

stances distinct in their physical properties, and essentially different in their chemical composition. This difference is denoted in its name by the addition of *shell* in the one instance, and Jersey or Green Sand in the other.

Many of the class of green sand marls exist in the tide-water counties on the Western Shore, but none which I have examined are worth the expense of their application. In every instance where no analysis has been given of samples of this marl sent to me, it is because it is valueless. There may be, and I do not doubt are, many deposits of marls in these counties which I have not examined, because I have not had any specimens of them. I will hereafter, however, examine any that may be sent to me and give their results. A strong indication of the true green sand is the existence of peculiar shells in them. The form of one of them is particularly striking, resembling very much a serpent coiled on itself without a head. These are called Ammonites and have often been mistaken for petrified snakes. In Walter Scott's beautiful poem of Marmion is given a fanciful legend of their origin, founded on this resemblance. He makes the nuns of Whitby, who had come with their Abbess to St. Cuthbert's Holy Isle, when speaking of the power of their Saint, to say—

“And how of thousand snakes—each one
Was changed into a coil of stone,
When holy Hilda prayed
Themselves within their holy bound,
Their stony folds had often found.”

The shell marl, as may readily be supposed from its origin, owes its valuable properties to lime, which exists in it in the state of carbonate; it also contains about one seventy-fifth of magnesia. In some rare instances however, the quantity of magnesia is as much as five per cent. Phosphate of lime is present also in some deposits, in others there is a mere trace, and frequently it is entirely absent. In some marls a small quantity of lime is present as sulphate.

The quantity of magnesia is not estimated separately from the lime in any of the marls, unless it forms at least two per cent. It is enough to say in this place, that they differ very much in different localities, both as regards appearance, the state of division of the shells, and the quantity of lime which they contain. Sometimes the shells are almost as perfect when first exposed as those in the recent state; some crumble into fine powder on exposure to the atmosphere, whilst others remain sound for a long period of time; some have the appearance of dirty lime, scarcely a vestige of shell being visible; others are consolidated like mortar, and have to be dug with pickaxes, often coming up in large, hard lumps, which gradually fall to pieces on exposure to the air. Other specimens, again, have a brick red color, and