

There is an early period in the development of the Testudinata,<sup>1</sup> when the embryo presents the most striking resemblance to that of any other allantoidian Vertebrate. At that age the embryo has not the remotest resemblance to a Turtle. It is then slender, and comparatively much longer than wide. (Pl. 6, fig. 28-32; Pl. 13, fig. 2-9; Pl. 14, fig. 2a, and 3-9; Pl. 16, fig. 6; and Pl. 18a, fig. 2 and 14.) There is no sign of the characteristic shield; the whole body is as elongated as that of a young snake of a corresponding age;<sup>2</sup> the head is very large in comparison with the size of the animal; the eyes, especially, are large and prominent (Pl. 14, fig. 3); the trunk is broader forward, and tapers gradually backward to a long tail; the limbs, when first formed, project only as small rounded paddles. (Pl. 6, fig. 28-32.)

When the shield makes its first appearance, it is only a fold in the skin, extending on both sides of the main axis, and converging in front of the body and over the tail. (See Pl. 15, fig. 13; and Pl. 6, fig. 26 and 27.) The body being still very long, the outline of this fold, when seen from above, has an ovate form. The tail of the *Caouana*, so short afterwards, is still as long as in the *Amydæ*, and its feet not longer than those of the *Amydæ*. (See Pl. 6, fig. 24-27.) At this age all Turtles resemble one another. I have seen *Chelonioidæ*, *Chelydroidæ*, *Trionychidæ*, *Cinosternoidæ*, and a number of species of *Emydoidæ* in this condition of development, which could not be distinguished one from the other.

Gradually the sides widen, so that the preponderance of the longitudinal over the transverse diameter is considerably lessened, and the characteristic features of the Turtles are brought out distinctly. (See Pl. 6, fig. 10-12, fig. 22-25; Pl. 9c, fig. 9-12, 18, 19, and 22, 23; Pl. 14, fig. 1; Pl. 15, fig. 4-6; Pl. 16, fig. 5; and Pl. 18a, fig. 2. See also Rathke, *Entw. der Schildkröten*, Pl. 10, fig. 8 and 9.) At this stage of the development the young of all the Testudinata have still the same form, to whatever family they may belong; but, as far as a dorsal shield is characteristic of Turtles, they are unmistakable Turtles. That no family difference can as yet be perceived is plain from the fact, that the figures here referred to represent the young of *Chelonioidæ*, of *Chelydroidæ*, of *Cinosternoidæ*, and of *Emydoidæ*.<sup>3</sup> The most remarkable features of this age consist not only in the perfect identity of the form, of the limbs, and of the shield, but also in the greater width of the anterior part of the shield, and in the great preponderance of the head.

But now great changes take place. Henceforth the young of different fami-

<sup>1</sup> The earliest stages of development are described in Part III. with fuller comparisons with the other allantoidian Vertebrates.

<sup>2</sup> Compare Rathke, *Entwickelungsgesch. d. Natur*, Pl. 1, fig. 3 and 4, with my fig. 4. Pl. 14.

<sup>3</sup> Pl. 6, fig. 22-25, represent the embryo of *Thalassochelys Cuviana*; Pl. 6, fig. 10-12, that of *Ozotheca odorata*; Pl. 9c, fig. 9-12, that of *Chelydra serpentina*; and Pl. 9c, fig. 18, 19, and 22, 23, that of *Chrysemys picta*.