

the spermaries and ovaries are situated inside of it. The spermaries are oval, and surrounded by a convolution of seminiferous canals, the lumen of which is large, whilst their walls are often provided with a large amount of black pigment.¹ The spermatic ducts open into the cloaca on the top of a papilla near the opening of the urinary organs. The penis is single, large, and retracted into the cloaca, as in Crocodiles, while in Snakes and Lizards it is double, and lies outside of the cloaca.² The form of the penis, particularly its end, exhibits great diversity in different families, the extremity being simple in Testudo and Emys, for instance, while it is branching in Trionyx. The ovaries are very much as in Birds. The number of eggs which are matured in one year is, as in Birds, very different in different families, genera, and species. The eggs of the ovaries are largely provided with bloodvessels. The oviducts begin with a tender but large tuba, often provided with beautifully folded margins. In relation to the reception of the eggs through these tubæ, we have come, by numerous observations, to the strange result, that eggs from the left ovary are often received in the right tuba, and vice versa. This fact is clearly demonstrable. We have observed, in a large number of cases, that there were more corpora lutea to be found in the ovary of one side than eggs in the oviduct of the same side; and the eggs which were wanting in this oviduct were found in that of the other side, on which there accordingly appeared fewer corpora lutea than there were eggs in the oviduct. Whether this occurs only among Turtles, or, as we would rather believe, also in other Vertebrata, we do not yet know. During their passage through the oviduct, the eggs are provided with a thick, hard, calcareous shell, as in Crocodiles, while in all other Reptiles we find only a leathery shell. In connection with this, Lizards and Snakes have, while hatching, a sharp tooth, to cut through the shell, as with a knife.³ In Turtles, we find only a hard tubercle upon the snout, by

¹ We do not find ripe semen in the seminiferous ducts of the young *Emys picta* (of which we had a large series from the first year upwards) before it has attained the seventh year of its age.

² Stannius has established a primary division, among the Reptiles, upon this difference, and that other peculiarity of a free movable suspensorium for the lower jaw in Saurians and Ophidians, which, on the contrary, is immovable, and soldered by sutures to the skull, in Crocodiles and Turtles; *Handbuch der Zoologie, Amphibien*, Berlin, 1856, p. 5 and 7. He there calls the Reptiles, *Amphibia monopnoa*; while the two large sections, founded upon the characters mentioned above, are his *Strepto-*

stylica, embracing the Ophidians and Saurians, and his *Monimostylica*, the Crocodiles and the Turtles. Though we acknowledge a nearer relation between Snakes and Lizards, and a greater difference between Saurians and Crocodiles, than is generally admitted, we cannot see, on the other hand, a real relationship between Turtles and Crocodiles. There is, at least, no more affinity between them than between Saurians and Turtles; and, though a group comprehending Turtles and Crocodiles may be convenient in an anatomical point of view, it seems to us at the same time artificial.

³ This tooth was discovered by Johannes Müller, (see his *Archiv für Anatomie und Physiologie* for