

excellent white lime has been made for the use of the Fort. After crossing Swan River, 12 miles from Fort Pelly, the trail enters the Five Mile Woods. The trees are aspen, balsam, poplar, spruce and white birch. The soil an excellent clayey loam, overlaid with black mould. The Square Plain, 16 miles, follows the Five Mile Woods. The first 6 miles consists of prairie openings, alternating with groves of aspens, the remaining 10 of prairie, with a fine loamy soil. Thunder Hill lies on the W. side of the Square Plain. The Poplars, 5 miles on the trail, follow the Plain, and the land is poor. The "Great Meadows," which come next and extend a great distance, are overgrown with sedges, grasses and vetches, and would yield an almost inexhaustible supply of fodder. The soil is a rich, black loam, but too wet for cultivation without drainage, with remains of ancient beaver dams. The Meadows are 30 or 40 feet above the level of Swan River, and could be easily drained. Fifty-three miles from Fort Pelly, Swan River was reached, about four miles above the junction of Sunder's River. Here were found cliffs ten feet, and further up they were much higher. On the banks of the river were oaks, 30 feet high and 15 inches in diameter; elm, black ash, white birch and ash leaved maple, and at Swan River Crossing, spruce of fair size. On returning to Fort Pelly, Mr. Bell descended the Assiniboine River to Fort Ellice in a skiff. The course of the river is extremely tortuous. The distance between the two forts in a straight line is 190 miles; by the river, 270. The river has the same character the whole way. The laminated alluvial clay of the valley forms, at low water, a cliff of from 10 to 30 feet high at the concave side of every bend, while on the opposite side there is a sloping bank of silt, covered with willows. These clay cliffs overhang at the top and afford shelter for thousands of gourd-shaped nests of the cliff swallow. The soil in the valley averaging about half a mile wide, is good, but above the immediate banks of the river are many marshes and ponds. The river was swift and shallow throughout at low-water, and only wide enough to allow room for the oars. At high-water, navigation is easier. The height of the banks of the valley averages 175 feet. The valley would seem to be excavated in the drift down to the level of the underlying rocks. Many of the tributaries appear to lose themselves or become very small on entering the valley, so that at the margin of the main stream at low water they cannot be recognized. The same thing was noticed in the tributaries of the Calling River.

The western shore of Lake Manitoba is bordered by extensive marshes and lagoons, separated from the lake by beaches and islands of sand and gravel. Towards Manitoba House, the land near the shore is good, and back from the lake are extensive openings, covered with good grass. Limestone is found on the west side of the Narrows and of the lake. The Fairford River flows swiftly for two miles from the outlet, opens into a small marshy lake, and contracting for a short space, enters St. Martin's Lake. This lake is 40 miles long, surrounded by level ground and marshes, the water shallow and its

surface broken by low bouldery points, reefs and islets. Out of its most northerly bay, the Little Saskatchewan flows, a large stream, two to three hundred feet broad, with a good depth of water, except in the rapids—all short, but one, four miles long, about a mile from the mouth of the river. This river falls into a bay on the west side of Lake Winnipeg, about the middle of the lake. The country on both sides of the lake is generally level, and appears to be well wooded. The rocks on the east shore southward were, for 20 miles, Laurentian gneiss; the next 40 miles a coarse-grained, greenish grey, silvery, mica schist, and after that, again the gneiss. No actual discovery of minerals appears yet to have been made, except iron.

In the three prairie steppes forming the North-west Territory, there is a marked difference in the aspect of the country and of the river valleys. On the first, the surface is level or undulating in long, gentle sweeps, and the beds of the streams do not average more than 30 feet below the level of the surrounding country. On the second plain, the surface is rolling, and the river valleys 150 to 200 feet deep; and on the third, the hills are large, either close together or rising to considerable heights, and the river valleys 200 to 250 feet deep. "Coulees," valleys or ravines, with steep sides, often 100 feet deep, sometimes run for miles over these last plains, closing in abruptly at both ends, or one end opening into the valley of a water-course. They are either quite dry or hold ponds of bitter water, which evaporate into snow-white alkaline salts. In the first and second steppes, the depth of the river valleys is not affected by the general descent of the country. They maintain the same general height and character, though the descent of the country may be several hundred feet. The valleys are evidently more ancient than the streams flowing through them. In the third steppe the valleys cut through the drift far down into the underlying rocks; in the second, they correspond to the depth of the drift, and in the first, the streams have merely cut through the deposits resting on the drift. Water has almost invariably been obtained without much difficulty, but around Bernside, Township 12, Range 5, W., there is an area in which all attempts to obtain water by wells have proved failures. Wells have been dug to the depth of 80 feet. The growth of trees appears to depend upon the capacity of the soil for receiving and retaining moisture. The diminution of water which, from all accounts, seems to be steadily going on in the North-west Territory, is a very serious consideration, especially in the water-supply of the "fertile belt." The forest fires, which have been so rapidly destructive, have probably much to do with this, and every means should be taken to prevent their recurrence.

Mr. J. W. Spencer made an exploration of Shell River and the adjacent parts of the Assiniboine. The Shell River Valley was explored for 40 miles. Along the upper part, the country has a rolling prairie character, but in the lower portion the valley of the river is like that of the Assiniboine, some 20 feet deep. The river is much more rapid than the Assiniboine, and the sides of the valley more