcontology and natural history. He had previously taken the Duke of Cornwall's scholarship in his second year. Returning to Canada he was engaged for a year in mining surveys in Nova Scotia, and in lecturing in Morrin College, Quebec. In 1873 he was appointed geologist and botanist to the North American boundary commission, engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. In this capacity he served for two years and prepared an elaborate report, with plates and maps on the geology and resources of the country in the vicinity of the 49th parallel. In connection with this work he also prepared a report on the lignite tertiary formation, a memoir on the superficial deposits and other scientific phenomena. In July, 1875, he was appointed to the staff of the geological survey of the Dominion. He became assistant director July, 1883, and director and deputy head of the department January, 1st, 1895. His work on the geological survey has been chiefly in British Columbia and the Northwest Territories, and he explored a large portion of the western country, including a boat journey of 1,300 miles, with one portage of 50 miles from the basin of the Liard river to the Yukon. One of the most important of his public services was in connection with the Behring Sea arbitration. As one of the British commissioners, he spent the summer of 1892, in the Behring Sea region for the purpose of inquiring into the conditions and facts of seal life. For his services he received the thanks of the Governor-General, and was honored by being made a companion of the Order of St. Michael and St. George. He was an author of considerable note and published several important scientific works. He received the degree of LL.D. from Queen's university, 1890, and from McGill university, 1891. In the same year he was awarded the Bigsby gold medal by the London geological society, and he was elected a Fellow of the Royal society, being elected president in 1893. In 1894 he was elected a corresponding member of the Zoological society of London, in 1895, a Fellow of the American association for the advancement of science; in 1896 he was appointed by the council of the British association to be president of the geological section for the Toronto meeting of the association, and in 1897 was presented with the society's gold medal in recognition of his distinguished services. He was unmarried and was a member of the Rideau club. He will be buried in Montreal.

THE COURIER,
DUNDEE, WEDNESDAY, MARCH 27, 1901.

Death of Yukon Discoverer.—Papers which have just been received in Dundee from Ottawa, Canada, contain information of the death of Dr G. M. Dawson, C.M.G., F.R.S., F.G.S., cousin of Mr Alfred G. Primerose, Dock Street, Dundee. Dr Dawson was one of the foremost geologists in Canada, and stood high in the world of science. Born in 1849, he received his training in Montreal and Edinburgh, carrying off high honours at both places. After a distinguished course at the Royal School of Mines, London, he returned to Canada, and in 1873 earned renown in connection with his report as geologist and botanist to Her late Majesty's British North American Boundary Commission. As a member of the Geological Survey Staff in 1875, he compiled what is now the most authentic information on the North-West Territories and British Columbia. In his Yukon explorations in 1887 and 1888, Dr Dawson made several daring journeys, being the real discoverer and describer of that now famous gold-bearing belt. As a naturalist, Dr Dawson took a foremost place, being especially noted for his work as one of the arbiters in the Behring Sea seal fisheries. With almost every scientific department in the Dominion he took an active and leading part, and his death is mourned by a large number of friends. Dr Dawson's father, Sir William Dawson, it may be mentioned, was the predecessor of Principal Peterson, of M'Gill University, Ottawa.

DR. G. M. DAWSON DEAD.

Head of the Geological Survey Passes Suddenly Away.

A painful sensation was caused both in Ottawa and Montreal by the unexpected death at the capital on Saturday evening of Dr. George M. Dawson, C.M.G., F.R.S., director of the Dominion Geological Survey, and eldest surviving son of the late Sir J. W. Dawson. Dr. Dawson was attacked by grippe early in the week, and bronchitis supervened, but no danger was at first apprehended. It was not until Saturday that Dr. Powell telegraphed that the patient had developed capillary bronchitis, and had had a bad night. Lady Dawson and her daughter, Mrs. Harrington, took the next train to Ottawa, but death took place before their arrival, or that of Dr. Rankine Dawson, Dr. Dawson's other brother. Mr. W. Bell Dawson was fortunately in Ottawa during Dr. Dawson's illness, and was able to make arrangements for his care. Dr. Dawson was unmarried. He has many friends all over Canada, especially in Montreal and Ottawa, where his loss will be very deeply regretted. The funeral takes place this afternoon from Lady Dawson's residence on University street.

George Mercer Dawson was the distinguished son of a distinguished father. Born at Pictou, N.S., he received his early education in Montreal and attended classes at McGill College, of which his father was principal. In 1869 he entered the Royal School of Mines, London, and had a brilliant career, taking the Duke of Cornwall's scholarship, the Edward Forbes medal and prize, and the first place in his year. Returning to Canada, he was for two years engaged as geologist and botanist to the royal commission then occupied in fixing the international boundary from the Lake of the Woods to the Rocky Mountains, and took the opportunity of writing some important papers on scientific problems, including the fluctuations of the great lakes. He was appointed to the Dominion Geological Survey in 1875, becoming assistant director in 1883, and director at the beginning of 1895. He has been exceedingly active in the exploration of the Canadian West, and made a canoe trip of 1,300 miles from the basin of the Liard river to that of Yukon. His surveys in the Yukon territory have been of very great importance since the discovery of the gold deposits there and the subsequent international negotiations as to the boundary. In the Behring Sea arbitration proceedings his investigations of the conditions of seal life were of great service, and won the C.M.G. He received the degree of LL.D. from Queen's University in 1890, and from McGill in 1891. In the latter year the London Geological Society awarded him the Bigsby gold medal, and he was elected a fellow of the Royal Society. In 1893 the Canadian Royal Society elected him president, and he has received many other honors from English and American scientific societies, one of the most recent being the gold medal of the Royal Geographical Society. His contributions to scientific literature were numerous and important, and his strong and genial personality will not be easily forgotten. The name of Dr. Robert Bell, assistant director of the Geological Survey, is mentioned as Dr. Dawson's probable successor.

Ottawa, March 3.—At a meeting of the Geological Survey, held this afternoon, when Dr. Whiteaves presided, it was arranged that a delegation should accompany Dr. Dawson's body to Montreal, and Dr. Whiteaves and Dr. Richard McConnell were chosen to represent the directorate and staff.

DR. GEORGE DAWSON DEAD.

DIRECTOR OF CANADIAN GEOLOGICAL SURVEY DIES SUDDENLY AT OTTAWA.

Dr. George M. Dawson, C.M.G., LL.D., F.R.S., director of the Geological Survey of Canada, died unexpectedly at Ottawa on Saturday evening from acute pneumonia, after an illness of only three days.

George Mercer Dawson was the eldest surviving son of the late Sir William Dawson. He was born at Pictou, N.S., in 1849. During the first part of his life he was an invalid, and was only able to attend a few classes at McGill. In 1869 he entered the Royal School of Mines, London, and had a brilliant career, taking the Duke of Cornwall's scholarship, the Edward Forbes medal and prize, and the first place in his year. Returning to Canada, he was for two years engaged as geologist and botanist to the royal commission then occupied in fixing the international boundary from the Lake of the Woods to the Rocky Mountains, and took the opportunity of writing some important papers on scientific problems, including the fluctuations of the great lakes. He was appointed to the Dominion Geological Survey in 1875, becoming assistant director in 1883, and director at the beginning of 1895. He has been exceedingly active in the exploration of the Canadian west, and made a canoe trip of 1,300 miles from the basin of the Liard river to that of Yukon. His surveys in the Yukon territory have been of very great importance since the discovery of the gold deposits there and the subsequent international negotiations as to the boundary. In the Behring Sea arbitration proceedings his investigations of the conditions of seal life were of great service, and won the C. M. G. He received the degree of LL.D. from Queen's University in 1890, and from McGill in 1891. In the latter year the London Geological Society awarded him the Bigsby gold medal, and he was elected a fellow of the Royal Society. In 1893 the Canadian Royal Society elected him president, and he has received many other honors from English and American scientific societies, one of the most recent being the gold medal of the Royal Geographical Society. His contributions to scientific literature were numerous and important, and many of them are considered the standard works on their subjects. It is said that he will be succeeded by Dr. Robert Bell, assistant director of the Survey.

There was a short service held at the residence of the deceased this morning, after which the remains were conveyed to the C. P. R. station for removal to Montreal, the following acting as pallbearers: The Hon. C. Sifton, the Hon. S. Fisher, Dr. Saunders, Dr. Whitegreaves, Mr. James Stewart and Mr. R. Bell.

Lady Dawson had gone to Ottawa when apprized of her son's illness, and was with him to the last. Accompanied by Master Victor Dawson and Mrs. Harrington, she returned to the city to-day. Dr. Whitegreaves and Dr. Richard McConnell also came to the city to be present at the funeral, as representing the Geological Survey.

At the Windsor station the remains were met by Dr. Rankine Dawson, Mr. Andrew Taylor and Prof. Harrington. The remains were removed to the residence of Lady Dawson, University street, whence the funeral took place this afternoon.

HAD VISITED THE YUKON.

Ottawa, March 4.—All Canada is the loser by the death of Dr. G. M. Dawson, director of the Geological Survey, which occurred on Saturday evening. The news was heard with surprise by all who knew him, for the deceased had been about his usual duties up till Thursday evening, and nobody knew so much as that he was seriously ill. Death is understood to have been due to a form of bronchitis. Though he had labored under a physical deformity from his infancy (a broken back), Dr. Dawson had been a man of unusual activity and endurance. Years before the Yukon ever was thought of as a land of rich mineral wealth, he had penetrated to the head waters of the Liard and of the Yukon rivers, passing through hardships that might have left their mark on many a man of robust frame. But under the weak exterior was the heart of a giant. He leaves behind him achievements of which his country may well be proud. He had won distinction among the geologists of the world, and his name will be perpetuated in the capital of the Yukon district, the richest gold country of the world. It may truly be said that it will be hard to find a man to succeed to the duties of the office he held under the Canadian Government. Certainly, no worthy successor will accept the post without a much higher salary than that received by the late incumbent.

THE FUNERAL.

The body of the late Dr. G. M. Dawson, director of the Geological Survey of Canada, who died suddenly in Ottawa on Saturday, was brought to Montreal this morning by the Canadian Pacific Railway. Accompanying the remains from the Capital were the Hon. Senator Primrose, Dr. J. F. Whiteaves and Mr. R. G. McConnell, officially representing the staff of the Geological Survey, and the following members of the staff: D. R. Dowling, H. Fletcher, James McAvoy, J. F. E. Johnson, Mr. P. H. Schoyn, A. P. Low, Dr. Barlow, J. C. Gwillin, William McGuinness, L. M. Lambe.

The funeral took place this afternoon from the residence of Lady Dawson, mother of deceased, on University street. A brief service was held at the house by the Rev. F. M. Dewey, pastor of Stanley Street Presbyterian Church.

Among those who followed the remains to Mount Royal cemetery in addition to the Ottawa deputation were: Dr. Barnes, Prof. Coussirat, the Rev. Dr. Robert Campbell, Prof. Bovey, A. T. Taylor, the Rev. Prof. Clarke Murray, D.D., Prof. Cox, Dr. Stirling, F. D. Monk, M.P., Alex. Robertson, Prof. Chandler, Lieut.-Col. J .H. Burland, Selkirk Cross, M.P., Dr. James Stewart, Dr. Peterson, principal of McGill University; James Coristine, Dr. D. McEachran, Prof. Penhallow, J. W. Brakenridge, Samuel Finley, Dr. Porter, Prof. Evans, the Rev Dr. George, the Rev. Hugh Pedley, Dr. Johnston.

DEATH OF PROF. DAWSON.

The death of Prof. George Mercer Dawson, director of the geological survey, will be a serious loss not only to the civil service of the Dominion, but to the scientific world. His was a brilliant career from the days in which, as a student in the Royal School of Mines, he secured the Duke of Cornwall's scholarship and Forbes medal, to more recent times when as one of the British commissioners on the Behring Sea arbitration he rendered such invaluable service to his country and to the empire. On that occasion he received the thanks of His Excellency the Governor-General and the C.M.G. from Her Majesty Queen Victoria. His work as a scientist was recognized by the universities of Canada and by the geographical, geological and ethnological societies of Great Britain and elsewhere. The two former societies of London awarded him gold medals for his work in these respective fields of scientific research.

Prof. Dawson was a brilliant conversationalist, a charming companion and a great favorite with all who had the pleasure of his friendship. He devoted his life to science and his literary records of researches in the various branches to which he directed his attention remain as a monument of a career of congenial and unremitting effort on the part of a man specially endowed by nature and equipped by thorough training and experience for the performance of services of inestimable and lasting value to his country and the scientific world at large. His death at the comparatively early age of 52 when many years of useful work seemed still ahead of him will be generally deplored.

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Obituary notice. Geographical Journal. April 1901. London: England: from which G. M. D. received gold medal 1897.

George Mercier Dawson, C.M.G., LL.D., F.R.S.

We have to announce with deep regret the death of our distinguished gold medalist Dr. George M. Dawson, Director of the Geological Survey of Canada, which took place at Ottawa, on March 2, after a short illness.

George Dawson was the son of the late Sir J. William Dawson, the well-known Canadian geologist and Principal of McGill University, Montreal, and was born at Pictou, Nova Scotia, on August 1, 1849. The love of natural science, and particularly of geology, proved to be hereditary, and without disparagement to the great abilities of the father, it may be said that the son surpassed him in his own special studies.

Although handicapped by difficulties that would have broken the spirit and embittered the heart of most men, George Dawson applied himself to study with a devotion and enthusiasm that ensured success in every department, while the geniality of his nature and the unselfish generosity with which he assisted his fellow-workers will remain as a cherished memory with all who knew him.

After attending the classes of the McGill University in Montreal, and deciding to take up geology as his special subject, Dawson came to London in 1869, and went through the three-years' course at the Royal School of Mines with high distinction. Returning to Canada, he proceeded to put his training to use, both by making mining surveys in Nova Scotia and by lecturing at Quebec. The Boundary Commission charged with fixing and marking out on the ground the 49th parallel from the Lake of the Woods to the Rocky Mountains, across the then almost unknown prairies, appointed him as geologist and botanist in 1873, and for two years he was engaged in exploring work, which was exactly to his mind. Intimate acquaintance with a vast stretch of country, including some of the most featureless and monotonous regions on the face of the Earth, quickened the powers of observation to a remarkable degree. In the general natural history observations also Dawson had an opportunity of recognizing the mutual dependence of all the phenomena which can be studied in the field, and thus he early acquired broad views of geography which prevented him from ever falling into the narrower modes of thought of a specializing geologist. A voluminous report on the geology and resources of the country on the southern edge of western Canada was the permanent result of these two years' work.

Immediately afterwards Dawson was appointed to a post on the Dominion Geological and Natural History Survey, a service that has trained many able travellers.

The work in which he made his name as a geologist and as a traveller was the preliminary survey of the extreme western province and territories of the Dominion, from the international frontier to the Arctic Sea. Here he was a pioneer of geographical discovery as well as of geological investigation. His journeys were on a heroic scale, including many thousand miles of canoe travelling; and the comprehensiveness of the work done can only be realized from the official reports which were regularly published in the annual volumes issued by the survey. How wide and clear his views of the structure of Canada were may be best judged from the short but singularly luminous chapter on the physical geography of the Dominion, published in the 'Handbook' for the British Association meeting at Toronto in 1897. We know no better geographical description of any region, whether we consider the profound personal knowledge it displays or its clear and cautious generalizations.

The explorations of the Yukon district, which Dr. Dawson commenced in 1887, was the prelude to the development of the great mineral resources of that region; and his name has very appropriately been given to the chief centre of its mining activity. It illustrates the modesty of the man to recall that Dr. Dawson would never acknowledge that the town was named after him; when pressed with a direct question on one occasion, he said, "I think it must have been after some other Dawson, there are so many Dawsons in Canada!"

In 1892, Dr. Dawson was one of the commissioners appointed to investigate the question of seal-life in Bering Sea, with reference to the arbitration proceedings with the United States; and for his services in this matter he was made a C.M.G., and received the thanks of the Canadian Government. Other honours came to him in full measure, honorary degrees from the Canadian universities, and the presidency of the Royal Society of Canada, and of the Geological Section of the British Association, the gold medals of the Geological and of the Royal Geographical Societies, and the Fellowship of the Royal Society. In 1894, on the retirement of Dr. A. R. C. Selwyn, Dr. Dawson was promoted to be the Director of the Canadian Geological Survey. During his tenure of that office, he did all in his power to encourage his staff to undertake journeys of exploration, and the numerous papers published in our recent volumes by members of the Canadian Survey show how heartily the encouragement was responded to.

During the meeting of the British Association at Toronto in 1897, Dr. Dawson was indefatigable in helping the numerous visitors from Europe to make the most of their opportunities in seeing Canada. He himself accompanied one fortunate party across the continent in the special railway car *Chaudière*, and none who were privileged to take part in that memorable trip can ever forget the kindness he displayed. No question was asked by the most learned geologists of the party that could not be answered in a moment, backed with references to the Reports which

have been successively explored and identified by two Chilian explorers: from Ralun to the Rio Blanco valley nearly as far as the thermal waters by Captain Valverde in 1885; and from this place as far as Nahuelhuapi by Captain Barrios

Death of Dr. Dawson

Director of the Geological Survey Died Very Suddenly Yesterday.

Was in His Office at Ottawa as Late as Thursday Last.

One of Commissioners Who Investigated Seal Life in Behring Sea.

From Our Own Correspondent.

Ottawa, March 2.—(Special)—The country sustained a great loss by the death to-night of Dr. G. M. Dawson, director of the geological survey. He was at his office as recently as Thursday, when he caught cold, and death resulted from bronchitis.

[George Mercer Dawson was the eldest surviving son of Sir J. W. Dawson, and was born in Pictou, N. S., August 1, 1849. He received his early education in Montreal, where he studied in McGill University as a partial student. In 1869 he entered the Royal School of Mines, London, taking its full course of study, extending over three years, and passed as an associate, being first in his class, and taking the Edward Forbes medal and prize in palaeontology and natural history. He had previously taken the Duke of Cornwall's scholarship in his second year. Returning to Canada, he was engaged for a year in mining surveys in Nova Scotia, and in lecturing in Morrin College Quebec. In 1873 he was appointed geologist and botanist to H. M.'s North American boundary commission, engaged in fixing the boundary line from the Lake of the Woods to the Rocky mountains. In this capacity he served for two years, and prepared an elaborate report, with plates and maps, on the geology and resources of the country in the vicinity of the 49th parallel. In connection with this work he also

tent teachers.

A convention is being held here to discuss ways and means for the bringing about of a better observance of Sunday in British Columbia. Rev. J. G. Sheerer, field secretary of the Lord's Day Alliance of Canada, is the principal speaker.

The tramp ship Palatina arrived to-day to load lumber.

The Hastings and Moodyville saw mill employees have demanded an increase of pay.

DR. G. M. DAWSON, C. M. G., DIED ON SATURDAY

The Remains Were Taken to Montreal This Morning for Interment.

A Noted Geologist.

A death which has come as a severe shock to the citizens of Ottawa is that of Dr. George Mercer Dawson, Deputy Head and Director of the Geological Survey Department, which occurred on Saturday evening at 6.15 o'clock. He had been ill only two days, having been in his office on Thursday. On Friday he was taken ill with an attack of acute bronchitis from which he died. Dr. R. W. Powell, who had been in attendance, and his brother, Mr. W. Bell Dawson, of the Marine and Fisheries Department, were present when the end came. His mother, Lady Dawson, and his sister, Mrs. Harrington of Montreal, arrived shortly after the death had occurred.

The flag on the Rideau Club flew at half-most yesterday in memory of Dr. Dawson, who was a member of the club. He was unmarried.

George Mercer Dawson, C. M. G., D. S., LL. D., F. R. S., was a son of the late Sir William Dawson and was born at Pictou, Nova Scotia, August 1st, 1849. His early education was received in Montreal and at McGill University. He entered upon the three years' course at the Royal School of Mines, London, in 1869, and graduated as an associate, being first in his class and taking the Edward Forbes' medal and prize in Paleontology and natural history. In his second year he had taken the Duke of Cornwall's scholarship. For a year after his return to Canada he was engaged in mining surveys in Nova Scotia and in lecturing at Morrin College, Quebec. He was appointed in 1873 geologist and botanist to the North American Boundary Commission, which was engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. He served with this commission for

THE OTTAWA EVENING JOURNAL, MONDAY, MARCH 4, 1901.

of sermons on "Giving," taking as his text, "The widow's mite." Special envelopes were given out for the thanksgiving offering to be received next Sunday, when a special effort will be made to clear off the remaining $300 on the church debt. Next Monday evening the anniversary entertainment will be held. Refreshments will be served in the Orange Hall, after which a programme will be carried out in the church, at which Rev. Dr. S. P. Rose will preside. The Rev. T. A. Haipenny will deliver an address, and will conduct both morning and evening services next Sunday. The Rev. Salem G. Bland will preach at the afternoon service. The Epworth League meeting on Friday night will be conducted by Miss Lottie Bullman.

The Rev. Robt. Eadie, who has been ill for the past few days, has recovered and conducted the services yesterday in Bethany church. He announced that there would be a meeting of the management committee to-night, and a meeting of the Cheerful Gleaners on Friday night. The Sunday school orchestra is putting in some arduous practice in preparation for their concert to be held in the town hall on March 14th. Some of the best talent in Ottawa has already been secured for the programme.

The early closing rule which has been adopted by some of the merchants of the village seems to be meeting with great favor. Mr. G. J. Young, postmaster, has decided to conform to the rule, although he will be obliged to remain open until 8 o'clock on account of his having the post office. Messrs. F. H. Gilchrist and F. Mahon have been

St. John Sun

HN, N. B., MARCH 6, 1901

DR. GEO. M. DAWSON DEAD.

Was One of the Cleverest Scientists in the Dominion.

Son of the Late Sir William Dawson, and Was Born in Nova Scotia Fifty-One Years Ago.

OTTAWA, March 3.—Dr. George M. Dawson, C. M. G., F. R. S. E., director of geological survey of Canada, died Saturday night of capilliary bronchitis, after a short illness. Deceased was 51 years of age. He was one of the cleverest scientists in Canada and his services have been of the greatest value to the country.

Dr. Dawson was the eldest son of the late Sir William Dawson, and was born at his father's early home in Pictou, N. S. He was educated at Montreal, studying at McGill under his father, who had become president of that university. He took a full three years' course at the Royal School of Mines, London, where he graduated at the head of his class, having won all the best medals and scholarships available. One of his London masters was Professor Huxley. After a short service on the staff of Morrin College, he was appointed geologist and botanist on the Boundary commission which traced the frontier between Canada and the United States from the Lake of the Woods to the Rocky Mountains. His maps, plates and reports of the geology of that region were published in 1875. In the same year he joined the staff of the geological survey on which he served as explorer assistant director, and director more than a quarter of a century.

His work on the geological survey has been chiefly in British Columbia and the Northwest Terirtories, and in the discharge of his official duty he has explored a large portion of the western country, including a boat journey of 1,300 miles, with one portage of 50 miles, from the basin of the Laird River to that of the Yukon.

One of the most important of his public services was in connection with the Behring Sea arbitration. As one of the British commissioners he spent the summer of 1892 in the Behring Sea region, for the purpose of enquiring

facts of the case do not bear out that statement. The chief justice makes the statement that a registered letter containing the bogus list was mailed in St. John to Mr. Gilliland. The letter was mailed to Geo. O. D. Otty.

Dr. Pugsley believed that because of being thus led into error his honor the chief justice also went out of his way to reflect upon his (Pugsley's) alleged neglect of duty. He had practiced long before the bar of this province, and he had yet to be accused of neglect of duty except on this one occasion. He felt that the chief justice had gone out of his way to offer a gratuitous insult to himself and that

THE OTTAWA EVENING JOURNAL, MONDAY, MARCH 4, 1901.

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ment will be held. Refreshments will be made to clear off the remaining $300 on the church debt. Next Monday evening the anniversary entertainment, when a special effort will next Sunday, when a special effort will thanksgiving offering to be received envelopes were given out for the text, "The widow's mite." Special of sermons on "Giving," taking as his evening service he continued a ...

Editorial St. John Sun

DR. GEORGE M. DAWSON.

The unexpected announcement is made today of the death of Dr. George M. Dawson, head of the geological survey of Canada. The late director inherited from his father his taste and aptitude for scientific research and exploration, without sharing the disposition and faculty which made Sir William Dawson a pillar of theological orthodoxy. The younger Dr. Dawson did not concern himself with the theological bearing of his observations or those of other people. He did not discuss the questions to which his father gave so much thought, and none of his writings show that he was much interested in them. He concerned himself only with the scientific side of scientific subjects.

Dr. Dawson was a more effective director that his predecessor, Dr. Selwyn, because he was a practical man and kept the survey more in touch with the requirements of the country. But so far as could be seen his heart was never in the adminstration of the department as it had been in field exploration. The best of his work was done as an explorer in new fields, as he was expert in half a dozen departments of natural history, and was a man of indefatigable energy. The specialist, who is only a specialist in one small area of knowledge, has his place in a geological survey, but he is not fit to go out to an unknown region to bring back a report of the land. No one would have supposed that the frail appearing body of the little director was capable of the immense labors and great feats of endurance involved in his expeditions into the polar regions of the far northwest. But the records of his twenty years in the outside service of the survey speak for themselves.

DEATH OF DR. GEORGE M. DAWSON AFTER ONLY 48 HOURS' ILLNESS

Morning Journal

The Head of the Canadian Geological Survey Succumbed on Saturday Evening From Bronchitis—An Eventful and Honorable Career Brought Suddenly to a Close.

Ottawa, March 3.—(Special.)—Dr. George M. Dawson, C.M.G., F.R.S.E., director of the geological survey of Canada, after whom Dawson City in the Yukon is named, died here Saturday night after but 48 hours' illness, of bronchitis.

George Mercer Dawson was born in Pictou, N.S., August 1, 1849, and was the eldest son of the late Sir J. W. Dawson. He was educated at McGill University, Montreal, and in 1869 entered the Royal School of Mines, London, where he remained for three years. He was first in his class to pass, being awarded the Edward Forbes medal and prize in palaeontology and natural history. Returning to Canada he was engaged in mining surveys in Nova Scotia and also lectured in Morrin College, Quebec. In 1873 he received the appointment of geologist and botanist to Her Majesty's North American Boundary Commission, which was engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. In this capacity he served for two years, and prepared a highly satisfactory report, with plates and maps, on the geological and other resources of the country. In this connection he also prepared a report on the Lignite Tertiary Formation, a memoir on the superficial deposits of the great interior plains of America. On the termination of his labors on the boundary survey, he was appointed to the staff of the Geological Survey of the Dominion in 1875. He became assistant director in July, 1883, and deputy head of the geological survey in January, 1895. While attending the School of Mines he paid special attention to geology and palaeontology under the tuition of Messrs. Ramsay, Huxley and Etheridge, and to chemistry and metals in the laboratories of Frankland and Percy. His work in the geographical survey was chiefly in British Columbia and the Northwest Territories, and while in the discharge of his official duties he explored a large portion of the western country, including a boat journey of 1300 miles. One of the most important of his public services was in connection with the Behring Sea arbitration, and as one of the British commissioners he spent the summer of 1892 in the Behring Sea region for the purpose of enquiring into the facts and conditions of seal life. He received the degree of LL.D. from Queen's University in 1890, and a similar degree from McGill University in 1891. In the same year he was awarded the Bagsby gold medal from the London Geological Society for his services to the science of geology. He was also a fellow of the Royal Society of Geology of London. In 1893 he was elected president of the Royal Geological Society of Canada; in the following year was made a corresponding member of the Zoological Society of London, and in 1895 was elected a fellow of the American Association of Geology for the Advancement of Science. In 1896 he was appointed by the Council of the British Association president of the geological section for the Toronto meeting of the association, and in the next year was awarded the yearly gold medal of the Geographical Society for his work as a whole.

Deceased was the author of several works on geology.

The Saturday Globe.

UTICA, SATURDAY, MARCH 9, 1901.

The Late GEORGE M. DAWSON, of Ottawa.

THE EMINENT GEOLOGIST, WHOSE DEATH IS A LOSS TO THE DOMINION.

GEORGE M. DAWSON.

The Late Head of the Canadian Geological Survey.

Ottawa, March 7.—The death of George Mercer Dawson, director of the Canadian Geological Survey, caused general regret among his wide circle of friends and admirers in the Dominion. He was a son of Sir J. W. Dawson and was born in Picton, N. S., in 1849. He received an early education in Montreal, where he took a course as partial student at McGill University. In 1869 he entered the Royal School of Mines, London, where he made a brilliant course. Returning to Canada, he was engaged for a year in mining surveys in Nova Scotia and in lecturing in Morrin and the funeral took place in Montreal this week. The announcement of the decease of the genial head of the geological survey created profound grief among the staff, with whom Mr. Dawson was most popular, and was a great surprise to the whole community, as the illness of the eminent geologist was not generally known, even in the city. Dr. Dawson was unmarried and roomed at the Victoria chambers. In scientific circles his name was a household word throughout the Dominion, and his labors have won him distinction as a geologist of international repute. His death at such an early age is a national loss.

Mail DR. G. M. DAWSON. Laquette March 4 1901

Dr. Dawson, the director of Canada's Geological Survey, died suddenly at Ottawa on Saturday night. This famous scientist was a son of Sir William Dawson, for many years principal of McGill University, and eminent as a geologist. Sir William did a great deal of exploratory work, both in the East and the West, before he settled down at McGill. He surveyed much of the Nova Scotia coal region, and made its value known, in the fifties. As early as 1858 he examined and reported upon the copper of Georgian Bay and Lake Superior. A powerful writer on scientific subjects was Sir William. His works establishing the harmony of the Biblical revelation with the revelation of geology are monuments to his industry and his skill. The son, George M., followed in the father's path, for he devoted himself to science, and more particularly to the geological branch. His abilities were early recognized by the Government, and he became one of the pioneer explorers of our great West. Dr. Dawson was among the first to cross the continent for exploration purposes. He entered the wild Kootenay country, and came out with the story of its wealth in silver, in gold, and in coal. To the north he was subsequently sent. Passing across our prairies, entering the mountain region, pressing on towards the Arctic circle, he reached the Yukon, and was able to report upon the marvellous gold deposits of that region. Dawson City is named after the great explorer. But Dr. Dawson performed other services of a scientific character for the country. One of especial value was in connection with the Behring Sea question. He spent a season on the Aleutian Island, observing the habits of the seals, their coming and going, and the manner of their capture, and prepared a report which sustained his country's case, and helped us to win at the Paris arbitration. The doctor became director of the Geological Survey in 1895, in succession to Dr. Selwyn, who had followed the distinguished Sir William Logan. He has done important work for Canada, all making for material development through the utilization of the stores of wealth that nature has given us. Universally will his early and sudden demise be deplored.

Lord Strathcona

T. D. Form 3
14—8—00

TRANS-ATLANTIC CABLEGRAM

Govt.

No. Message 8 C2 No. Words 22

6 71 2 Mch. 10 1901

The following Cablegram has been received, via MACKAY-BENNETT CABLES, working in connection with the CANADIAN PACIFIC RAILWAY COMPANY'S TELEGRAPH, at 1220 p M.

FROM London TO Lady Dawson

Montreal

Intelligence death of Dr.
Dawson greatly
and you
your family have
heartfelt sympathy.

Strathcona

This is an unrepeated Telegram, and is delivered by request of the sender subject to the conditions printed on Form No. 2.

293 University St

FORM 1.
Cox's Patent INFOLD. Canada, Nov. 10th, 1883; U.S., May 27th, 188
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H. P. DWIGHT, President and General Manager.

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TELEGRAM

To Lady Dawson

Use this space for Continuation of Lengthy Addresses,
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Rec'd Mar 5

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Mar 5 1901

From Baltimore md 5

Inexpressibly shocked to
hear the sad news heartfelt
sympathy
Wm Osler

The Gazette.

MONTREAL, FRIDAY, MARCH 8.

THREE DIRECTORS.

Apart from the irreparable loss which the lamented death of Dr. G. M. Dawson has caused to a multitude of personal friends all over the Dominion, the close of his too short career marks an epoch in the history of one of the best known and most useful of Canadian organizations. The contribution of Dr. Dawson's family to the work of the Geological Survey forms no small part of that history. Sir J. William Dawson came to Montreal forty-five years ago with a reputation among men of science which constantly increased after he became principal of McGill. He had been Sir Charles Lyell's co-worker in his native province. Here Sir William Logan found him, a willing and valuable helper. The survey had been in operation a dozen years when he settled in Montreal. Notwithstanding the laborious and delicate nature of his educational and administrative duties, which he ever faithfully and fruitfully discharged, he rendered services to the survey which its director did not fail to acknowledge. In the introduction to the great Report of 1863, entitled Geology of Canada, Sir William Logan gratefully reviews his researches in special fields of geology. The same honorable service was continued in subsequent years. Some of Sir William Dawson's most important contributions to the Survey's publications appearing after Logan's retirement. These contributions are related in subject to Sir

through Mr. Henry Black, petitioned the Government for aid, and on motion of Hon. S. B. Harrison the sum of £1,500 sterling was voted. Meanwhile, Lord Sydenham's untimely death left the governor's office vacant and it devolved on Sir Charles Bagot, his successor, to appoint a geologist. Mr. W. E. Logan, a native of Montreal, was already favorably known to the geologists of England, and the letters on his behalf of De la Beche, Murchison, Sedgwick and Buckland left no doubt as to his qualifications. In the Report of 1863, which, as already indicated, contains the results of twenty years' enquiry, Sir W. E. Logan does honor to some of the pioneers of Canadian geology, giving the first place to Dr. Bigsby, to whom Sir William Dawson has dedicated all of the chapters of "Salient Points in the Science of the Earth." He was secretary to the Boundary Commission under the Treaty of Ghent, and his first contribution is dated 1823. His range of investigation extended from Quebec to Lake Superior, and beyond, and on the store of facts which he had collected and published, Sir W. Logan says that the greatest reliance can be placed. Major-General Baddeley, R.E., had while still a subaltern explored the Saguenay region and Gaspe Peninsula. Lieut. Ingall, Sir R. H. Bonnycastle (whose books we still read), Dr. James Wilson, Dr. Andrew F. Holmes (the unforgotten Dean of McGill's Medical Faculty), Mr. Robert Abraham, editor of The

Times April 2 1901

UNEXPLORED CANADA.

We have heard much lately of unexplored Africa. But the truth is that there is quite as much of the American Continent unexplored as of the African. There are great areas in South America which have probably never been trodden by the foot of the white man. And what is still more remarkable, Dr. G. M. Dawson, of the Canadian Survey, has recently shown to the Ottawa Field Naturalists' Club that of the Dominion, one of the oldest and most prosperous colonies, something like one-third still remains unexplored. Such very vague and misleading ideas prevail as to the actual area of Canada available for settlement, as to the real value of the Dominion as a colony, that it may be of service to reproduce Dr. Dawson's main facts and conclusions.

A glance at the map which accompanies Dr. Dawson's paper shows that, while many of the larger unexplored areas may be said to lie to the north of the limit of profitable agriculture, considerable regions situated to the south of this limit still await examination. Large districts, again, in which no farmer will ever voluntarily settle, may afford timber which the world will be glad to get when the white pine of the nearer forests is more nearly exhausted; while, with respect to mineral resources, it is probable that the value of those which exist in the unexplored regions will be found, area for area, to be equal to those of the known regions, comparing each particular geological formation with its nearest representative. On the grounds alone, therefore, of geographical knowledge, and of the discovery and valuation of the reserves of the country in timber and minerals, the exploration of all these unknown or little-known regions may be amply justified. Taking a line drawn north and south in the longitude of the Red River Valley, which is, as nearly as may be, the middle of Canada from east to west, it may confidently be stated that by far the larger part of the country in which agricultural settlement is possible lies to the west, while the great bulk of the actual population lies to the east of this line. Looking to this grand fundamental fact, it is probable that the time will come when these conditions with respect to population will be completely reversed.

This disposition of the cultivable land depends partly upon the physical characteristics of the country, and in part on its climatic conditions. Beyond Winnipeg, and stretching therefrom to the west and north-west, is the great area of prairie, plain, and plateau, which, wider near the 49th parallel than elsewhere on the continent, runs on in one form or other, though with diminishing width, to the Arctic Ocean. This is, generally speaking, an alluvial region, and one of fertile soils. Very fortunately, and as though by a beneficent provision of nature, the climatic features flavour the utilization of this belt. The summer isothermals, which carry with them the possibility of ripening crops, trend far to the north.

Beginning on the extreme north-west, Dr. Dawson reviews the various areas of the Dominion which may still be regarded as unexplored :—

1. Area between the eastern boundary of Alaska, the Porcupine river and the Arctic coast, 9,500 square miles, or somewhat less than Belgium. This area lies entirely within the Arctic circle.

2. Area west of the Lewes and Yukon rivers and extending to the boundary of Alaska, 32,000 square miles, or somewhat larger than Ireland. This country includes the head-waters of the White and probably of the Tanana rivers, and, being comparatively low and sheltered from the sea by one of the highest mountains ranges on the continent, the St. Elias Alps, doubtless possesses some remarkable peculiarities of climate.

3. Area between the Lewes, Pelly, and Stikine rivers and to the east of the coast ranges, 27,000 square miles, or nearly as large as Scotland. This has been penetrated only by a few prospectors, from whom, and from Indians, the courses of rivers shown on the maps published in connexion with the Yukon Expedition Report are derived. It lies on the direct line of the metalliferous belt of the Cordillera, and its low lands are capable of producing hardy crops.

4. Area between the Pelly and Mackenzie rivers, 100,000 square miles, or about twice the size of England. This belongs partly to the Yukon basin and partly to that of the Mackenzie, and includes nearly 600 miles in length of the main Rocky Mountain range. Many years ago Mr. A. K. Isbister penetrated the northern part of this area for some distance on the line of the Peel river, but, owing to the manner in which he had to travel, little accuracy can be attributed to his sketch of that river. Abbé Petitot also made a short journey into its northern part from the Mackenzie river side, but, with these exceptions, no published information exists respecting it.

5. Area between Great Bear Lake and the Arctic coast, 50,000 square miles, or about equal to England in size. Nearly all of this lies to the north of the Arctic circle.

6. Area between Great Bear Lake, the Mackenzie, and the western part of Great Slave Lake, 35,000 square miles, or larger than Portugal. In both of these areas, between 1864 and 1871, the indefatigable missionary, Abbé Petitot, made numerous journeys, of which he subsequently published an account. As Petitot's instruments consisted merely of a compass and a watch, which he rated by the meridian passage of the sun, it must be assumed that his mapping of the country does not possess any great accuracy. His work, however, considering the difficulties under which it was performed, is deserving of all praise, and his descriptions of the character of the country traversed are most valuable. It does not appear from his account of these regions that they are likely to prove of great utility to civilized man, except as fur preserves, or possibly for the minerals which they may contain. He writes :—

Ce pays est composé de contrées silencieuses comme le tombeau, des plaines vastes comme des départements, des steppes glacés plus affreux que ceux de la Sibérie, de forêts chétives, rabougries comme on n'en voit que dans le voisinage des glaciers du Nord.

7. Area between Stikine and Liard rivers to the north, and Skeena and Peace rivers to the south, 81,000 square miles, or more than twice as large as Newfoundland. This includes a portion of the western Cordillera, and, between the Liard and Peace rivers, a large tract of the interior plateau region of the continent, parts of which, there is reason to believe, consist of good agricultural land. Its western extremity was crossed in 1866 and 1867 by the exploratory survey of the Western Union or Collins's Telegraph Company, then engaged in an attempt to connect the North American and European telegraph systems through Asia. No details of this part of their exploration have, however, been published, and if we may judge from other parts of their line, since checked, the survey made was of too rough a character to possess much geographical value.

8. Area between Peace, Athabasca, and Loon rivers, 7,500 square miles, or about half as large as Switzerland.

9. Area south-east of Athabasca Lake, 35,000 square miles. This, again, may be compared in extent to Portugal.

10. Area east of the Coppermine river and west of Bathurst Inlet, 7,500 square miles. This, again, may be compared to half the area of Switzerland.

11. Area between the Arctic coast and Back's river, 31,000 square miles, or about equal to Ireland.

12. Area surrounded by Back's river, Great Slave Lake, Athabasca Lake, Hatchet and Reindeer Lakes, Churchill river, and the west coast of Hudson Bay, 178,000 square miles. Much larger than Great Britain and Ireland, and somewhat larger than Sweden. The lakes and rivers shown in this great region depend entirely on the result of the three journeys made by Hearne in 1769-1772. Hearne's general account of it is not very encouraging, but before long we shall know more about it. He writes :—"The land throughout the whole tract of country is scarcely anything but one solid mass of rocks and stones, and in most parts very hilly, particularly to the westward, among the woods." The extreme north-eastern extremity of this region was also crossed by Lieutenant Schwatka in the course of his remarkable journey to King William Land, but his geographical results possess little value.

13. Area between Severn and Attawapishkat rivers and the coast of Hudson Bay, 22,000 square miles, or larger than Nova Scotia. Several lakes and rivers are shown upon the maps in this region in practically identical form since Arrowsmith's map of 1850, but Dr. Dawson has been unable to ascertain the origin of the information.

14. Area between Trout Lake, Lac Seul, and the Albany river, 15,000 square miles, or about half the size of Scotland.

15. Area to the south and east of James Bay, 35,000 square miles, which also may be compared to the area of Portugal. This region is the nearest of those which still remain unexplored to large centres of population. It is probable that much of it consists of low land which may afford valuable timber.

16. Area comprising almost the entire interior of the Labrador Peninsula, or North-East Territory, 289,000 square miles. This is more than equal to twice the area of Great Britain and Ireland, with an added area equal to that of Newfoundland. Several lines of exploration and survey have been carried for a certain distance into the interior of this great peninsula, among which may be mentioned those of Professor Hind, Mr. A. P. Low, and Mr. R. F. Holme. In all probability this entire region consists of a rocky plateau or hilly tract of rounded archæan rocks, highest on the north-east side and to the south, and sloping gradually down to low land towards Ungava Bay. It is known to be more or less wooded, and in some places with timber of fair growth, but if it should be possessed of any real value, this may probably lie in its metalliferous deposits. In this tract of country particularly there is reason to hope that ores like those of Tilt Cove, in Newfoundland, or those of Sudbury, in Ontario, may occur.

To sum up briefly what has been said as to the larger unexplored areas of Canada, it may be stated that while the entire Dominion is computed at 3,470,000 square miles, about a million square miles of the Continent alone, exclusive of the inhospitable detached Arctic portions, are for all practical purposes entirely unknown.

GEOLOGICAL SURVEY CHIEF.

Dr. George M. Dawson and His Work for Science.

Dr. G. M. Dawson, whose name is announced as the successor of Dr. Selwyn as head of the Geological Survey of Canada, is a native of Nova Scotia, the oldest surviving son of Principal Dawson, of McGill college, Montreal, and now in his 46th year. He received his early education in Montreal, but did not enter the university except as a partial student, in consequence of delicate health. In 1869 he entered the Royal School of Mines, London, and took its full course of study, extending over three years. He passed in 1872 as associate of the Royal School of Mines, taking the first place in his class, and the Edward Forbes medal and prize in palæontology and natural history. He had previously taken the Duke of Cornwall's scholarship in his second year. (See certificates below.) On returning to Canada he was engaged for a year in mining surveys in Nova Scotia, and in lecturing in Morin college, Quebec. He was then appointed geologist and botanist to the British North-American Boundary commission, in which capacity he served for two years, and prepared an elaborate report on the geology and resources of the country in the vicinity of the 49th parallel, which was published by the commission. In conection with this work he also prepared a report on the lignite tertiary formation, a memoir on the superficial deposits of the great interior plains of America, which was published in the proceedings of the Geological Society of London, of which he is a fellow, and papers on the locust visitation, and on the fresh water sponges of Canada, which were published in the Canadian "Naturalist;" also a paper on the fluctuations of the great American lakes, published in "Nature." On the completion of the boundary survey, he received an appointment on the staff of the Geological Survey of the Dominion, and has been much occupied in the survey of British Columbia.

While attending the school of mines, Mr. Dawson devoted special attention to geology and paleontology, under the able tuition of Ramsay, Huxley and Etheridge, and to chemistry and metallurgy in the laboratories of Frankland and Percy. In connection with his work on the Boundary commission, he has given much time and study to the special geology and fossils of the principal North American formations. He is also a good microscopist and a skilful draughtsman. His merits as a careful observer and accurate and lucid describer may be judged of by his published reports, while his personal character and relations with his colleagues have been of the best and most cordial character.

Following is a sketch of his work:—George M. Dawson, C. M. G., D. S., A. R.

Montreal Gazette, Jan 14. 95.

Times OBITUARY. April 2 1901.

Dr. George Mercer Dawson.

Our Ottawa Correspondent telegraphed on Saturday:—"Dr. G. M. Dawson, director of the Geological Survey of Canada, one of the most brilliant men of science the country has produced, died to-night after two days' illness."

Dr. George Mercer Dawson was a son of the late Sir John William Dawson, the distinguished geologist and naturalist, and was born in Picton, N.S., on August 1, 1849. He received his early education in Montreal, where he studied in McGill University as a partial student. In 1869 he entered the Royal School of Mines, London, taking its full course of study extending over three years, and passed as an associate, being first in his class and taking the Edward Forbes medal and prize in palæontology and natural history. He had previously won the Duke of Cornwall's scholarship in his second year. Returning to Canada, he was engaged for a year in mining surveys in Nova Scotia and in lecturing in Morrin College, Quebec. In 1873 he was appointed geologist and botanist to the North American Boundary Commission engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. In this capacity he served for two years, and prepared an elaborate report, with plates and maps, on the geology and resources of the country in the vicinity of the 49th parallel. In connexion with this work he also prepared a report on the lignite tertiary formation, a memoir on the superficial deposits of the great interior plains of America, and papers on the locust visitation, on the fresh-water sponges of Canada, and on the fluctuations of the great American lakes.

On the termination of his labours on the boundary survey Dr. Dawson was appointed in July, 1875, to the staff of the Geological Survey of the Dominion. He became assistant director in July, 1883, and director and deputy head of the department of the Geological Survey on January 1, 1895. While attending the School of Mines he devoted special attention to geology and palæontology under the tuition of Ramsay, Huxley, and Etheridge; and to chemistry and metallurgy in the laboratories of Frankland and Percy. His work on the Geological Survey was done chiefly in British Columbia and the North-West Territory, and in the discharge of his official duty he explored a large portion of the western country, including a journey by boat of 1,300 miles, with one portage of 50 miles, from the basin of the Liard river to that of the Yukon. One of the most important of Dr. Dawson's public services was in connexion with the Behring Sea Arbitration. As one of the British Commissioners he spent the summer of 1892 in the Behring Sea region for the purpose of inquiring into the conditions and facts of seal life. The report of the Commissioners constituted the case of the British Government on this part of the subject, and was of great service. For his services on this occasion he received the thanks of the Governor-General in Council and was made a C.M.G. In addition to his official reports Dr. Dawson was the author of a large number of notes and papers on geological, geographical, and ethnological subjects. He received the degree of LL.D. from Queen's University in 1890, and from McGill University in 1891. In the same year he was awarded the Bigsby gold medal by the London Geological Society for his services to the science of geology, and was elected a Fellow of the Royal Society. In 1893 he was elected President of the Royal Society of Canada, in 1894 he was elected a corresponding member of the Zoological Society of London, and in 1895 a Fellow of the American Association for the Advancement of Science. In 1896 he was appointed by the council of the British Association president of the geological section for the Toronto meeting of the association, and in 1897 he was awarded the yearly gold medal of the Royal Geographical Society for his work as a whole.

LONDON: THURSDAY, MARCH 7, 1901.

THE CANADIAN GAZETTE.

THE LATE DR. DAWSON.

WE record with the deepest regret the death of DR. G. M. DAWSON, Director of the Geological Survey of Canada, which took place on Friday of last week after two days' illness. In communicating this sad news, the Ottawa correspondent of the *Times* rightly describes DR. DAWSON as "one of the most brilliant men of science Canada has produced," and it is lamentable to think that a man so gifted and so valuable to Canada should be cut off in the middle of his career, for DR. DAWSON had not yet reached his 51st year. But mingled with this feeling of regret there must be one of sincere gratitude for a career so crowded with activity of the highest national value and importance. It is 22 years ago since DR. DAWSON was engaged as geologist and botanist to the North American Boundary Commission in fixing the boundary line from the Lake of the Woods to the Rocky Mountains, and his reports upon the geology, resources and natural life of the great interior plains of the Dominion formed the basis of most of our knowledge on this subject. Seventeen years ago he entered upon his work in direction of the Geological Survey of Canada, and it is no exaggeration to say that the splendid services rendered by the Survey to Canada of recent years are very largely the outcome of his scientific zeal and devotion. It was in the discharge of his work on the Geological Survey that he explored a large portion of the western country, including a journey by boat of 1,300 miles, with one portage of 50 miles, from the basin of the Liard river to that of the Yukon. In more recent times DR. DAWSON took an active share in the investigation of the seal life with which the Behring Sea dispute was concerned, and the Commissioners found in his report material of the highest value and of the most entire reliability. It is unnecessary to go on to recall the many directions in which DR. DAWSON'S activities were shown, or to speak of the honours thrust upon him. In all his life-work he showed himself to be a gentleman and a patriot, and Canadians will long remember with grateful appreciation his enlightened and devoted services.

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NOMINATE DR. ADAMS

Mining Men Want Him at the Head of Geological Survey.

MEETING OF THE INSTITUTE

Interesting Papers Read on the Crow's Nest Coal Fields and Spanish Iron Ore Deposits.

With reception of Dr. Dawson's services.

There was quite a good attendance of mining men at the annual meeting of the Canadian Mining Institute, which opened in the club room of the Windsor Hotel yesterday afternoon, Mr. John E. Hardman, Montreal, occupying the chair, in the absence of the president, Mr. S. S. Fowler, of Nelson, B.C.

Several new members, recommended by the council, were elected, after which the treasurer, Mr. J. Stevenson Brown, submitted his annual report, showing that the receipts, including a balance from the previous year of $484.87, had amounted to $4,055.37, and the expenditure to $630.61 less.

The report of the secretary, Mr. B. T. A. Bell, spoke of the continued growth and prosperity of the institute, which now had a membership of 323, including 14 student members. The loss of six members by death was deplored, and the secretary remarked that since his report was prepared, Dr. George M. Dawson had passed away. He was sure that every member of the institute and every mining man in Canada deplored the untimely and unfortunate loss this country had sustained in the death of the director of the Geological Survey of Canada. The institute had already taken steps to put on record a permanent memorial of its appreciation of what Dr. Dawson had done for the mineral development of the Dominion, and had opened a subscription list, to which the institute had subscribed $100, for the purpose of painting a portrait to be presented, in conjunction with that of Dr. Selwyn, to the museum of the Geological Survey. At a later stage of the annual meeting Dr. Ami would present a review of Dr. Dawson's work. Mr. Bell concluded by stating that he would subsequently add to his report by presenting a review of the mineral industries of the country.

The report was adopted, and Messrs. W. Blakemore, P. Kirkgaard and the chairman were appointed a committee to prepare a resolution on Dr. Dawson's death, and they subsequently presented the following, which was unanimously adopted:—

"That the Canadian Mining Institute, in annual session assembled, desires to place on record its sense of the deep loss sustained by the Dominion of Canada, and especially by the mining profession of this country, in the lamentable death of Dr. George M. Dawson, late director of the Geological Survey of Canada. It recognizes the immense value of the services which he rendered in the important position which he occupied with such distinguished ability, and not least, the high qualities of mind and personal character which he displayed. The institute wishes further to express its sympathy with his surviving relatives in their irreparable loss, and herewith forwards a copy of this resolution to them."

Messrs. W. Blakemore, Montreal

THE MONTREAL MEETING OF THE CANADIAN MINING INSTITUTE.

Engineering & Mining Journal

Reported for the Engineering and Mining Journal.

March 23, 1901

The annual meeting of the Canadian Mining Institute began at the Windsor Hotel in Montreal on Wednesday, March 6th, with a good attendance of members. President S. S. Fowler was unable to be present, and Mr. John E. Hardman, of Montreal, occupied the chair.

Several new members, recommended by the council, were elected, after which the treasurer, Mr. J. Stevenson Brown, submitted his annual report, showing that the receipts, including a balance from the previous year of $484, had amounted to $4,055, and the expenditure to $3,425, leaving a balance of $630 on hand.

The report of the secretary, Mr. B. T. A. Bell, spoke of the continued growth and prosperity of the Institute, which now had a membership of 323, including 14 student members. The loss of 6 members by death was deplored, and the secretary remarked that since his report was prepared, Dr. George M. Dawson had passed away. He was sure that every member of the Institute and every mining man in Canada deplored the untimely and unfortunate loss this country had sustained in the death of the director of the Geological Survey of Canada. The Institute had already taken steps to put on record a permanent memorial of its appreciation of what Dr. Dawson had done for the mineral development of the Dominion, and had opened a subscription list, to which the Institute had subscribed $100, for the purpose of painting a portrait, to be presented, in conjunction with that of Dr. Selwyn, to the museum of the Geological Survey. At a later stage of the annual meeting Dr. Ami would present a review of Dr. Dawson's work. Mr. Bell concluded by stating that he would subsequently add to his report by presenting a review of the mineral industries of the country.

The report was adopted, and Messrs. W. Blakemore, P. Kirkgaard and the chairman were appointed a committee to prepare a resolution on Dr. Dawson's death, and they subsequently presented the following, which was unanimously adopted:

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Dr. B. T. A. Bell then took the floor and expressed the pleasure he had felt on learning, through the press, that no successor had yet been appointed to the late Dr. G. M. Dawson, and said that the council had on the previous evening come to the conclusion that the gentleman who should be the director of the Geological Survey of Canada was Dr. Frank D. Adams. Mining men in the Dominion had recognized that Dr. Adams, young, vigorous, skillful, was the very man who should be in charge of that very important department of the public service, and it was hoped that the Mining Institute would yet be able to place before the Government its wishes that Dr. Adams should receive the appointment. Mr. Bell moved that the Institute use its best influence toward securing the appointment of Dr. Adams as director of the Geological Survey. This was seconded by Mr. James F. Lewis, supported by the chairman, and carried unanimously.

A short discussion took place on the papers which had been read, and after this the secretary was authorized to send the following telegram to Hon. Clifford Sifton, minister of the interior:

"Canadian Mining Institute, at large and representative meeting tonight, unanimously recommends the appointment of Dr. Frank D. Adams, a former member of the survey staff, and professor of geology at McGill, as successor to the late Dr. G. M. Dawson."

In connection with students' prizes, it was announced that Mr. Charles

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WANT DR. ADAMS APPOINTED.

At this point Mr. B. T. A. Bell expressed the pleasure he had felt on learning, through the press, that no successor had yet been appointed to the late Dr. G. M. Dawson, and said that the council had on the previous evening come to the conclusion that the gentleman who should be the director of the Geological Survey of Canada was Dr. Frank D. Adams. Mining men in the Dominion had recognized that Dr. Adams, young, vigorous, skillful, was the very man who should be in charge of that very important department of the public service, and it was hoped that the Mining Institute would yet be able to place before the Government its wishes that Dr. Adams should receive the appointment. Mr. Bell moved that the institute use its best influence towards securing the appointments of Dr. Adams as director of the Geological Survey.

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In connection with students' prizes, it was announced that the president-elect, Mr. Charles Fergie, of Westville, N.S., would give a gold medal to the student submitting the best paper during the year.

DR. G. M. DAWSON DEAD

The Director of the Geological Survey of Canada Passes Away at Ottawa.

British American, Chicago
March 4 1901.

BRIEF SKETCH OF HIS CAREER.

Born in Pictou, N S., in 1849, Dr. Dawson Performed Many Valuable Services for His Country.

By the death, from capillary bronchitis, at Ottawa, on March 2, of Dr. George Mercer Dawson, C. M. G., director of the Geological Survey of Canada, the Dominion has sustained a great loss. His brother, Mr. W. Bell Dawson, Director of Tidal Surveys, was with him at the time, and his mother, Lady Dawson, and sister, Mrs. Harrington, arrived from Montreal a few minutes after his death. Deceased was unmarried.

Dr. Dawson was born in Pictou, N. S., in 1849. He was educated at Montreal, and was a partial student at McGill University. In 1869 he went to London and took a three years' course in the Royal School of Mines, where he captured several honors. On his return to Canada he spent a year in mining surveys in Nova Scotia and in lecturing at Union College, Quebec. In 1873 he was appointed geologist and botanist to the North American Boundary Commission, between Lake of the Woods and the Rockies. He was engaged two years in this work and prepared several valuable reports on the geology and resources of the country.

In 1875 he was appointed on the staff of the Geological Survey of the Dominion, becoming assistant director in July, 1883, and director and deputy head of the department in 1885. During his work on the survey he explored a large area of the western country.

WEDNESDAY. MARCH 27, 1901

THE DUNDEE ADVERTISER

DEATH OF A FAMOUS GEOLOGIST.

Dr George Mercer Dawson, C.M.G., F.R.S., F.G.S., who for the last 26 years had been a member of the Geological Survey of Canada and Director of that body for the past six years, died after a few hours' illness at Ottawa on Saturday, March 2d. His death was most unexpected, and cast a great gloom and sorrow upon the whole Survey staff and on all who knew him. He was not only reckoned as the ablest geologist in Canada, but of North America, and stood high in the world of science. By his demise there has been removed from the sphere of activity one of the greatest intellectual lights of the last half of the century just past. He was the author of many books on geology, and by them and the superiority of his staff he did much to disseminate such information regarding Canada's resources as would establish mining upon a firm and rational and non-speculative basis. Dr Dawson was the eldest son of the late Sir William Dawson, of Upper University, Montreal, and was born in Picton, Nova Scotia, on August 1, 1849. He received his early training and education in Montreal and Edinburgh, having taken a partial course in the Arts Faculty of M'Gill University in preparation for his work in the Royal School of Mines, London, where he studied from 1869 to 1872, carrying off high honours and the Duke of Cornwall's prize in his class. On his return to Canada Mr Dawson was appointed geologist and botanist to Her Majesty's British North American Boundary Commission, of which Major D. R. Cameron, R.A., was Chief Commissioner for Britain. As an explorer also deceased has given to the world some of the most useful information on the country traversed by him, including several most interesting and valuable reports on the Yukon Goldfields, of which he was the real discoverer. He was also a foremost naturalist. Amongst his contributions to the Empire may be mentioned his work as one of the Commissioners appointed by Her late Majesty Queen Victoria as one of the arbiters in the Behring Sea seal fisheries. In 1883 Mr Dawson was appointed Assistant Director of the Geological Survey Department. In 1892 he was created C.M.G., and two years previously the degree of LL.D. was conferred upon him. As an ethnologist and archæologist Dr Dawson stood foremost in Canada, and was an eminent authority. Dr Dawson was of a retiring disposition, though exceedingly sociable and amusing and always interesting in the company of geologists, especially in the field. He was unmarried. The funeral, which took place on the 4th inst., was largely attended. It may be mentioned that Dr Dawson was a cousin of Mr Alfred G. Primerose, West Ferry.

CROW'S NEST PASS COAL

Witness March 12th 1901

DR. DAWSON'S REPORT UPON ITS EXTENT AND QUALITIES.

Ottawa, April 12.—The summary report of the Geological Survey, brought down in the House of Commons yesterday, contains a reference by the late Dr. G. W. Dawson to the coal deposits of the Crow's Nest Pass as ascertained by a survey made by Mr. J. McEvoy last season. Dr. Dawson says:

The great value of this coal depends largely upon its excellent coking character, and low percentage in ash or other deleterious substances, combined with its position in regard to growing centres of metalliferous mining. It must be added, however, that great skill and care will evidently be needed in properly developing and fully utilizing the field, which in some respects present peculiar conditions. The highly bituminous character of the coal, already gives evidence that very effective ventilating apparatus will require to be installed as the workings extend, in order to avoid dangerous accumulation of gas. The great thickness of some of the seams, with the often tender character of the coal composing them, will present difficulties in the way of cheap and complete extraction, while the fact that levels run in the seams from the bottom of the intersecting valleys are at a depth of 3,000 feet or more below the general level of the surface of the intervening plateau-like areas, may probably render it necessary to contend with exceptional pressure upon the workings as these progress. The output of the Crow's Nest Pass coal mines is at present over 1,000 tons per diem. Coking ovens to the number of 360 are in operation, and large additions are in contemplation.

Recent explorations, taken in conjunction with information previously obtained, lead to the belief that large and important coal fields will be available, when required, in the northern part of British Columbia. The explorations particularly referred to are those which have been carried out for the Department of Railways and Canals under Messrs. J. S. O'Dwyer and A. H. Dupont. Notes and specimens brought back by these gentlemen and handed over to the Geological Survey, show that the coal-bearing Cretaceous rocks occupy a much larger area than had been supposed between the 55th and 57th parallels of latitude, while anthracitic coals have actually been found in the region about the head-waters of the Skeena and Stikine rivers. This northern region may eventually add materially to the already great wealth of British Columbia in coal. Specimens of bituminous and coking coal of good quality, indicating a new and perhaps important locality for this fuel in British Columbia, have also lately been received from the south side of the Tulameen river, west of Granite creek. This is a fuel of Tertiary age that has been subjected to local condition of alteration and resembles in this respect and in its character that of the Nicola valley, which has previously been described in the reports of this Survey.

Mr. McEvoy says:,

'Although the extent of the coal lands in the area can as yet be only somewhat roughly estimated, the estimate (230 square miles), should be near enough to the truth to be used as an argument for the calculation of the total available coal supply. The thickness used in the calculation is the minimum already given of 100 feet of workable coal.

Total area of coal lands, 230 square miles —147,200 acres.

One acre with 100 feet of coal would yield 153,480 tons of 2,240 lbs.

50,000 acres would yield 7,674,000,000 tons of 2,240 lbs.

147,200 acres would yield 22,595,200,000 tons of 2,240 lbs.

COMPANIES MAY UNITE

Buffalo Times March 4th 1901.

The death of Dr. George Mercer Dawson, C.M.G., F.R.S., director of the Canadian Geological Survey, which occurred at Ottawa, Ont., on March 2d, removed one of the most distinguished scientists of the continent, and marks an epoch in the history of what has long been recognized in Canada and Great Britain as a most useful organization. Dr. Dawson and his father, Sir J. William Dawson of McGill University, Montreal, contributed very largely to the Dominion Geological Survey, and in Sir William's later contributions he proudly cites his gifted son as an authority. Father and son were inveterate workers. Both had the literary as well as the scientific gift and both employed these gifts to the advantage of the governmental department to which the younger man was attached. Dr. Dawson also wrote a great deal on the native races of Canada, their origin, languages and folk lore, and his reports to the Government were models of statistical information and interesting description.

OTTAWA DAILY FREE PRESS MONDAY, MARCH 4, 190

DR. DAWSON.

The almost sudden death of Dr. G. M. Dawson causes the country a loss scarcely second to that which resulted from the death of his late distinguished father, and makes a gap in the scientific world of very large proportions. It is not necessary to enter into any lengthened sketch of his life and professional career at this point. A full synopsis appears elsewhere and will be read with regretful interest by the public. So many of our people met Dr. Dawson, within a few hours of his death, that the bulletins announcing his death caused a shock to pass over the entire community, the sad news spreading with the speed with which bad news usually travels. Personally Dr. Dawson was popular and his amiable disposition and high breeding caused him to be regarded with affection by those with whom he was professionally engaged and there is probably no branch of the public service in which so much harmony and mutual good will exists as was always found in the Geological department under the deceased's headship. His death will be regretted as a national loss. It will be lamented as a personal loss by those acquainted with him. His brief summons suggests a line which the deceased had himself inscribed on the cover of a book he once showed an acquaintance. And let us hope that he has found what it says is true: "Life's good night is God's good morrow to eternal light."

"Events." Ottawa 23rd March 1901.

Dr. G. M. Dawson, C.M.G., F.R.S., F.G.S., F.R.S.C.

LATE DIRECTOR AND DEPUTY HEAD OF THE GEOLOGICAL SURVEY OF CANADA.

AFTER a few hours illness, Dr. George Mercer Dawson, C.M.G., F.R.S., F.G.S., for the last twenty-six years a member of the Geological Survey of Canada, of which he has been the indefatigable and able director for the last six years, died at his rooms, Victoria Chambers, Ottawa, Saturday, the 2nd March, 1901.

A slight cold and aggravated cough soon developed into capillary bronchitis and he breathed his last at five minutes after six o'clock in the evening.

He had only been ill one day, having attended to his official duties in the department up to six o'clock Thursday evening, Feb. 28th.

His death was most unexpected and casts a sad gloom and deep sorrow upon the whole staff and all who knew him. He was not only reckoned as the ablest geologist in Canada, but of North America, and stood high in the whole world of science. His early training at the Royal School of Mines and McGill University career eminently fitted him for the position he occupied at the time of his death. By his demise there is removed from the sphere of activity one of the greatest intellectual lights of the last half of the century just past. His numerous and important writings are a monument which will ever be a crown to his life work. He was facile princeps in geology and the grasp he had of all problems relating to the economic and natural resourses of our vast Dominion made him master of his department and a centre of distribution of most valeable information. With a diminished staff the department was producing and giving out more information than before in all its branches. With the increased demands for information concerning the mineral and and other natural resources of Canada, the increase of labor and attention to official matters kept him more than usually busy for the last six years. Through his efforts and that of his staff he did much to disseminate such information regarding Canada's resources as would establish mining upon a firm and rational and non-speculative basis.

Dr. Dawson was the eldest son of Sir William Dawson, who died November 19th, 1899, at his home in Montreal, the subject of this sketch thus following his father, also most eminent as a geologist and educationalist, by only a few months.

Dr. G. M. Dawson, was born in Pictou, Nova Scotia, August 1st, 1849. He received his early training and education first in Montreal, and later in Scotland, having taken a preparatory and partial course in the Arts Faculty of McGill University, in connection with his work at the Royal School of Mines, London, Eng. There he studied from 1869 to 1872, carrying off high honors and the Duke of Cornwall's prize in his class, also the Edward Forbes gold medal in palæontology and the highest prize of his class, when he became an Associate of the Royal School of Mines, a much sought for title. On his return to Canada he spent some time investigating the copper and iron deposits of Nova Scotia, his native province, and later lectured in Morrin College. In 1873 he was appointed geologist and botanist to Her Majesty's British

DR. G. M. DAWSON.

North American boundary commission, of which Major D. R. Cameron, R.A., was chief commissioner for Britain. His excellent report upon the geology and mineral resources of the 49th parallel from the Lake of the Woods to the Pacific, marked him out as a scholar and an eminent observer. He was only 25 years of age when this report was prepared. This volume was so eagerly sought that it is now out of print, the edition being soon exhausted, and a copy is conceded actually worth its weight in gold.

Then it was that were laid down the lines upon which his subsequent career followed, for in July, 1875, he received an appointment on the Geological Survey staff and his explorations and researches led him into the great and then practically unknown Northwest Territories and British Columbia. In the mass of his voluminous and much sought-for reports upon the resourses of the districts he examined and explored, will be found the most authentic and useful information on those now rapidly developing and flourishing districts. In his Yukon explorations, of 1887 and 1888, he examined and reported upon that most valuable and important district to which the world has been looking for some years for a goodly share of its source of supply

position, though exceedingly sociable and amusing and always interesting in the company of geologists, especially in the field. He was unmarried and a foremost member of the Rideau club.

His writings are to be found in the annual reports of the Geological Survey department, in the Quarterly Journal of the Geological Society of Science and Arts, in the Canadian Naturalist, the Ottawa Naturalist, "Future of Science in Canada," etc. He was an associate editor of the Journal of Geology of Chicago, and for three years he was president of the Ottawa Field Naturalist club. In 1894 he was president of the Royal Society, Canada. His was a life constantly devoted to the best interests of his official work. He had indomitable energy and will power, which did much to keep up his vital energy as against what might be termed a weakly physique. Close attention—possibly too close attention —to office work and a lack of outdoor physical exercise during late years, which he was wont to enjoy in his arduous mountain climbing in his exploring of many unknown regions of this great Dominion possibly combined to weaken his constution.

He was called away very suddenly and he will be missed by all who knew him for his writings, but he has left behind him many a monument of his industry as an explorer and practical geologist.

As a geologist his reputation was world-wide. He was one of those investigators in the realm of geological science who sought not only to point out the at once practical and economic side in the resources of the earth's crust in Canada, his native land, but one who diligently and perseveringly hammered away at the numerous problems of pure geological science.

They are numerous, the problems which are still unsolved in the geology of North America, and wherever an element of doubt came in as to the truth or validity of the results propounded by this or that investigator, or wherever intricate bits of geology presented themselves to his mind and eye, he made it his duty and serious consideration to study and examine closely the various phases of the problems at issue and their relations in the fields, so as to enable him to arrive at something like a satisfactory explanation of the different points involved. He never rested until the problem which he had before him was solved. In other words, he was thorough. His reports, maps, and papers, are models of excellence and description. He had a facile pen, an intellect ready and lucid, which could grasp the situation at a glance. His love for thoroughness and excellent work came forth prominently time and again in his endeavors, as Deputy Head of the Geological Survey of Canada, when he presented to the Honorable Minister of the Interior and to Parliament, as well as the world of enquirers on the resources of our great Dominion, such able reports as can truly be said to be the pride of the department. As regards the quality as well as the quantity of work brought forth, and exact informatfon published and disseminated by him during the six years and two months of his administration it cannot be denied that they were both unequalled in any previous period in the history of this old and established institution.

His own reports on the Kamloops District of British Columbia, on the Southern interior of the same province, on the North-West Territories and the

of gold. He was the real discoverer and describer of that now famous gold-bearing belt in which there is happily left as a monument to his indefatigable researches in the eighties, the capital town or city of the Yukon territory, which now bears his name. Not only were his mental strength and intellectual vigour remarkable but even his powers of physical endurance were great A boat journey of 1,300 miles and a portage 50 miles from the valley of the Liard to that of the Yukon, is one of the feats which his zeal and energy as an explorer accomplished. It is superfluous here to give even a synopsis of his numerous reports, but they are all most readable and full of useful information on the regions traversed.

He was also a foremost naturalist. Amongst his contributions to the empire may be mentioned his work as one of the commissioners appointed by Her late Majesty Queen Victoria as one of the arbiters in the Behring Sea seal fisheries. The conditions and real facts concerning seal life were studied by him and have been Britain's most powerful argument in the case. In 1883 he was appointed assistant director to the Geological Survey department. In 1892, after his work on this commission was done, Her Majesty created him a C.M.G., and two years previous Queen's and McGill's universities conferred upon him the degree of doctor of laws.

1891 he was made a Fellow of the Royal Society of England, the highest scientific body in Britain, for his eminent work in geological science. In 1893 he was elected president of the Royal Society of Canada; in 1894, corresponding member of the Zoological Society of London; in 1895, Fellow of the American Association Adv. Science; in 1896, President of Section C in Geology of the British Association Adv. Science; and in 1897 delivered a masterly inaugural address upon the archæan geology of Canada. In the same year the Royal Geographical Society of London presented him with their highest award, a gold medal; and in 1891 had been awarded the Bigsby medal for eminent researches in geology. The recipient of this medal must not be older than 45 years at his last birthday.

As an ethnologist and archæologist, Dr. Dawson stood foremost in Canada and an eminent authority. Many of his spare hours were devoted to this most important subject. His report upon the manners and customs of the Haidas in the Queen Charlotte Islands and the numerous and interesting specimens he brought with him have laid the foundations of the ethnological department of the National Museum at Ottawa. The Geological Survey of Canada was fortunate in having so able a geologist as director. He has done much in disseminating knowledge regarding the vast regions of the west, chiefly, while his attention and care has led him to take a most prominent part in the economic prosperity and development of the eastern or older provinces. His courteous and practical replies to the constant stream of correspondence which in his position as chief of the Geological Survey department he received, have done much to place Canada's mining interests on a solid basis. He has successfully carried out the work of his predecessors, Sir William Logan and Dr. Selwyn, in investigating the resources of Canada, both far and near. His death is an irreparable loss to Canada, to science, and especially to the Geological Survey department.

Dr. Dawson was of a retiring dis-

and represented. I believe it was in the interest of Canada that this should be done, and therefore I took upon myself to recommend the appointment of the honorary lady commissioner Madame Dandurand, who is well known in literary circles in Canada for her writings on many subjects, was chosen, and she represented Canada most worthily. She is a lady of not only high social position in Canada, but of literary accomplishments as well, and possessed of what the French call esprit, which we can hardly translate, and which I would not like to translate in connection with a lady.

Mr. CLANCY. Will the hon. gentleman permit me to interrupt him a moment. Miss Barry has been allowed living allowance, and that is now a system which is carried on all through the service. It is a system which has created a breach between the Auditor General and the government of the day. I do not believe that those in the service of the government should in any sense receive mean or beggarly treatment in relation to their expenses, and I can quite understand that in certain cases it might not be wise that the accounts of persons occupying certain positions should be published to the world. I wish to point out this case, because it is becoming the habit of this government to allow living expenses which are equivalent to part of a salary. I see that Miss Barry is allowed the maximum of $6 a day. While she no doubt occupied an important position, I do not understand that she occupied a position justifying that allowance. Under the former government all accounts were rendered, and hon. gentlemen opposite were manly and courageous enough to criticise them, even to the pay of bootblacks and other incidental expenses which are no doubt included in these living allowances, and they were spread all over all the backwoods of Canada in order to discredit the government. Whether these expenses were excessive or not may be open to debate; but the fact that hon. gentlemen opposite have covered them up in living allowances is something that cannot be condoned. I think this committee should lay down a rule by which every person in the service not occupying a responsible position should render an account, so that this House might see it. I would ask the minister why $6 a day was allowed to Miss Barry as a living allowance ?

The MINISTER OF AGRICULTURE. The hon. gentleman is in error. The $6 covered both salary and living expenses. It was allowed to all below the rank of commissioner, except the labourers, who were employed there and paid by the day. A large number of employees were paid at the uniform rate of $6 a day, which covered all they received during the time they were in Paris. Besides that, their actual transportation charges from here to Paris and back were paid. The commissioners went into this matter very thoroughly before fixing the remuneration. In most cases the employees protested against it ; but it was felt that it would be a fair return for their labour in a foreign country, where, of course, they would be under unusual expenses. Everybody knows that on the occasion of a great exhibition like that, the cost of living is greatly increased, and we could not expect them to live in Paris as economically as in Ottawa or elsewhere in Canada. In a rough awy, I may say, this $6 a day was thought to be about equally divided between living allowance and salary. The ordinary living allowance made by the government to people of that class while travelling abroad is, I understand, $5 a day. That was before the present arrangement was made with the Auditor General by which actual disbursements were charged. But in this case the Auditor General has gone over all these accounts, and has accepted this arrangement as being a satisfactory one.

Mr. SPROULE. I notice on D-12 of the Auditor General's Report that H. C. Knowlton was paid $1,115.48. Will the minister be good enough to tell us who he is, where he is from, and what he was employed at ?

The MINISTER OF AGRICULTURE. With pleasure. Perhaps I had better continue the list which the hon. leader of the opposition gave. Mr. Cusson was one of the secretaries. We first appointed Mr. Dupuis, whose experience in connection with exhibitions is well known. He was the commissioner for the province of Quebec at the Jamaica exhibition some years ago, and made a most valuable report on that exhibition. I, therefore, felt that he was a man well qualified for this position, and asked him to assume the position of secretary to the commission. He did the preliminary work here, but when the commissioners had to go to Paris and begin to receive the exhibits there, we had to send somebody over with them. As Mr. Dupuis' work was not finished here, we employed Mr. Cusson to go to Paris. Mr. Dupuis remained here till his work here was finished ; then he went to Paris, and Mr. Cusson returned home. Mr. Faribault is a member of the staff of the Geological Survey. He went to Paris in connection with the exhibit prepared under the direction of the late lamented Dr. G. M. Dawson, whose death the other day is such a great loss to this whole Dominion, and especially to the department of which he was the brilliant head, and in which he has given so much excellent and invaluable work to the Dominion of Canada. Speaking as one who has come largely into contact with his work in connection with this Paris exhibtion, I may say that if Canada made the splendid record she did with her mineral exhibit, it was largely due to the experience and wide knowledge exercised by Dr. Dawson in the

Crow's Nest region, on the Yukon Territory—containing in 1888, as this last mentioned report did, upwards of 400 pages of description of that now famous region, including its gold-bearing gravels—also his Queen Charlotte and Vancouver reports, all are replete with the greatest interest and value.

As for his writings they are numerous. A complete list of them will soon be furnished, and prepared, giving complete bibliographic references to the hundreds of valuable reports and interesting papers on economic as well as on scientific geology.

H. M. AMI, D.Sc.

preparation and management of that exhibit. Mr. Gillmor was one of the commissioners who was asked to go from the maritime provinces. During the earlier part of his commissionership he was unfortunately laid up at home, and was not able to travel about and secure exhibits from the maritime provinces; but he asked that his son, Mr. P. H. Gillmor, might do that work while he was laid up, and the payments made to him are payments which would have been made to the commissioner if he had not been confined to his bed.

Mr. HUGHES. In what position was Mr. A. H. Gillmor before he was appointed commissioner?

The MINISTER OF AGRICULTURE. His name is well known in this House, and in the whole Dominion of Canada. I need not give the record of the former member for Charlotte county, and now senator of the Dominion. Col. Gourdeau is the well known deputy minister of the Marine and Fisheries Department. I do not know that we could have chosen a man better qualified to prepare the marine and fisheries exhibit than Col. Gourdeau. Mr. Gelinas, whose name was brought forward, is the private secretary of the hon. Minister of Public Works, and he was taken over in that capacity. Andrew Halkett is an official of the Marine and Fisheries Department, an expert in mounting fish and game, who went over to see that the exhibits were properly mounted and displayed. Robert Hamilton is a well-known fruit-grower of the province of Quebec, coming from the town of St. Andrews, in the county of Argenteuil. He is one of the best known writers on fruit-growing in the Dominion of Canada. He went in charge of the fruit-growing exhibit. When he was obliged to return to Canada, Mr. A. McD. Allan, one of the best known fruit-growers in Ontario, went over in his place. Mr. W. H. Hay is the accountant of the Experimental Farm. Those gentlemen who know the exhibits made by the Experimental Farm at the exhibitions at Ottawa, Toronto, and other places, know his work. He is an expert in agricultural exhibits, in decoration, and in working up specimens of grain and fruit and other things into an artistic display which will attract attention. Mr. Jardine was one of the commissioners appointed from the province of Ontario, and spent a large amount of time and money travelling about to secure exhibits.

Mr. HUGHES. What were his personal qualifications?

The MINISTER OF AGRICULTURE. He has a large acquaintance with business in Toronto and formerly in Montreal, and had been in the leather and boot and shoe trade.

Mr. CLANCY. What class of exhibits was he expected to select?

Mr. FISHER.

The MINISTER OF AGRICULTURE. He did not select the exhibits but went to the manufacturers and gave them the information necessary, and afterwards in Paris he was in charge of the manufactured exhibits and did other general work as a commissioner.

Mr. CLANCY. He was selected to take a sort of holiday trip.

The MINISTER OF AGRICULTURE. On the contrary, he was one of the hardest working men during the last year and a half that lived in Canada.

Mr. BENNETT. Upon whose recommendation was he appointed?

The MINISTER OF AGRICULTURE. I do not remember exactly, but I think I consulted my colleagues from Ontario.

Mr. BENNETT. Does the hon. gentleman know that Mr. Jardine has been a very active politician in Ontario—part and parcel of the machine moving from one end riding to another.

The MINISTER OF AGRICULTURE. I did not know that he was an active politician, but that would be no disability.

Mr. BENNETT. Many gentlemen here can testify that he was used in the by-elections in Ontario to work the machine. As far as the statement of the minister that he was in the boot and shoe business is concerned, that is a little off colour.

The MINISTER OF AGRICULTURE. That statement is the exact truth. I do not know whether Mr. Jardine was active in politics or not, but I have heard that he met the hon. gentleman on the public platform and took the change out of him. That would not be a disability in my opinion.

Mr. BENNETT. Mr. Jardine is now on the floor of the House, and I presume he communicated to the hon. gentleman the statement just made. Let me tell the hon. gentleman that if Mr. Jardine told him that he ever met me on the public platform, he made a statement that is utterly and deliberatively false and maliciously untrue, and that the company which that man consorted in the elections was not the company to be found on the public platform, but of a vastly different nature.

Mr. McGOWAN. He went through Wellington riding and kept track of the machine there.

Mr. COCHRANE. Along with Cap Sullivan.

Mr. DEPUTY SPEAKER. I must call the hon. gentleman to order. We are not discussing the character of Mr. Jardine or of Cap Sullivan. The hon. member for Wellington introduced the name of Cap Sullivan.

Mr. McGOWAN. I did not say anything about Cap Sullivan.

this is part of the [illegible] of the Republic and are

eccentric actress secured some desired publicity in New York City a few years ago by attempting to ride astride

showered on Canada. And here is another just reported. Mrs. Emmons

George M. Dawson

George W. Dawson

SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, APRIL 12, 1901.

CONTENTS:

GEORGE M. DAWSON.

BY the death of Dr. G. M. Dawson, the Dominion of Canada loses one of her ablest and most distinguished men of science and one whose loss will be felt for many years to come. George Mercer Dawson was the eldest son of the late Sir William Dawson and was born at Pictou, Nova Scotia, on August 1, 1849. In 1855, his father, having received the appointment as Principal of McGill College, left Nova Scotia and came to live in Montreal. The wide college grounds, lying then on the outskirts of the town and backed by Mount Royal, at that time covered with its original forest growth, formed an environment full of interest and delight to the boy, whose mind turned to the study of nature from the first, a study which was made doubly fascinating in his case by his father, who was always ready to encourage him in his work, explain his difficulties and talk with him as a friend.

At the age of ten he entered the High School at Montreal, where he took a high place among the boys of his class. There were, however, at that time, near what is now the center of the city of Montreal, a number of ponds in which the boys from the High School used to go rafting at lunch hour. On one of these occasions he received a drenching and remained in his damp clothes through the afternoon; a chill was induced, which led to spinal trouble,

resulting in years of suffering and final deformity. He consequently left school, and his education, until he was old enough to enter college, was carried on chiefly by private tutors. While not neglecting the ordinary subjects of a school curriculum, he was allowed to follow out lines of study in which he found a particular interest and in this way learned many things which were later of the greatest value to him. Surrounded by books, chemical apparatus, paints and pencils, the days were never too long, and photography, bookbinding, painting magic lantern slides, pyrotechny and even cheese-making were among his many occupations. He seemed to absorb knowledge rather than to study, and was always cheerful amusing and popular, other boys flocking round him and invariably submitting to his unconscious leadership. At times he suffered much pain and was deprived of many things dear to boys, but was never heard to complain. When quite a lad he often accompanied his father on his geological excursions with the students of McGill College on Saturdays, and even on longer expeditions to Murray Bay, Gaspe and the Joggins, and was always a helpful and bright companion.

At nineteen he had recovered his health and entered McGill College, where he studied for a year, and in the following year entered the Royal School of Mines in London. He went to England in a sailing ship, for the benefit of the longer voyage, and on the way over amused himself by studying navigation under the captain. Years later when he chartered a schooner, in order to make an examination of the Queen Charlotte Islands, the captain of the latter, proving to be drunken and unsatisfactory, was dismissed, and Dawson navigated the schooner himself during the remainder of the trip, and this on a deeply indented and dangerous coast, of which at that time no chart existed.

At the Royal School of Mines he took the regular course, extending over three years, taking the Duke of Cornwall's Scholarship, and the Forbes medal and prize in paleontology and natural history. While at the Royal School of Mines he paid especial attention to the study of geology and paleontology under Ramsay, Huxley and Etheridge, and also devoted much time to the study of chemistry and metallurgy in the laboratories of Frankland and Percy.

Returning to Canada, he was engaged for a year in mine surveys in Nova Scotia and in lecturing at Morrin College, Quebec, and in 1873 was appointed Geologist and Botanist to Her Majesty's North American Boundary Commission, which was to fix the boundary line from the Lake of the Woods to the Rocky Mountains, and which had been at work for over a year. There are but few corners of the earth which now appear so far off as the great Northwest did at that time—a veritable *terra incognita*. Fort Garry, now the city of Winnipeg, was the last point of civilization and the 49th parallel had to be traversed on horseback or on foot, the provisions and materials being taken along in Red River carts. The difficulties now experienced in traversing that district were then increased by its remoteness from civilization and the fact that it was unexplored. In summer there was not only the scorching heat of the Plains, but the prairie fires, the difficulty of procuring and carrying firewood, the scarcity of water, and, in the late autumn, the cold with all its accompanying inconveniences. Notwithstanding these difficulties, however, during the two years in which he was a member of the Boundary Commission, he accumulated materials for an elaborate and very valuable 'Report of the Geology and Resources of the Country in the Vicinity of the 49th Parallel,' accompanied with maps and many illustrations, which was published in Montreal in 1875. In connection with

this work he also prepared a report on the Tertiary Lignite Formation, a memoir on the 'Superficial Deposits of the Central Region of North America,' and papers on the 'Locust Visitations,' on the 'Fresh Water Sponges of Canada' and on the 'Fluctuations of the American Lakes.'

When the work of the Boundary Survey was brought to a close, he was appointed, in 1875, to the Staff of the Geological Survey of Canada, and, in 1883, on the retirement of Dr. Selwyn, he succeeded him as Director of the Survey, which position he held at the time of his decease. His field work, while connected with the Geological Survey, was carried on chiefly in British Columbia and the Northwest Territories, and the excellent character of this work contributed largely to the great development of the mining industry in these parts of the Dominion in recent years.

Dr. Dawson also rendered important public service in connection with the Behring Sea arbitration. As one of the British Commissioners he spent the summer of 1892 in the Behring Sea region, for the purpose of inquiring into the facts and conditions of seal life. The report of the Commission constituted the case of Her Majesty's Government, and I remember hearing at the time a high tribute paid to Dr. Dawson's ability by one of the gentlemen connected with the United States side of the case, in the statement that had it not been for Dr. Dawson's evidence and arguments, a finding much more favorable to the United States would probably have been secured. In connection with his services on this arbitration he was made a Companion of the Order of St. Michael and St. George (C. M. G.).

He usually enjoyed excellent health and had great capacity for hard work, but he succumbed very suddenly, on the 2d of March last, to an attack of acute bronchitis after an illness of but two days.

Dr. Dawson was a prolific writer In addition to his numerous and voluminous official reports, he contributed many papers on geological, geographical and ethnological subjects to the scientific magazines and to the Transactions of various learned societies, both on this continent and in England.

He received the degree of D.Sc. from Princeton, and the degree of LL.D. from Queen's University in 1890 and from McGill University in 1891. In the same year he received the Bigsby gold medal from the Geological Society of London for his services to the science of geology, and was elected a Fellow of the Royal Society. In 1893 he was elected President of the Royal Society of Canada. In 1896 he was President of the Geological Section of the British Association for the Advancement of Science at its Toronto meeting, and was last year President of the Geological Society of America. His presidential address, delivered on retiring from the latter position, appeared in a recent number of SCIENCE. In 1897 he was awarded the gold medal of the Royal Geographical Society. He also received many other distinctions which cannot here be mentioned.

Dr. Dawson was a man of more versatile gifts than his father, but like him possessed of an unusual combination of scientific insight, literary ability and administrative capacity. He was a man of broad views, clear and judicial frame of mind, modest and retiring, but withal an excellent conversationalist. He won the esteem of all who knew him, and his loss will be keenly felt by his very large circle of friends.

FRANK D. ADAMS.

MCGILL UNIVERSITY, MONTREAL.

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*STATE NATURAL HISTORY SURVEYS.**

A GEOLOGICAL survey of Wisconsin, very complete and careful for the time, was com-

* Abstracts of addresses made before the Naturalists, meeting in Chicago, December, 1900.

pleted in the year 1878. During the following twenty years no investigations of this character were carried on in the State. In 1897, however, the Legislature organized the present Geological and Natural History Survey and gave to it for the first two years an appropriation of $5,000 annually, which was doubled during the second biennial period. The government of the Survey is in a Board of Commissioners, consisting of the governor of the State, the president of the State University, the State superintendent of Public Instruction, the president of the Commission of Fisheries, and the president of the Wisconsin Academy of Sciences, Arts and Letters. The director of the survey from the first has been E. A. Birge, professor of zoology in the University of Wisconsin. The work of the Survey has been done along three lines: economic, scientific and educational.

The first piece of work of economic importance was the investigation of the building stones of the State, to which two years were devoted by Dr. E. R. Buckley, who is in charge of this department, and, as a result, a full report on the building stones was published as a bulletin of the Survey in 1899. After the completion of this work, Dr. Buckley turned his attention to the clays and the clay industries, on which he is still engaged. A general report on this subject will appear during the present winter, and the work will be continued probably for at least a year or two in the future. The geological structure of the Keweenawan, or copper-bearing rocks, of Douglas and adjacent counties of northern Wisconsin has been worked out by Professor U. S. Grant, and a preliminary report has been published.

Of the several scientific investigations, the most important is the geology of the crystalline rocks in the central part of the State—a region which was almost entirely uninhabited at the time of the earlier survey. Its investigation has been assigned to Dr. S. Weidman, who has been carrying on field work since the organization of the Survey and who will prepare a complete report of the geology of the region when he has completed the task of working out, in the field, the difficult and intricate relations of the rocks.

Another line of work has been on the lakes which are so abundant in Wisconsin. A hydrographic survey has been made of more than 60 of the more important lakes in the southeastern part of the State, and maps of these lakes have been published. The investigation of the biology of the waters has been fairly begun. The physica geography of the lake region of southern and eastern Wisconsin is now being studied by Mr. N. M. Fenneman.

The first educational bulletin has recently been published by Professor R. D. Salisbury, on the physical geography of the region about Devil's Lake. This is intended to set forth the geography and the surface geology of the region in such a way as to bring out the principles of physical geography involved, so that the book will be primari ly of value to the teachers and students of the subject, but it is also a contribution to our knowledge of that region.

This brief notice touches only the most important directions in which the Survey has been working, leaving unmentioned many subjects to which less attention has been given.

So far as the experience of the Wisconsin Survey goes, it appears that the State is quite willing that a considerable amount of money should be devoted to investigations whose value is scientific in the fullest sense of the word, and it also expects a considerable amount of attention to be given to subjects of economic value and of immediate practical importance. This seems to me to be entirely right. The State has a right to expect an economic return for money expended in a State survey, especially as there are

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MSS. intended for publication and books, etc., intended or review should be sent to the responsible editor, Professor J. McKeen Cattell Garrison-on-Hudson, N. Y.

*PHYSICAL HISTORY OF THE ROCKY MOUNTAIN REGION IN CANADA.**

IT will now be endeavored to briefly review the orographic changes and the conditions of deposition of which the geological column gives evidence—in other words, to touch in outline the main facts of the physical history of the Rocky Mountain region of Canada.

Regarding the Archean, it need only be said that here, as in most parts of the world, we find, beneath any rocks that can be assigned to the Cambrian in the most extended sense of that term, and apparently separated from these rocks, by a great break and unconformity, a crystalline series or 'fundamental complex' composed of plutonic rocks with highly metamorphosed and vanishing sedimentary rocks in seemingly inextricable association. The similarity of this basal series in different parts of the world is so great as apparently to imply world-wide and approximately contemporaneous conditions, of a kind perhaps differing from any that can have occurred at later periods. The region here described is not, however, an ideal one for the study of these Archean rocks, because of the extreme metamorphism by which much newer formations

* Concluding section of the address of the President of the Geological Society of America, the late Dr. George M. Dawson, read before the Society on December 29, 1900.

have often been affected in it; nor has any series yet been defined that appears here to bridge the gap between the Archean and the strata that may with propriety be attached to the Cambrian.

In the earlier series of deposits assigned to the Cambrian, we discover evidence of a more or less continuous land area occupying the position of the Gold ranges and their northern representatives, and aligned in a generally northwesterly direction. The Archean rocks were here undergoing denudation, and it is along this axis that they are still chiefly exposed, for although they may at more than one time have been entirely buried beneath accumulating strata, they have been brought to the surface again by succeeding uplifts and renewed denudation. We find here, in effect, an Archean axis or geanticline that constitutes, I believe, the key to the structure of this entire region of the Cordillera. To the east of it lies the Laramide geosyncline (with the conception of which Dana has familiarized us) on the west another and wider geosyncline, to which more detailed allusion will be made later.

Conglomerates in the Bow River series indicate sea margins on the east side of this old land, but these are not a marked feature in the Nisconlith, or corresponding series on its western side. Fossils have so far been discovered only in the upper part of the Bow River series, but the prevalence of carbonaceous and calcareous material (particularly in the Nisconlith) appears to indicate the abundant presence of organisms of some kind at this time.

Although no evidence has been found of any great physical break, the conditions indicated by the upper half of the Cambrian are very different from those of the lower. Volcanic materials, due to local eruptions, were accumulated in great mass in the region bordering on the Archean axis to the west, while on the east materials of this kind appear to be mingled with the preponderant shore deposits of that side of the Archean land, and to enter sparingly into the composition of the generally calcareous sediments lying still farther eastward. Where these sediments now appear in the eastern part of the Laramide range they are chiefly limestone, indicating marine deposition at a considerable distance from any land.

The history of the Ordovician, Silurian and Devonian times is very imperfectly known. Marine conditions still prevailed to the eastward of the Archean axis and were probably continuous there, but our knowledge of the region to the west, while as yet almost entirely negative in its character, is not sufficiently complete to enable us to assume the existence of any extensive land area in that quarter. In the Devonian the sea is known to have covered a great area in the interior of the continent, extending far to the north in the Mackenzie basin, and it appears probable that considerable portions of the western part of the Cordilleran region were also submerged, particularly to the north.

About the beginning of the Carboniferous period and thence onward the evidence becomes much more satisfactory and complete. In the earlier part of the Carboniferous, marine sediments, chiefly limestones, were laid down everywhere to the east of the Archean axis, while to the west of that axis (which was probably in large part itself submerged) ordinary clastic deposits, mingled with contemporaneous volcanic materials, were formed, tranquil epochs being marked by the intercalation of occasional limestone beds. It is not clearly apparent from what land the clastic materials were derived, but the area of vulcanism at this time was very great, covering the entire western part of British Columbia to the edge of the continental plateau and, as now known, extending northwest-

ward into Alaska and southward to California.

In the later time of the Carboniferous, however, the volcanic forces declined in their activity, and a great thickness of calcareous marine deposits occurred with little interruption of any kind. The area of land to the eastward was probably increased, for there is some evidence to show a first gentle uprising in the Laramide region at this time (or at least a cessation of subsidence), and no late Carboniferous strata have so far been found there.

No separate record for the Permian has yet been found in this part of the continent, but it must be remembered that, in view of the scanty character of the paleontological evidence, strict taxonomic boundaries can seldom be drawn. At about this time, however, very important changes occurred, for in the Triassic a great part of what is now the inland plain of the continent is found to have become the bed of a sea shut off from the main ocean, in which red rocks with salt and gypsum in some places were laid down. The northern part of this sea appears to have extended into the Canadian region for a short distance, covering the southern portion of the Laramide area. Farther north must have been the land boundary of this sea, and beyond this an extension of the Pacific ocean which swept entirely across the Cordillera. In the southern part of British Columbia, however, this ocean found its shore against the Gold ranges of the Archean axis, where the preceding Carboniferous beds had already been upturned and subjected to denudation. The Laramide region was not affected by volcanic action at this time, but vulcanism on a great scale was resumed in the entire western part of the Cordillera that had previously been similarly affected in the Carboniferous, and the ordinary marine sediments there form intercalations only in a great mass of volcanic products, probably in large part the result of submarine eruptions.

Such definite indications as exist of the Jurassic must, as already noted, be considered as physically attached to the Triassic of the interior plateau of British Columbia. It is probable that the greater part of the Jurassic period was characterized by renewed orogenic movements and by denudation, for when we are next able to form a connected idea of the physical conditions of the region these are found to have been profoundly modified.

It is to about this time that the elevation of the Sierra Nevada and some other mountain systems in the western states is attributed. In the region here particularly described, the Triassic and older rocks of the Vancouver range, or that forming Vancouver and the Queen Charlotte islands, were upturned, while a similar movement affected the zone now occupied by the British Columbia Coast ranges. These may not have been elevated into a continuous mountain system and barrier to the sea, but in any case the ranges then formed were, before the beginning of the Cretaceous period, largely broken down by denudation, so that the underlying granitic rocks supplied abundant arkose material to some of the lowest Cretaceous beds.

It is also probable that subsidence marked the close of the Jurassic, for in southern British Columbia the Pacific of the Earlier Cretaceous extended more or less continuously across the line of the Coast ranges, finding its shore not far to the east of this line. Farther north, although not without insular interruptions, it spread over the entire width of the Cordilleran belt, repeating the conditions found in the Triassic, but with the difference that it extended far to the south along the axis of the Laramide geosyncline, in which rapid subsidence had been renewed. In this early Cretaceous sea and along its margins and lagoons the

massive fossiliferous rocks of the Queen Charlotte islands and Kootanie formations were accumulated and coal beds were produced. Volcanic activity was renewed in some places, particularly near the present seaward margin of British Columbia. Sedimentation evidently proceeded more rapidly than subsidence in many localities and coal-producing forests, largely composed of cycadaceous plants, took possession of the newly formed lands from time to time.

The era of later Cretaceous appears, however, eventually to have been introduced by a marked general subsidence, which, as already noted, carried the Dakota sea entirely across the inland plain of the continent. The distribution and character of the ensuing Cretaceous formations show that the whole southern part of what is now the mainland of British Columbia soon after became and remained a land area, while the sea was more gradually excluded from the northern part of the Cordillera and continued to occupy the area of the Great plains and the present position of the Laramide range. Along the margin of the continental plateau, however, a renewed subsidence was in the main progressing southward and resulted ultimately in carrying the later Cretaceous sediments into the region of Puget sound.

The closing event of this cycle was the deposition of the Laramie beds on the east and in some places to the north, with probably the Puget group and its representatives on the coast, and this was followed by the most important and widespread orogenic movement of which we find evidence in the entire Rocky Mountain region. At this time the great Laramide range, or Rocky Mountain range proper, was produced, rising on the eastern side of the Archean axis along a zone that had previously been characterized from the dawn of the Paleozoic by almost uninterrupted subsidence and sedimentation. That the pressure causing this upthrust of the Laramide range was from the westward is clearly shown by the great overthrust faults in this range. The stability of the old Archean axis, which it may be supposed had previously sustained the tangential thrust from the Pacific basin must at this time have been at last overcome. As a part of the result of this, the chief belt of faulted strata in the Laramide range, originally about 50 miles wide, became reduced in width by one-half. How rapidly this great revolution may have occurred we do not know, but it probably did not occupy a long time from a geological point of view, and the Laramide range, as first produced, may very possibly have attained a height approaching 20,000 feet.* The thickness of stratified rocks in the geosyncline was at the time probably more than 40,000 feet.

It is difficult to determine to what extent the Archean axis with the Gold ranges and other preexisting mountains was affected at this period of orogenic movement, because of the absence of the newer formations there, but it seems probable that no very important change took place. Farther west, however, the great zone of Coast ranges was elevated, and the corrugated and vertical Cretaceous beds, met with even on their inland side, show that large parts of the Interior plateau of British Columbia and of the country in line with it to the northward were flexed and broken. Similar conditions are found to have affected Cretaceous rocks of Vancouver and the Queen Charlotte islands, of which the

* This refers particularly to the better known region near the Bow pass. See Annual Report, Geol. Surv. Can. (N. S.) Vol. II., p. 31 D, and *Am. Jour. Sci.*, Vol. XLIX., p. 463. The base of the mountains may at this time have been nearly at sea level, or 4,000 feet lower than at present, while the actual height at any time attained would depend upon the rapidity of uplift relative to denudation. The total height of folded strata is estimated at from 32,000 to 35,000 feet.

mountain axis, previously in existence, was evidently greatly increased in elevation.

The Laramide geosyncline has already been particularly referred to and allusion has been made to the now well recognized fact that by such zones of continued subsidence and deposition the lines of most mountain systems have been determined. To the Laramide geosyncline here, the mountains of the Archean axis—the Gold ranges—stood in much the same relation as the Archean western border of the Wasatch to the Laramide geosyncline in Utah (as described by Dana), but on a larger scale.

On the other or western side of this axis, as already noted, I am now led to regard the zone of country extending to the Vancouver range as a second and wider geosyncline with a breadth of about 200 miles, in which a thickness of deposits, perhaps greater than that of the Laramide, but in the main composed of volcanic ejectamenta, had by this time been accumulated. The volume of the Carboniferous and Triassic rocks alone must have exceeded 20,000 feet. It is probable that to this may be added a great thickness of older rocks,* for the circumstance that volcanic action was so persistent here and the amount of extravasation resulting from it was so enormous, implies a recognition of the fact that, along this zone (not far from the edge of the continental plateau) the isogeotherms, with what we may call the plane of granitic fusion, had crept up to a position abnormally near the surface. It is to this probably that we may attribute the apparent absence of Archean rocks in the Coast ranges, or at least the impossibility of defining any rocks of that period there, for these, together, no doubt, with great volumes of later deposits, may be assumed to have become merged in the rising granitic magma, on which strata of Triassic age are now often found lying directly, arrested in the very process of absorption.*

When the Laramide revolution occurred, by reason of the increasing tangential pressure from the Pacific basin and the growing failure of resistance of the two great geosynclines of this part of the Cordillera, the Laramide range was produced by the folding and fracture of a very thick mass of beds, of which the crystalline base has not yet been revealed by denudation, while in the western trough an eversion of the axis of settlement seems to have occurred, resulting in the appearance of a granitic bathylite of nearly a thousand miles in length, from which the comparatively thin covering of unabsorbed beds was soon afterward almost completely stripped away by ensuing processes of waste.

This last great epoch of mountain making doubtless left the surface of the Cordilleran belt generally with a very strong and newly made relief, which before the middle of the Tertiary period is found to have become greatly modified by denudation. Chiefly because no deposits referable to the Eocene or earliest Tertiary have been found in this part of the Cordillera, it is assumed with probability that this was a time of denudation. It is further indicated that it was a time of stability in elevation by the fact that the prolonged wearing down resulted, in the interior zone of the Cordillera, in the production of a great peneplain, the base-level of which shows that the area affected stood for a very long time 2,000 or 3,000 feet lower in relation to the sea than it now does. If, however, the Puget beds of the coast are correctly referred to the Eocene, it follows that the coast region was at the same period

*Several thousand feet of Cretaceous rocks must also be added to this thickness near the line of the present Coast ranges, and the total thickness of deposits in the center of this geosyncline must probably have exceeded 40,000 feet.

*Annual Report, Geol. Surv. Can., Vol. II. (N. S.), 1886, p. 11 B et seq.

only slightly lower than at present, and that the movements in subsidence and elevation between this and the interior region must have been differential in character and very unequal in amount.

As already noted, the earliest Tertiary sediments of the Interior plateau of the Cordillera are referred to the Oligocene. Probably some further subsidence at that time interrupted the long preceding time of waste. This period of deposition was in turn closed by renewed disturbance of an orogenic kind, comparatively slight in amount and local, chiefly affecting certain lines in a northwest and southeast direction. Next came renewed denudation or 'planation,' and this continued until the enormous volcanic extravasations of the Miocene began.

It is not proposed in this place to recapitulate in detail the physical conditions of the Tertiary period, for it has already been necessary to refer to these in connection with the description of the beds themselves, which, because they have not been materially changed since their deposition, really tell their own tale.

It need only be said that, after the Oligocene lake deposits had been formed, disturbed and denuded, new series of lakes were from time to time produced at different stages during the Miocene, their beds now generally appearing as intercalations in volcanic deposits of great mass. Both the coast and the interior region appear to have been subject to these conditions, while the Laramide range stood high, with the inland plain of the continent sloping eastward from its base.

Following the close of, or at least a great reduction in, volcanic activity in the early Pliocene, the interior zone of the Cordillera again assumed a condition of stability for a considerable time, during which wide and 'mature' stream valleys were formed. The elevation of the interior plateau region of British Columbia must then have been about 2,000 feet less than it is at present.* Farther north, the yellow Pliocene gravels of Horsefly river and other places are attributed to this period, and the southern aspect of their contained fossil plants is such as to indicate that, in the given latitude, the height of that part of the interior can not have been much above the sea level.

In the later Pliocence a very marked reelevation of the Cordilleran region evidently occurred, leading to the renewed activity of river erosion, the cutting out of deep valleys and canyons, and the shaping of the surface to a form much like that held by it at the present day. This elevation in all probability affected the coast as well as the interior, and it would appear that the rivers for a time extended their courses to the edge of the continental plateau.

The excavation of the remarkable fiords of British Columbia and the southern part of Alaska must, I think, be chiefly attributed to the later portion of the Pliocene, although it is quite possible that the cutting out of the valleys may have been begun soon after the Laramide upheaval. The antiquity of these valleys is evidenced by the fact that several comparatively small rivers still flow completely across the Coast ranges in their deep troughs. The fiords are now essentially the submerged lower parts of these and other drainage valleys of the old land, not very materially affected by the later glacial action, important as this has undoubtedly been from other points of view. The valleys of the fiord-like lakes that occur along the flanks of the Archean axis of the interior may probably also be referred to river erosion in the later Pliocene, but if so this mountain region must have been affected by a relatively greater uplift at that time, followed later by a subsidence of its central part. It appears,

* *Trans. Royal Soc. Can.*, Vol. VIII., Sec. IV., p. 18.

however, that the excavation of valleys or gorges like these by rivers, when the slope and water supply are favorable, occurs with such rapidity relative to the wider effects of denudation, as to be almost negligible in any general view of the physical changes of an extensive region or in the accounting of geological time.

There is as yet some difficulty in connecting the later physical changes particularly referred to above with those which have recently come under observation far to the north in the Klondike region. It is probable, however, that the auriferous 'quartz drift' of that region, implying long subaërial decay and stability of level, may be attributed to the early Pliocene; while the river gravels found in the newer and deeper-cut valleys may be assigned to the later Pliocene time of greater elevation. During the Pliocene, and probably until its close, the mammoth, one or two species of bison, the moose and other large mammals roamed northward to the Arctic sea. Then came the Glacial period, with renewed great changes in levels and climate and its own peculiar records and history, which in many respects are more difficult of interpretation than those of more remote periods, because the whole time occupied by them has been relatively so brief. I have elsewhere endeavored to follow this history in detail, and do not propose on this occasion to deal with this latest chapter of the physical history of the Rocky Mountain region of Canada.

In conclusion, what appear to be the most striking points evidenced by the geological record of this northern part of the Cordillera may perhaps be specified as follows:

1. The great thickness of strata accumulated both to the east and west of an Archean axis. In the Laramide geosyncline the strata no doubt actually attained the volume stated. In the western and wider syncline it is not so certain that all the formations in their full thickness were ever actually superposed at any one place or time (for reasons already alluded to), but the volume was probably not less than in the Laramide region.

2. The great proportion of volcanic materials accumulated in the western geosyncline and the recurrence of vulcanism throughout the geological time-scale in this region, resulting in the production of massive volcanic formations in the Cambrian, Carboniferous, Triassic, Cretaceous and Miocene.

3. The recurrence of folding and disturbance parallel to the border of the Pacific basin and the concurrent great changes in elevation of the land relatively to the sea, both continued down to quite recent geological times, the latter even into the Pleistocene.

4. The tremendous energy of denudation, in part due to the events last referred to, but also dependent upon the position of the region on the eastern border of a great ocean, where, in northern latitudes, an excessive rainfall must have occurred at all periods on the seaward mountain ranges. No comparable denuding forces were probably ever operative on the east side of the continent in similar latitudes since the definition of the ocean basins of the Pacific and Atlantic.

G. M. DAWSON.
GEOLOGICAL SURVEY OF CANADA.

STEREOSCOPIC STUDY OF THE MOON.

IN looking at a terrestrial landscape we see that certain features are distant and others near. We also recognize the extension of objects in three dimensions, so that a tree, for example, is not a mere silhouette, but is perceived in its proper rotundity. The data for these automatic and instantaneous judgments as to distance and form are somewhat complex. The distance of

objects of familiar character is judged in part by their apparent size—the principle of lunar perspective. Distant objects, being seen through more air, have a different color from near objects—the principle of aërial perspective. For objects in the foreground we have two retinal pictures which are sensibly different, and from these the eyes estimate distance—the principle of optical parallax. The judgments arising from optical parallax are automatically combined into judgments of the rotundity or solidity of objects. If the sun shines, many objects show one side illuminated and the other side in shadow, and a shadow is also cast on the ground or on adjacent objects. From long association with judgments arising from optical parallax we have come to infer rotundity from the distribution of illumination and non-illumination—the principle of shadows. Finally, sunlight is scattered and reflected from particles in the air and from objects in the landscape so as to come with modified intensity from many directions, affording partial illumination to surfaces not directly exposed to the solar rays. This partial illumination we have learned to interpret in terms of rotundity—the principle of shades.

When one looks at the surface of the moon through a telescope of high power he sees a landscape from an unfamiliar direction and under unfamiliar conditions. As all the objects are strange, he is not aided by linear perspective. As there is no foreground, he is without the assistance of optical parallax. As the moon has no atmosphere his view is devoid of aërial perspective and of shades. It is true that the moon receives reflected light from the earth and there must also be reflection from lunar cliffs, but these reflected lights are so faint as not to help the seeing of surface details; so far as the eye can determine, the lunar shadow is absolutely black. The observer, being deprived of all other data, has to depend wholly on light and shadow, complete illumination and the entire lack of illumination, for his determination of the configuration of the surface. The sense of sight, having been educated by terrestrial landscapes, is unprepared for the peculiar conditions of the lunar landscape and gives false judgments. Close to the terminator, or sunrise line, where light and shadow divide the field, the eye overestimates the relief and sees the topography as grossly exaggerated as some of the published sketches of lunar mountains. At a distance of 40° or more from the terminator the landscape is practically without shadows, but is diversified by spots of color representing the distribution of the various substances composing the moon's face. These colors, being chiefly light and dark grays, are interpreted by the eye as shades and give an impression of relief no less false than that obtained at the terminator. Along an intermediate zone the general effect as to altitude is substantially true, but it can hardly be doubted that many details of form are misconceived.

Professor W. Prinz, of Brussels, has hit upon an ingenious method of avoiding these difficulties and realizing the actual relief. For many years the rotundity of the moon as a whole has been exhibited by means of the stereoscope. The possibility of this depends on libration, which permits us to view the moon from different directions ranging through an arc of about 16°. Two photographs taken in different months and at times properly chosen, and afterward viewed through a properly constructed stereoscope, give the same fulness of relief which we obtain in observing an object at a distance of 9 inches. Professor Prinz has applied the same method to the examination of small portions of the lunar surface greatly magnified, and is thus enabled to see the craters and other details in their natural proportions. To get the best

URALIST. [May

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The Ottawa Naturalist
May 1901,

THE LATE GEORGE MERCER DAWSON.

The world of science and especially of geology received a severe shock on the evening of Saturday, the 2nd day of March 1901, when the news of the death of Dr. G. M. Dawson was announced. This sad event was altogether unexpected and leaves the ranks of the Canadian Geological Survey minus one of its most distinguished men, one who had always taken a foremost part in carrying on the good work of his predecessors in the position of Director.

Not only as a geologist, but also as an ethnologist and naturalist Dr. Dawson was well known, and his too early loss will be felt by the whole scientific world.

The immediate cause of the death was a severe attack of capillary bronchitis which set in subsequent to a somewhat protracted but apparently only slight cold. Dr. Dawson had been attending to his official duties all day Thursday Feb. 28th and had thus been only a whole day absent from the Department when he breathed his last at five minutes after six in the evening, at his rooms in the Victoria Chambers, Ottawa.

His loss to Canada cannot be overestimated. His place can never properly be filled. He will be missed most by the various members of the Geological Survey of Canada with whom he was in constant communication regarding the advancement and welfare of every part of the Dominion of Canada.

The early training he received with his father, Sir William Dawson, at McGill University, subsequently in London, England, at the Royal School of Mines, eminently fitted him for the distinguished positions which he held during his lifetime and at the time of his death, as Director of the Canadian Geological Survey.

By his demise there is removed from this sphere of activity one of the greatest lights and intellects of the last progressive half of the century just ended. His numerous and important writings are a monument which will ever be a crown of glory and renown to his life-work, for his industry, talent and painstaking accuracy.

He was a Nestor in Canadian geology and the grasp which

his strong intellect had of all problems relating to the economic and natural resources of our vast Dominion, made him master of his Department and a centre of distribution of the most valuable information. With a diminished staff at his disposal, he guided the Department under his care with unsparing as well as inspiring efforts, and was thus producing more results and giving out more information than ever before in any period of the history of the Survey in all its different branches.

With the ever increasing demands for exact information concerning the mineral and other economic resources of Canada, with the increase of labour and attention to official matters, he was kept more than usually busy for the past six years. Through his personal efforts and that of his staff, he did much to disseminate such information regarding Canada's mineral resources, that the mining interests of the Dominion may now be said to be fairly well established upon a firm and non-speculative basis.

Dr. George Mercer Dawson was the eldest son of the late Sir William Dawson who was the honoured Principal of McGill University for upwards of forty-four years, and who preceded the subject of this sketch by a few months only, having died in Montreal, his home, on the 19th day of November, 1899, at the advanced age of 79.

"Doctor George," as he was wont to be called, was born in the town of Pictou, Nova Scotia, Aug. 1st, 1849. His early training was at the Montreal High School, then subsequently, at home under tutors, and in McGill University, where however, he did not graduate, but went to Edinburgh and London. There he carried on studies and researches in Mining and Geology, especially at the Royal School of Mines, London, from 1869 to 1872, carrying off the highest honours of his class and the Duke of Cornwall's prize in his year, also the Edward Forbes gold medal for palæontology, ranking first, and subsequently became an "Associate of the Royal School of Mines," a much coveted title.

On his return to Canada he spent some time investigating the copper and iron deposits of Nova Scotia, his native province, and later lectured in Morrin College. In 1873, he was appointed geologist and botanist to Her Majesty's British North American boundary commission, of which Major D. R. Cameron, R.A., was

Chief Commissioner for Britain. His excellent report upon the Geology and Mineral Resources of the 49th parallel from the Lake of the Woods to the Pacific Ocean marked him out as a scholar and an eminent observer. He was only twenty five years of age when this report was prepared. This volume was so eagerly sought, that it is now out of print, the edition being soon exhausted and a copy is conceded to be actually worth its weight in gold.

Then it was that were laid down the lines upon his subsequent career and researches lay, for in July 1875, when he received from the Dominion Government an appointment on the Geological Survey staff, as Chief Geologist, his explorations and researches led him into the vast and then practically unknown Northwest Territories, and in British Columbia. In the mass of his voluminous and much-sought-for reports upon the resources of the districts which he examined and explored will be found the most authentic and useful information on those now rapidly developing and flourishing districts. In his Yukon explorations of 1887 and 1888, he examined and reported upon that most valuable and important district to which the world has been and is still looking for most years for a goodly share of its source of supply of gold. He was the real discoverer and describer of that now famous gold-bearing belt in which there is happily left as a monument to his indefatigable researches in the eighties the capital town or city of the Yukon Territory, which now bears his name.

Not only were his mental strength and intellectual vigour remarkable but even his powers of physical endurance were great. As an instance of the latter, may be mentioned a boat journey of 1,300 miles and a portage of fifty from the Valley of the Liard to that of the Yukon, as one of the feats which his zeal and energy as an explorer accomplished. It would be superfluous here to give even a synopsis of his numerous reports, suffice it to say that they are all most readable and full of useful information on the regions traversed.

Besides being an eminent geologist, he was also a foremost naturalist. Amongst his contributions to the Empire may be mentioned his work as one of the Commissioners appointed by Her Late Majesty Queen Victoria, as one of the arbiters in the

Behring Sea seal fisheries. The conditions and real facts concerning seal life were studied by him and have been Britain's most powerful argument in the case. In 1883 he was appointed assistant director to the Geological Survey Department. In 1892, after his work on this commission was ended, Her Majesty Queen Victoria was pleased to create him a C.M.G., and in 1890 and 1891 respectively, Queen's and McGill Universities conferred upon him the degree of doctor of laws *honoris causâ*.

In 1891 he was made a Fellow of the Royal Society of England, the highest scientific body in Britain, for his eminent work in geological science. In 1893 he was elected President of the Royal Society of Canada ; in 1894, corresponding member of the Zoological Society of London ; in 1895, Fellow of the American Association for the Advancement of Science ; in 1896, chosen President of Section "C" in Geology of the British Association for the Advancement of Science, and in 1897 delivered a masterly inaugural address upon the Archæan geology of Canada. In the same year, the Royal Geographical Society of London presented him with their highest award, a gold medal ; and in 1891 had been awarded the Bigsby medal for eminent researches in geology by the Geological Society of London. The recipient of this medal must not be older than 45 years at his last birthday.

As an ethnologist and archæologist, Dr. Dawson stood foremost in Canada and was an eminent authority. Many of his spare hours were devoted to this most important subject. His report upon the manners and customs of the Haidas in the Queen Charlotte Islands and the numerous and interesting specimens he brought with him have laid the foundations of the ethnological department of the National Museum at Ottawa. The Geological Survey of Canada was fortunate in having so able a scientist and geologist as Dr. Dawson for its director. He has done much in disseminating exact knowledge regarding the vast regions of the west chiefly, whilst his attention and care has led him to take a most prominent part in the economic prosperity and development of the eastern or older provinces. His courteous and practical replies to the constant stream of correspondence which, in his position as chief of the Geological Survey department, he received, have done much to place Canada's mining interests on a solid

basis. He had successfully carried out the work of his predecessors, Sir William Logan and Dr. Selwyn, in investigating the resources of Canada, both far and near. His death is an irreparable loss to Canada, to science, but especially to the Geological Survey Department.

Dr. Dawson was by nature of a retiring disposition, though exceedingly sociable and amusing as well as always interesting in company, yet more so in the case of geologists, and above all in the field. He was unmarried, and a foremost member of the Rideau Club, where he was most popular and highly appreciated. He proved to possess a perfectly inexhaustible fund of ready knowledge upon questions of Canadian or of world-wide interest.

His writings are to be found in the Annual Reports of the Geological Survey department, in the Quarterly Journal of the Geological Society of London, in the American Journal of Science and Arts, in the Canadian Naturalist, the Ottawa Naturalist, &c. In 1894 he was unanimously elected President of the Royal Society of Canada, the theme of his address being "The Future of Science in Canada." He was Associate Editor of the Journal of Geology of Chicago, and for three years he was President of the Ottawa Field-Naturalists' Club, during which term he did all in his power to advance and promote the interests of the Club. His was a life constantly devoted to the best interests of his official work. He combined indomitable energy with will power which did much to keep up his vital strength as against what might be termed a weakly physique. Close attention—possibly too close attention—during late years, to office work, and a lack of outdoor physical exercise, which he was wont to enjoy in his arduous mountain climbings and in his explorations of many unknown regions of this great Dominion, possibly combined to weaken his constitution.

He was called away most suddenly and will be missed by all who knew him personally or through his writings; but he has left behind him a noble monument of his industry as an explorer and of his skill as a practical geologist both in his official work and in the personal influence which he exerted in the advancement of science and scientific thought for twenty-six years.

As a geologist Dr. Dawson's reputation was world-wide. He was one of those investigators into the realm of geological science

who sought not only to point out the at once practical and economic side in the resources of the earth's crust of Canada, his native land, but one who diligently and intelligently hammered away at the numerous problems of pure geological science. They are numerous the problems in the geology of North America which are as yet unsolved ; and, wherever an element of doubt came in, as to the truth or validity of the results propounded by this or that investigator, or whenever intricate bits of geology presented themselves to his mind and eye for investigation, he made it his sacred duty to closely examine and carefully study their various relations in the field as well as in the office, thus seeking to ascertain all the facts of the case to enable him to arrive at a satisfactory conclusion of the difficult points involved. He never rested until the problem which he had before his mind was solved. In other words he was *thorough*. His reports, maps and papers are models of excellence and description. He had a facile pen, an intelleect ready and lucid, which could grasp the situation at a glance. His love for thoroughness and the best possible work came forth time and again in his endeavors, as the head of the Geological Survey of Canada, to present to the Hon. the Minister of the Interior, and to Parliament, the reports under his care, as well as the innumerable correspondence of the department making enquiries on the resources of every quarter of our great Dominion as models of care and attention. The reports issued during his régime as Deputy Head and Director can truly be said to be the pride of the Department. As regards quality as well as quantity of work brought forth and exact information published and disseminated by him during the six years and two months of his administration, it can not be denied that they were both unparalleled in any previous period in the history of this now old and established institution.

A cursory sketch of the various regions examined by Dr. Dawson during his connection with the Geological Survey of Canada will serve to shew the amount of territory which he covered and the nature of his extensive researches.

After completing his explorations and surveys in connection with the British American Boundary Commission, and writing his priceless memoir on the same, he contributed several reports which

are noted in the Reports of Progress of the Geological Survey of Canada for 1873-74, for 1874-75. These include reports on the hematite deposits of Pictou County, Nova Scotia; on the limonites of the same county and on the spathic ore deposits of the Sutherland's River, N.S.; also on the clay-iron stones of the Tertiary, along the 49th. parallel, and the limestones of the Cretaceous of the Swan River and Thunder Hill in Manitoba; together with the results of his botanical researches along the 49th parallel.

In the Report of Progress for 1875-76 comes his report on Chilco and Nazco rivers and trail to Fort George, B.C., and in the next year's report his results in the basins of the Blackwater, Salmon and Necchacco rivers and of François Lake, B.C., along with a reconnaissance report of Leech River and vicinity on Vancouver Island. This report includes a statement of the condition of mines and mining in British Columbia at this early period. Coals and lignites and many minerals of economic importance were obtained by him along the route and analyses made by the department which have helped to lay down the foundation of the mineral wealth of that once remote province, hut one whose resources, thanks to Dr. Dawson's work, is to-day well known and appreciated.

In 1877 and 1878 Dr. Dawson's field of explorations was in the Queen Charlotte Islands. It would suffice to obtain an estimate of the subject of this sketch to peruse the most interesting report on the resources and possibilities of these hitherto unknown islands from his pen. It was a practically virgin district for him and the excellent maps which he prepared that were published by the Department reflect greatly to his credit however young he was at that time. Not only as a geologist did he excel in this report, but he distinguished himself also as an ethnologist of repute. He shewed the world of science what an abundant field for research and enquiry there was open on that west coast. Even with the languages and vocabularies of the different tribes of the aborigines which he visited and examined, he made himself familiar, and has contributed much of value to the Philology of the western tribes of British Columbia.

Dr. Dawson's reports are usually accompanied by an extensive series of Appendices. He was a most prolific collector of

facts and specimens. Accordingly, his reports sometimes contain as many as a dozen appendices on all kinds of subjects of importance and interest to our country. The floras and faunas met with, the insects and crustacea, the shells of the land and of the sea, weather reports and other interesting meteorological observations; as well as the fossil organic remains of the district which he visited, he ever looked after most carefully, for he truly knew their great value as horizon-markers. He not only submitted these various collections to specialists and authorities throughout the country and abroad from whom he received further information from time to time but examined and described them himself.

Later, in the Report of Progress for 1878-79, he gives notes on the geology of areas drained by the Red and Assiniboine Rivers in Manitoba, and also describes the Coal deposits of the Lignite Tertiary of the Souris River, from the Great Valley and Porcupine Creek. The report of his explorations on the Skeena and down the Peace in 1879 are embodied in the Report of Progress for the year 1879-80, which is entitled "A report on exploration from Port Simpson to Edmonton, by the Peace River." Much important astronomical data has been furnished the government by Dr. Dawson during his numerous voyages and explorations which serve to fix the latitude and longitude of distant places on our Map of the Dominion.

In 1882 Dr. Dawson visited Europe where he carried on studies having for their object the utilization of the lignites of the West as fuels, and the results of his researches were embodied in a subsequent report.

For a knowledge of the forests of British Columbia the country is under a great debt to Dr. Dawson. He sought not only to bring forward the immense value which they prove to possess but also to point out the best means to preserve such a grand heritage. In the Districts of Alberta and Assiniboia he did much to reveal their hidden geological structure and economic resources, especially as far as coal is concerned. Up to 10,000,000 tons of coal to the square mile for hundreds of square miles of territory he has described and reported, and time will only serve to emphasize the accuracy of his carefully sought out facts from the bosom of Nature which was ever ready to yield her secrets to him

who knew her heart and appreciated her bountiful stores. His report on the geology of Bow and Belly Rivers in the Report of Progress for 1880-82 affords a condensed summary of his explorations in the districts just east of the Foothill country.

In 1883, Dr. Dawson was engaged along the western slope of the Rocky Mountains proper and had with him as assistant that year Mr. J. B. Tyrrell who examined the geology and structure of the Crow's Nest Pass with its great possibilities for Coal. In 1884 he carried on explorations farther north in the Rocky Mountain and Selkirks region and prepared a reconnaissance map and a report giving the results, together with notes on the geology of the Red Deer River country.

In 1885, Dr. Selwyn was appointed as Canadian Commissioner to the Colonial and Indian Exhibition and Dr. Dawson superintended the work of the survey as Acting Director, and his time was fully occupied in attending to the duties of the office, to the shipment of the minerals and ores of the Dominion and cataloguing the same as well as of editing the first Annual Report of the Survey's new series. However, he found time to write and publish his own report on the Rocky Mt. region, and Dr. Selwyn makes the following kindly allusion to his work :—

"I wish here to record my high appreciation of the very able "and efficient manner in which Dr. Dawson has performed all the "work."

Dr. Dawson was officially appointed to the staff of the Geological Survey of Canada in 1876, as we read on page 7 of the Report of Progress for 1875-76, where Dr. Selwyn, then Director, informs us as follows :— "Mr. G. M. Dawson, late Geologist and Naturalist on the International Boundary Survey of the 49th parallel was appointed and has since been actively engaged in exploration in British Columbia." It was during this first year of Dr. Dawson's connection with the Canadian Survey that the Centennial Exhibition was held in Philadelphia and on page 2 of the report just quoted one can see that even at that early date he had the material welfare and prosperity of British Columbia at heart. He contributed, we read, not a little towards the proper representation and display of the then little known mineral resources of the Pacific province, and not only were the minerals attended to, but also the vegetable as well as the animal products of British Columbia.

His recent reports on the Kamloops District of British Columbia, those on the Southern Interior of the same province, on the Northwest Territories, on the Yukon Territory (containing in 1888, as this last mentioned report did, nearly 400 pages of description of that now famous region including its gold-bearing gravels,) also his Queen Charlotte and Vancouver Island reports, are all replete with the greatest interest and afford the best works of reference upon these important regions.

A list of Dr. Dawson's writings has been prepared from various bibliographic sources and references to original papers from his pen, in geology, natural history, &c. These comprise hundreds of reports, memoirs and papers on economic as well as scientific subjects. It is reserved for a subsequent issue of THE OTTAWA NATURALIST.

Dr. Dawson was President of the Ottawa Field-Naturalists' Club for three years, from 1891 to 1894; and as much as lay in his power he worked in the interest of our Club, not only by contributing important papers to the pages of its Transactions but also by encouraging others to do the same. His love for science and scientific work was unbounded, and of him it may be truly said that he spent himself for his country and his country's good. Especially in the West he will be greatly missed.

I cannot more fitly close this sketch than by quoting part of that admirable

ODE TO "DR. GEORGE" BY CAPT. CLIVE PHILLIPPS-WOOLLEY.*

"Hope she has fooled us often, but we follow her Spring call yet,
And we'd risk our lives on his say so and steer the course he set,
Down the Dease and the lonely Liard, from Yukon to Stikine;
There's always a point to swear by, where the little doctor's been,
Who made no show of his learning. But, Lord! what he didn't know
Hadn't the worth of country rock, the substance of summer snow.
I guess had he chosen, may be, he'd have quit the noise and fuss
Of cities and high palavers to throw in his lot with us.
He'd crept so close to Nature, he could hear what the Big Things say,
Our Arctic Nights, and our Northern Lights, our winds and pines at play.
HE loved his work and his workmates, and all as he took for wage
Was the name his brave feet traced him on Northland's newest page—
That, and the hearts of the hardfists, though I reckon for work well done,
He who set the stars for guide lights, will keep him the place he won,
Will lead him safe through the Passes and over the Last Divide,
To the Camp of Honest Workers, of men who never lied.
And tell him the boys he worked for, say, judging as best they can,
That in lands which try manhood hardest, he was tested and proved A Man."

Ottawa, 19th April, 1901. H. M. AMI.

*Ex. British Columbia Mining Record for April, 1901.

breeds in the mountainous parts to far north in British Columbia

Its food consists of mammal racoons, gophers, squirrels, gr the Bald Eagle sparingly, if ev quently feed upon carrion.

From time to time we see n carried away by Eagles, fortuna are sensational, but in sections demed by the sheep farmers, f their flocks by feeding on the reporting in 1889 the loss of fro

A comparison of the Golden Bald gives the latter a slight a table will show.

	Length.
Male Golden,	30 to 35 in.
Male Bald,	30 to 35 in.
Female Golden,	35 to 40 in.
Female Bald,	34 to 43 in.

The Golden Eagle in *Adult* brown, the feathers of head and darker than body and banded the adult but with basal half of tarsi paler sometimes nearly wh and neck same as in adult. In tinguished from the Bald Eagle l the tarsus thickly feathered dow

NOTE.—The specimen refer my possession and I have made ceedingly fat, weighing about 10 in. from tip to tip. Beneath the about No. 6, which was very mu hit a bone. This pellet was emb large bone in the wing) had beer wrist, but was entirely healed ov

GEORGE M. DAWSON

IN the death of Dr. George M. Dawson the Dominion of Canada has sustained a great loss in the domains of geographic science and of affairs, for Dr. Dawson was not only one of her leading scientific men, but took an active part in her political matters.

Dawson was born at Pictou, Nova Scotia, in 1849, his father being the

George M. Dawson

celebrated geologist, Sir William Dawson. After a thorough training at McGill University and at the Royal School of Mines of London, he commenced his long career of geographic and geologic explorations as geologist and botanist on the Northwest Boundary Commission in 1873. Two years later he joined the Geological Survey of Canada, and for nine years was engaged in the exploration of British Columbia, the Yukon Valley, and the high plains of the northwest. While his work was primarily geological, still we owe to him, more than to any other explorer, our present knowledge of the northwestern part of North America. In 1883 he was appointed assistant director of the Geological Survey, and in 1895 became its director, which position he held until his death, on March 2, 1901.

During his quarter century of active work many duties were imposed upon Mr. Dawson and many were the honors he received. In 1891 and 1892 he served on the Bering Sea Commission, and for his services received the order of Companion of St. Michael and St. George. In 1891 he received from the Royal Society of England, of which he was a fellow, the Bigsby medal for his researches in geology, and degrees were conferred upon him by Queens College and McGill University. In 1893 he was elected President of the Royal Society of Canada.

Dr. Dawson's work was mainly that of an explorer, and for that he had, in spite of his physical defect, wonderful ability and fitness. To draw broad and accurate generalizations from the slight data obtained by the explorer requires close observation, great breadth of vision, and high reasoning powers, and in the selection of Dawson for this work the Canadian authorities made no mistake. He has laid down with great accuracy the leading geographic and geologic features of the Canadian Northwest, and thus constructed a skeleton on which future work will supply the details.

H. G.

"National Geographic"
Washington
D.C.

Ausschnitt aus: Geographischer Anzeiger,

vom März 1901

Einen empfindlichen Verlust hat Canada erlitten durch den am 2. März in Ottawa erfolgten Tod von Dr. George Mercer Dawson, dem Leiter der geologischen und naturhistorischen Aufnahme in Canada. Er war geboren am 1. August 1849 in Pictou, Nova Scotia. Nach Beendigung seiner Studien in Montreal und London trat er als Geolog in den Dienst seiner Heimat, indem er 1873 an der zweijährigen Grenzvermessung vom Lake of the Woods bis zu den Rocky Mounlains teilnahm; über die geologischen Verhältnisse und die Hilfsquellen im Grenzgebiete nach 40° nördl. Br. veröffentlichte er einen eingehenden Bericht. 1875 trat er als Mitarbeiter in das geologische Vermessungsamt seiner Heimat ein, im Juli 1883 wurde er Assistent-Director und nach dem Rücktritte von A. R. C. Selwyn, 1895 Leiter des Institutes. Seine Hauptthätigkeit entfaltete er in der Aufnahme der Queen Charlotte-Inseln, der Gebirge von Britisch-Columbia und in der Untersuchung des Yukon-Gebietes, über welche Unternehmungen die Jahresbände der Geological Survey zahlreiche umfangreiche Berichte von ihm enthalten. Im Jahre 1892 nahm er auch als Sachverständiger für Canada an der Untersuchung über die Streitfrage betr. den Robbenschlag im Beringmeere teil. Dawson veröffentlichte ausser seinen Reiseberichten zahlreiche geologische, geographische und ethnographische Aufsätze.

A Canadian Scientist

THE Dominion of Canada, and, indeed, the scientific world at large, has sustained no ordinary loss in the death of Dr. George Mercer Dawson. A son of the late Sir William Dawson, he was born at Pictou, Nova Scotia, in 1849, and had not, therefore, completed his fifty-second year. He received his early education at Montreal, and in 1869 entered the Royal School of Mines, London, where he distinguished himself, carrying off high honours. Returning to Canada, Dr. Dawson was appointed geologist and botanist to the commission for fixing the international boundary between the Lake of the Woods and the Rocky Mountains. In 1875 he joined the staff of the Geological Survey of Canada, of which he eventually became the head. His duties during this perod lay chiefly in the then almost unknown wilderness of the North-West Territories and Northern British Columbia, which he explored with that thoroughness characteristic of all his work. The full and clear reports which he made to his Government from time to time, to-day form the basis of our knowledge of that distant region known as the Yukon Territory, the capital of which fitly bears his name. Nine years ago Dr. Dawson was appointed by the Home Government to inquire into the conditions of seal life in Behring Sea. He visited the resort of the seals in the North Pacific Ocean, and spent some time in investigating the habits of those mysterious animals. The report which he issued, in conjunction with the late Sir George Baden-Powell, proved of the utmost assistance to our counsel at the Arbitration in Paris, where, in his quiet and unassuming way, Dr. Dawson rendered yeoman's service to the British cause. He also did much good work at various times in connection with the Alaska Boundary dispute, which, unfortunately, he did not live to see terminated. Dr. Dawson was eminent, too, as a naturalist, a botanist, and a geographer. "He touched nothing he did not adorn." Numerous learned bodies counted him among their members, and esteem and regard for him were not confined to the scientific world. Many persons unable to follow him in his intelectual persuits, and but little interested, perhaps, in the results of his professional labours, yielded to none in their admiration and affection for one of the most charming of men.

R. G. M. DAWSON, CANADIAN SCENTIST
Who has just died at Ottawa

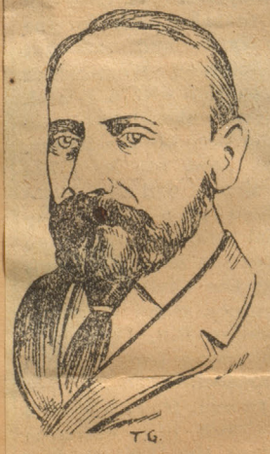
The Sun

An Independent, Up-to-Date Newspaper for Up-to-Date People.

LONDON: THURSDAY, JUNE 6. 1901.

A Canadian Scientist.

Canada has lost a distinguished scientist by the death of the late Dr. George Mercer Dawson. Born in Picton, Nova Scotia, in 1849, he received his early education at Montreal; but in 1869 he entered the Royal School of Mines, London, carrying off high honours. Returning to Canada, he was appointed geologist and botanist to the Commission for fixing the international boundary between the Lake of the Woods and the Rocky Mountains—a task which took him through an almost unknown wilderness. Later he did much good work in the Yukon territory, on Behring Sea questions, and in connection with the Alaska boundary dispute.



T.G.

Eminent as a naturalist, a botanist, and a geographer, his work was always thorough.

disposition.

Dr. George Mercer Dawson, like Dr. Marchand, was a man possessed of many charms of character, which endeared him to all his companions and friends. In science he had won many honors, and it is most regrettable that Canada should have so soon lost one from whom she had reason to expect even more useful and enduring achievements in the future. No physical weakness ever kept him from venturing on the most arduous field work, and his name must be always associated with a knowledge of the geological structure of the Canadian Northwest, even as far as that dreary but rich region through which the golden Yukon and its tributaries flow. It is indeed now sad to think that all he had done was, after all, but "an earnest" of all he might have done had he been spared to the great world of science in which he had already won so honored a name. With him work was almost a religion. Like Ruskin, he believed that "We are not sent into this world to do anything in which we cannot put our hearts. We have certain work to do for our bread, and that is to be done strenuously; other work to do for our daylight, and that is to be done heartily; neither is it to be done by halves or shifts, but with a will; and what is not worth this effort is not to be done at all." It was in this spirit that George Dawson labored until he died in the meridian of his career.

George Mercer Dawson

GEORGE MERCER DAWSON

GEORGE MERCER DAWSON

GEORGE M. DAWSON, C.M.G., LL.D., F.R.S., Director of the Geological Survey of Canada and an editor of the *American Anthropologist*, died on March 2, in his fifty-second year, of acute bronchitis, after an illness of but a few hours. In his death Canada loses her leading scientist, and North America one of her foremost geologists.

George Mercer Dawson was born at Pictou, Nova Scotia, August 1, 1849. His father, Sir J. William Dawson (who died in 1899), long known as principal of McGill University and still more widely known as the author of standard works on geology, archeology, and related topics, was Canada's most eminent scientist for decades; his mother, Lady Dawson (Margaret A. Y. Mercer), representative of a distinguished Edinburgh family, still occupies a prominent place in that scientific and educational circle in Montreal which grew up under the influence of her honored husband. Born with the best physical and intellectual endowments, young Dawson suffered a nearly fatal accident (involving a fracture of the spine) in infancy, which arrested bodily growth and resulted in permanent deformity; yet the misfortune was so far counteracted by early treatment and training, and so far overcome later by inherent vigor, that its victim achieved distinction in his maturity as one of Canada's hardiest explorers, while his intellectual accomplishments could hardly have been enhanced by any physical advantages.

Dawson's earlier education was acquired partly in Montreal, partly in Edinburgh; later he took a partial course in McGill University, followed by a course in the Royal School of Mines (London), 1869–1872, where he not only graduated with honors but took

the Duke of Cornwall scholarship and the Edward Forbes prize, and received the highly-prized title of Associate. Returning to Canada, he began original researches in geology. In 1873 he was appointed geologist and botanist of the British North American Boundary Commission, and his report is one of the classics of Canadian geology. In 1875 he was appointed on the staff of the Canadian Geological Survey, and entered on a remarkable career of exploration of northwestern North America; his work including extended reconnaissances of the Liard and Yukon valleys, of the Canadian Rocky mountains, and of British Columbia. During these travels and researches he came in frequent contact with aboriginal tribes, and did excellent work in recording their characteristics and customs and in collecting their languages. In 1883 he was made Assistant Director of the Geological Survey Department; in 1891 he became a fellow of the Royal Society of England, and during the same year received the Bigsby medal for eminent researches in geology. In 1891 and 1892 he served as one of the British Bering Sea Commissioners, for which service he was decorated by the late Queen and Empress Victoria with the order of Companion of Saint Michael and Saint George; and about the same time degrees were conferred on him by McGill University and Queen's College. In 1893 he was elected president of the Royal Society of Canada; on the retirement of Sir Alfred Selwyn in 1895, he was appointed Director of the Geological Survey; and when an Ethnological Survey of Canada (modeled after the Ethnographical Survey of the United Kingdom and thus after the Bureau of American Ethnology) was instituted in 1896, he was placed at the head of the Survey Committee.

It falls to few men to have so many high honors and grave responsibilities thrust on them in so short a period; the succession is probably without parallel in Canada's history; yet it is the common judgment that the honors were fully merited, the responsibilities borne in such manner as to add renown to the country and the crown. Dr Dawson's career was a credit to Canada, and

an eloquent testimony to the wisdom of the nation in recognizing and utilizing the talents of her sons.

One of Dr Dawson's earliest contributions to ethnology was a memoir on the Haida Indians of Queen Charlotte islands, published in the form of an appendix to the Report of the Geological Survey of Canada for 1878–79 (pp. 103–189, pls. II–XIV); a contribution made noteworthy by the novelty and extent of the observations and the comprehensiveness of the record. Four years later he, in association with W. Fraser Tolmie, prepared a valuable series of "Comparative Vocabularies of the Indian Tribes of British Columbia, with a Map Illustrating Distribution," which were published by the Geological Survey in 1884; and he appended a valuable series of notes on the aborigines of the Yukon district and adjacent territory to the Survey Report of 1887–88 (pp. 191–213). About the same time he prepared for the Royal Society of Canada a memoir on the Kwakiutl people of Vancouver island and adjacent coasts, with an extended vocabulary (Trans. Roy. Soc. Can., vol. V, sec. II, 1887, pp. 1–36, with plate); and still more comprehensive was his subsequent memoir entitled "Notes on the Shuswap People of British Columbia" (ibid., vol. IX, sec. II, 1891, pp. 3–44, pl. vi). A "Note on the Occurrence of Jade in British Columbia, and its Employment by the Natives" was published in 1887 in the *Canadian Record of Science;* and a summary sketch of the "Past and Present Condition of the Indians of Canada" appeared in the *Canadian Naturalist*, vol. IX, 1881. In 1884 the British Association for the Advancement of Science appointed a committee to investigate the physical characters, languages, and industrial and social condition of the northwestern tribes of Canada, of which committee Dr Dawson was made a member; and by reason of previous familiarity with the subject, acquaintance with territory and tribes, and presence on the ground, it naturally fell mainly to him to organize and administer the work of the committee. The work was carried forward with great economy under small grants, and the reports of the collaborators (among whom

Dr Boas deserves especial mention) were published annually up to the institution of the more formal survey in 1896.

While several of Dr Dawson's titles and the prefatory remarks in some of his papers imply that his ethnologic researches were subsidiary to his geologic work, and while his busy life never afforded opportunity for monographic treatment of Canada's aborigines, it is nevertheless true that he made original observations and records of standard value, that much of his work is still unique, and that his contributions, both personal and indirect, materially enlarged knowledge of our native tribes. It is well within bounds to say that, in addition to his other gifts to knowledge, George M. Dawson was one of Canada's foremost contributors to ethnology, and one of that handful of original observers whose work affords the foundation for scientific knowledge of the North American natives.

Primarily a geologist, Dawson did his work in such wise as to aid in the solution of fundamental problems in archeology, and so to illumine various aspects of anthropology. When he returned from the Royal School of Mines to the land of his nativity, he found the geologists of Canada and the United States at issue concerning the later periods and episodes of geologic history. The differences were natural; they grew out of the fact that each group of earth-students began with the phenomena of their respective fields—those of Canada with late-glacial, aqueo-glacial, and glacial deposits only, those of the United States with earlier glacial deposits chiefly—and extended inference too far into the neighboring field; yet the differences were none the less unfortunate and obstructive of progress. Young Dawson wisely avoided controversy, but gradually extended observation over the more northerly field, gradually systemized knowledge of the Pleistocene history of the northland, gradually brought the stern logic of facts to bear on the general interpretations, and in this manner contributed more than any associate—probably more than any contemporary—toward harmonizing the discrepant readings of the

records of rocks and ice. Today the leading geologists of Canada and northern United States are practically at one as to the later episodes of earth-making; they are in substantial agreement as to the geologic time-scale by which the antiquity of man on the western hemisphere is to be measured; and for this happy condition they are indebted to no one more than the sagacious and far-sighted student whose untimely end they are united in mourning.

Time was when progress was mainly material, and when he who made two blades of grass to grow where one grew before was a great human benefactor; now horizons have widened, and progress has changed its course so far that he who sows ideas and harvests knowledge is coming to be reckoned among the greatest of benefactors. Of such was Dawson's work; gaining broader knowledge of his country than any predecessor, he gathered the wide-spreading strands in single grasp; writing treatises on geologic history among the most masterly ever penned, he was able to look from the past through the present and into the future far more clearly than most of his fellows; so his surveys of natural resources and possible utilizations contributed in unexcelled degree to the welfare of his nation and others, while the light of his knowledge and the radiance of his example have raised in due measure the intellectual plane of the western world.

Dawson was one of the men who left the world better because he lived in it.

W J M.

Dundee Advertiser

DEATH OF A FAMOUS GEOLOGIST.

Dr George Mercer Dawson, C.M.G., F.R.S., F.G.S., who for the last 26 years had been a member of the Geological Survey of Canada and Director of that body for the past six years, died after a few hours' illness at Ottawa on Saturday, March 2d. His death was most unexpected, and cast a great gloom and sorrow upon the whole Survey staff and on all who knew him. He was not only reckoned as the ablest geologist in Canada, but of North America, and stood high in the world of science. By his demise there has been removed from the sphere of activity one of the greatest intellectual lights of the last half of the century just past. He was the author of many books on geology, and by them and the superiority of his staff he did much to disseminate such information regarding Canada's resources as would establish mining upon a firm and rational and non-speculative basis. Dr Dawson was the eldest son of the late Sir William Dawson, of Upper University, Montreal, and was born in Picton, Nova Scotia, on August 1, 1849. He received his early training and education in Montreal and Edinburgh, having taken a partial course in the Arts Faculty of M'Gill University in preparation for his work in the Royal School of Mines, London, where he studied from 1869 to 1872, carrying off high honours and the Duke of Cornwall's prize in his class. On his return to Canada Mr Dawson was appointed geologist and botanist to Her Majesty's British North American Boundary Commission, of which Major D. R. Cameron, R.A., was Chief Commissioner for Britain. As an explorer also deceased has given to the world some of the most useful information on the country traversed by him, including several most interesting and valuable reports on the Yukon Goldfields, of which he was the real discoverer. He was also a foremost naturalist. Amongst his contributions to the Empire may be mentioned his work as one of the Commissioners appointed by her late Majesty Queen Victoria as one of the arbiters in the Behring Sea seal fisheries. In 1883 Mr Dawson was appointed Assistant Director of the Geological Survey Department. In 1892 he was created C.M.G., and two years previously the degree of LL.D. was conferred upon him. As an ethnologist and archæologist Dr Dawson stood foremost in Canada, and was an eminent authority. Dr Dawson was of a retiring disposition though exceedingly sociable and amusing and always interesting in the company of geologists, especially in the field. He was unmarried. The funeral, which took place on the 4th inst., was largely attended. It may be mentioned that Dr Dawson was a cousin of Mr Alfred G. Primerose, West Ferry.

Globe. London. Eng:

Dr. George Mercer Dawson, whose death is announced from Canada, was one of the most brilliant men of science in the Dominion, and held the post of Director of the Geological Survey of Canada, his appointment dating from 1895. As the "Times" points out, one of the most important of Dr. Dawson's public services was in connection with the Behring Sea Arbitration. As one of the Commissioners, he spent the summer of 1892 in the Behring Sea region, studying the conditions and facts of seal life. For his services he received the thanks of the Governor-General in Council, and was made a C.M.G. Dr. Dawson, who was in his fifty-second year, was a son of the late Sir J. Dawson, the geologist and naturalist.

OBITUARY.

Dr. George Mercer Dawson.

Our Ottawa Correspondent telegraphed on Saturday:—"Dr. G. M. Dawson, director of the Geological Survey of Canada, one of the most brilliant men of science the country has produced, died to-night after two days' illness."

Dr. George Mercer Dawson was a son of the late Sir John William Dawson, the distinguished geologist and naturalist, and was born in Picton, N.S., on August 1, 1849. He received his early education in Montreal, where he studied in McGill University as a partial student. In 1869 he entered the Royal School of Mines, London, taking its full course of study extending over three years, and passed as an associate, being first in his class and taking the Edward Forbes medal and prize in palæontology and natural history. He had previously won the Duke of Cornwall's scholarship in his second year. Returning to Canada, he was engaged for a year in mining surveys in Nova Scotia and in lecturing in Morrin College, Quebec. In 1873 he was appointed geologist and botanist to the North American Boundary Commission engaged in fixing the boundary line from the Lake of the Woods to the Rocky Mountains. In this capacity he served for two years, and prepared an elaborate report, with plates and maps, on the geology and resources of the country in the vicinity of the 49th parallel. In connexion with this work he also prepared a report on the lignite tertiary formation, a memoir on the superficial deposits of the great interior plains of America, and papers on the locust visitation, on the fresh-water sponges of Canada, and on the fluctuations of the great American lakes.

On the termination of his labours on the boundary survey Dr. Dawson was appointed in July, 1875, to the staff of the Geological Survey of the Dominion. He became assistant director in July, 1883, and director and deputy head of the department of the Geological Survey on January 1, 1895. While attending the School of Mines he devoted special attention to geology and palæontology under the tuition of Ramsay, Huxley, and Etheridge; and to chemistry and metallurgy in the laboratories of Frankland and Percy. His work on the Geological Survey was done chiefly in British Columbia and the North-West Territory, and in the discharge of his official duty he explored a large portion of the western country, including a journey by boat of 1,300 miles, with one portage of 50 miles, from the basin of the Liard river to that of the Yukon. One of the most important of Dr. Dawson's public services was in connexion with the Behring Sea Arbitration. As one of the British Commissioners he spent the summer of 1892 in the Behring Sea region for the purpose of inquiring into the conditions and facts of seal life. The report of the Commissioners constituted the case of the British Government on this part of the subject, and was of great service. For his services on this occasion he received the thanks of the Governor-General in Council and was made a C.M.G. In addition to his official reports Dr. Dawson was the author of a large number of notes and papers on geological, geographical, and ethnological subjects. He received the degree of LL.D. from Queen's University in 1890, and from McGill University in 1891. In the same year he was awarded the Bigsby gold medal by the London Geological Society for his services to the science of geology, and was elected a Fellow of the Royal Society. In 1893 he was elected President of the Royal Society of Canada, in 1894 he was elected a corresponding member of the Zoological Society of London, and in 1895 a Fellow of the American Association for the Advancement of Science. In 1896 he was appointed by the council of the British Association president of the geological section for the Toronto meeting of the association, and in 1897 he was awarded the yearly gold medal of the Royal Geographical Society for his work as a whole.

Aberdeen Free Press

DEATH OF DR G. M. DAWSON.

Dr George Mercer Dawson, Director of the Geological Survey of Canada, died at Ottawa on Saturday evening after a short illness. He was (says "Men and Women of the Time") a son of Sir J. William Dawson, the geologist and naturalist, who died about a year ago, and was born at Pictou, Nova Scotia, in 1849. He was educated at M'Gill University, Montreal, and at the Royal School of Mines, London, having been Murchison and Edward Forbes Medallist at the Royal School of Mines. He was appointed geologist and naturalist to the North American Boundary Commission in 1873, and in 1875 he published a detailed report on the country traversed from the Lake of the Woods to the Rocky Mountains, entitled "Geology and Resources of the 49th Parallel." He was appointed to the Geological Survey of Canada in 1875, and had since been principally engaged in the survey and exploration of the North-West Territory and British Columbia, and was placed in charge of the Yukon expedition, undertaken by the Canadian Government in 1887. He was appointed (with Sir George Baden-Powell) one of the Behring Sea Commissioners in 1891, and spent the summer of that year in investigating the facts connected with the fur-seal fishery on the northern coasts of America and Asia. Meetings of the International Commission were subsequently held at Washington, and a report of the Commissioners was published as a Parliamentary paper in 1892. In 1893 he was on the staff of the Behring Sea Arbitration, convened at Paris. In 1890 he received the honorary degree of LL.D from Queen's University, Kingston, and in 1891 from M'Gill University, Montreal. He was awarded the Bigsby Medal of the Geological Society of London in 1891, for his researches into the geological structure of Canada. He was made a Companion of the Order of St Michael and St George in 1892, and was elected President of the Royal Society of Canada, 1893. His geological work includes the first detailed account of the surface geology and glacial phenomena of the northern part of the continent of America west of the great lakes, as well as the investigation of the great coal and lignite deposits of the North-West Territory and of large portions of British Columbia and the Queen Charlotte Islands. The results of these investigations are published in the annual reports of the Geological Survey of Canada, from 1875 to the present time. In January, 1895, he was appointed Director of the Survey. He is the author of numerous original scientific papers, principally geological, but including geographical, ethnological, and other observations made in the course of his explorations, published in the "Quarterly Journal of the Geological Society," "Transactions of the Royal Society of Canada," "Canadian Naturalist," "Canadian Record of Science," and elsewhere.

Glasgow Daily Mail

Death of a Canadian Geologist.

Dr George Mercer Dawson, director of the Geological Survey of Canada, died on Saturday night after a short illness. Dr Dawson, who was the eldest surviving son of the late Sir J. W. Dawson, Principal of M'Gill University, Montreal, was born at Picton, Nova Scotia, in 1849, and was educated at M'Gill University and at the Royal School of Mines, London. Dr Dawson was geologist and naturalist to H.M. North American Boundary Commission, 1873-75, and has since been connected with the Geological Survey. He was one of the Behring Sea Commissioners in 1891 and 1892. Dr Dawson was the author of numerous scientific papers.

29 July 190

From Montréal 29

Sincerest congratulations and all kind wishes for future

Rawnie T Glo

Operators must not write beyond this line.

Newcastle Chronicle

DEATH OF DR. G. M. DAWSON.

(By Telegraph through Reuter's Agency.)

OTTAWA, March 2.

Dr. George Mercer Dawson, Director of Geological Survey of Canada, died to-night.

Mr. George Mercer Dawson, C.M.G., LL.D., F.R.S., was the son of Sir J. William Dawson, and was born at Pictou, Nova Scotia, on Aug. 1, 1849. He was educated at McGill University (Montreal), and at Royal School of Mines (London), Murchison and Edward Forbes Medallist at Royal School of Mines. He was appointed Geologist and Naturalist to H.M. North American Boundary Commission in 1873, and in 187 he published a detailed report on the country traversed from the Lake of the Woods to the Rocky Mountains, entitled "Geology and Resources of the 49th Parallel." He was appointed to the Geological Survey of Canada in 1875, and was latterly principally engaged in the survey and exploration of the North-West Territory and British Columbia, and was placed in charge of the Yukon Expedition, undertaken by the Canadian government in 1887. He was appointed (with Sir George Baden-Powell) one of H.M.'s Behring Sea Commissioners in 1891, and spent the summer of that year in investigating the facts connected with the fur-seal fishery on the Northern Coasts of America and Asia. In 1893 he was on the staff of the Behring Sea Arbitration, convened at Paris. In 1890 he received the honorary degree of LL.D. from Queen's University, Kingston, and in 1891 from McGill University, Montreal. He was awarded the Bigsby Medal of the Geological Society of London in 1891, for his researches into the Geological Structure of Canada. He was made a Companion of the Order of St. Michael and St. George in 1892, and was elected President of the Royal Society of Canada, 1893. His geological work includes the first detailed account of the surface geology and glacial phenomena of the northern part of the Continent of America west of the Great Lakes, as well as the investigation of the great coal and lignite deposits of the North-West Territory and of large portions of British Columbia and the Queen Charlotte Islands. In Jan. 1895, he was appointed Director of the Survey. He is the author of numerous original scientific papers, principally geological, geographical, and ethnological.

DAWSON-SELWYN PORTRAITS.

Mr. B. T. A. Bell, secretary of the Canadian Mining Institute, acknowledges the following subscription to date towards the fund to provide the National Museum at Ottawa with memorial portrait paintings of the late Dr. George M. Dawson and his predecessor, Dr. A. R. C. Selwyn: Lord Strathcona, London, England, $150; the Canadian Mining Institute, $100; officers of the Geological Survey, $54; the Hon. Sydney Fisher, M.P., Ottawa, $25; London and B. C. Gold Fields, Limited, Nelson, B.C., $25; 'Canadian Mining Review,' Ottawa, $25; Mackenzie & Mann, per D. D. Mann, Toronto, $25; H. C. Hammond, Toronto, $20; John B. Hobson, Bullion, B.C., $20; J. Roderick Robertson, Nelson, B.C., $10; Dr. James Douglas, New York, $10; W. P. Jennings, Toronto, $10; W. H. Aldridge, Trail, B.C., $10; Wallingford Brothers, Perkins Mills, Que., $10; George E. Drummond Montreal, $5; John J. Drummond, Midland, Ont., $5; J. W. Evans, C.E., Deseronto, Ont., $5; Dr. Henry M. Ami, Ottawa, $5; . S. Fowler, Nelson, B.C., $5; Rinaldo McConnell, Ottawa, $5; Dr. Frank D. Adams, Montreal, $5; W. F. Little, Anthracite, N.W.T., $5; O. E. S. Whiteside, Anthracite, N.W.T., $5; Eugene Coste, Buffalo, N.Y., $5; R. D. Featherstonhaugh, Alton, B.C., $5; G. J. Ross, Nelson, B.C., $2. The portraits are being executed by Mr. Franklyn Brownell, the well known Canadian artist.

Daily Chronicle - London

Mr. George Mercer Dawson, director of the Geological Survey of Canada, is reported by Reuter's Ottawa correspondent to have died after a short illness. He was one of the British Commissioners in the Behring Sea Arbitration, for which he received a C.M.G.

Morning Post

The death is announced from Ottawa of Dr. George Mercer Dawson, director of the Geological Survey of Canada, after a short illness.

Daily Telegraph

Dr. George Mercer Dawson, Director of the Geological Survey of Canada, died on Saturday night at Ottawa, after a short illness.

Daily Express

DEATH OF DR. G. M. DAWSON.

REUTER'S AGENCY.

OTTAWA, Saturday.

Dr. George Mercer Dawson, Director of the Geological Survey of Canada, died to-night, after a short illness.

Baltist

The death is announced from Ottawa of Dr. George Mercer Dawson, director of the Geological Survey of Canada, after a short illness. Dr. Dawson rendered great service to the Dominion by the work of exploration in the remote parts of Canada carried out under his direction.

St James Gazette

The death is announced from Ottawa of Dr. George Mercer Dawson, director of the Geological Survey of Canada, after a short illness. Dr. Dawson has rendered great service to the Dominion by the work of exploration in the remote parts of Canada carried out under his direction.

The Mining Record.

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THE MONTH.

THE death of Dr. George Dawson, so many years of whose useful and busy life was devoted to faithful service to Canada in connection with the work of the Geological Survey, of which he was executive chief, is lamented not only by the scientific world, but by a host of warm, personal friends. The following verse is a tribute from one who was proud to thus number himself. In our opinion these lines of Mr. Phillipps-Wolley are among the strongest he has ever written. They worthily "epitomize the life and pronounce an authentic epitaph" on a truly good and great man:

TO "DR. GEORGE."*

BY CLIVE PHILLIPPS-WOLLEY.

Grey and ghostly willow fringes, flame to crimson at the tips,
Where a sun that has some heart in, through the waking forest slips.
High above us, on Mount Sicker, I can hear the blue grouse hoot;
Birds are calling, rivers glitter; buds are bursting, grasses shoot.

On the pine stump, by our shanty, Dawson's tattered map lies spread,
And my partner with his finger, marks the footsteps of the dead.
"Spring!" he says, mate, time to quit it, for the barren lands and hoar,
Where the Earth's heart freezes solid and the mighty bull moose roar:
Where through silent spaces, silent, reckless bands of hardfists hold,
By this here map and the compass, their course to the northern gold,
With a laugh and a curse at the danger, while down the Arctic Slope
Are two of the best ahead of the boys, Doctor George and Hope—

* * * * *

Hope she has fooled us often, but we follow her Spring call yet,
And we'd risk our lives on *his* say so and steer the course he set,
Down the Dease and the lonely Liard, from Yukon to Stikine,
There's always a point to swear by, where the little doctor's been
Who made no show of his learning, but Lord! what he didn't know
Hadn't the worth of country rock; the substance of summer snow—
I guess had he chosen, may be, he'd have quit the noise and fuss
Of cities and high palavers to throw in his lot with us.
He'd crept so close to Nature, he could hear what the Big Things say,
Our Arctic Nights, and our Northern Lights, our winds and pines at play.
He loved his work and his workmates, and all as he took for wage
Was the name his brave feet traced him, on Northlands newest page—
That, and the hearts of the hardfists, though I reckon for work well done,
He who set the stars for guide lights, will keep him the place he won,
Will lead him safe through the Passes and over The Last Divide,
To the Camp of Honest Workers, of men who never lied—
And tell him the boys he worked for, say, judging as best they can,
That in lands which try manhood hardest, he was tested and proved A Man.

List of flowers sent

March 4th 1901

Lillies Mrs Redpath. Terrace Bank

A. wreath Mrs Frank Adams

A. beautiful wreath Lord & Lady Minto

A wreath Mrs Sterling

Sm Anchor Mrs Andrew Taylor

A wreath Dr & Mrs Ami

Large wreath Staff of Geological Survey

Bunch of white roses Mrs Frank Redpath

Azalia Mrs Peck

Palms & lillies Miss Lunn.

Flowers Dr Barlow

" Mrs A. P. Gault

" Bailey-

" Mrs M. Gault

" Mrs Mc Lennan

the Greek lord's room, a dagger ready to plunge into his back. He sat at the desk, a hanging lamp lighting his page, for the rest the room was dim. As I reached his chair he turned suddenly and faced me ; the light from above shining full upon him. At the instant I fell back in horror. The face, now pale with terror, with the starting eyes, was the face that had hung livid in the moonlight over that cave in far Albania ;—and there, —oh ! horror !—was the purple ring round the strangled neck. And while I stared, cold and palsied, at the awesome thing, the lips grew blue and frothy, the eyes set in a rigid stare. The dead man moved stiffly towards me, then fell forward, forward at my feet,—stark. Then stayed I for nothing, but shaking and cold with sweat, I fled, scarce knowing where I went, feeling only this terror behind me....

At daybreak a constable took me. I was charged with the murder of my master,—found strangled in his room. And now for that crime I am to die, though,—Heaven be my witness—not a finger did I lay upon him in the room that night when he died. Yet I durst raise no voice against my doom, nor question its justice ; for I may not forget that foul deed done one stormy night in the hills..... The wheel has come full circle. God have mercy on my soul.

PHŒBE CROMPTON.

INTERPRETATIONS.

"I have followed the stars in their courses,
Seen the shaping of worlds yet to be,
I have measured the infinite forces,
That rule through eternity
All things with unerring precision,
Yet neither in science nor vision
Hath a God been revealed unto me."

Thou fool that hast eyes, yet they see not,
How can God show himself to the blind ?
What are motion and force, if they be not
Revealment in Nature of mind ?
Her laws are the thoughts that God willeth,
Who into each atom instilleth
Endless life, linked with love unconfined.

"I have traced back humanity's history
To the single primordial cell,
And stripping the past of its mystery,
I know how the changes befell
Through continual strife for existence,
Blind efforts o'ercoming resistance,
Yet no signs of a God can I tell."

Thou art ignorant from thy confession,
For the presence of God is marked well,
Lacking Him there could be no progression,
Hate's struggles produce but a Hell.
Earth's noblest God chooseth and leadeth,
And the race that obeyeth and heedeth
Is upraised by the love they compel.

WILLIAM WILKIE EDGAR.

THE LATE DR. DAWSON.

Dr. George M. Dawson, C. M. G , F. R. S., director of the Geological Survey of Canada, whose death occurred on Saturday, March the second, seemed, at an early period of life, to have taken all knowledge for his province, in Lord Bacon's phrase. He had that insatiable curiosity which is one of the marks of a superior mind, and is ever at work in men who distinguish themselves in literature or science. "Man as I am," says the Latin poet, "I am indifferent to nothing human." Dawson, with equally wide sympathies, was eager to acquaint himself, not only with what had been said and done in the past, but with the general movement of life from day to day. As a man of science his reputation was world-wide, but his vast stores of information on all kinds of subjects outside his own department, made him the most versatile and interesting of companions. Ask him the composition of the Hungarian House of Magnates, the flora and the fauna of Manchuria, the present state of the old Catholic movement in France, or the size of the Yerkes telescope, and he would answer you with the same accuracy and familiar ease with which he would discuss the geological formation of the Ottawa valley, or Prof. Darwin's correction of Newton's theory of gravitation.

His industry was constant and indefatigable. Work was to him a joy. 'Nulla dies sine linea' might have been placed as a motto over his chamber, though it but feebly expresses the unremitting application he gave to business and to study. His swift apprehension made it easy for him to acquire knowledge, but he was not one of those whose erudition is merely a fortuitous accumulation of miscellaneous and ill digested facts. His scientific instinct led him to put each fact in its proper place and note its relations. This clear, logical faculty of orderly arrangement was not his highest gift. Many men have that who have nothing better. Their intellectual fire is well nigh choked with the fuel. Dawson's mind irradiated and transfused the mass, causing it to glow with living energy. Every great intelligence, it has been said, is furnished with a great memory. The converse is not equally true, but it was true in this instance. The man of science was also a thinker, who reflected deeply upon the ultimate constitution of things and the fundamental problems of life. His views were therefore central. He fastened instinctively upon the essential principle, seldom being drawn into error by unduly emphasising the secondary and accidental aspects of a subject.

In private life Dr. Dawson was the most genial and charming of men. A careless nurse let him fall in childhood and the fall broke his back. Keenly sensitive as he was by nature he felt the deformity deeply and abstained from going into that society which his mental gifts and graces well fitted him to adorn. Notwithstanding that he was bereft of the fair proportions of normal manhood, and was, like the royal hunchback, sent into this breathing world but half made up, he displayed great vitality in early life and often astonished the companions of his exploring expeditions by the vigour and endurance he showed in walking and riding. But the mal-formation of his chest prevented proper expansion of the lungs and this fact coupled with a more sedentary life gradually impaired his active powers and rendered him liable to a dangerous onset of pulmonary or bronchial trouble. The end came in that way after years of suffering.

Yet physical weakness and disease never depressed his bright spirits. His constant cheerfulness was a source of surprise to all who knew him, more especially to those who reflected upon the fortitude required to bear his bodily infirmities with patience. In conversation he was witty and humorous to a degree, while at the club or at a public dinner, his sallies were wont to keep the table in a roar. A quick wise smile lit up his countenance when indulging in good-natured badinage, of which he was very fond ; and when talking upon serious subjects his eye flashed with the intelligence which made his most trivial discourse luminous. Rare and beautiful spirit, we shall not soon look upon your like !

R. W. SHANNON.

Ottawa, March 6th, 1901.

THE LEADEN HEEL.

"Justice Hath a Leaden Heel."

I, RICHARD Merivale, write this in my cell in Newgate. And if any man doubt whether the thing I write be true, I will say this:—I am to die at cock-crow, and a dying man speaks truth if he never spake aught but lies before. Since, then, time is short, I will waste no words in beginning, but go straight to my tale.

I was bred to crime in the streets of this city, not half a mile from the prison where I now lie. My father,—mother I never knew,—had a small shop where thieves were wont to come and traffick their gains; and there I fell among all manner of evil men, and became such an one as they.

When a lad of barely eighteen years I was pressed for service during a drunken bout in Wapping, and came to my senses on board a frigate in the Channel, bound for the Mediterranean. I had no liking for the sea; and because I had been bred to no trade,—being indeed unused to any kind of honest work,—I could not take kindly to that hard life. My spirit chafed at the harsh tyranny of our officers, and my stomach was sore with sickness and loathed the vile food. To make my case the worse, as we came into the open water we met rough weather with choppy seas, so that I was consumed with misery and rage, and thought only how I might escape.

Watching my chance, I left the ship at Lepanto in Greece, and fled inland into the highlands, which in that part are very rough and sparsely peopled. And there I lived; a wild life enough, and dared not show my face on the coast, lest I should fall in with English seamen, and be hanged as a deserter. Truly, I might as easily have hanged then as now, and much blood the less to my reckoning.

I found it scarcely easier to come by an honest living here than in England; and in time I threw in my lot with a band of robbers, mostly natives of the hills, young men like myself and wild spirits. Making our stronghold among these secret hills, we raided the villages, to the peasants' terror; and, growing bolder, we would descend upon the towns on the low-land slopes beneath.

It chanced one day that a herdsman from the nearest village, who was himself half brigand and had many secret dealings with our band, brought us tidings of a state convoy which was that night to cross the mountain pass some three miles further north, bearing gold to the Montenegrin Prince. Sallying out at dusk we met them where the path lay narrow and deep between steep walls of rock. We fell upon them,—they were few and unprepared; we won the gold, a mighty treasure, and slew all, save a few grooms who fled. All save one,—a Greek and a good swordsman, who fought fiercely, until disarmed he fell a prisoner to my sword. A heavy thunder storm had now blown up, and was about to break over us. Clouds, black and big with rain, had gathered overhead; the roar of thunder, low and hoarse, came rolling up from the southern hills, to be echoed and re-echoed from slope to slope,—the mountain pines the while groaning in the rising wind. With all haste we conveyed our booty to a small narrow cave hard by; while we ourselves sought the shelter of a deserted dwelling some two hundred yards down the hill, or thereabouts. And before we left that cave, I,—being now drunk with blood and with the sight of the gold,—took him that I had made prisoner, and hanged him over the cave entrance, and as a bitter jest I bade the dead man look well to our treasure. Now nearer rolled the thunder and we sped down the slope. I turned once and looked to the cave. As I looked, for the space of a moment, the moon rode high over the dark storm clouds and it glinted brightly on a dead face and drawn grinning lips. A dead, mocking face, white against a world of blackness, this I saw—and fled on faster.

Two hours or more we passed in that ruined lodge, drinking, gambling and making merry over our great taking; while the sky shook with deep thunder claps, and the torrents from that great rainfall swept down the mountain side. Then, the storm having passed by, and all being once more quiet, we set out to fetch the hidden gold and to convey it to our secret fortress. The clouds had cleared, and in the light of the moon we saw that the cave was empty, the treasure vanished, and not a trace left. Then one cried that the dead man too had gone; and indeed he hung there no longer, only the rope and the noose dangling uncut. Whereat some crossed themselves and looked fearfully, but I cursed more deeply than before.

After this that I have told our band fell on evil days. Eight of our number were taken and marched down to the coast in chains, there to hang or to perish more horribly at the galley. And hate and fear sprang up between us that were left, so that we fought and slew our comrades, until of that whole company but five remained. Then, since there was at that time a great price set on our heads, I betrayed the rest to their doom, and was for that freely pardoned.

Eight years had passed since I fled from the ship at Lepanto, and I was now a man grown and bearded,—having little look of the boy that I was at that day. So it came that none questioned or doubted me when I took ship back to English shores, having indeed a great longing to set foot again in London after so great a while.

Here the rest of my gains were quickly spent, and I made many shifts for a living; serving as groom, as carrier, or running with links for some gay lord at night, keeping in no place long. After many strange turns I became lackey to a great man from foreign parts, from Greece 'twas said; a man whose untold riches and noble parts had set all tongues agog. It chanced to come to my master's ears that I had sojourned in Greece, and knew that tongue. From that day he set me near him, and from his serving man, I came to be in sort his secretary, dealing with such of his affairs as lay still in his native land. Whether it was that my master put trust in me, or for what reason I cannot say, but I served him honestly for nigh upon a year.

When the year had closed it chanced that my master had by him some rare and lovely pearls,—in these and in choice stones of every sort he had often dealings. These pearls, a rich fortune for any man, rested in the desk, within his private closet, and good store of gold beside. I had no rest, day nor night, with a longing to finger these riches. A craving for my old evil life came back upon me. At length, tormented with this desire, I laid plans to slay my master and fly with the jewels.

I chose a time when he wrote late, and all save him and myself were abed. Then I crept quietly into

THE CANADIAN MINING INSTITUTE.

Montreal SPECIALLY REPORTED. March 6th 1902

The annual general meeting of the Canadian Mining Institute began in Montreal, March 4, with a large attendance of members. The original notice had named March 5 as the opening day, but some unavoidable changes in the local arrangements made it necessary to advance the date by one day. The meeting was notable, not only for the large attendance, but also for the great interest taken in the discussions and the value of the papers presented.

The opening session was held on Tuesday, March

After the conclusion of the report, the chairman, in a brief and appropriate address, made a formal presentation to the Geological Survey of Canada of portraits of Dr. Selwyn and the late Dr. George M. Dawson, two gentlemen who had shed so much honor on Canada as heads of the Survey. The presentation was made on behalf of the members of the Institute and a few other subscribers. The portraits, which hung upon the wall of the meeting room, were fine works of art, and were generally admired by the members.

Dr. Robert Bell, as acting head of the Geological Survey, accepted the gift on its behalf, and spoke briefly of the work done by the two eminent geologists. Dr. Selwyn was head of the Survey for 25 years, while Dr. Dawson was connected with it for an equal period, serving as director during the last six years of his life.

Resolution on Death of Dr. G. M. Dawson, Patron of Mir. Nat. Hist. Association.

Whereas this Association has suffered a great loss in the death of its distinguished Patron, Dr. G. M. Dawson, Director of the Geological Survey of Canada;

And whereas the cause and progress of scientific research in our country has lost in him an able, enthusiastic and profound worker, whose untiring energy and devotion to duty were laying the foundation of a great National Museum, to promote the development of Canada's immense resources;

Therefore resolved; That the Miramichi Natural History Association deplores the early death of one of Canada's most distinguished sons, and the loss science has suffered thereby;

And further, that a copy of this resolution be recorded in the minute of the Association and another sent to the family of the deceased.

Philip Cox
J. D. B. F. McKenzie } Committee
J. L. Stewart

65-4

W. Bell Dawson

DOCTOR OF SCIENCE.

The degree of doctor of science was conferred (on Wednesday) by McGill university, Montreal, upon Mr. W. Bell Dawson, M.A., Ma. E., F.R.S.C., who is in charge of the tidal survey in the marine department. This degree is given only for original scientific work, and is never conferred as an honorary title. Mr. Dawson already holds the diploma of the Ponts et Chaussees, the highest engineering degree in France; and is also a member of the Canadian Society of Civil Engineers and the Institution of Civil Engineers of London.