the arms of Cephalopods as cephalic structures, interpret the nervous system, and especially the brachial ganglia of the animals. We will now examine the value of this interpretation.

From the point of view of these zoologists, which was briefly stated above, it is evident :—

1. That the union of each brachial ganglion to the corresponding pedal ganglia is a secondary disposition.

2. That the cerebro-brachial connective must be a primitive structure, since it would represent the means by which the brachial ganglion would remain in connection with the cerebral ganglion from which it arose.

We will now consider each of these conclusions separately.

1. If, instead of regarding the nervous system of the Decapod Dibranchiates such as *Sepiola* and *Ommatostrephes*, which, so far as the present question is concerned, form the end of the series, we refer to the nervous system of the Octopoda, we shall find that in *Octopus* the brachial ganglia are only separated from the pedal ganglia by a very slight external constriction ; and in *Cirroteuthis*, which in certain respects (notably in the presence of fins) is a more primitive Octopod than *Octopus*, the brachial ganglia are in such close contact that the nerves to the funnel (which in *Octopus* arise from the pedal ganglia) have their origin quite close to that of the nerves to the ventral arms[1] (which in *Octopus* spring from the brachial ganglia).

And if, in addition to what has been stated above, we do not confine ourselves to a macroscopic examination of the exterior of the nervous system of the Cephalopoda, but study it also, as I have done, by serial microscopic sections, we shall find that in *Octopus* the central substance formed by the prolongations of the cells and giving origin to the nerves is quite continuous between the pedal and brachial ganglia.

If now we pass to the Decapoda and study not only the adults but also the embryos in all stages of development (in *Sepia* for example), we shall see that in the youngest forms the central substance of the pedal and brachial ganglia is in free communication, and that it is only little by little, in the subsequent stages, that they become separated as in the adult, where their central masses only communicate by a very slender bridge.[2]

From this point of view then, the Decapod central nervous system passes in the course of its development through an Octopod stage. These facts show clearly that the brachial ganglion results from the transverse segmentation of the pedal ganglion, and consequently that the union of each brachial ganglion with the corresponding pedal ganglion is not a secondary disposition.[3]

[1] Reinhardt og Prosch, Om Sciadephorus Mülleri, *K. dansk. Vidensk. Selsk. Afhandl.*, t. v. p. 19, pl. v. fig. 2.

[2] Stieda, Untersuchungen über den Bau der Cephalopoden, *Zeitschr. f. wiss. Zool.*, Bd. xxiv. pl. xiii. fig. 6.

[3] This subject will be treated at greater length and with illustrations in a paper which I propose to publish in the *Arch. d. Biol.*, t. viii., under the following title,—"Sur la valeur morphologique des bras des Céphalopodes et sur la composition de leur système nerveux central."