

of Toronto at present, the evidence available suggests that it was by no means Arctic, probably only cold temperate, in spite of the immense glacier generally supposed to have dammed its waters near the Thousand Islands. There are some interesting problems connected with this ice dam which held the water of Lake Iroquois for at least 2,500 years at a constant level in a climate apparently not Arctic. During the whole time its front seems to have retreated not more than fifty miles in a north-northeasterly direction, since the ice must have occupied the region near Kingston until the Iroquois water was drained to a lower level. If the Iroquois beach at Toronto required 2,500 years to form, the ice must have retreated in the direction N 17° E at the rate of about one mile in fifty years. If the time allowed for its formation is 15,000 years, the glacier retreated at the rate of one mile in 300 years. How many years were required for the ice to withdraw from its most southern point to Toronto, and how many more were needed for the retreat from the point where the Iroquois water was drained to the vanishing point in Labrador?

It is, of course, very improbable that the ice withdrew in a uniform manner. The great moraine of the Oak Ridges stretching across southern Ontario represents, no doubt, a prolonged halt in the retreat and is perhaps connected with the damming of the Iroquois water, since the moraine reaches Lake Ontario at about the point where the dam must have stood. Why should the ice have halted so long in a climate which seems not to have been Arctic? The Alaskan glaciers, it is true, present somewhat similar features, but they are Piedmont glaciers with an immense range of snowy mountains behind them as a source of supply, while the waning ice sheet of Northeastern Canada rested on a comparatively level plain.

Another point that has presented itself with considerable distinctness in the study of the Iroquois beach deposits is that their formation seems to have been preceded by a considerable period of low water. Under the thirty feet of Iroquois gravel at the Hunter street tunnel in Hamilton, the boulder clay has been weathered brown for a depth of two feet, and the time of low water was long enough for large tamaracks and spruces to grow. At that time the water must have stood at least thirty-five feet lower than the Iroquois level at Hamilton.

Near Toronto there is evidence not easily set aside suggesting that the till-covered surface was eroded into valleys and cliffs before the Iroquois water occupied its basin to the full depth. At the British Association shaft near the Don, stratified sand, probably of Iroquois age, is found resting on a brown, evidently weathered, surface of inter-