

organic body, and if, in the course of very many generations, this number be gradually decreased, this transformation will be an example of perfecting.

Another law of progress, which is quite independent of differentiation, nay, even appears to a certain extent opposed to it, is the law of *centralization*. In general the whole organism is the more perfect the more it is organized as a unit, the more the parts are subordinate to the whole, and the more the functions and their organs are centralized. Thus, for example, the system of blood-vessels is most perfect where a centralized heart exists. In like manner, the dense mass of marrow which forms the spinal cord of vertebrate animals and the ventral cord of the higher articulated animals, is more perfect than the decentralized chain of ganglia of the lower articulated animals, and the scattered system of ganglia in the molluscs. The community of medusæ, the Siphonophora, in the same way as a human civilized community, is the more accomplished and the more perfect, the more it is centralized. However, we must not forget that the idea of perfection is relative only, not absolute. Owing to the difficulty of explaining these complex laws of progress in detail, I cannot here enter upon a closer discussion of them, and must refer the reader to Brönn's excellent "Morphologischen Studien," and to my "General Morphology" ("Gen. Morph." i. 370, 550; ii. 257-266).

While, therefore, we have, on the one hand, become acquainted with phenomena of progress, quite independent of divergence, we shall, on the other, very often meet with divergencies which are no perfecting, but which are rather the contrary, that is, *retrogressions* or *degenerations*. It is