

indurated, and go by the name of rock marl. Much of the marl used in Virginia, and other Southern States, is composed mostly of fossil marine shells; and this is a true *shell marl*. But that usually so called contains only a small proportion of shells; the remainder being pulverulent carbonate of lime, except the clay and peaty matter, mixed with the carbonate. These beds of marl often cover hundreds of acres, and are several feet thick. In Ireland they contain bones of a large extinct species of elk, as well as shells of *Cypris*, *Lymnæa*, *Valvata*, *Cyclas*, *Planorbis*, *Ancylus*, etc. The marls of this country contain shells of *Planorbis*, *Lymnæa*, *Cyclas*, and other small fresh-water molluscs.

A part of these marls is probably a chemical deposit. Carbonate of lime is scarcely soluble in pure water, but is abundantly soluble in water impregnated with carbonic acid. Yet the excess of acid is easily expelled, and then the salt will be deposited in a pulverulent form, unless there be some reason why it should be crystalline. As marl beds chiefly occur in the vicinity of limestone, it is easy to surmise the origin of the carbonate of lime. The tributaries convey it in solution from the ledges into the pond. There the constant evaporation of the water causes the dissolved portion to fall to the bottom. Molluscs add their shells to the mass, and at length a thick deposit will be formed. When the pond is drained or dries up, the marl may be gathered. This process may suggest the origin of many of the limestones of the older series, as the marls need only induration to resemble them completely.

*Silicious Sinter*.—Thermal waters alone contain silica in solution to any important amount. The most noted of these are the Geysers in Iceland, where a silicious deposit about a mile in diameter, and 12 feet thick, occurs; and those of the Azores, where elevations of silicious matter are found 30 feet high. The stems and leaves of the frailest plants are converted into sinter, or covered with it. Thermal springs, also, not in volcanic regions, as on the Washita river, in this country, and in India, deposit a copious sediment of silica, iron, and lime.

*Bog Ores*.—The numerous deposits of the hydrated peroxide of iron, or bog iron ore, so widely diffused, may originate from springs, from the fossil shields of animalcula, or from the decomposition of beds of iron ore or pyrites. A popular theory of the origin of bog ore is this: Waters containing organic matter from vegetable decay, reduce to the state of protoxide the peroxide of iron disseminated through sediments, and thus dissolve it. The oxygen of the air then peroxidizing the iron, it is precipitated from the water as the hydrated peroxide. Under various