

3. *The Devonian or Old Red Sandstone Series.*

The position of the different formations of the Devonian series has been already shown. The *Oriskany sandstone*, the *Cock-tail grit*, and the *Schoharie grit* are mostly silicious. They are succeeded by a persistent fossiliferous limestone, the *Upper Helderberg*. The *Marcellus shales* are composed of clay slate; the *Hamilton group* of thick bedded grits, used extensively for flagging stones, and slates; and the *Genesee slates* are also argillaceous. The *Portage and Chemung groups* are mostly grits and shales. The *Catskill Red Sandstone*, the upper member in this country, constitutes the Catskill Mountains in New York, where they are 3,000 feet thick. The whole thickness of the system in this country is 11,750 feet.

In Great Britain this system has long been known as the Old Red Sandstone, and was denominated Devonian by Sedgwick and Murchison, to designate the Old Red Sandstone as it was developed in Devonshire. In Scotland this formation is not less than 10,000 feet thick. In England it is divided into three groups: 1. *Tilestone*, or fissile beds used sometimes for tiles. 2. *Cornstone* and *Marl*, or argillaceous marly beds, alternating with sandstone, and sometimes with impure limestone. 3. *Old Red Conglomerate*, the uppermost division.

This formation is widely developed on the continent of Europe, as in Belgium and Westphalia, France and Spain. In Russia it covers more surface than the whole of Great Britain, not less than 150,000 square miles. In the United States it occupies extensive tracts.

4. *Carboniferous series, or Coal formation.*

This system derives its name from the great amount of coal found in it; it being the principal deposit from which coal is derived for economical purposes. In this country there are four general divisions: 1. *A conglomerate*, 2,660 feet thick in Pennsylvania. 2. *Carboniferous Limestone*, or Red Shales and Limestone, in Pennsylvania, 3,000 feet thick. This Limestone is gray and compact, traversed by veins of calcite, and is abundantly fossiliferous. When it is mostly made up of the remains of encrinites, it is called *Encrinal Limestone*. In England, where it forms the lowest member of the series, it is called *Mountain Limestone*. (See Fig. 52, on page 54). 3. *A conglomerate*, less than half the thickness of the lowest division. This is the *millstone grit* of Europe. 4. The true *coal measures*. These consist of irregularly interstratified beds of sandstone, shale, and coal. Frequently these are deposited in basin shaped cavities, but not always.