

which was first expressed in a footnote to a former paper of mine (**X**, p. 438). There can hardly be any doubt as to the existence, consequent upon natural selection, of a constant tendency in the different component parts of living organisms towards simplification and increased efficiency (Roux's *Kampf der Theile im Organismus*). This fact enables us to understand the gradual supremacy of the median cord in the Nemertean plexus over the two lateral ones. It seems as if it were mathematically demonstrable that for the delicate adjustment of the impressions from the exterior to the co-ordinated movements thereby occasioned, one longitudinal central stem in bilateral, lengthened animals, would be more efficacious than two lateral ones. And if we ask if, at the final stage of this struggle for supremacy between three longitudinal stems, any remnants of the lateral cords are yet detectable in the Vertebrate embryos, perhaps even in the adults, I am inclined to answer in the affirmative. Here I must be allowed to insert a reference to the three figures on Pl. XVI., which will facilitate the exposition of the further consequences of the hypothesis I am here developing. Fig. 1 represents the chief points in the nervous system of the Nemertea. The brain-lobes are simple lateral swellings of the longitudinal stems, as in *Carinella*; plexus, medulla and transverse stems, together with brain-lobes and lateral stems, may be considered as forming part of the integument (*cf. Carinina*). A double innervation of the respiratory portion of the intestine is indicated; one due to visceral branches (*vi.sy*) springing from the plexus (or from its transverse tracts), the other to the more specialised nerve (*v*), which has above been indicated as the Nemertean vagus nerve. The plexus and its innumerable radial fibres, both sensory and motor, are not indicated in this figure, nor are the nerve-stems which, when present (Pl. XIV. fig. 2), pass from the lateral stems directly to the integument.

This figure must now be compared with the two others. Of these, Pl. XVI. fig. 2, diagrammatically represents the chief points that may be considered as characteristic of the nervous system of a lower Vertebrate, in which the dorsal and ventral roots of the spinal nerves (*dr* and *vr*) are as yet separate nerve-tracts, in which the sympathetic nerve system is as yet only represented by visceral branches given off by these dorsal roots (*vi.sy*), and in which the polymerous character of a primitive vagus (*Vag*) is established.

Pl. XVI. fig. 3, stands for *Amphioxus*, as far as we know its nervous system, more particularly through the researches of Rohon and others. It differs from the foregoing by the absence of a distinct brain swelling, and of a polymerous vagus. A number of spinal nerves are considered as homologues to the vagus of Vertebrates by Rohon. The commissural connections between the successive spinal nerves form a plexus, which is peripherally even much more elaborate, according to Rohon's figures. This plexus does not reveal the presence of any distinct lateral longitudinal nerve, nor any ganglia of spinal or cephalic nerves. The latter (*cn*) may be said to be three in number. Visceral branches (*vi.sy*) are given off by the dorsal nerves (*dr*). The ventral ones, springing from the lower edge of the medulla, are here represented as shorter stems (*vr*).