

Geological Survey for 1872-3.

The surveys in 1872-3 were mostly in continuation of the investigations of the preceding seasons. A preliminary reconnaissance from Lake Superior to Fort Garry by the English and Winnipeg rivers was made by the Director, Mr. Selwyn. Travelling rapidly, only a general idea of the physical features of the country could be ascertained, but the occurrence of a series of great parallel bands of schistose and slaty strata traversing the region hitherto supposed to be exclusively occupied by Laurentian gneiss was put beyond doubt. Their presence exerts a marked beneficial influence on the physical character and general fertility of the country. Not only the best land, but likewise valuable mineral deposits may be looked for within the limits they occupy. From Lac des Mille Lacs to Lake Winnipeg but little variation is seen in the face of the country. The shores of the lakes and rivers present generally rock surfaces, sometimes bare, sometimes wooded. The trees are small, but this is in a great measure due to the older trees having been destroyed by forest fires. The highest elevations are only 400 or 500 feet and one half the surface area is water. Throughout the whole region, especially from Lake Sturgeon to Lake Winnipeg, there are considerable areas fit for cultivation.

In June Mr. Selwyn made an examination of Iron Ore Deposits in Colchester County, N. B.

These mines are on the southern slopes of the Cobequid Hills, extending east and west 12 miles with an average width of 4 miles, comprising 33,000 acres in contiguous lots, some of them cleared, but for the most part covered with valuable hard wood timber. The Intercolonial Railway passes for several miles through the eastern portion of the property. A branch road is being constructed from the main line to the smelting works, which, when completed, will put the mines in direct communication with the coal fields of Pictou on one side and Spring Hill on the other, and with the principal Ports of Nova Scotia. The ore is of the first quality, and there is no danger of any failure of supply for years to come. In the summer of 1872 Mr. Richardson continued his survey of the coal deposits on Vancouver's Island, and also visited Queen Charlotte's Island to survey the anthracite coal-seams. On the former island, the part surveyed more particularly was the Comox coal field. This extends from Comox Harbour about 12 miles west, and 30 miles S. E. including Denman and Hornby Islands. The coal-bearing rocks of this area may be separated into seven divisions. From a detailed examination of the first of these divisions, it was found that workable seams of coal occupy a belt of pretty uniform breadth along the S. W. rim of the Comox field. The difference in the thickness of the seams is very great, ranging from 2 inches to 6 or 8 feet.

Division B consists of a series of brownish-black argillaceous shales, interstratified with layers of soft grey sandstone, its total thickness being about 1000 feet. On Denman's Island they contain frequent seams of coal from a mere fibre to half an inch broad.

Division C.—"Lower conglomerate" runs the whole length of Denman's Island, 11 miles, and is from 900 to 1000 feet thick.

Division D.—"Middle Shales," succeeds the conglomerate and is not more than 70 feet deep.

Division E.—"Middle conglomerate," varying in depth from 300 to 1200 feet.

Division F.—Upper shales, 777 feet deep, the last 50 feet containing layers of coal half an inch thick and fragments of fossil wood.

Division G.—Upper conglomerate, about 300 feet thick, the lower part with occasional seams of coal from $\frac{1}{2}$ inch to an inch thick. The total thickness of the rocks associated with the coal of Vancouver's Island is about 500 feet. On the Queen Charlotte Islands, the coal bearing strata have been partially examined for a distance of at least 20 miles showing a general presence of coal, however much the seams may differ in thickness and other qualities.

The forest trees on these islands seem to be equal to those of Vancouver. Spruce trees were measured at 7 feet from the ground 364 ft. in circumference and running up straight without a branch 100 feet. Cedar trees of the same magnitude. In one place where seed had been accidentally dropped, grass had grown 6 feet 3 inches. The coal of the Queen Charlotte Islands is a true anthracite showing upon analysis about 5 per cent. of volatile combustible matter, 84 of fixed carbon and 7 or 8 of ash. Iron ores of great richness were also found in those islands.

Mr. Bell with his party were engaged during 1872, between the western shore of Lake Superior and Red River, with Thunder Bay as Headquarters. Portions of the route had never before been traversed by white men. The stiff red clay of the Kaministiquia Valley was found to extend westward up the valley of the Mattawa to the Shebandowan Lake. Around the shores of this lake and nearly all the others to the Lake of the Woods, the rocky hills are strewn with rounded and angular boulders from the size of a man's head to 30 or 40 feet diameter.

Mr. Bell, in his description of the geology of the region N. W. of Lake Superior, states that the upper copper-bearing series attains its greatest development in the Basin of Nipigon. This basin is about 170 miles long and 80 miles wide. Mr. Bell suggests that the name of this series shall be altered to Nipigon. The rocks form a broad band along the N. W. side of Lake Superior all the way from Thunder Bay to Duluth. Between Thunder Bay and Duluth there are six apparently distinct belts of Huronian rocks, occupying long V shaped basins in the folds of the Laurentian strata, their aggregate breadth being about half that of the Laurentian bands between them. On the second, or Lake Shebandowan band, is situated the new gold field. Gold-bearing veins are said also to occur at Cross Lake on the Red River route. In the Laurentian series have as yet been discovered no useful minerals, nor any bands of limestone such as occur in Central Canada.

Mr. Walter McQuat was engaged in 1872 in an examination of the country between