

during these depressions the subsidence was sufficient for, or the other surrounding conditions favourable to, the action or even the existence of icebergs, though previous to this time, this section of the Northwest was no doubt also subject to the action of ice, all evidence being now covered up by the more recent deposits here referred to.

West of these lower and more recently formed prairies, are the rolling prairies, which have an origin somewhat different. The stretches of sand, both on the surface and under the clays, point to the existence of extended lake and sea margins at more than one period. The extensive, somewhat parallel gravel ridges at Arden, the gravel knolls, the smaller ridges with boulders in and on them at Birtle and west of Langenburg, and the uneven, rolling nature of the surface of the prairie, all seem to me to point to the action of icebergs in the glacial or post-glacial seas, modified afterwards by the water during subsidence, and to indicate the direction of the force, whether wind or current or glacier, which at these places impelled the bergs onward. Further, the thinner surface loam, mixed to the westward with some sand, would seem to point to a condition of growth and decay of plant life, less defined than and probably of a different character from that on the lower prairies to the eastward.

The Assiniboine, though presently a branch of the Red River, was not always so, and is in its upper reaches above Brandon, a much older river. When the whole prairie east of the Riding and Pembina Mountains was a vast shallow lake, the Assiniboine was a large stream varying from half a mile to a mile and more in width for most of its course, discharging into this lake the surplus waters of the country to the northward and westward. As the whole surface of the continent here, to the east and west, but more especially to the westward, continued to rise, in the long lapse of time, the Assiniboine, with the strongly increased current which its relatively higher level westward gave it, cut its way through the surface soils to its present great depth of about two hundred feet below the prairie level.