

rocks. These last consist of amphibolites, (trap,) porphyries, amygdaloid, serpentine, and epidote. This last named rock is extensively developed both in large masses and intercalated between the slates, and has largely contributed to produce the highly fertile soil of Middletown valley.

Approximate measurements of the thickness of these strata have been made in New York and Pennsylvania, but I have not as yet been able to obtain reliable information upon this point in our State.

FORMATION No. 10.

Auroral series of the Pennsylvania reports. Chazy and Black River Limestones of New York.

This constitutes the most extensive limestone formation of the United States, or in the world, its entire length being over 600 miles. A small area of it occurs in Frederick county, near the Monocacy river, reaching from the Potomac to a point north of Woodsboro', where it is covered by the mezozoic or new red sandstone. Between the South and North Mountains, in the Hagerstown valley, it is developed to the extent of more than three-fourths the area of the part of that fine valley within our limits.

It varies in color from blueish black to blue and gray, etc., and has a compact structure, sometimes inclining to slaty. Some of its layers are nearly pure, whilst others contain from 10 to 30 per cent. of magnesia. The slaty varieties contain variable proportions of other earthy matters.

The lower beds of the limestone have been named calciferous sand rock in New York, and calcareous sandstone in Pennsylvania, but I have seen none yet in this State to which these names can be properly applied.

Near its eastern limits in Washington county it assumes a coarse slaty appearance, and some of the layers contain a large proportion of oxide of iron. This is probably the equivalent of the calcareous sandstone of Pennsylvania.

The soil resting upon this formation is among the best in the State.

Fossils are rare, and embrace what are probably among the remains of the first created animals of North America.

FORMATION No. 11.

Metamorphic Limestone.

There are two ranges of these in Maryland, both of which have already been noticed :