

6. Sand, gravel and boulders, five to twenty-five feet.

7. Angular fragments, one to three feet, usually limestone, and largely derived from the solid rock which lies immediately below it.

This loose material is far from being uniform, and varies so much in its arrangements that scarcely any two borings show the same distribution. Sometimes there is little or no hard pan, while in other parts it is several feet thick. However, as a usual thing, these seven forms of strata are passed through in boring, and varying in thickness to the number of feet already mentioned.

SERIES WANTING.

After the formation of the Hudson River limestone, there seems to have been a great break in the deposition of rock in this part of the country, for in other parts of the Dominion we find hundreds of feet in thickness, being deposited while the Red River was, geologically speaking, at a stand still. Such might have happened by its being raised above the sea and continuing so, while other places were submerged and in a position to receive further additions to their strata. It may have been, though not likely, that deposits were laid down and afterwards disappeared by denudation during long periods of time, or as some have thought the place may have been located in deep water and situated far beyond the reach of deposits being added, while they were forming rapidly nearer the shore. The first reason for the absence of deposits, is that which we are inclined to accept. Whatever view may be the correct one, is open for consideration, but one thing is certain, formations of later date are represented elsewhere, while here not a trace of them is found. Throughout the coal forming age little or nothing was being added to our strata, while other places were receiving from Nature's liberal hand donations, which would serve as fuel in time to come. True, coal has been found in the North-West, and lately we have been informed by some of our eager news seeking reporters it has been discovered near Selkirk. But it must be remembered that our coal belongs to a much later period than what is known as the "Coal Measures." The latter are supposed to have been deposited toward the close of the Palaeozoic age,

while the former belongs to the Cretaceous or Tertiary period; in other words, using the terms Primary, Secondary and Tertiary as applied to the various comprehensive periods in geological history, we find the "Coal Measures" in the Primary and the Lignite of the North-West in the Tertiary.

The extensive Coal age passed away without the Red River Valley receiving a single seam. The age of Chalk ended, and still our strata were not increased. Whole formations thousands of feet in thickness were built up and millions of years passed away while the rocky foundation of Winnipeg seemed to idly wait without further addition, beyond the influence of the sea. Still the surface of our rock would be undergoing some changes. Winds may have exercised an influence in disintegrating the rock. Rains, too, may have battered upon the exposed surface now no longer beneath the sea. The action of these forces, together with frost during the countless ages employed in building up immense rock formations elsewhere would aid to some extent in preparing the ground material of which our soil is composed and which at present hides our solid rock from view. But now, after a great portion of the first geological age of the world, the whole of the second, and much of the third had passed away, and millions of years had glided by, we find a new scene about to take place, in which this part of the Dominion performed no insignificant part.

THE GLACIAL AGE.

We have now reached the glacial period in geological history, a time when mighty icebergs and immense rivers of ice are supposed to have swept over the northern part of our continent, wending their way southward, loaded with thousands of tons of rocky material, and grinding the rocks over which they passed. It is supposed that during the glacial period the northern portion of the country was raised above the level of the sea, so much so that a line of perpetual snow was formed. Where such occurs snow must accumulate, till finally the force of gravitation starts the mass. This is the origin of a glacier or ice stream. Its movements may be slow, sometimes only eight or ten inches per day, consequently it will be a long time in making much headway down the moun-