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clear and well-defined line of demarcation. It forms one of those great epochs in the history of the earth, where the geologist can pause and satisfy himself of the correctness of his conclusions. On the one hand, he sees evidence of intense and long continued igneous action; on the other, of comparative tranquillity and repose.

Few regions, perhaps, afford ampler facilities than this, for the investigation of the early history of our planet, or at least of that portion extending back from the termination of the Silurian epoch to the first-formed or azoic schists, "when the waters were gathered together unto one place and the dry land appeared," and although a few leaves may be wanting, enough remain to form a connected and intelligible record.*

Having thus taken a general view of the origin of the azoic system we will now proceed to describe its geographical distribution.

AZOIC SERIES ON THE NORTHERN SHORE.

The rocks of which it is composed are developed on an extensive scale, both on the northern and southern margin of the Lake Superior basin. Commencing on the northern shore of the lake, we find a series of talcose and chlorite slates with occasional beds of coarser grits, in immediate contact with the granite and gneiss. They have been divided by Mr. Logan, the distinguished Provincial Geologist of Canada, into two groups—a division which we have failed to recognize on the southern shore—the lowest of which consists of slates partially chloritic and talcose, and occasionally holding a sufficient number of pebbles derived from the hypogene rocks to constitute conglomerates. "These slates," he remarks, "are of a dark-green color, often dark-grey in fresh fractures, which at the base, appear to be occasionally interstratified with beds of a feldspathic quality, of the reddish color belonging to the subjacent granite and gneiss: sometimes they are a combination of feldspar and quartz, occasionally with the addition of hornblende, making syenitic beds, and in some the hornblende predominating gives the syenite a general green tinge. Some of the beds have the quality of a greenstone, others that of mica slate, and a few present the character of a quartz rock."† These slates, he conjectures, attain a thickness of several thousand feet, and are well exposed at the mouth of the river Doré, about five miles from the Michipicoten river. The strike of the beds is very irregular and their dip highly inclined.

The upper group rests *unconformably* on the preceding, and towards the base presents conglomerate beds of no great thickness, the pebbles of which consist of white quartz, red jasper and occasionally slate, the whole enclosed in an arenaceous matrix. Higher up are found layers of chert,

* Lyell and others, as remarked in a previous chapter, maintain that the rocks composing the azoic system, may once have been fossiliferous, and that their crystalline character is not due to a peculiar and nascent condition of our planet at the period of their formation.

We can hardly conceive it possible that causes of sufficient intensity to elevate continents above the level of the waters, could have operated without having left unmistakable evidences of their action. At a period when the earth was passing from a chaotic to a habitable state, we may suppose that the two great antagonistical forces of fire and water were actively excited, and the result would be a vast accumulation of igneous and detrital materials; the whole so metamorphosed as to render it difficult in all cases to distinguish between them: and although in the subsequent history of the earth, there is abundant evidence of the repeated and conjoint operations of these causes, yet the azoic age was emphatically one of METAMORPHISM.

† Report of Progress, 1846-7, p. 20.