

the Cephalopoda that reliance has generally been placed in classing these two groups near together (Claus, Fischer, &c.), or even including them in the same class (Ray Lankester).

This question of the morphological value of the arms of the Cephalopoda has always been the subject of animated discussion. It may be laid down at the outset that there are two hypotheses to be considered :—

1. The arms are pedal in nature ; this is especially the opinion of the English naturalists, Huxley, Ray Lankester, &c.

2. The arms are cephalic in nature ; a view maintained particularly by naturalists of the German school (Grenacher, von Jhering, Grobben).

In investigating this disputed point we may adopt the following methods :—(1) comparative anatomy, (2) embryology.

(1) If the arms of the Cephalopoda are, like the appendages of the Gymnosomata, cephalic in origin, their nerve supply ought at once to make this clear to us.

Topographically there is no difference of opinion regarding the part of the nervous system which gives off nerves to the arms of the Cephalopoda ; viz., the anterior infra-oesophageal or brachial ganglia (“ganglion de la patte d’oie” of Cuvier).

But as regards the morphological value of these ganglia there is the same difference of opinion as regards the arms.

These are pedal ganglia, say the English naturalists.

They are cerebral or cephalic, maintain the Germans.

The solution of the question as to the morphological value of the arms is to be found then by solving this other question :—What is the morphological value of the brachial ganglia of the Cephalopoda ?

A few words are necessary here to explain how such differences of opinion can exist regarding an organ whose topographical anatomy is so well known.

The central nervous system of the Cephalopoda is entirely concentrated in the head, around the œsophagus, and resting in the cephalic cartilage in the Dibranchia ; a little less protected in the Tetrabranchia.

In spite of the great concentration of the component parts the following separate elements may be recognised externally in this central nervous system :—

1. A supræoesophageal mass.
2. A subœoesophageal mass, including :—
 - (i.) An anterior mass.
 - (ii.) A middle mass.
 - (iii.) A posterior mass.

The supræoesophageal mass gives off the optic and olfactory nerves, and innervates the whole cephalic region ; there is no disagreement regarding its nature, all recognising in it the fused cerebral ganglia.