

to and beyond Elkton, and after an interruption of several miles, reappear in New Jersey, cropping out from under the north-western edges of the green sand region.

These clays furnish the material for the extensive manufacture of fire bricks and also of queensware and other kinds of pottery to be referred to presently.

2. The iron ore clays resting upon the last named, in which are imbedded the nodules of iron ore noticed on page 55.

These clays have usually a greyish lead color, and are free from sand. They are plastic and well adapted to being worked by the potter, but usually contain so much iron as to give a decided red color to the ware upon being burned. It is suited for the manufacture of this red ware and for bricks.

3. The third class of clays exist in limit extent, in detached areas, are of much more recent origin than the other two formations, and their position is in the lower grounds in the vicinity of the others. As they burn red, they are only used for making bricks, tile and common pottery.

MANUFACTURE OF BRICKS AND TILE.

The bricks manufactured near the city of Baltimore of this clay, are unrivaled in appearance, which is owing to the proportion of iron and the little manganese in the clay, as well for its uniformity and freeness from coarse sand. The fine quality of the Baltimore pressed bricks has always been a subject of remark.

A very neat and inexpensive kind of fancy paving bricks or tile is made in Baltimore of this clay. They are made either square or hexagonal, with a fancy figure depressed on one side, and filled with a cement of any color that will afford a proper contrast with the deep red of the tile.

Draining tile or pipe is also produced at a price so low as to deprive the farmer of a valid excuse for not under draining such portions of his land as require this operation.

The material used for the manufacture of *fire bricks* is obtained from the lower or older of these formations, which contain many beds differing materially from each other. Some of them contain such a proportion of iron as to "burn red," and will not endure the high temperature to which fire-bricks are exposed when used for the interior of furnaces. Such clays are therefore rejected for this purpose. In fact a good fire-clay should consist entirely of silica and alumina. The proportions of these are variable in different clays, but must be such as will permit the material to cohere when burned, so as to give sufficient strength to the brick. This proportion is 65 per cent. of silica, and 35 per cent. of alumina, which is the composition of the clay found by the French chemists the best for crucibles which require strength and infusibility. This was also determined by Dr. John H. Alexander and myself to be the proportion of silica and alumina, which produced