

the organs within the embryonic disc begins (Pl. 11, fig. 1, a^1) before its outlines are well marked by the deepening of the circular furrow. However, we may mention that it is usually the fact that the embryonic disc becomes sharply bounded before any change comes over it.

By the time the embryonic disc has become well defined, (Pl. 10, fig. 12-15,) there is already a difference noticeable in the nature of the cellular components of its upper and of its lower side. Those above are by far more uniform in size, and smaller (Pl. 9a, fig. 34, a) than those below; they form a thin, uninterrupted layer (Pl. 9e, fig. 1, a) of so smooth a surface as to give to the embryonic disc that polished aspect mentioned before, while those below are coarser and darker, (Pl. 9a, fig. 34, b ,) still evincing a cumulated arrangement, and, in some instances, even restrained by the parental envelope.¹ These lower cells form by far the thicker layer (Pl. 9e, fig. 1, a^1). The upper layer (a) is continued over the whole surface of the yolk; but here it is not quite so thin as on the embryonic disc. The lower layer (a^1) follows the upper, (a), but is not so distinct from the subjacent more mobile yolk mass (y/k); yet it is sufficiently separated from the yolk to be easily recognizable, even though it forms an intermediate stage between the two. The thinner or upper layer (a) more properly deserves the name of germinal layer, and the other, the thicker or lower, may be considered as a subsidiary layer, (a^1) the upper surface of which is constantly furnishing supplies to the thickness of the upper layer, (a), and is continually added to from below, (y/k), for a certain length of time, which varies according to the part of the whole developing mass to which it belongs. We have mentioned before in passing, that, in the vascular area, there is a constant addition to this layer, even up to the end of the period of incubation.

The Amnios. We have already noticed the initial steps toward the formation of the amnios, when pointing out the circular furrow which bounds the embryonic disc. This furrow (Pl. 9e, fig. 1, c ; Pl. 10, fig. 12, 13, 14, a , 15) is not formed by a scooping out of the thickness of the germinal layer. It is, on the contrary, the result of an actual depression of its whole thickness (Pl. 9c, fig. 1, c , c); so that, if viewed from below, that region would appear to have a circular semicylindrical ring raised upon its surface. This is the first indication of the folding of the germinal layer to form the amnios.

But soon this uniformity yields to a different tendency. The edge of the embryonic disc becomes suddenly depressed at one point, so that, viewed from above, it appears as if a narrow segment of a circle had been cut away from its sides (Pl. 11, fig. 1, a^1 , 6, a^1). A longitudinal section of the embryonic

¹ See p. 519-522, and Pl. 9a, fig. 7, 9, and 34.