

variation in special instances would at least allow us to accumulate many interesting life-histories of families of living creatures, and might some day lead to important generalisations. Mr Galton has himself made an attempt to modify and further elaborate the hypothesis of Pangenesis;¹ and Mr William Bateson has given us,

¹ Mr Galton in 1871 advanced certain objections to the theory of Pangenesis, based upon experiments made with the transfusion of blood, and tending to show that blood cannot be the carrier of the germs or gemmules. See a paper read before the Royal Society, March 30, 1871. Darwin did not think Pangenesis had "received its deathblow, though from presenting so many vulnerable points, its life is always in jeopardy" ('Life of Darwin,' vol. iii. p. 195). In 1875 Mr Galton published an article in the 'Contemporary Review,' vol. xxvii. p. 80, entitled "A Theory of Heredity," in which he put what may be termed the atomic theory of life and its propagation into a form in which it might serve as a working formula for statistical research. It is a mistake to look upon any such theory as a biological, mechanical, or historical explanation. For statistical purposes only the scantiest data need be borrowed from biology. There is, however, one very important biological conception which Galton introduced, which is not contained in Darwin's "provisional hypothesis," and which somewhat later became celebrated mainly through the writings of Prof. Weismann. This is the distinction between the germ-plasma and the body-plasma, the former preserving the continuity of life and inheritance, whereas the latter forms the character of the individual, and is probably sterile. In fact, Galton, from a purely statis-

tical point of view, anticipated—as several other naturalists did, from various other aspects—the theory of the differentiation of the germinal from the personal portions or aggregates of life units in the "stirp" or sum-total of organic units of some kind which are to be found in the newly fertilised ovum. Prof. J. A. Thomson ('The Science of Life,' p. 147) gives the following succinct statement of the conception of "stirps": "First. Only some of the germs within the stirp attain development in the cells of the 'body.' It is the dominant germs which so develop. Second. The residual germs and their progeny form the sexual elements or buds. The part of the stirp developed into the 'body' is almost sterile. . . . The continuity is kept up by the undeveloped residual portion. Third. The direct descent is not between body and body, but between stirp and stirp. The stirp of the child may be considered to have descended directly from a part of the stirps of each of its parents; but then the personal structure of the child is no more than an imperfect 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 emphasised."