found inclosing their mesoblasts (Pl. 9a, fig. 9, *a*, *b*) after segmentation has completed its purpose, and even at the time the cephalic hood has begun to form (fig. 34, *b*). Almost to the last moment before losing its identity as one of the many belonging to a particular heap, each mesoblast can be recognized and distinguished from the waxy bodies, the entoblasts, which it usually incloses in greater or less numbers, (Pl. 9a, fig. 9, *a'*,) by the peculiar mesh-like condensation of its viscid contents upon the inner surface of its wall (fig. 9, *a''*). This may be seen, even in those which rival in minuteness the cells of a much further advanced embryonic disc. (Compare fig. 9, *a'*, with fig. 8).

Not only the mesoblast, but the ectoblast also, gives the peculiar reaction formerly noted in regard to the cells of the interovarian egg, when water is applied; for, just as in these latter, the ectoblast swells up, and, finally bursting, after the transparent fluid contents in which the mesoblasts float have condensed into a swarm of minute oscillating particles allows them to escape, discharging at the same time its multitude of mesoblasts (Pl. 9a, fig. 7, 7a).

Going deeper into the substance, and more toward the back of the embryonic disc — or, more properly speaking now, the back of the embryo — and the outer surface of the germinal layer, the heaps of mesoblasts become less and less distinct, owing to the closer application of the wall of the ectoblast against the mulberry-like surface of the mesoblasts, (Pl. 9a, fig. 4,) so that the mesoblasts of adjacent heaps interlock with each other to the confusion of the outline of each mass. Finally, almost at the outer surface of the yolk, the ectoblasts have disappeared entirely, (Pl. 9a, fig. 5a,) though the mesoblasts still remain in heaps, with more irregular outlines than is usual. The disappearance of the ectoblasts is so gradual, so imperceptible, that we have good reason to believe that they are slowly disintegrated and liquefied, the result mixing with the surrounding fluid. The now free heaps of mesoblasts extend their boundaries in an irregular manner, inosculating with each other by the intermixing of their most superficial components (fig. 5, 6). Even here the mesoblasts retain their entoblasts, sometimes to the number of three or four in each, (fig. 5a,) and withal exhibit their vitelline character. The same may be

occurs not only on one side, but all over the surface, of the yolk, for the very reason that these identical "segment balls" are found upon the whole superficial extent of the egg, (Pl. 9a, fig. 4, and 34, *b*,) and, to a certain depth, inwardly. But we think this total segmentation may be proved upon totally different premises, so that what we have just said above may be left for the consideration of those who would hold both to the partial segmentation of the yolk and to the development of a wall around the segment masses, as is said to occur in Birds. By commencing our investigation of the subject with these "segment balls," and tracing their development in a retrograde series, beginning with Pl. 9a, fig. 9, and receding through fig. 7, 4, 34, *b*, 36–36c, 37–37d, 38–38c, 40–40l, we find that the first steps toward their formation are taken in the midst of the great yolk mass, the very spot from which segmentation is excluded by the advocates of partial and superficial segmentation in the classes of Birds and Reptiles.