

Testudinata undergo with age, not only because I have been able to obtain a much larger number of specimens, but chiefly because I have had ample oppor-

carapace of a *Trionyx*, and that like this, it lives almost exclusively in water. This is also the reason why, in spite of the much larger number of young than of adults, (which exist no doubt among these animals, as in most species throughout the animal kingdom,) the young Emydoidæ are still so rare in our museums, and almost unknown to zoölogists. Nothing could prove more directly this difference in the mode of life of the young and the adult than the fact, that though *Emys insculpta* is so common in the neighborhood of Lancaster, about forty miles from Boston, that I have at times collected over one hundred in an afternoon, aided by a few friends, I have never yet been able to obtain a single young specimen of the first year, even though a whole school of young men were called to aid in the search. Professor Baird has found the same difficulty in obtaining young *Emys rugosa* for me, and though he offered a high price for them, he could not obtain more than a single specimen of the first year. And yet this species is so common, that, in the season, hundreds are daily brought to the market of Washington.

By and by the bulk of the body becomes more concentrated in the middle; the lungs of land species, being larger in proportion than those of aquatic ones, (see above, p. 283,) require a larger development of the carapace in height; and *Emys picta* of the seventh year, which is now ready to go from time to time on land, assumes at this age the shape of the Nectemyds. Then it approaches more and more the rounded form of the land Turtles; this is, however, never reached in this species, though it is actually the case in a higher genus of Emydoidæ, the terrestrial *Cistudo*.

The retrograde development of the tail, as shown in our table, furnishes another proof of the truth of these comparisons. At first, in the hatching Turtle, the tail is vertical, compressed laterally, and very long in proportion to the size of the animal, indeed, nearly as long and powerful as in *Chelydra*, and, like the tail of a Tadpole, serves as a kind of

rudder, strong enough to direct the course of that living flat-bout with its four paddles. Thus, as in the flying Bird, the tail is to be looked upon as a locomotive organ. But afterwards it does not grow in the same proportion as the body; and while in the young it was one of its most important parts, it is, on the contrary, in the adult, a mere appendage to the body, weak and useless for the locomotion of that heavy bulk. I may add here, that the tail is also rather long in *Trionychidæ*; and that in the family of *Chelydroidæ* it is most powerful, and clearly subservient to locomotion, in darting the body forwards or in turning it over when on its back; while in *Cistudo* it nearly disappears, or at least loses all significance.

Again, the legs, in their development in the young as compared with the adults, show similar metamorphoses, though not in the same degree in our species as in some others, *E. guttata* or *insculpta*, for instance. Being really broad paddles in the young, they become stiffer and more compact in the adult, to suit their habit of walking on the land, as well as swimming in the water. In *Cistudo*, the highest Emydian, they have reached the form of feet adapted to walking, instead of broad paddles, and so we find the slender fingers soldered together. In one species of this genus, one of these fingers has even faded away to a single phalanx, which does not reach beyond the skin, or only shows, when young, a very small nail projecting sideways.

We now proceed to a comparison of the horny plates of the young *E. picta* with those of the adult. I would also refer to the Plates I., II., III., and IV., which exhibit accurate drawings of the young of a number of other species of our Turtles. Pl. XXVI. represents, besides, several young *Ptychemys rugosa*. (*Emys rubriventris*.) and Pl. XXVII. adults of the same species in different varieties of color. A glance at the horny plates of both shows a great difference in form. The following changes take place in the development of these plates in *Chrysemys* (*Emys*) *picta*. The plates of the dorsal side of this