

avenue, Ottawa. For comparison a study was made of eleven typical specimens of *Parastrophia reversa* (Billings)<sup>1</sup> from the Lorraine formation of the Island of Anticosti. Billings later stated that this species was simply a variety of *Parastrophia hemiplicata* Hall.<sup>2</sup> The most striking differences are their size, and their greater average gibbosity, as indicated by the ratio of height and length. The mesial fold and corresponding sinus also are relatively less prominent than those of *Parastrophia hemiplicata*, Hall.

For the majority of the specimens the writer is indebted to the kindness of Mr. J. E. Narraway of Ottawa, by whom all the Fifth Avenue specimens were loaned, as well as a large number from the Prasopora beds. The rest are in the collections of the Geological Survey of Canada.

The data taken for study are: length of shell; width of shell, measured at the widest part; height; width of sinus, measured at the anterior margin; number of plications on each side of the sinus on the pedicle valve; and the total number of plications. As stated above, the number of plications or striæ in the sinus is the basis for division into groups.

Each shell in its nepionic stage is without a plication, even the sinus not being indicated; as it grows, anteriorly, it forms the sinus and fold, later come the plications in the sinus and on the sides. Would every young shell, if undisturbed in its growth, continue to develop more and more plications until it reached the maximum number, the five-plication form? Or, does each shell start out with an inherent tendency to form one, two, three, or four plications in the sinus, as the case may be? From the specimens examined and measured it would seem that the latter alternative is the more probable.

*Inherent Tendency to a Definite Number of Plications.* First.—Each group of no-plications in the sinus, one, two, or three plications, etc., has adult representatives. Figure 1, Plate IV, for instance, probably represents an adult, or nearly adult specimen, with no plications in the sinus or on the sides, merely the two ridges which bound the sinus. There is no indication of

<sup>1</sup>Geol. Surv. of Can. Report of Progress for 1856, p. 295, 1857.

<sup>2</sup>Can. Jour. IV, p. 316, 1859.