## CHAP. II. FOLDINGS OF THE EMBRYONIC DISC.

within its outlines, and there only, that, in the order of Testudinata, the characteristic features of the type of Vertebrates are developed. From the beginning, the mode of formation and growth of this disc distinguishes the Turtles from the five lower classes of this type which have neither unnios nor allantois, namely, the Myzontes, the Bony Fishes, the Ganoids, the Selachians, and the Amphibians,<sup>1</sup> though they belong to the same branch of the animal kingdom to which the order of Testudinata also belongs. Among the classes just mentioned, nothing like an amnios or allantois occurs, and the embryonic disc bears also different relations to the other parts of the egg. Thus we see, that, at the outset, this order exhibits characteristic features, distinguishing it from the classes below it, and showing its relation to the other orders of its class, and to the classes above it.

Though prevailing universally, it is a mistaken view that the outlines of the embryonic disc are the boundaries of the animal, and that the yolk beyond and below is a mere appendage to it. We have already endeavored to show the fallacy of this theory in a former section,<sup>2</sup> where it has been shown that the whole egg is, even from its first appearance, just as truly the animal as that part of the egg which is circumscribed within the region of the embryonic disc, when this disc becomes distinct from the rest of the yolk. We shall, therefore, speak hereafter of the whole egg as being the animal, and of those portions of the egg which are called the embryonic disc, the embryo, the annios, the allantois, the vascular area, the area pellucida, the yolk mass, etc., as being so many different organs, or groups of organs, of one great organism. What we have said in a former section warrants us in the belief that we have taken the proper view of this subject; and, under these impressions, we will now proceed to investigate the formation, growth, and changes of the various organs which characterize this type of the vertebrate series. For obvious reasons we will begin with the embryonic disc, as definite organization first makes its appearance there.

The Embryonic Dise. The area over which the embryonic disc extends is not so much marked by peculiarities of its own, as by the circular furrow (Pl. 10 fig. 14, a) of the germinal layer, which lies immediately beyond it; although it is true that between the two there is a slight difference in thickness, and in the intimate nature of their cellular constituents. However, the prominent feature that separates these two regions from each other is this intermediate furrow, which, as will soon be seen, is of great significance in relation to the development of an important organ, the amnios. The arching of the embryonic disc, like a blister on the surface of the yolk, renders the yellow color of the latter less visible, and the whiteness of the former more prominent. In some instances, the formation of

1 See p. 187.

2 See Sect. 6, p. 528.