occurred, a portion of the unchanged ovum was insulated to continue the constancy of the species.

In this aspect the reproductive cells form a continuous chain, and the reproduction of like by like is as natural and necessary as it is in the Protozoa. No special theory is required. Similar material in similar conditions produces similar results. But a serious difficulty besets this doctrine. Such an early appearance and insulation of the reproductive cells, continuous with the very ovum itself, does indeed occur, and where it does this part of the problem of heredity is simple. Early origin of special germ-cells, distinguished from those of the general "body", has been observed in leeches, *Sagitta*, thread-worms, many Polyzoa, *Moina* among crustaceans, not a few insects, Phalangidæ among spiders, and the Teleostean fish *Micrometrus aggregatus*, while indications of the same early separation are not wanting in a number of other organisms. But it must be distinctly allowed that in most cases it is only after differentiation is relatively advanced that the future reproductive cells make their appearance. Thus we have to pass from the cases of the continuity of the germinal *cells*, to the more general, but less objective fact of the "continuity of the germ-*plasm*".

Weismann's Theory.—Weismann, like the previous investigators, reached his conclusion independently. In the fact of continuity between the reproductive elements of generations, the solution of likeness must be found. But a direct chain of cellular continuity has been demonstrated only in a few cases. The solution which is proposed for the majority of cases is as follows:—

(1) "In each development a portion of the specific germ-plasm (*Keimplasma*), which the parental ovum contains, is not used up in the formation of the offspring, but is reserved unchanged for the formation of the germinal cells of the following generation."

(2) What is actually continuous is the germ-plasm "of definite chemical and special molecular constitution". A continuity of germinal cells seems to be relatively rare; a continuity of intact germ-plasms is constant.

(3) This germ-plasm has its seat in the nucleus, is extremely