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Copy: Dominion Land Survey

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The mare, my best mountain horse, shifted her weight onto her other hip, resting – apparently casually – a back leg. Her front end, though, was telling a different story, head raised and black eyes thickly fringed with white lashes very seriously intent; her ears meanwhile were meticulously tracking a mature grizzly ghosting ahead through black spruce on the very far side of the valley's muskeg.

The afternoon was sizzling hot and Mr Grizzly far more intent on locating a nice cool place to snooze for the afternoon. He wandered away, and the mare's attention gradually wandered too; following her eye-line with my gaze brought into view an ancient post, smack bang in the middle of the boggiest muskeg I'd yet encountered during that 2005 summer while hooves-on researching my backcountry equestrian guidebook. Without realizing it, we'd ridden straight into one of the original examples of one of the most remarkable surveying feats the world has ever recorded.

Officially these posts were measured, calculated and placed there from 1871 onwards by surveyors as part of the Dominion Land Surveys (DLS). A few years earlier on July 1st 1867, the British North America Act entered historic fact, and a dream that eventually became reality of the Fathers of Confederation – of a Dominion that would stretch from Eastern coast to western, and from the borders of the USA on the 49th parallel right up to the Arctic.

Property developers (as we know them now) existed even in those days, and those Canadian Fathers relished and expected prosperity, and huge numbers of immigrants from abroad as excitement over railways-to-be-built escalated. Additionally, young men itching to try their luck westwards (my great-grandfather was one) were already experiencing even then that Ontario's premium farmlands had been claimed and ploughed, and any young farmer looking to homestead had either to move into rock-strewn hardwood forests, or consider options even further afield - the unknown prairie lands known as Manitoba (in fact, the very earliest surveying efforts are alleged, in part, to have given rise to the Riel Rebellion,1869-1870). Remarkably, within a few decades much of Manitoba, Saskatchewan, Alberta and British Columbia had been parceled out into farm-sized portions (quarter sections of 160 acres). And, by the end of 1919 (and

those first 50 years of surveying), nearly all areas had been measured out - approximately 1,110,000 quarter sections and the staggering total of 178 million acres.

Some of these surveyors kept diaries and journals; generally taciturn and engineers with minds of practical bent, their writings often are prosaic rather than lyrical, although many dotted in archives of The West's venerable museums bring alive accounts of, day after week after month, of endless vistas of untouched prairie, foothills and mountain wonderlands, black fly agonies, mosquito torments, blizzards, gales, bear and wolf attacks, and chronic shortages of water and wood (particularly on the prairies and why, eventually, politicians of the day were eventually allowed those surveying to utilize iron, rather than wooden, posts). These early proponents generally began their heroic journeys from Winnipeg, in itself accessed back then via American railway systems, onto steamboats northwards before, finally, provisioning with little idea of the tremendous trials and tribulations ahead. In later years they would take the Canadian Pacific Railway (CPR) westwards as far was possible, before switching to hideously uncomfortable Red River carts, into canoes and strength-sapping portages, or snowshoes, dog teams even. James C MacGregor, the magical storyteller of ***VISION OF AN ORDERED LAND, THE STORY OF THE DOMINION LAND SURVEY*** freely admits though that once the "combustion engine" came along and made the surveyors' extraordinary lives substantially less precarious, his own personal fascination with their near-obsessional dedication dwindled immediately. All in all approximately 1,300 staked their lives (and their posts) right up until 1964, and many of our present government topographical maps rely heavily on their original input and detailing.

**SIDEBAR>>There are six meridians (running northwards from the US/Canada border along the 49$^{th}$ parallel). The first (also known as principal) passed some 10 miles west of Winnipeg, and its longitude half a world away from Greenwich, England (zero degrees longitude and the home of the Central Meridian) was 97 degrees, 27' west. Even if you're not a mathematician of the first water, it's fairly obvious that as these six meridians head northwards, they'll converge and narrow due to the earth being spherical (most inconveniently, from a surveyor's perspective!) before hitting the North Pole. At the US/Canada border on the 49$^{th}$ parallel these (six) meridians are about 180 miles (or 30 townships) apart; as they narrow heading northwards, "correction lines" were introduced and used, sometimes with considerable imagination.**

**SIDEBAR>>In 1870 Manitoba became a province and part of a confederated Canada. Here, too, began the original surveying that was soon revised to many features already incorporated further south in the United States. Particularly recommended were townships of six miles square, and with road allowances of one and a half "chains" wide (99') between all section boundaries.**

**SIDEBAR>> DLS used a combination of celestial navigational measurements, sextants, compass notations and now outdated (as Canadians switched to metric), a collection of units of linear measurements (used, for example, when measuring out a road allowance between two sections - a distance decided as viable at 99' – or 1 ½ chains wide).**

**Then, thus, surveyors commonly would think in terms of, for example: -**

| | | |
|---|---|---|
| **1 link** | **=** | **7.92 inches** |
| **100 links** | **=** | **I chain (or 66')** |
| **10 chains** | **=** | **1 furlong** |
| **80 chains** | **=** | **1 mile** |
| **3 miles** | **=** | **I league** |
| **8 furlongs (1 mile)** | **=** | **1,760 yards** |
| **5 ½ yards** | **=** | **1 pole, 1 perch or 1 rod** |
| **4 poles** | **=** | **1 chain** |
| **10 square chains** | **=** | **1 acre** |

**(How history is interwoven into our present day lives! Acre is derived from the Old English word "aecer", referring to an "open field," and also to an area which one man, with one ox, could plough in a day. Acres in those earlier times could also allude to differing amounts of land, in that hillsides would be dramatically different to work than a flatland area. Our modern acres always equal up to 4840 square yards, their length measuring one furlong (or 220 yards) and a breadth of one chain (or 22 yards); this again refers to a historical background, in that it was infinitely easier to plough a longer sided rectangle than a square field. Furlong – most commonly used these days in horse racing parlance - has eight per mile, and another word dating back to the 9th century)**

SIDEBAR>>(Land surveryor's "chains" were a critical tool for these DLS employees. Extraordinarily, English clergyman and mathematician Edmund Gunter (1581-1626 and an enthusiastic proponent of surveyors and navigators being encouraged to use mathematical instruments - he was also later instrumental in developing principles for the mathematical slide rule) invented a relatively simple, easy to carry, and operate method of measuring that would be used in Canada centuries later. One chain = 66 feet = 22 yards = 4 rods = 4 perches = 100 links (of the chain). And, too, as the width of an acre centuries back was defined as one chain, it was also known as an "acre's breadth". Links of Gunter's Chain were eight inches in length, of a heavy gauge wire and with a loop at each end. These links were joined end to end, and enabled the chain to be folded up, link by link, until all 100 were in a bundle (which could be held in the hand). At each of the outer ends were brass handles, and the official chain measurement was between the outer extremities of these handles with the chain at full stretch on flat ground (in some Canadian wilderness areas this

required truly lateral problem solving of the Sherlock Holmes' variety. Folded correctly, an experienced chainman (surveyor's assistant) could fling this bundle out where it would unfold neatly, ready for measuring. Gunter's Chain was thus used centuries later, over these Canadian surveying decades, in countless unique situations that in hindsight have wry ironies that may have been just a little difficult for participants to appreciate at the time.

THE END