

ROCK STARS



George Mercer Dawson: Pioneer Explorer of Western Canada

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George Mercer Dawson, May 1885 (age 36). National Archives of Canada. PA26689

In a short life of 51 years, as a geologist, botanist, anthropologist, and director of the Geological Survey of Canada, George Mercer Dawson (1849–1901) rendered an extraordinary service in exploring the geology and resources of western Canada—on the prairies, in the foothills, and in the mountains of British Columbia and the Yukon. His dedication and spirit overcame his considerable physical limitations. He was remarkable among the men of his day.

Early Years

George Dawson was born in Pictou, Nova Scotia, on August 1, 1849. His father, James William Dawson (see “Rock Stars,” *GSA Today*, September 1998) had been schooled in geology at the University of Edinburgh. Dawson’s father was then superintendent of education for Nova Scotia and, as time permitted, immersed in studies of its geology and mineral deposits. At an early age,

George Mercer Dawson, age 24 (third from right in back row) with members of the British North America Boundary Commission, 1873. National Archives of Canada (PA74675).

Dawson was attracted to his father’s collections of fossils, shells, and rocks. In 1855, his father was appointed principal of McGill College (later McGill University), and the

family moved to Montreal. Nurtured by his father’s interest in education and natural history, Dawson developed as the distinguished son of paleobotanist Sir William Dawson.

At nine, Dawson showed symptoms of an illness that would permanently affect his life. He was stricken with a rare and serious form of tuberculosis, affecting the spinal vertebrae (Pott’s disease). For several years he was bedridden and wore a body truss. He was left with “the torso of a hunchback,” the “stature of a ten year old,” and recurring headaches, impediments which make his later achievements all the more extraordinary. Regular schooling was impossible, so he continued his studies with tutors at home. In this environment, he was able to pursue a wide variety of subjects beyond the normal school curriculum, including using the microscope and blowpipe, photography, and drawing. He absorbed knowledge readily, satisfying his avid intellectual curiosity, and never complaining about his disabilities.

In 1868, Dawson entered McGill as a part-time student, attending lectures in English, chemistry, and geology. A year later, he sailed to England to attend London’s Royal School of Mines (RSM). His father provided a special “invalid’s chair” for his use while studying, and Dawson coped quite well. At the RSM, affiliated with the British Geological Survey (BGS), his instruction in geology, mining, metallurgy, and chemistry was overseen by leading British scientists, including A.C. Ramsey (geology) and T.H. Huxley (paleontology). Charles Lyell provided generous hospitality. Dawson worked with a BGS field party in 1871. Following three years of instruction, he graduated as an associate, with honors, and he was first in his class. His mind was set on returning to Canada, and pursuing a geological career.



Geologizing the 49th Parallel

Dawson returned to Canada in 1872, and was temporarily employed in surveys of Nova Scotia coal mines and lecturing. But this was a period when the newly acquired and largely unknown Canadian West presented a huge challenge—its resource potential was largely undefined. He was soon offered two government positions, both directed at this western challenge—one with the Geological Survey of Canada (GSC), and the other with the British North America Boundary Commission (BNABC). Each would involve long absences from family in Montreal and arduous working conditions. On his father's advice, he chose the BNABC, starting in 1873, while the GSC waited until 1875.

As geologist and botanist to the Boundary Commission, Dawson single-handedly took responsibility for reporting on the natural history of an 800-mile section of the international boundary from western Ontario to southern British Columbia. His purpose was "to make the forty-ninth parallel a geological base line with which future investigation could be connected." Over two years, he traveled by horseback and on foot, collecting scientific data and drawing conclusions on this little known, central region of the North American continent. His 387-page report, "Geology and Resources of the Region of the Forty-ninth Parallel, from the Lake of the Woods to the Rocky Mountains, with Lists of Plants and Animals Collected, and Notes on the Fossils," is considered a classic in Canadian geology. It was published in 1875 with other supplementary reports when he was only 26, and it established his scholarly credentials.

Geological Survey Years

Dawson joined the GSC in 1875. For the next 20 years, he explored the remote parts of western Canada, principally in British Columbia, and adjacent parts of Alberta and the Yukon. He demonstrated an aptitude for hard work, and an innate ability to observe and reach sound conclusions. He zigzagged his way through difficult terrain, by foot, horseback, or canoe, making observations and generalizations that still stand the test of time. His field notebooks, written in a clear hand, are interspersed with sketches and observations on people, flora and fauna, and the weather. He soon established his reputation broadly, in geology and geography, the study of native peoples, and history.

Much of Dawson's exploratory work was directed toward the search for coal and for information of use in constructing the transcontinental railway. As a result, a fairly clear picture of western coal potential emerged. He applied knowledge gained at the RSM to assess the potential for other mineral deposits, particularly placer gold. He implemented a series of periodic reports

on the economic minerals and mines of British Columbia.

One remarkable field season, in 1887, involved a seven-month reconnaissance of northern British Columbia and the Yukon along the swift waters and dangerous canyons of the Stikine, Dease, Liard, Frances, Pelly, and Yukon Rivers and finally the crossing of Chilkoot Pass. Geological features were outlined along a 1,332-mile route, involving portages up to 70 miles. Boats and canoes were built, abandoned, and rebuilt along the way. Dawson's report on the Yukon Territory was in great demand during the Klondike gold rush that followed, and Dawson City (then the Yukon capital) was named in his honor.

Dawson's reconnaissance studies made significant contributions to scientific knowledge of the west. He provided a general knowledge of the stratigraphy and structure over vast areas. He described the glacial phenomena, diverging from his father's floating ice theory by providing evidence for widespread continental ice sheets, and naming the Cordilleran and Laurentide Ice Sheets. Along the way, he found time to compile extensive reports on the native populations he encountered, in particular the Haida Indians, their customs, and their vocabularies. These and related contributions established him as a leader in Canadian anthropology.

Dawson never married. He was probably happiest while in the field. He withstood severe weather, rough terrain, mosquitoes, and physical discomfort without complaint. From time to time, his thoughts were reflected in poems, penned in his notebook or on scraps of paper, some of a geological flavor and others reflecting the majesty of the wilderness:

*Contorted beds, of unknown age,
My weary limbs shall bear;
Perhaps a neat synclinal fold
At night shall be my lair....*

Dawson's field studies and his prolific writings spread his reputation across North America and England. In 1891, he was elected to the Royal Society of London and was awarded the Bigsby Medal of the Geological Society of London. For service as a commissioner on the Bering Sea seal fisheries, Queen Victoria named him a Companion of the Order of St. Michael and St. George (C.M.G.). In 1893, he was elected president of the Royal Society of Canada. He received honorary doctorates from various universities, including Princeton (1877), Queen's (1890), McGill (1891), and Toronto (1897).

In 1895, Dawson was appointed director of the GSC, an appointment that received glowing tributes in the newspapers and from the mining community. For six hard years he

administered a GSC strapped for funds, with consequent effect on staff morale. No time was left for personal fieldwork. He deployed his staff as best he could across the country, and insisted on high standards of achievement. He struggled to fund the museum collections in ethnology, anthropology, and zoology. He showed skills in dealing with the government, the mining industry, and the public, which brought the GSC recognition and support, but not necessarily new funds. While director, Dawson maintained his contacts with the world of science in a number of ways, including serving as GSA president in 1900. At the Albany meeting in December of that year, his President's Address, "The Geological Record of the Rocky Mountain Region in Canada," summarized his work on Cordilleran geology. The following March, at age 51, he died suddenly of acute bronchitis.

Legacy

George Dawson's delicate constitution did not prevent him from tackling the most arduous tasks, whether on the trail or mountainside, or as a leader and dedicated public servant. He combined brilliance with self-discipline, and he strove for excellence in his own work and in that of others. He published widely, lucidly, and frequently, for academic, political, and public audiences. He rightly earned the esteem of his countrymen and the international scientific community.

Further Reading

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George Mercer Dawson (age 30) and Geological Survey of Canada survey party, Fort MacLeod, British Columbia, 1879. National Archives of Canada (C18100).