

Brooks shares, there are several subsidiary hypotheses in the modification which he has proposed. It is in *unwonted and abnormal* conditions that the cells of the body throw off gemmules; the *male* elements are the special centres of their accumulation; it is the ovum that keeps up the *general* resemblance between offspring and parent.

The theory of "Pangenes" advocated by De Vries in 1889 is hardly in any sense a rehabilitation of Darwin's, since it rejects the hypothesis of "transport", and incorporates the distinctively modern conception of germinal continuity. It has often been urged that the hypothesis of pangenesis involves not one but many suppositions—that it is just as difficult to understand why a gemmule should reproduce a cell like its own origin as to understand the entire problem, and so on. Detailed criticism will be found in the works of Galton, Ribot, Brooks, Herdman, Plarre, and others. It is enough to emphasize the comparative gratuitousness of any special theory whatever, a paradox which is explained in the succeeding section.

As far back as 1849 Owen pointed out in his paper on Parthenogenesis that in the developing germ it was possible to distinguish between cells which became much changed to form the body, and cells which remained little changed and formed the reproductive organs. This was probably the earliest distinct suggestion of the modern theory of germinal continuity, but Owen seems to have virtually abandoned it later on.

In 1866, in his classic *Generelle Morphologie*, Haeckel emphasized the simple and yet fundamental fact of the material continuity of offspring and parent. In a historical note upon the distinction between the "personal" and "germinal" parts of an organism, Rauber states that the distinction was proposed by Haeckel in 1874, and by himself in 1879.

Jaeger stated the doctrine of germinal continuity very clearly and concisely at an early date (1878):—"Through a great series of generations the germinal protoplasm retains its specific properties, dividing in

The Doctrine
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