

of this membrane, the primitive egg-cell wall, and have here only to speak of its permanence up to a certain period, (Pl. 9a, fig. 18, 18a, c,) when the egg has attained to a size of about one tenth of an inch in diameter, beyond which, very probably, its function is supplied by the already well developed zona pellucida, whilst it is gradually resorbed; at least, we have observed no trace of its existence after this time. Of its changes, from the time of its origin till its disappearance, little can be said of such a thin, apparently structureless membrane, beyond the mere notice of the gradual thickening and defining of its outline, till there is no doubt left of its perfect distinctness, as a layer, from the yolk which it incloses.¹

*The Embryonal Membrane.*² On the surface of the yolk, in an egg hardly visible to the naked eye, there is a layer of minute, singly mesoblasted cells, (Pl. 8, fig. 12, d; Pl. 9a, fig. 13, d,) apparently not yet connected with each other. On account of their size, and of their color, which resembles that of the yolk in the intermediate neighborhood, it is no easy matter to recognize these cells at first sight; but when once seen, and their peculiarity noted, their presence may afterwards be readily detected by a practised eye. As to the mode of their origin, there appears to be but one explanation, which is, that they are peculiarly modified yolk cells. In confirmation of this explanation we may mention their outline, which as yet is thick,

is now called vitelline sac is the primitive cell wall of the primitive ovarian egg.

¹ Thompson (article *Ovum* in *Cyclop. Anat.* p. 78) compares the early yolk sac of Birds (which he hardly admits as a true *membrana vitelli*, notwithstanding Meckel's researches) to the zona pellucida of Mammals, (the true primary vitelline sac of these animals, interior to the zona, being totally ignored by him; see also p. 50, where he describes the zona as the original yolk sac, and the only one existing in Mammals,) and the secondary yolk sac (the true zona) to the tunica granulosa of viviparous Vertebrates. The secondary yolk sac, he infers, is derived from the cellular lining of the Graafian follicle; but, since at the same time he makes it merely the exterior stratum of a concentric series, the inner of which, he insists, become the true yellow yolk granules, (the primary yolk sac, zona pellucida, as he calls it, having disappeared by deliquescence,) it looks very much as if he had mistaken the development of the "*membrana investiens*" for that of the *membrana vitelli*. Again he says, (p. 78,) "the external edge of the layer of

prismatic cells, the length of which is considerably increased, is now surrounded by a narrow, pellucid space inclosed by a double line, presenting the appearance as if a small part of the bases of these cells had been fused together in a homogeneous film." This, probably, is the true zona pellucida of Birds; he having failed to see the *membrana vitelli*, (already disappeared, as he thinks,) situated between it and the layer of prismatic cells, from which latter he supposes, but without direct research, that the "pellucid space," because of its traces of hexagonal markings, is an immediate development.

² Until more extensive investigations have proved the identity of this membrane with the "*Keimblase*" of Bischoff, or the "*Umbüllungshaut*" of Reichert, which is called "investing membrane" by some English writers, it seems best, in order to avoid confusion, to give it a distinct name. That of "embryonal membrane" appears the most acceptable and significant. It can hardly be an objection that it recalls the embryonic envelopes, for it is in the end more or less intimately connected with them.