

latter, and, still later, plunges into its substance, till the whole yolk mass becomes a great network of bloodvessels, (Pl. 18, fig. 4,) a vascular area, hollowed out in the lamellar partitions (Pl. 17, fig. 1) into which the yolk cells have consolidated themselves. Now if segmentation obtains in a part of the vascular area, and is still apparently progressing externally, it is at least reasonable to expect to find it operating eventually wherever that area may exist; especially as the latter bears with it the identical uniform arrangement and modifications of yolk cells which are found within the circle of its primary development. So confident are we of the soundness of this theory, that we look earnestly forward to another breeding season for an opportunity to demonstrate it in an indisputable series of ocular proofs.

SECTION VI.

THE WHOLE EGG IS THE EMBRYO.

Since we have shown in former pages, that the embryonic disc, and its extension, the germinal layer, are formed by the original apposition of yolk-cell mesoblasts minutely subdivided, and that these yolk cells are all the same through the whole yolk mass from centre to surface, even to the very walls of the superficial Purkinjean vesicle; and, moreover, since it is proved that segmentation obtains beyond the embryonic disc, and very probably all over and throughout the whole yolk, it is evident, that, in the egg of the Testudinata at least, the region around the Purkinjean vesicle cannot be separated from the more exterior or inferior mass which constitutes the greater bulk of the vitelline substance, and that the last cannot be homologous to the contents of the Graafian follicle,¹ which bears no part whatever in the formation of the embryo, but is totally exterior to the mammalian egg. Again, as will be shown hereafter, that portion of the yolk which is originally excluded from the primary circumscription of the outlines of the embryonic disc cannot be separated from the animal as an appendage,² for it very soon

¹ Meckel von Hemsbach (*Zeitschrift für Wissenschaft. Zool.*) and Thompson (*Cyclop. Anat.*, London, 1854, article "Ovum," page 77) deny that the whole yolk mass of the Birds and of the scaly Reptiles corresponds to the egg of Mammals. The first of these writers compares the Purkinjean vesicle alone to the mammalian ovum, and the yolk surrounding this vesicle to the corpus luteum; whilst the latter author

includes the granular centriola, along with the vesicle imbedded in it, as homologous to the mammalian egg, and the yellow yolk to the tunica granulosa of the Graafian follicle. With this latter view Dr. Martin Barry (*Phil. Trans.*, London, 1839, p. 309, note, and 370) is strongly inclined to coincide.

² It has been customary heretofore, among most authors, to designate the yolk sac as a reservoir of