

PLATE XVI.

Three diagrammatic figures for the comparison of the nerve system of the Nemertea, of the Vertebrata, and of the Cephalochorda.

Fig. 1. The chief points in the nervous system of the Nemertea. *ln, ln'*, the lateral nerve-stems with their anterior swellings, the brain-lobes, *Lg*. The latter are connected in front by a strong ring-shaped commissure, the former by much thinner but unmistakable commissures, *dvr*, metamerically placed both dorsally and ventrally in a continuous plexus of nerve-tissue, that ensheathes the body. This plexus is no further indicated in the figure. It moreover carries a longitudinal medio-dorsal nerve-tract *m*, which is also continued forwards, in front of the brain commissure, with which it is connected. Into this medullary nerve *m* the transverse tracts *dvr* converge. From the latter (*sensu strictiori* from the plexus) radial nerve twigs of sensory and motor significance can be traced both in centripetal and in centrifugal direction, but these are not indicated in the figure. Other similar nerve twigs, indicated by *vi.sy*, innervate in a similar way the wall of the œsophagus and of the blood-lacuna surrounding it (*cf.* Pl. XIV. figs. 3, 4). The innervation of the œsophageal wall is, moreover, brought about by a paired nerve, *v*, springing from the brain-lobes, and not strictly separate in its peripheral distribution from that of the nerves *vi.sy*. *cn*, nerves to the tip of the head; *M*, mouth.

Fig. 2. The chief points in the nervous system of the Vertebrata.

Instead of the medullary nerve we find here in the corresponding situation the medulla spinalis *m* and its anterior enlargement, the brain. The spinal nerves are represented in their primitive condition, *i.e.*, with the dorsal (sensory) roots *dr*, and the ventral (motor) roots *vr*, not yet connected into a spinal nerve of higher order. Anteriorly is represented the union of more than one metameric transverse root into a complex polymerous vagus nerve, *Vag*, motor and sensory branches of which are represented as innervating the branchial pouches of the fore gut (the latter not specially indicated in the figure). From the vagus ganglion also springs *ln*, the ramus lateralis nervi vagi or nervus lateralis; *ln'*, the left nervus lateralis. This nerve is continued forwards into other ganglionic swellings *Lg*, representing the series of ganglia of the cephalic nerves. The visceral branches springing from the dorsal roots and innervating vegetative organs are indicated by *vi.sy*; they are supposed not yet to have united into a longitudinal "sympathetic nerve." In front the region innervated by them overlaps and fuses with that of the intestinal branch *v*. of the vagus, and of other cephalic nerves. *M*, mouth.

Fig. 3. The chief points in the nervous system of *Amphioxus*.

The medulla spinalis *m* without any considerable anterior enlargement; *cn*, pairs of cephalic nerves; *dr*, dorsal roots; *vr*, ventral roots; the former springing from the medulla at a higher level than the latter. The dorsal roots are connected together in a plexiform arrangement; they give off visceral branches (*vi.sy*). *M*, mouth.