

important groups—a lower, composed essentially of mica-schists, and an upper, consisting of green chloritous, amphibolitic, talcose or micaceous schists, with subordinate bands of quartzite, serpentine, and cipoline.⁵⁵

America.—In North America the pre-Cambrian rocks, which cover an area estimated at more than 2,000,000 square miles, from the Arctic Ocean southward to the great lakes, have been studied in detail for a longer period than those of any other region, and in many respects they may serve as the type with which those of other parts of the globe may be compared. They were first mapped and described by Logan and Murray in Canada, and were divided by these observers into two distinct divisions. The lower of these, named Laurentian from its extensive development among the Laurentide mountains, was described as consisting chiefly of coarse red, gray, and banded felspathic, hornblendic, micaceous, and pyroxenic gneisses with pegmatites, and included zones of limestone. The upper group, called Huronian from its exposures in the Lake Huron district, was recognized as being composed mainly of quartzites, felsites, diorites, diabases, syenites, various coarse and fine fragmental volcanic rocks (agglomerates and tuffs), clay-slates, and other bedded materials that passed into schists. Though the Huronian series was found along the line of junction to dip below the Laurentian, this position was believed to be due to disturbance, no doubt being entertained that the former series was the younger of the two.

Since the days of these two great pioneers of American pre-Cambrian geology the subject has been attacked by many able observers. The Geological Surveys of Canada and the United States, as well as those of some of the States of the Union, particularly Michigan, Wisconsin, and Minnesota, have examined the rocks over many hundred square miles, and have published voluminous reports concerning them. Unfortunately, as many of the districts were worked out independently, considerable variety of nomenclature and diversity of view have arisen. At present it is hardly possible to reconcile these conflicting opinions, though there can be little doubt that before long a general concurrence will be arrived at regarding the main features of pre-Cambrian geology in this important region. The table on the

⁵⁵ Ann. Soc. Geol. Nord, ii. 1882.