

1. Blue limestone dipping eastward under the new red sandstone of the Monocacy valley.

2. Slate, (No. 12,) which underlies the limestone and conforms therewith in dip.

3. Pottsdam sandstone, (No. 8,) which belongs to the oldest formation of sandstone of the United States.

4. Talcose slate.

5. A vast mass of epidotic trap, which embraces a mass of chert perhaps three or four thousand feet in thickness. The width occupied by this intrusive belt is at least five miles.

6. This is succeeded on the western slope of the South mountain, in an inverse order, by the slates, sandstone and limestone similar to those noticed above.

The geological section which resulted from this investigation goes to prove that the limestone, slates and sandstone of Washington and Frederick counties were originally deposited in continuous and probably nearly horizontal strata. At a subsequent period in geological history the epidotic trap rock was forced up from below in a state of fusion, by causes similar to those by which lava is thrown up in the volcanoes of the present day. In attaining an elevation of nearly two thousand feet, this great intrusive mass broke through and upturned the overlying strata, leaving them in the position as described, dipping into the valley of the Monocacy on the east, and into the Cumberland or Hagerstown valley in the west. The middle portions of these overlying strata were broken up, crumbled and carried off by the floods, except some of the harder fragments of sandstone, which still lie scattered about the neighborhood.

The geology of this as well as many other parts of the State would be much better understood with the aid of maps and sections, which I am obliged to dispense with for reasons already given.

Fine specimens of native or metallic copper have been obtained at several places along the eastern edge of the epidote, and carbonate of copper occurs in that rock as well as in the overlying talcose slates. This may be seen on the side of the turnpike road leading from Frederick to Hagerstown, at the summit of the Catoctin Mountain.

I have also seen fine samples of specular oxide of iron, said to have been found in Catoctin Mountain.

In smelting iron ores at the Catoctin furnaces an oxide of zinc constantly accumulates near the upper part of the furnaces, (called the tunnel head,) indicating the presence of that metal either in the iron ore or limestone used.

In exploring the vicinity, a silicious mineral was found containing a small proportion of silicate and carbonate of zinc. The probability of large quantities of this ore existing in that region is increased by the fact that it is a prolongation of the