

48.  
Weismann  
on heredity.

the three great generalisations mentioned above. Out of the three ideas of pre-formation, after-formation, and the directive principle, the three generalisations, namely, the cellular theory, natural selection, and metabolism, and the enormous number of facts collected by microscopists and naturalists of all kinds, many more or less ingenious theories of life have been put together. None of them has obtained, though some have had a very marked influence on biological science, and even on popular thought. Of these Prof. Weismann's theories of heredity are probably the best known. Without entering upon the enormous array of biological facts which have been marshalled by supporters and opponents alike, it will be of interest to point out the novel aspects and lines of reasoning which have come into prominence through the voluminous discussion belonging to this subject. They were prepared before the appearance of Weismann's writings by the changed and enlarged conceptions which the discoveries of the middle of the century introduced concerning the general phenomena of Life, Death, and Disease. Three distinct convictions regarding these three main aspects of the living portion of creation have been forced upon the scientific and popular mind. First, we have the modern doctrine of the ubiquity of organisms and germs, at least so far as our planet is concerned: beyond this sphere we can say that we know no more of the existence of living matter than past generations. Secondly, we have the generally recognised doctrine that spontaneous generation of living out of not-living matter is unknown and inconceivable under such conditions as