

earth's crust are grouped into various divisions, the names of which are often taken from the locality where the rock is largely represented. This is exemplified in such names as Devonian, Silurian and Cambrian divisions. It is usual to apply the term age to the most comprehensive divisions, hence we have Azoic, Paleozoic, Mesozoic, Cenozoic, and Anthropozoic ages, names based upon the condition of life at the time. The name system is applied to less comprehensive groups, as Laurentian, Cambrian, Silurian, Devonian, etc., systems names derived chiefly from the places where these occur. The smaller divisions are groups, formations, series and strata.

4. These divisions have their characteristic fossils, which serve at once to identify the age or system to which the rock belongs. Consequently if fossils are present the age of the deposit is readily determined.

5. An important fact concerning the layers of rock is that they always occupy the same position relative to each other. For example, if we represent the series of rocks by 1, 2, 3, 4, etc., the lower numbers occupying the lower position. We never find 3 below 2 or 8 below 5. Remembering this, it will be easily understood that as soon as we obtain a few characteristic fossils we can with considerable certainty make out the position of the rock in the geological series.

Supplied with these five facts regarding the rocks which make up the earth's crust, we shall proceed to the consideration of the out-crop found at Selkirk.

SELKIRK QUARRY.

The exposure from which the data placed before you this evening has been derived is situated a short distance from the Selkirk station on the south side of Cook's Creek and east of the track. At this place Major Bowle's quarry is found. Here an excellent exposure of limestone occurs. The stone is of a greyish white color, and effervesces strongly on treatment with cold acid in striking contrast with Stony Mountain limestone, which remains unaffected under similar treatment, but readily acted upon if the acid is heated. When burnt the Selkirk stone produces a white variety of lime. A moment's examination reveals that the rock material is in layers, that the stone is not crystalline, and that remains of animals are embedded in it. With these data before us, we at once conclude that

the rocks are of aqueous origin; hence belong to the division called Aqueous, Sedimentary or Stratified rocks.

Before examining the rock in position, or the innumerable fragments lying around, for the purpose of determining the system to which these rocks belong, let us observe some superficial characters worthy our consideration.

APPEARANCE OF THE QUARRY.

The earth over the quarry appears like a mound which might attract the notice of a devotee in search of Indian relics, leading him to think something of archaeological interest lay beneath. Examining the position of the elevated ridge which has been dug into by quarrymen you will at once perceive that the strata on the east side of the quarry is quite horizontal, while that on the west is very much inclined, dipping westward at an angle of 30°, and down the centre there appears a distinct break with the fissure several feet wide, filled up with loose rock material. This is very observable in the southern part of the quarry, and it certainly shows that at some time this place has experienced an upheaval from some subterranean force. This convulsion likely occurred after the "glacial period," because the deposits of that time also show a disturbed appearance, which could only have occurred after the glacial deposit had been laid down.

GLACIAL PERIOD.

I would fain say something about that wonderful period put down as extending over a period of 160,000 years, when this great continent was ground over by an immense glacier, or river of ice, wending its way southward, which, as a warm climate, was heralded in by milder days, gradually receded northward, and the southern districts became freed from its icy grasp. For a lengthened period the unmelted portion formed a barrier to our Red River and forced it to empty south by the Mississippi.

A LAKE COVERS RED RIVER VALLEY.

During these days a nameless lake of great magnitude covered the Red River Valley and along its bottom settled rich alluvial deposits derived from the regions through which rivers emptying into it passed. At last the great ice dam passed away, melting under the influence of a warm climate and the waters of the great lake found an outlet to the north through Hudson's Bay. The lake disappeared leaving us a good heritage, the fertile valley traversed by a river whose waters