

archenteron was not the only, nor perhaps the most important part of the organism to act upon.

Still more different are they from those advocated by Perrier<sup>1</sup> and Cattaneo,<sup>2</sup> who have adhered to and extended the idea already held by others, but by them most actively defended, "that the metamery of Arthropods, Vertebrates, and a great many Vermes, has originated out of the multiplication by transverse fission of very simple primitive worms which were not metamerous. The products of this transverse fission remaining connected together have then formed a chain of individuals, or a linear colony; later on the unity of the chain has become more definitely established, the single individuals at the same time becoming different both in form and in function, and the foremost individual thus becoming *the head* of the series. Each segment (metamere) thus represents a reduced individual; a metameric (segmented) animal is the result of the more or less complete fusion of single individuals into an individual of higher order."

Emery, from whose paper<sup>3</sup> I have translated the foregoing sentence, has very successfully combated these propositions. This author, however, adheres to Lang's views in ascribing to the archenteric pouches, the "gemination" as Emery calls it (*loc. cit.*, p. 18) of the intestine, the most important and initial significance for the first origin of metamery, "the sexual glands and excretory canals being in relation to the intestinal diverticula," and following the lead. I have above explained why I cannot adhere to this argumentation, which brings the cœlome and the sacculated intestine too strongly into the foreground, and why I rather suppose incipient metamery to have been antecedent to either of these (*e.g.*, *Carinella*). On the other hand, many views contained in Emery's important paper coincide with my own. Thus he writes (*loc. cit.*, p. 11), speaking of that interesting marine Triclade, *Gunda segmentata* :—

"The metamery of *Gunda* is thus manifestly the consequence not of the 'symbiotic' fusion of a colony of equivalent 'parts' (meridi), but of the 'autobiotic' differentiation and perfecting of one 'part' (meride);" and further on (p. 15) :—"When I consider the facility with which certain worms break into one or more pieces even spontaneously, it appears to me that this capacity for rupture may well have been the origin of the reproductive purpose of transverse scission in similar elongated organisms. The rupture, in the first instance accidental, could have contributed to the more rapid multiplication of the organism, being followed by the regeneration of the parts that were deficient in the separate fragments. This process of rupture might further have been so perfected that the spot best adapted for rupture, with a view to the best condition of the fragments, was prepared in advance. In the more perfect evolutionary phases of the process, which are at the same time those that have till now been more carefully investigated, the new head is formed anteriorly to the rupture, or at least its essential parts are pre-established."

<sup>1</sup> E. Perrier, *Les colonies animales*, Paris, 1881.

<sup>2</sup> G. Cattaneo, *Le colonie lineari e la morfologia dei Molluschi*, Milano, 1883.

<sup>3</sup> C. Emery, *Colonie lineari e metameria*, Napoli, 1883.