

etc., where the Archæan has outcrops not far distant (at Little Falls). A cavity is reported to have contained half a bushel of loose, transparent crystals. Fragments and nodules of *anthracite coal* are sometimes included in the crystals or accompany the crystals in the cavity; the larger nodules are two inches or more long. Besides quartz and calcite, barite, celestite, gypsum, and occasionally blende are found in its cavities.

In Canada, north of New York, the Calciferous beds spread widely over the western part of the Ottawa basin, and in general are nearly pure dolomite, but with cherty or sandy layers. The fossils are mostly weathered out. Thickness, 50' to 300'. In Tennessee, the Knox dolomite, above its lower 2000' of Upper Cambrian, contains typical Calciferous fossils. In Missouri, the first magnesian limestone, which has been ascertained by fossils to be Calciferous, has a thickness of 50' to 150'. The Saccharoidal sandstone, 100' to 133' thick, is very white, and is used for glass-making.

"Lower magnesian limestone" of Iowa, Minnesota, and Wisconsin, has been found to contain Calciferous fossils in Clayton and Allamaker Counties, according to S. Calvin.

2. Chazy Epoch.

At Chazy, according to Brainard and Seely, the Chazy limestone has three divisions: a lower of 310'; a middle of 265', thick-bedded and abounding in *Maclurea*; and an upper of 157', which is very various in character, partly siliceous dolomite. The middle division contains a 20-foot bed of pure gray limestone which is often oölitic; it is 50 feet above the bottom, and is free from the *Maclurea*, — a fact accounted for by the oölitic character, since this structure is produced only in tide-washed calcareous sand-flats or beaches. It makes a handsome marble called "French Gray," while the *Maclurea* beds make a black or grayish black marble.

The Chazy beds thin out in the valley of the Mohawk, where the Calciferous is often followed directly by the Birdseye.

The Chazy is the Grenville limestone of the Ottawa region; it is largely developed about Montreal. It often contains the shells of *Lingulæ* in phosphatic concretions; and shells of *Pleurotomaria* occur as casts of calcium phosphate. The beds are 300' thick at the Mingan Islands. No characteristic Chazy fossils have been reported from the Mississippi valley. The *St. Peter's sandstone* of Iowa, Minnesota, and the adjoining part of Wisconsin underlies the Trenton, and has been referred to the Chazy. It has been reported as affording a few fossils related to those of the lower part of the Trenton. But in Iowa and Minnesota the name covers limestone beds as well as those of sandstone. The limestones become thicker in the latter State, and constitute the Shakopee limestone, which is the middle member of the sandstone. In Iowa the *St. Peter's sandstone* includes also the Willow River limestone, and in Wisconsin the New Richmond sandstone. A sandstone has been met with, also, in borings in Indiana, below the Trenton, and over 50' of magnesian limestone, which is supposed to be the *St. Peter's*. The thickness is 150' to 224'; its waters are often saline.

2. TRENTON PERIOD.

a. Eastern Border region. — The Hudson beds of Anticosti, along its north side, are of limestone, and 959' thick. Above these are limestone beds of the Upper Silurian, in all about 1400'. The rocks are nearly horizontal. The Trenton occurs in central and western New Brunswick, but on the coast and along the shores of Maine only doubtfully at Foster Island near Machiasport.

b. Appalachian and Interior Continental regions. — The Trenton limestone in central New York extends as a surface rock through Oneida and Lewis counties to Lake Ontario; then reappears across the lake and stretches westward in a band 30 miles wide to Georgian Bay. It occurs also on the Manitoulin Islands and Drummond's Island, Lake Huron. The thickness at Montreal is 600', in the Ottawa basin as great, and nearly 1000' west of