Chapter XI.

Heredity.

A Modern Study—The Facts of Inheritance—Problems of Heredity—Theories as to the Uniqueness of the Germ-cells—The Doctrine of Germinal Continuity—Elaborations of the Idea of Continuity—The Problem of Reconstruction—Inheritance of Acquired Characters—Criticisms of Weismann's Position—Filial Regression—Galton's Law of Ancestral Inheritance.

A Modern Study.

It must be admitted, even by the most pessimistic, that the biologists of the Victorian era have made some progress in the understanding of heredity, or the relation between successive generations. But if we measure what we can honestly say we *know* in regard to heredity by what we should like to know, we must confess that the serious study of the subject has just begun.

The great steps in the Darwinian era have been: (*a*) the exposition of the doctrine of germinal continuity, (*b*) a more precise investigation of the material basis of inheritance, (*c*) the growth of scepticism as to the inheritance of acquired characters, and (*d*) the application of statistical methods which have led to the formulation of the law of ancestral heredity and the like. The most important names are those of Weismann and Galton, and the most fruitful methods have been (1) detailed microscopic analysis as to the cellular phenomena of reproduction, and (2) statistical researches as to the facts of inheritance. What seems most needed at present is a series of exact experimental studies in breeding, continued through a series of generations.

The facts of Inheritance.

The general facts of Inheritance were first adequately discussed in a classic work by Lucas (1847–1850). At present they may be summarized as follows: (1) The general likeness between parent and offspring is a commonplace of observation, condensed in the familiar saying, "Like begets like". As variations which make the offspring different from the parent