

and limiting it. Directly in front of the cardinals there are two large impressions of similar shape and direction, the laterals, which extend forward to the mid-length of the shell. These two pairs of impressions are frequently connected with each other by the passage of the cardinals down into the laterals; but, as will be seen, they are not so connected in the specimen figured, which has been selected in order to illustrate more clearly their essential independence. In the central portion of the valve there is a pair of still larger impressions,¹ having their upper portions parallel and their lower, falcate parts widely diverging. Between their parallel portions there is a low mesial ridge, which dies out before reaching the hinge-line. The falciform portions of these scars are, in general, very faintly impressed, and might readily escape observation. The interior surface is usually smooth."

In specimens from a light-gray, granular limestone, the tendency of the shell to break on the surface and show successive laminae is quite pronounced, but usually it is, as Mr. Ford says, not so.

The differences between the muscular scars of *O. crassa* and the type of the genus *O. chromatica* are not as marked as I had supposed from the figures given by Mr. Billings and Mr. Ford. A study of the interior of the valves of *O. chromatica* shows that the central scars of the dorsal valve are not unlike those in *O. crassa* and that those of the ventral valve are essentially the same. It is difficult to find two interiors of the same valve in either species exactly alike, a fact owing to the original condition of the scars on the shell and much more to the changes passed through since the death of the animal that inhabited it.

Formation and localities.—Middle Cambrian. In the even-bedded and conglomerate limestone on the ridge east of the city of Troy, New York; at the same geologic horizon one mile below Schodack Landing, in Columbia County, New York; also, at St. Simon and at Bic Harbor, on the St. Lawrence River below Quebec, Canada.

OBOLELLA GEMMA Billings.

Plate x, figs. 2, 2a-c.

Obolella gemma Billings, 1872. Can. Nat., new ser., vol. vi, p. 218, fig. 5, of p. 217.

Original description.—"Shell very small, about two or three lines in length, ovate, both valves moderately convex and nearly smooth. Ventral valve ovate, the anterior margin broadly rounded, with sometimes a portion in the middle nearly straight; greatest width at about one-third the length from the front, thence tapering with gently convex or nearly straight sides to the beak, which is acutely rounded. The area is about one-fifth or one-sixth the whole length of the shell, with a comparatively deep groove, which extends to the apex of the beak. The dorsal valve

¹ See in original.