

any more than notochord and backbone are; and he extended this to the nervous system of vertebrates—a difficult path which Dr. Beard has followed.

The newest departure in embryological investigation has been along experimental lines, and there is no better Experimental Embryology. illustration of modern biological activity. Within a few years a vast literature has accumulated, an important journal—Roux's *Archiv für Entwicklungsmechanik*—has arisen as a specialized record of research, and there is already a text-book (Haacke's) on the subject. The investigations are still too novel and incomplete to be securely appreciated, but there can be no doubt that they have shed fresh light on old problems, and that they are full of promise. It seems fair to associate one name in particular with this new movement—that of Wilhelm Roux, the keen-witted author of *Der Kampf der Theile im Organismus* (1881)—The struggle of parts within the organism,—but his work has been ably criticised, or supplemented, or extended, as the case may be, by Oscar Hertwig, Born, Chabry, Driesch, Herbst, Morgan, Wilson, and others. The experimental work is especially of two kinds: (1) subjecting developing ova to new conditions of chemical medium, pressure, gravity, temperature, &c.; (2) puncturing or isolating certain cells of the segmenting ovum and observing results. The results have immediate relation to several problems: (a) the morphological problem of cell-lineage, (b) the physiological problem of immediate growth-conditions or body-physics, (c) the theory of development, and (d) the influence of the environment in inducing modifications.

There are at present two main theories of development—the mosaic theory of Roux and Weismann, and the Theories of Development. anti-mosaic theory of Hertwig and Driesch. In their extreme forms these two theories are irreconcilable, but with mutual concessions it seems possible to combine them.

According to the mosaic theory, the cause of differentiation is to be found in the nature of cell-division, which is supposed to be *qualitative*, sifting out different characteristics into the two daughter-cells. Thus if the