

ered as one region. In this article the southern limit of permanently frozen subsoil is regarded as the northern limit of the eastern position of the Laurentian Plateau Region.* While a sufficient number of actual borings to determine accurately the position of this boundary have not been made yet, such data as are available indicate that the subsoil is permanently frozen along the annual isotherm of 22°F. or 23°F. This line runs from the main fork of the Nelson River to near the mouth of the Severn River which empties into Hudson Bay. On the east coast of Hudson Bay it begins near the mouth of the Great Whale River and runs to the divide between the St. Lawrence and Ungava Bay drainages near latitude 55°, reaching the Labrador Coast at Hebron. Since the region so defined lies immediately north of the earliest and most populous settlements in Canada, it might be supposed that the pressure of population would have carried settlers north in great numbers onto the Laurentian Plateau. This is not so, since the land is naturally unsuited to agriculture, partly on account of the nature of the soil but largely because the short frost-free period involves too great a hazard of failure.

Temperature.—There are in this Region extensive areas of glacial clay and sediments suitable for successful agriculture if there were a satisfactory continuously frost-free period. Unfortunately, summer outflows of polar air pass southward over the cold waters of the inland sea with very little modification and, this dense air settles into the valleys and depressions where the arable soils lie. Night radiation from rocky hills and ridges to a clear sky and subsequent drainage of chilled air to the low levels further increase the danger of frost. The length of the period continuously free from frost, therefore, varies considerably with the topography: for instance, at White River, surrounded by low hills, the average is only 42 days — from June 26 to Aug. 8 — at Hornepayne, to the north of White River, the average frost-free period is even lower being only 34 days, that is from June 29 to Aug. 2 (frost has occurred in many years in July). Where agriculture has been reasonably successful there are lower levels to which the frosty air may drain; for instance, at Haileybury, on the shore of the comparatively large Lake Timiskaming, the frost-free period rises to 123 days, certainly a long enough period for ordinary agriculture, but at Heaslip, a short distance north of Haileybury, the period falls to 71 days.

The most successful attempts at agriculture have been in the region of Lake Timiskaming and the continuation of this valley northward to Cochrane. Along this stretch of territory the most suitable sites have an average of 85 days continuously frost-free. Even the fast drainage along long rivers appears to be favourable since Kapuskasing, on the Kapuskasing River, averages 79 days.

Along the north shore of Lake Superior fast drainage of cold air towards that Lake is favourable for the lengthening of the frost-free period. At Port Arthur, there are 117 frost-free days and at Kakabeka Falls, 95 days. Similar effects occur near Lake Nipigon where at Cameron Falls the average is 106 days. The effect of proximity to large lakes is also shown by the splendid record of 127 frost-free days for Kenora, in the Lake of the Woods area. By contrast, Savanne, about 75 miles to the northwest of Port Arthur, averages only 32 days and Longlac, about 100 miles further on, only 46 days.

* From the point of view of possible agriculture this Climatic Region is considered to include the whole of the territory around James Bay even if it is not everywhere geologically similar to the Laurentian Plateau. The maximum effect of the water of James Bay in lengthening the frost-free period is indicated by the record at Moose Factory which is on an island of the Moose River. This place averages 87 days free from frost from June 15 to September 10. By contrast the station at Great Whale River on the opposite shore of James Bay averages only 54 days and at Fort George only 72 days.