ish shales, with a few thick layers of dull gray sandstones. It contains remains of plants approximating those of the coal formation.

## FORMATION NO. 18*b*.

*Umbral series of the Pennsylvania reports.* (*It does not occur in New York.*)

It consists principally of red shales with some of an olive green color. There are also occasional alternations of slaty sandstones.

It contains a bed of limestone from forty to fifty feet thick, which is important from the fact that it is the only thick bed of limestone in Maryland, west of Dan's Mountain.

This group, with its limestone indicated on the map, cropping out on the east flank of Dan's Mountain, dipping under the Potomac and George's Creek coal field. It rises to daylight along the west flank of Savage Mountain and is again found underlying the Meadow Mountain and the Yohiogheny coal fields.

## COAL FORMATION NO. 19.

*Seral series, Pennsylvania reports.*

In the Pennsylvania report this formation is divided into

1. Seral conglomerate, usually known by the name of "millstone grit." In Pennsylvania it exists in the anthracite coal regions of great thickness, made up principally of large pebble of quartz, with a silicious cement. It thins off southwestward, and in Maryland it does not exist; its place being supplied by beds of coarse gray sandstone of moderate thickness.

2. The coal formation proper.

Of this there are four divisions recognized in the Pennsylvania reports, but the necessity of this classification does not seem to me clearly apparent.

The coal formations of this State consist of alternations of

1. Sandstones usually gray and varying from coarse to fine and shaly.

2. Shales usually black and bituminous, or carbonaceous, but also gray, brownish and olive colored.

3. Slate clay, or massive beds of indurated clay, with little or no fissile structure, and known by miners as fire clay.

4. Bituminous coal.

5. Iron ores of the variety called carbonate of iron. This lies within thin strata between the shales and fire clays, or in flattened nodules imbedded therein.

CHAP. III.