

the embryonic disc is sharply defined, not only the same homogeneity, but also the same size, that obtained when they were in the ovary. We would recall this fact again, in order to allude more directly to the similarity in the conduct of the yolk mass in the oval eggs of *Cinosternoidæ* with that of the families which have globular eggs.

Immediately after the embryonic disc has become sharply defined, we perceive a remarkable change in that portion of the yolk mass which lies just below the embryonic area (Pl. 9b, fig. 1,  $a^1$ , 4,  $a^1$ , 4a,  $a^1$ , 5,  $a^1$ ; Pl. 11, fig. 1a). At this spot, a small quantity of clear fluid makes its appearance. Below, it rests on the great mass of yolk, ( $y$ ), and above, presses against the under-side of the embryonic disc ( $e$ ) and its continuation, the germinal layer. Seen from above, the space which this fluid occupies appears dark, unless light is admitted through the side of the egg; but in profile it is as clear as glass. This, however, is not seen very readily, unless the slightly opaque germinal layer that surrounds the whole egg is broken through. The embryonic disc is also rendered more distinct and conspicuous by the presence of this dark background. At the same time, a slight enlargement of the yolk sac is noticeable. From these facts, we at once infer that the clear fluid under the embryonic disc does not arise from a liquefaction of a portion of the yolk mass, but that it is introduced from without, and is the cause of the increase in the size of the yolk sac. We are confirmed in this belief when we look at that portion of the albumen which overlies the embryonic area,<sup>1</sup> and there find that a more or less circular portion

<sup>1</sup> The manner in which the albumen is absorbed into the yolk sac in the eggs of Birds seems not to have been observed with sufficient care. This process is very peculiar, and stands in direct relation to the embryonic area, and to the increase of the yolk sac. Nothing is easier than to ascertain the precise amount of albumen that is absorbed into the yolk at successive periods of incubation, and the changes of form which the yolk sac undergoes in consequence of this absorption. It is only necessary to boil the eggs slowly, when the albumen discloses at once the changes it has undergone. Its absorption is at first distinctly circumscribed to the area above the embryonic disc; and the limits within which it takes place are so sharply defined, that, when the albumen is hardened by heat, there may be seen, above the growing germ, a hollow, truncated cone, (Pl. 9d, fig. 5,) the broad base of which is turned

towards the shell, while its truncated apex, turned towards the yolk, corresponds in width to the diameter of the embryonic disc. As the embryo increases, the cone appears gradually flatter and flatter and more truncated, until the broad embryonic disc occupies the whole space in the upper part of the egg immediately below the shell membrane. The changes which the form of the yolk sac successively undergoes are not less characteristic: at first spherical, it is gradually more and more flattened within the limits of the embryonic area, until, by the time the area equals the diameter of the yolk sac, it is very nearly hemispherical, the flattened side being only slightly raised in the centre. I intend to publish, on another occasion, a series of drawings representing these interesting changes, as observed in hens' eggs; meanwhile I would seriously call attention to these facts, as they show clearly that the changes which the albu-