

at the base of the formation. The limestones are, on the contrary, highly fossiliferous and often entirely composed of shells. The fauna of the Marcellus shales and limestones of Lancaster has been thoroughly studied by Wood,<sup>1</sup> who records as the most common forms of the shale *Styliolina fissurella* Hall, *Chonetes mucronatus* Hall, *Strophalosia truncata* Hall, *Pterochaenia fragilis* Hall and *Liorhynchus limitare* Vanuxem. The lowest shale exposed proved to contain abundant ostracod valves, belonging to the species *Isochilina* (?) *fabacea* Jones and *Primitiopsis punctulifera* Hall.

#### *Stafford limestone*

On Flint creek in the town of Phelps, Ontario co., the Marcellus shales are capped by a 4 inch layer of dark chocolate limestone which is very hard when fresh but breaks easily into angular fragments after exposure. It is not known farther east but increases westward from 2 feet or more at the Livonia salt shaft to nearly 4 feet at Stafford, where it is well exposed and whence the name is derived, and to 8 feet, 4 inches at Lancaster, Erie co. The record of the Smoke's creek well makes it even 15 feet thick at that point. There are no exposures of the entire formation on this quadrangle but the upper layers outcrop to the thickness of nearly 6 feet in the bed of Buffalo creek opposite the end of the Winchester road,  $\frac{3}{4}$  mile east of South Buffalo and  $1\frac{1}{2}$  miles south of the junction with Cayuga creek, at which latter point there is a small exposure of Onondaga limestone.

The Stafford limestone is here a compact bluish gray limestone, mostly in thick layers and bearing a strong resemblance to the Onondaga limestone by the admixture in considerable proportion of dark chert in nodules and nodular layers. It has been found in excavations at several places southwest from this exposure but nowhere comes to the surface and its precise position on the lake shore is not known, the bed being completely buried under heavy drift cover.

Besides the exposures previously mentioned it appears in the east bank of the Oatka river at Leroy and along the outlet of Conesus lake at Littleville near Avon.

Fossils are abundant in the Stafford limestone at Lancaster, specially in the upper part and some layers are entirely made up of

<sup>1</sup>N. Y. State Mus. Bul. 49. 1901. p. 139-81.