

These members are distributed over most of the continent, and may generally be recognized by tolerably constant lithological characters. The limestones in the Western States are often magnesian, instead of the simple carbonate of lime. The Hudson River rocks are the most variable. Typically, they are slates, with a few strata of conglomerate and limestone, or dolomite. In Canada, besides the slates there are great accumulations of conglomerates and sandstones, often composed of pebbles of limestone, and called provincially the *Quebec Group*. In Ohio and other Western States, the whole series is changed into the *blue or Galena limestone*.

Along the eastern coast north of Cape Cod, and as far as Nova Scotia, various slates occasionally occur containing the *Paradoxides Harlani*, which is at the base of the silurian system in Europe. These slates are supposed to be of the same age as the Potsdam sandstone.

The Lower Silurian rocks are not distinguished upon the map, but their general position is at the edges of the paleozoic rocks, contiguous to the oldest azoic rocks. Often, as in northern New York, they encircle an insulated portion of the older groups.

*Upper Silurian.*—The Lower Silurian periods were closed by a revolution or disturbance of the strata, so that in some localities, as at Gaspé, in the Gulf of St. Lawrence, the Upper Silurian strata rest unconformably upon the Lower Silurian.

There are three periods in this system of rocks. The first embraces the Oneida conglomerate and the Medina sandstone, formations quite variable in composition and thickness. The local name of *Sillery sandstones* has been applied to the Oneida conglomerate in Canada, where it attains a thickness of 4,000 feet. As the range passes through Vermont, it becomes by turns silicious and calcareous, or dolomitic, and is exceedingly variable in thickness. A mere knife-edge thickness of limestone may suddenly expand into 100 feet within the distance of a mile. The range continues in this erratic way along the whole Alleghany range, and, in conjunction with the Medina sandstone, is found from western New York to Wisconsin, through Canada West.

While a somewhat turbulent agency was depositing this curious rock within the continent, at its border, near the mouth of the St. Lawrence there was a quiet accumulation of limestones, under conditions suitable to the development of life. As the lithological characters are so distinct, the group, which consists of six divisions, embracing the equivalents of the upper part of the Hudson River group, the Oneida conglomerate, Medina sandstone, and the Clinton group, has received a distinct name, the *Anticosti Group*.

The first period embraces besides the conglomerates, and having the same general geographical distribution, the Clinton and Niagara groups, consisting of alternate layers of shales and limestones. They are quite productive in interesting forms of life.

There is also a belt of Niagara limestone in Canada, running down to Memphremagog Lake, which seems to pass into calciferous mica schist, an azoic rock lying east of the Green Mountain range.

The second great period of these upper rocks embraces only the Onondaga salt group, a series of limestones and shales 1,000 feet thick. Its development is less extensive than the preceding groups.

The third great period is now called the *Lower Helderberg group*, embracing the following earlier divisions: Pentamerus limestone, Delthyris shaly limestone, Encrinal limestone, and the Upper Ponent series. These rocks are distributed in general conformity with the Niagara group west of Canada East.

*Mineral Deposits.*—There are some remarkable mineral deposits in the silurian rocks. In the Northwestern States there occurs one of the most re-