

*The Nervous System of Clionopsis* has been described and figured by Troschel<sup>1</sup> and by Gegenbaur,<sup>2</sup> but only in a summary fashion.

Troschel represents the nervous system as formed of three pairs of ganglia, which may be regarded as cerebral, pedal, and visceral. He did not observe the pedal commissure,<sup>3</sup> and only saw nerves issuing from the cerebral ganglia. Among these is to be noted as a curiosity a nerve which, according to Troschel, runs from the posterior or nuchal to the anterior or labial tentacle. Gegenbaur was the first to see the pleural ganglia of *Clionopsis*, but as regards the nerves he only saw some issuing from the pedal ganglia.

According to my own observations<sup>4</sup> the central nervous system of *Clionopsis* is constituted in the same manner as that of *Pneumonoderma*; that is to say, it is composed of four pairs of ganglia, disposed as in this last, the pleuro-pedal connective being quite evanescent as in all Gymnosomata.

The cerebral ganglia are close together, and are shaped like those of the *Pneumonodermatidæ*. As regards the nerves given off from these ganglia, the chief difference from the preceding forms is dependent upon the absence of the buccal appendages. From the anterior side of each ganglion proceed two large nerves.

1. The lateral, which passes to the anterior tentacle.
2. The median, which soon ramifies freely, and is distributed to the large proboscis, and then to the buccal opening and the lips.
- 3 and 4. From the dorsal surface of the ganglion arise, as in the preceding genera, two nerves for the posterior or nuchal tentacles. These two nerves were seen and figured by Troschel, but he erroneously represented the left optic nerve as anterior to the olfactory nerve. As for Troschel's nerve from one tentacle to the other, I can positively assert that it does not exist, and suppose that the retractor muscle of the anterior tentacle has been taken by him for a nervous thread.

The description given of the pedal and pleural ganglia of *Pneumonodermatidæ* is also applicable to the *Clionopsidæ*. The pedal ganglia also have the second small commissure, and the lateral cervical nerve also anastomoses with the nerve of the pleural ganglion in order to contribute to the innervation of the neck.

The two visceral ganglia are characterised, as in all the typical Gymnosomata, by their asymmetry; that of the right side is smaller than the other, and only

<sup>1</sup> Beiträge zur Kenntniss der Pteropoden, *Archiv f. Naturgesch.*, Jahrg. xx. p. 228, pl. x. fig. 9, r.

<sup>2</sup> Untersuchungen über Pteropoden und Heteropoden, p. 70, pl. v. fig. 13.

<sup>3</sup> It is strange that the pedal commissures of the Gymnosomata, which are the only true commissures, for the cerebral ganglia as well as those of the visceral commissures are in juxtaposition, have passed unnoticed, even where they are especially strong. Thus Cuvier has not figured the pedal commissures in *Clione*, nor has Souleyet in *Halopsyche*, nor Gegenbaur in *Clionopsis*.

<sup>4</sup> Recherches sur le système nerveux des Ptéropodes, *Arch. de Biol.*, t. vii. pp. 102-104, pl. iv. fig. 5.