

SUPERFICIAL DEPOSITS.

Matachewan district in the main is rather heavily soil-covered. The superficial deposits fall into four general classes, ground moraine, terminal moraines, outwash plains, and glacial or post-glacial lake beds and stream deposits.

An area of ground moraine, or boulder clay, occurs in the northern part of Yarrow and the adjacent southern part of Powell townships. The high ground underlain by the Cobalt series in Bannockburn and Doon townships is covered with a thin sheet of ground moraine. Another small area lies in McNeil township to the south of Whitefish lake. As the boulder clay is in general a richer soil than the terminal moraines or the outwash plains, its recognition is assisted by the dense growth of vegetation which it supports, in contrast to the sparser growths on the other soils. The forest contains a large proportion of deciduous trees, especially birch, and in addition there is an exceedingly thick undergrowth of ground maple, hazel, and alder.

Terminal moraines are scattered thickly over the area. They are not commonly found on top of the high Huronian areas, but in some cases heavy accumulations of drift have been heaped against northward facing slopes. Such accumulation has occurred against the face of the Huronian mass in Bannockburn and Powell townships. This would seem to indicate that during the decline of glaciation, when the ice was thinning and depositing heavy moraines it did not override these elevations, which are only 300 to 500 feet above the general level. Further evidence to the same effect was obtained by mapping the morainic belts in a few places where it could be done without too much expenditure of time. Although glacial movement in the district was in a direction about 10 degrees east of south, as shown by the direction of striae and of individual moraines and eskers, the belts of moraines on the west side of the Huronian ridge in the western part of the district all have a northeast trend, as if they were lateral to a lobe of ice pushing down into the valley to the west of the ridge but not mounting over it. Similarly the moraines to the east of the Huronian ridge have a northwest trend. The wide valley of Duncan creek extending north into Bannockburn township is filled with moraine toward the northern end and outwash sands and gravels in the southern part, again as if followed by a tongue of ice. The principal morainic belt runs slightly east of north through the chain of lakes from Kame lake in Doon township to Argyle lake. Another morainic belt runs slightly south of east across the southeast corner of Argyle and into the northeastern part of Powell. This belt appears from fragmentary data to have a westward extension through Hincks along the divide between the two branches of Whitefish creek, connecting with the belt that crosses the narrow place in the Huronian band in the centre of the township. Its extension is supposed to indicate the normal position of the ice front where not influenced by the presence of Huronian ridges.

Between these morainic belts, which represent stands of the ice border for longer or shorter periods of time, sand and gravel plains are found, composed of the materials carried out by waters flowing from the melting edge of the ice sheet. These outwash plains are frequently pitted, the holes marking the spots where large blocks of ice were buried in the