

cells among each other, and their resemblance to those of an unfecundated egg, provided we are aware that the changes which it undergoes in its earlier growth essentially belong to a period anterior to the final influence fecundation has upon its development.

As soon as it is once admitted that the so-called nutritive yolk, as contrasted with the embryo, is an essential part of the embryo itself, there is no longer any possibility of tracing a distinction between an embryo, as it stands out from the yolk at a later period, and the yolk, as embryo, before any morphological difference is introduced between the two, their differentiation being clearly the result of a continuous process, initiated very early in the youngest ovarian eggs prior to the first copulation. It follows, therefore, that the egg itself is, in the strictest sense of its physiological importance, a new being, an embryo, originating in the ovary as a single, specific cell; and that, from its earliest appearance, it is to be considered as the new animal in progress of formation. From this point of view, the names egg, embryo, young and adult animal, are only convenient appellations to indicate the different periods of growth of one and the same being.

Thus far, we have limited our remarks to facts which are within the reach of our investigations. But the inquiring mind is unwilling to stop at the limits assigned to its progress by the circumstances of the moment. May we not ask, therefore, what takes place at the time when an egg, the germ of a new being, originates? Apparently it is only a concentration of an exceedingly small mass of oleagino-albuminous substance, in the form of a sphere. But, in reality, it must be a very different thing; for that sphere is, from the beginning, the centre of an action that differs from the functions going on in any other part of the parental organism. It is alive, and at once proceeds to develop, in a regular manner, towards a definite end. From the beginning it assimilates to itself, and for its own ends, the material supplies it receives from without. Whatever may be said to the contrary, a principle of life is now at work in the egg which is totally

shapes the layers of its more superior portions into the cerebro-spinal systems of organs of the body, as any other portion; or that it is in fact an organ in progress of development, and more or less permanent, according to the animal in which it originates. Indeed, we are inclined to believe, that, upon further investigation, this portion of the body will be found never to disappear entirely, but only to assume successively various guises, either diminishing its bulk and rotundity and lengthening out into the intestine,

as in Mammals, Birds, and the scaly Reptiles,—or, as happens in some Batrachians, according to Wyman, coiling very early into an intestine,—or, as Remak has shown in *Rana esculenta*, moulding itself at first into a thick cylindrical digestive canal, which subsequently lengthens and becomes coiled at the expense of its own thickness,—or simply lengthening, and at the same time diminishing its transverse diameter, as in *Abramis* (*Cyprinus*) *Blicca* (Baer, *Entwickel. der Fische*, etc., q. p. 81: fig. 9-20.)