

extremity of the State to another. Those experienced in such matters have found, however, that a different mode of proceeding is required. The most efficient mode of operating is the following :

1. A preliminary reconnoissance of the territory to be explored (which in the present case embraces the whole State) and become acquainted with its leading geological constitution and most important resources.

2. A series of geological sections are made, running as nearly as practicable at right angles to the direction or range of the formations. The course of these (north-westward and north of a line running from Washington via Baltimore, Havre-de-Grace, to and beyond Elkton) is about N. 30° E. within the tide-water districts ; south-east of the above this range is irregular and requires much study.

3. All the points at which these sections cross the edge of each formation are then to be noted on a large map.

4. Careful explorations of the country between these points are then made, so as to determine the positions of the out-cropping edges of each formation. Whilst this is progressing the characters, both chemical and physical, of these rocks, clays and all minerals which they contain, are carefully investigated, having especial reference to their industrial applications. Many of these should be analyzed and otherwise experimented upon, in order to determine whether they can be made available for useful purposes.

The first part of this system, the *preliminary* investigation, has been *fully* executed.

The second (making the sections) has been carried out along the lines of our rail and other roads running in the proper directions, and I have all the sections noted and ready for using on the map. It is necessary to make a section along the Potomac river, tortuous as it is, and this will complete the suite of sections above tide-water or in the hilly portions of the State. This will be a laborious job which cannot be conveniently executed in the present disturbed state of the country bordering on that beautiful river.

Detailed investigations of much of the country between these sections have been made for the purpose of ascertaining what mineral resources they may contain. These will be noticed in their proper place in the present report.

In reference to the tide-water counties it may be remarked that it would be a tedious task to make the investigations required for constructing geological sections by traveling through the counties altogether on land.

The sections in those counties must be made along the shores of the bay and rivers. These being indented by innumerable creeks, too deep to be forded, (and often extending