

the theory of the unceasing flow of protoplasm, by which the body cells were supposed to throw off "gemmules" which pass into the germ cells. This view is to account for the direct action between the germ cells and soma. The present conception of the complex organization of the germinal material adds to the difficulty of conceiving an inter-relation between the body and its progeny.

Notwithstanding the fundamental nature of the problems of the inheritance of acquired characters, with their accompanying variations, and all the evidence which has been presented for their solution, they still remain unsolved. Each theory advanced fails to satisfy one or another of the conditions necessary for absolute proof. For twenty two generations Weismann cut off the tails of mice at birth, yet no change resulted. So far as the inheritance of mutilations and disease influences are concerned, the evidence is of a negative type, and thus inconclusive. The effects of acclimatization, changed food supply, and temperature on the germplasm of the new individuals can be explained in more than one way. Even in the case of instincts, which have been termed as inherited memory, and which produce the strongest evidence for the inheritance of acquired characters, an alternative explanation is possible.

The views of Lamarck and Weismann have their strong features as well as their weak ones, and the followers of each school have been practically forced to concede in the ideas of one another in regard to the evolution of species, the course of which is guided by the adaptive directions of environment.

The problem of acquired characters, after all, concerns the higher animals only. In the lower animals and in plants, no clear distinctions exist between body and germ cells, as we find in higher phyla. Every cell is capable of reproduction in the lowest animals, and modifications produced in a cell by environment are passed on to the next generation. If it be true that the potentialities of living substance can be changed in lower organisms, it seems reasonable also that such influences may exist in the higher animals. It is the sheltered position of the germ cells which ordinarily seems