

It is 65 feet thick at the mouth of the Genesee river gorge at Mt Morris and 90 feet in Ontario county. There are large exposures of these beds at Mt Morris, on the shores of Conesus and Honeoye lakes, in the Bristol valley, at the head of Canandaigua lake and in the West River valley in Yates county.

Pterochaenia fragilis is abundant in thin layers of this shale at the exposure on Smoke's creek south of Windom. Other fossils are exceedingly rare.

Portage beds

Middlesex black shale

As in the case of the Hamilton beds and other larger divisions it has also become necessary to recognize the distinct component units of the Portage division by separate terms. The Middlesex black shale is the lowest of the subdivisions of the former Portage group. It is abundantly exposed in the Middlesex valley in Yates county, whence the name [see N. Y. State Mus. Mem. 6 and Handbook 19]. It appears as a bed of densely black slaty shale 6 feet thick superjacent to the West River shale at Windom; is found on Eighteen Mile creek and the south shore cliffs and well exposed on Pike creek.

It may be easily distinguished at nearly all of the outcrops from the West River shale by its darker color and more bituminous character. Like all the preceding divisions, it increases slowly in thickness toward the east and is 35 feet thick in Ontario county, where a few thin sandstone slabs and hard blue shales are interstratified at the bottom and near the top.

The Middlesex shale contains very few fossils, but *Lingula ligea* is common in this horizon on Pike creek, North Evans; and it occasionally carries in the central part of the State *Sandbergeroceras syngonum*, *Pterochaenia fragilis* and *Spathiocaris emersoni*, together with plant and fish remains.

Cashaqua shale

The Cashaqua shale is another well characterized subdivision of the Portage beds, for which the original name given by the early geologists has been revived. The type locality of this formation is along Cashaqua creek, a confluent of the Genesee river. The formation is composed of light blue-gray or olive soft shales in which are interbedded at frequent intervals concretionary calcareous layers 2 to 4 inches thick. Layers of dark or black