

stratified with or overlaid by sand and gravel. These superficial strata, which are in some parts several hundred feet in thickness, are throughout the eastern division, in great part of marine origin, and date from a time when this champaign region was covered by the waters of the ocean; while throughout the western division the clays are more probably of fresh-water origin. It results from the distribution of these superficial post-tertiary strata, that the soil over the greater part of the region consists of strong and heavy clays which in the newly cleared portions are overlaid by a considerable thickness of vegetable mould. In the eastern division, a line drawn from Quebec to Ottawa, and two others from these points, converging at the outlet of Lake Champlain, will enclose a triangular area of about 9,000 square miles, which is very nearly that occupied by the marine clays. These are overlaid, chiefly around the borders of this space, by more sandy deposits, which are well seen near Three Rivers, and about Sorel. They form a warm but light soil, which yields good crops when well manured, but is not of lasting fertility. The greater part of this area however is covered by a tenacious blue clay, often more or less calcareous, and of great depth, which constitutes a strong and rich soil bearing in abundance crops of all kinds, but particularly adapted for wheat, and was in former times noted for its great fertility. These clay lands of Lower Canada have been for a long time under cultivation, and by repeated cropping with wheat, without fallow, rotation, deep plowing, or manure, are now in a great many cases unproductive, and are looked upon as worn out or exhausted. A scientific system of culture which should make use of deep or sub-soil ploughing, a proper rotation of crops, and a judicious application of manures, would however soon restore these lands to their original fertility. The few trials which within the last few years have been made in the vicinity of Montreal, and elsewhere, have sufficed to show that an enlightened system of tillage, with sub-soil draining, is eminently successful in restoring these lands, which offer at their present prices good inducements to skilled farmers. Besides grain and green crops, these soils are well fitted for the culture of tobacco, which is grown to some extent in the vicinity of Montreal. Notwithstanding the length of the winter season in Canada, the great heat and light of the summer, and the clearness of the atmosphere, enable vegetation to make very rapid progress.

The mineral resources of this champaign region of Eastern Canada are chiefly confined to stones for building, paving, lime and cement, stone for glass-making, and peat. Large peat bogs are very numerous in various parts of this region, and may be made to furnish an abundant supply of fuel. This part of the country is also remarkable for the great number and variety of its mineral springs.

To the northeast of Quebec, besides the plains which border the river, there is a considerable area of low-lying clay land, cut off from the great St. Lawrence basin by Laurentian hills, and occupying the valley of Lake St. John and of a portion of the Saguenay. Here is a small outlying basin

of Lower Silurian rocks, like those about Montreal, and overlaid in like manner by strong and deep clays, which extend over the adjacent and little elevated portion of the Laurentian rocks, and form a soil as well fitted for cultivation as any part of the Lower St. Lawrence valley. The valley of this lake is probably not more than 300 feet above the sea; and from the sheltered position the climate is not more rigorous than that of Quebec. Several townships have within a few years been laid out in this valley, and have attracted large numbers of French Canadians from the older parishes in the valley of St. Lawrence.

The western part of the champaign region, commencing near Kingston and including all the southern portion of the western province is the most fertile and productive part of Canada. Like the plains further eastward, its soils consist chiefly of strong clays, overlaid here and there by loam, sand, and gravel. In the natural state nearly the whole of this region supported a fine growth of timber, in great part of broad-leaved species, but presented, however, various local peculiarities. Thus, the banks of the Grand River from Galt to Brantford were remarkable for a sparse growth of oaks, free from underwood, and known as oak openings. These are said to have been pasture grounds of the Indians, brought to this condition and kept in it by partial clearing, and by the annual burning of the grass. The object of this was to attract the deer who came to feed upon the herbage. (See on this point, Marsh's *Man and Nature*, page 137.) The soil of these plains is a light sandy loam, very uniform in character, and generally underlaid by coarse gravel. Though fertile, and of an easy tillage, this and similar soils will not support the long continued cropping without manure, which is often practiced on the clay lands of both Upper and Lower Canada.

The valley of the Thames, together with the rich alluvial flats which extend from it northward to the North Branch of Bear Creek, and southward nearly to the shore of Lake Erie, is remarkable for its great fertility, and its luxuriant forest growth. The soil is generally clay, with a covering of rich vegetable mould, and is covered in the natural state with oak, elm, black walnut, and white wood (*Liriodendron tulipifera*) trees of large size, together with fine groves of sugar-maple. Towards the mouth of the Thames, and on the borders of Lake St. Clair, is an area of natural prairie of about 30,000 acres. It lies but little above the level of the lake, and is in large part overflowed in the time of the spring floods. The soil of this prairie is a deep unctuous mould, covered chiefly with grass, with here and there copses of maple, walnut and elm, and with willows dotting the surface of the plain. Numbers of half-wild horses are pastured here, and doubtless help to keep down the forest growth. The characters of the surface are such as to suggest that it had been at no distant period reclaimed from the waters of the adjacent lake.

In no part of the province have skilled labour and capital been so extensively applied to agriculture as in western Canada, and the result is seen in a general high degree of cultivation, and in the great quantity of wheat and other grains which the region annually furnishes for exportation; as well as in the excellent grazing farms, and the