Particularly obscure is that part of our phylogeny which extends from the Gastræa to Amphioxus. The morphological importance of this last small creature had been perceived by Johannes Mueller, who in 1842 gave the first accurate description of it. It would not, of course, be correct to proclaim the modern Amphioxus the common ancestor of all the vertebrates ; but he must be regarded as closely related to them, and as the only survivor of the whole class of Acrania. If the Amphioxidæ had through some unfortunate accident become extinct, we should not have been able to gain anything like a positive glimpse at our most remote vertebrate ancestor. On the one hand, Amphioxus is closely connected with the early larva of the Cyclostomes, which are the oldest Craniota, and the pre-Silurian ancestors of the fishes. On the other hand, the ontogeny of Amphioxus is in harmony with that of the Ascidians, and if this agreement is not merely coincidental, but due to relationship, we are justified in reconstructing for both Ascidians