

observed it "bis an das Hinterende des Körpers") is not confirmed by modern investigators. Ahlborn's description (*loc. cit.*, p. 304) of the variable situation of this nerve in *Petromyzon* is very suggestive in connection with the views here advocated. Ransom and d'Arcy Thompson consider that the regularity of the integumentary sensory apparatus is not yet established in *Petromyzon*, as may be concluded from the citation given above (p. 140).

We have now considered the superficial ramifications of what I may call the lateral nerve system, both in lower worms and in Vertebrates; we must now turn to the intestinal, to the visceral branches of this same system, from which other and important data may be gathered for further elucidation of the hypothesis under consideration.

We have already seen that in Nemertea the typical innervation of the respiratory portion of the intestine is brought about—(a) by a pair of nerves directed backwards and springing from the anterior lateral swellings (the brain-lobes) of the lateral nerve-stems; (b) by numerous visceral branches starting from the plexus, directed inwards as branches that spread over the wall of blood-lacunæ and intestine.

In the Vertebrata, *Amphioxus* excepted, we also find that the innervation of the anterior respiratory portion of the intestine and of the circulatory apparatus is obtained from two sources, viz., (1) the cephalic nerves, amongst which the vagus nerve is in this respect the most important<sup>1</sup>; (2) the visceral branches of the spinal nerves, which are at the basis of what is afterwards more highly differentiated and separately recognised as the sympathetic nerve-system.

In Nemertea it is very difficult to determine in the anterior part of the intestinal wall, which tracts belong to the so-called vagus nerve, which to this system of visceral nerve-branches.

So it is often in Vertebrata, and the blending together (in both divisions of the animal kingdom) of two systems, each of them again mutually comparable when separately considered, is an important point of agreement, and would, if no actual homology were at the base of it, be a very puzzling coincidence.

It is in this respect highly suggestive that Born notices, as early as 1827, what was afterwards confirmed by Ahlborn (*loc. cit.*) and others, that in *Petromyzon*, *i.e.*, one of the lowest Vertebrates, the spinal nerves send out connecting branches towards the pneumogastric nerves. The existence of superficial metameric connections (Ransom and d'Arcy Thompson, *vide supra*) as well as of this set of deeper connections between the transverse and the latero-longitudinal nerve-stems (n. lateralis and n. pneumogastricus) of *Petromyzon* would thus be a most remarkable repetition of the similar arrangement in the Nemertea, as it has been here for the first time demonstrated.

<sup>1</sup> Ventrally these nerves (*e.g.*, the n. hypoglossus) are sometimes commissurally united with their representative of the opposite half of the body. It must remain an open question whether these commissures are in any way comparable either to the Nemertean vagus commissures (*cf.* p. 83), or to the general ventral commissural system of these worms.