HUNT-PRE-CAMBRIAN ROCKS.

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consisting of a lower group of hornblendic gneisses without limestones, and an upper group of similar gneisses, distinguished by interstratified crystalline limestones.

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These rocks were found by Logan and by Murray to be overlaid, both on Lake Superior and in the valley of the upper Ottawa, by a series consisting of chloritic and epidotic schists, with bedded greenstones, and with conglomerates holding pebbles derived from the ancient gneiss below. The same overlying series had, as early as 1824, been described by Bigsby on Lake Superior, and by him distinguished from the Primary and classed with Transition rocks.

Labradoritie and hypersthenic rocks like those previously described by Emmons in the Primary region of northern New York, were, in 1853 and 1854, discovered and carefully studied in the Laurentide hills to the north of Montreal, when they were described as being gneissoid in structure, and as interstratified with true gueisses and with crystalline limestones. In 1854, the writer, in concert with Logan, proposed for the ancient crystalline rocks of the Laurentide Mountains, including the lower and upper gneissic groups already mentioned, and the succeeding labradoritic rocks (but excluding the chloritic and greenstone series), the name of Laurentian. In an essay by the writer, in 1855, the oldest gneisses of Scotland and Scandinavia were, on lithological and on stratigraphical grounds, referred to the Laurentian series, and at the same time the name of Huronian was proposed for the chloritic and greenstone series, which had been shown to overlie unconformably the Laurentian in Canada.

Previous to this, in 1851, Foster and Whitney had described the Laurentian and Huronian rocks of Lake Superior as constituting one Azoic system of Metamorphic rocks, with granites, porphyries and iron-ores of igneous origin; and in 1857, Whitney attacked the two-fold division adopted by the Canadian geological survey, maintaining that the stratified crystalline rocks of the region belong to a single series, with a granitic nucleus. The observations of Kimball in 1865, and the later studies of Credner, of Brooks and Pumpelly, and of Irving, have, however, all confirmed the views of the Canadian survey as to the relations of the Laurentian and Huronian in this region.

The primary age of the Highlands of southern New York, and their extension in what is called the South Mountain, as far as the Schuylkill, was now unquestioned, but the crystalline rocks