

perfect representation of his own stirp, and the personal structure of each of the parents is no more than an imperfect representation of each of their own stirps."

This is a definite expression of the notion that the germinal cells of the offspring are in direct continuity with those of the parents. The antithesis between the "soma" and the chain of sex-cells is emphasized.

The history must also include Nussbaum, who called emphatic attention to the very early differentiation and isolation of the sex-elements to be observed in some cases. The theory both of Jaeger and of Nussbaum is that of a continuity of germinal *cells*. The theory of Weismann is more strictly that of the continuity of germinal *protoplasm*.

The idea of a continuity of *germ-cells* may now be summarized more definitely:—

(1) At an early stage in the embryo, the future reproductive cells of the organism are often distinguishable from those which are forming the body.

(2) The latter develop in manifold variety, and lose almost all likeness to the mother germ.

(3) The former—the reproductive rudiments—are not implicated in the differentiation of the "body", remain virtually unchanged, and continue the protoplasmic tradition unaltered.

(4) As the sex-cells of the offspring are thus continuous with the parental sex-cells which give rise to it, they will in turn develop into similar organisms.

This fact of the continuity of reproductive elements is obviously of fundamental importance. If a fertilized egg-cell has certain characters, a, b, c, x, y, z , it develops into an organism in which these characters, a, b, c, x, y, z , are expressed; but, at the same time, the future reproductive cells are early set apart, retaining the characters a, b, c, x, y, z , in all their entirety, to start a new organism again with the same capital. Balbiani, who was not influenced by theoretical considerations, observed in the development of the blood-worm or *Chironomus* (an insect) that the future reproductive cells were isolated before even the blastoderm was completed; that is to say, at a stage when hardly any differentiation had