

Wilderness Astronomer of the Great Northwest

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When the young David Thompson disembarked from a creaking ship on the barren and bleak shores of Hudson Bay in 1784, cartographers knew the interior of North America essentially as a great void, an embarrassing *terra incognita* on their maps. Yet by the time Thompson, a fur trader with a passion for surveying, departed the Northwest for good in 1812 the entire region was accurately represented on several detailed charts. Despite the time-consuming and difficult process of measuring the wilderness, Thompson had accurately plotted the main routes of travel and delineated the physical features of approximately 1.7 million square miles depicted the most remote, inaccessible streams and lakes, all in almost perfect relation to each other.

The rudimentary sketch maps in common circulation at the time mostly showed a rough and only vaguely correct line linking the trading forts along the major rivers, combined with a route description to make it useful. They were practically useless for anything other than delivery instructions for fur traders. Created with no means of precisely calculating the distance he traveled, Thompson's charts provided the first accurate cartographic overview of perhaps a quarter of a continent and would be of practical use even today.

For several decades after Thompson produced the first version of his masterpiece in 1813, nearly every major map shamelessly pirated the information on it without giving him credit — or compensation. When he died in 1857 at the age of eighty-seven he had never seen his work published under his own name.

Uncharted Territory

David Thompson spent most of his life in the fur trade in North America. He was

born in London to Welsh parents in 1770. When Thompson was a small boy of three, his father died. When he was seven, his struggling mother enrolled him in the Grey Coat School of Westminster Abbey, a charity school where he was raised with "piety and virtue...[and] a foundation for a sober and Christian life." He also received a basic grounding in Latin, mathematics, geography, and navigation. In 1784, at the age of fourteen, he signed on as an apprentice with the Hudson's Bay Company and departed his native land forever.

While in the employ of the Hudson's Bay Company, Thompson developed skills as a surveyor and mapmaker, and advanced quickly as a trader along the chilly rim of Hudson Bay. But the torpid life of a Bayman was not to his liking. "Neither reading nor writing was required," he later remarked in sour humor, "and my only business was to amuse myself, in winter growling at the cold and in the open season, shooting Gulls, Ducks, Plover and Curlews, and quarrelling with Musketoes and Sand Flies." The Hudson's Bay Company showed little interest in properly surveying the wild terrain under their trading monopoly, at one point specifically ordering young Thompson to stop his surveying and concentrate solely on procuring furs from the Indians.

In 1796 Thompson abandoned the Hudson's Bay Company and joined its adventuresome arch rival, the North West Company, hoping to explore the vast continent spreading south and west from the isolated huts strung out along the shore of the bay. "How very different the liberal and public spirit of this North West Company of Merchants of Canada from the mean selfish policy of the Hudson's

Bay Company styled Honourable," he remarked, pleased with his new circumstances. (The "Honourable" company was at the time forwarding all of the survey notes from his journals to the London map publishing company owned by Aaron Arrowsmith, to create the map produced for Alexander Mackenzie's account of his explorations to the Arctic and Pacific Oceans in 1789 and 1793.)

Thompson's first assignment for the Nor' Westers was more than he had hoped for. Over the next ten months he was to travel more than 4,000 miles in almost uncharted country from Lake Superior to Lake Winnipeg, down through Manitoba and Saskatchewan, following the length of many of the smaller rivers, to the upper Missouri and then over to locate the headwaters of the Mississippi. "Every necessary I required [was] to be [put] at my order," he wrote proudly. In the following sixteen years with the North West Company he roamed over 55,000 miles by canoe, on horseback, and on foot throughout what is now the Canadian West and the American Northwest. He slowly and methodically compiled journals of thousands of survey notes taken along his many routes, an area that was eventually bounded by Hudson Bay in the north, the Missouri River in the south, the Mississippi River in the east, to the Pacific Ocean in the west.

Thompson earned a reputation as a fair and honest trader with the native peoples, with whom he spent most of his time. On one occasion "several old Indians made a bargain with me," he noted. "If they should die in winter, I should not demand the debt due to me in the other world — namely, heaven. To which I always

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agreed.” He also refused to trade liquor after witnessing the devastation it had inflicted on native communities, a stubborn act of defiance that earned him the respect of some, but the irritation of others. “I was obliged to take two kegs of alcohol, overruled by my partners,” he complained, “...who insisted upon alcohol being the most profitable article that could be taken for the Indian trade. When we came to the defiles of the mountains I placed the two kegs of alcohol on a vicious horse, and by noon the kegs were empty and in pieces.” He then sent a note to his partners clearly informing them that he would do the same with any other casks of liquor he found in his annual supplies.

In 1807, following instructions to open new trade routes, Thompson first clambered over the Continental Divide through what is now known as Howse Pass, a route frequently used by the Kootenay Indians. He descended into the verdant valley of the upper Columbia River with ten pack horses loaded with trade goods. His troupe included his wife, the beautiful and multilingual Charlotte Small, daughter of an Indian princess and a wandering fur trader (Thompson had married her *au façon de pays* in 1798, when she was fourteen); and their three young children, the youngest a fifteen-month-old bundle strapped to Charlotte’s back. Here he founded Kootenae House trading fort, just north of Lake Windermere in eastern British Columbia, and settled into a domestic-nomadic life tramping over the dry brownish hills, following rivers through much of interior British Columbia, western Montana, Idaho, and Washington, inviting the Indians to trade at his post. He measured the lengths of rivers, the heights of mountains, and the width of plains, and kept careful notes of his surveys wherever he went.

Thompson reached the mouth of the Columbia in the summer of 1811, several weeks after a contingent arrived from John Jacob Aster’s Pacific Fur Company, (a priority that would later strengthen the U.S. claim to Oregon Territory). He and his entourage slowly followed the length of the river to its headwaters in eastern British Columbia, establishing contact with the Indians and verifying his calculations. “Thus I have completed the survey of this part of North America from sea to sea,” he concluded, “and by almost innumerable Observations have determined the

positions of the Mountains, Lakes, and Rivers, and other remarkable places of the northern half of this Continent; the Maps of all of which have been drawn, and laid down in geographical position, being now the work of twenty-seven years.”

By the Sun and the Moon

Surveying the wilderness in Thompson’s era was a difficult and demanding endeavor involving huge amounts of time. Not only was the interior of North America not charted, it had not even been explored by Europeans. When Thompson canoed down a river he often had only the vaguest concept of where it might lead, based on the accounts of natives or other fur traders. The shape and size of lakes were totally unknown. When he came to the Rocky Mountains in 1807, he had no idea of what lay between the mountains and the coast, which had been accurately charted by George Vancouver the previous decade.

Apart from the calculation of latitude, which on land and at sea was determined by measuring the angle of altitude of the sun, the techniques used on a land survey were quite different from those on a nautical survey. The greatest difference was in the calculation of longitude. The simplest solution was to carry an accurate clock, or chronometer, set to Greenwich time and to observe the difference between Greenwich time and local time at high noon. However, the prototype chronometers that James Cook and George Vancouver brought on their voyages were too finicky and bulky to survive years exposed to the elements on an overland journey tramping and paddling through the wilds.

Thompson used a far more time-consuming and error-prone method involving the observation of celestial bodies. By squinting through a telescope and noting the exact moment of the eclipse of one of Jupiter’s moons at local time (Thompson carried a primitive watch that was accurate for about six hours at a time), he could consult a set of tables that told him when the eclipse occurred in Greenwich. The time difference between observing the same eclipse was translated into degrees of longitude. When the moons of Jupiter were in eclipse or were obscured by clouds, Thompson would measure the angle of the moon against two fixed stars, consult a set of astronomical tables known as the Nautical Almanac, and determine

Greenwich time. Each of these methods was reliable but painfully slow, particularly the method of lunar distances, which consumed about three hours.

Thompson spent thousands of hours over the years calculating latitude by the sun and longitude by the stars. After he had fixed the longitude and latitude of given points, he would mark the positions in his journal and perhaps on a crude field chart as an anchor point. He then track-surveyed to fill in the detail between the “peg points.” When he set out to create his great chart after retiring from the fur trade, he began with such a well-balanced skeleton of astronomically fixed points that his accuracy was virtually assured.

Publishers And Piracy

On Thompson’s final trip east in 1812, a committee of the principal partners of the North West Company at Fort William voted in favor of “a resolve...that David Thompson now going down on Rotation shall be allowed his full share of the Company’s profits for three years...that he is to finish his Charts, Maps, etc. and deliver them to the agents in that time.”

His ambitious cartography project consumed the first year of his retirement on a rural estate near Montreal. From his copious astronomical readings and distance estimates he diligently created a great chart showing the terrain west of Hudson Bay to the Pacific Ocean. It was drawn with dark ink on twenty-five separate sheets of rag linen, measuring about ten feet wide and six and half feet tall. The North West Company hung it in a prominent location on the back wall of their conference and dining hall at Fort William, and it was no doubt of great interest to the hundreds of fur traders passing through on their way to the western frontier. Today the Map of the North-West Territory hangs at the Archives of Ontario.

In 1816 the North West Company published a pamphlet that included a copy of Thompson’s map without giving credit to its creator. Decades earlier the Hudson’s Bay Company had passed on Thompson’s calculations to the London-based map-publishing company Arrowsmith, which incorporated his data into its maps of North America — astutely giving thanks to the company but failing to mention Thompson. When the Hudson’s Bay Company and the North West Company merged in 1822, Arrowsmith was given

access to Thompson's other charts and notes. A Map Exhibiting All the New Discoveries in the Interior Parts of North America, originally published by Aaron Arrowsmith in 1795, was updated nineteen times before the 1850s.

But Thompson wasn't completely accurate in his charting. Just west of Boat Encampment on the Pacific Slope rises a watercourse romantically named the Caledonia River, described to Thompson by Indians. It curves southwest and then disgorges into Puget Sound between the Fraser and the Columbia Rivers. The Caledonia River, however, doesn't exist. Although Thompson corrected his error the following year, in 1814, on an even more accurate chart of the region, the phantom Caledonia is prominently featured on Arrowsmith maps of the region as late as 1824. It also found its way onto virtually every other map for the next twenty years, a clear marker for the various pirated editions of his work.

In 1826 Thompson, just finishing ten years as chief astronomer and surveyor for the British contingent of the International Boundary Commission (where he had divvied-up the land between the St. Lawrence River and the Lake of the Woods), sent the British government an even more updated and accurate version of his chart of the west to help them in determining the international boundary west of the Rocky Mountains. He must have been flabbergasted when his offer was turned down. The British government thanked him, but indicated that they already had maps of the region given to them by the Hudson's Bay Company. Ever optimistic, Thompson again sent the British, during the U.S.-British boundary dispute in the mid-1840s, a revised, final, and perfected edition of his map. Again his maps were ignored. Despite such rejections, his work remained the basis for all maps of the region for much of the century, with the Caledonia sneaking in occasionally long after he had eliminated it.

By 1827 Thompson had resigned from his position as surveyor for the International Boundary Commission. A series of bad debts and the depression of 1837 claimed a good portion of his investments, and at the age of sixty-seven, returned to work surveying the Muskoka Lake district in southern Ontario. Later he began to write an account of his journeys in the West, but his failing eyesight pre-



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"DAVID THOMPSON TAKING AN OBSERVATION"

vented his work from ever being completely finished or published.

In 1843, as a final insult, the colonial government in Canada asked the Arrowsmith company to estimate the value of the final version of Thompson's map. The value was set at a paltry 150 pounds, which was the only known financial compensation Thompson ever received for his work. Arrowsmith promptly pirated from this latest chart to update its own charts and for inclusion in a new Hudson's Bay Company pamphlet. Thompson, not surprisingly, wasn't mentioned. The colonial government didn't publish the chart with proper credit to Thompson until after his death fourteen years later.

It was the famous explorer and geologist J.B. Tyrell who, after purchasing the original manuscript of Thompson's narrative and publishing a version of it for the Champlain Society in 1916, tried to set the facts straight on Thompson's contribution to the cartographic history of North America. He offered this explanation of how the continent's greatest astronomer and field cartographer could have died without receiving recognition for his life's work. "The record of that [Thompson's] survey was made on maps and not in books," he observed. "The people who study maps are few compared to those who read books, and consequently, often great

maps may remain in manuscript unpublished when even trivial books are published with profit and read with enthusiasm."

Finally, more than half a century after his death, Thompson received the credit for his maps that he never enjoyed in life. In a 1937 article Tyrrell went even further, noting the "seemingly insurmountable difficulties" Thompson had overcome, his remarkable devotion to surveying, and the magnitude of his accomplishment. "The accuracy of his observational work by which he determined the positions of the places on the earth's surface to form the framework of his great map of northwestern America, and the care which he used in filling in the geographical details between those determined positions, by the best means available to him, consistent with strict attention to his fur-trading business, give the measure of the man." 

Editor's note:

Upon further research, it is noted that David Thompson was responsible for the first survey in Muskoka District which still governs the direction of boundaries in Muskoka. Early Exploration and Surveying of Muskoka District by Robert J. Boyer, Herald-Gazette Press, Bracebridge 1979.