

## SECTION VIII.

## FORMATION AND DEVELOPMENT OF THE ORGANS.

While tracing the general progress of the development of the young Turtle, we have described with sufficient fulness the mode of formation and the earlier metamorphoses of many of the organs;<sup>1</sup> and it would therefore be useless to repeat here many of these descriptions, now that we are about to consider the different organs and systems of organs separately. It will be sufficient for our purpose to refer to the figures and pages, in which much that might be required here has already been said, and then to fill up whatever blanks may be left, in order to illustrate the serial development of each organ. As we proceed in the description of these organs, we shall refer to the pages where they are mentioned in connection with the whole embryo; and in this way every student may be enabled, not only to follow the progressive growth of each organ, but also to appreciate the relations which every one bears to every other, at each successive stage of its special development.

*The Brain.* The formation of the primitive furrow, which is the earliest step taken to lay the foundation for the brain and spinal cord, has already been described (p. 543, Pl. 9c, fig. 3, *b*, fig. 3a, *b*, fig. 4, *b*, fig. 4a, *b*; Pl. 11, fig. 3, *b*, fig. 4, 5, *b*). This primitive furrow soon becomes a deep gutter, of variable width and depth. In the head it is a very broad channel, from the beginning of its formation; but soon the germinal layer rises on each side of it in the form of a long ridge, in consequence of which the channel (Pl. 12, fig. 1a, *e*<sup>1</sup>; Pl. 9d, fig. 1, *e*<sup>1</sup>, *e*<sup>2</sup>) is deepened. Gradually the ridges rise higher and higher, till the channel is as deep as it is broad; they then fold inwardly toward each other till their edges meet, first at one point, (Pl. 9d, fig. 1, *e*<sup>3</sup>) and finally along the whole length of the head, (Pl. 12, fig. 3, *e*<sup>1</sup>) thus forming a large, closed cavity (see p. 547). At this period, the cavity occupies the whole breadth of the head, as well as its whole length; the vertebral layer not being developed, except along the lower side of that organ (see Pl. 9d, fig. 1, *f*<sup>1</sup>).

At the posterior end of the head, the brain gapes broadly open (Pl. 12, fig. 8, *e*<sup>2</sup>, fig. 9, *e*<sup>2</sup>, fig. 9a, *e*<sup>2</sup>) for a considerable distance, as far back as just above the heart, where it again closes over rather suddenly as it meets the spinal tube

<sup>1</sup> Comp. p. 543-578.