

that body, . . . so included, any derivative germ-cell or the nucleus of such may commence and repeat the same processes of growth by imbibition, and of propagation by spontaneous fission as those to which itself owed its origin."¹ We have here the first enunciation of that idea of a differentiation between the germ-substance and the body-substance, between that portion of living matter which is destined to preserve the continuity of life, and that other portion which, destined to differentiate more and more into the aggregate of living cells, each bearing a special form and carrying out a special function in the economy of the higher organisms, is at the same time doomed to death, gradually losing, as it does, its power of assimilation, growth, and division—*i.e.*, of self-preservation. Prof. Haeckel in 1866, and Dr Jäger in 1877, elaborated the idea further, pointing out that the "germinal" element or substance was that portion which in the process of division is reserved for the preservation of the species (the *φύλον*, hence termed the phylogenetic portion), whereas the "personal" element or substance goes to form the body or individual (the *ὄν*, hence termed the ontogenetic portion).²

53.
Germ-sub-
stance and
body-sub-
stance.

¹ Darwin quotes this passage in a historical note to his theory of "Pangenesis" in the concluding chapter of his 'Animals and Plants under Domestication' (vol. ii. p. 375). He adds further, "By the agency of these germ-cells Prof. Owen accounts for parthenogenesis, for propagation by self-division during successive generations, and for the repairs of injuries. His view agrees with mine in the assumed transmission and multiplication of his germ-cells, but differs fundamentally from mine in

the belief that the primary germ-cell was formed within the ovarium of the female, and was fertilised by the male. My gemmules are supposed to be formed, quite independently of sexual concourse, by each separate cell or unit throughout the body, and to be merely aggregated within the reproductive organs."

² Complete references to the earlier statements of this theory, which, through the various writings of Prof. Weismann (since 1881, when he read a paper, "On the Duration of Life," before the