

till late in life. The fourth pair extend backward under the pelvis; their front edges extend pretty directly inward, their hind edges more backward, so that they are broad where they meet under the pelvis. The odd bone is long and slender, and arches forward and overlaps the second pair. The bones of the first pair are small, and bent nearly to a right angle; one of their limbs rests against the odd bone, while the other reaches almost directly forward. A thick derm underlies all this bony framework, and spreads out before it, under the shoulders, as far as the end of the body, and, in *Trionyx* proper, behind it, under the hind legs. A considerable portion of this derm, on and immediately around the bony frame, is ossified; but the larger part, including a space in the middle, is not. There is, on that account, some mobility in the plastron, so that when the animal takes breath it yields and expands. The microscopic structure of the unossified derm has already been illustrated above.¹

As stated before, the ossification of the shield is very irregular, as it undergoes a great variety of changes during its growth. There is, however, a regular alternation between its growth and that of the true skeleton, with which it is connected, now the one advancing,² now the other. The ossification is much less fixed and determined, both as to extent and position, than in the other families of the sub-order. These peculiarities, and their relation to the general form, are still subjects of investigation, and consequently their value as family characters is not fully determined. This much however is certain, that the ossification goes on more slowly, is not carried so far, is much less intimately connected with the true skeleton, and is more varying, than in the other families of the sub-order.

As shown above, the vertebral column is nearly at the same level in the sacral region as within the scapular arch. The pelvis and shoulder apparatus have nearly the same height; they take the proportions of a cross section of the body, that is, they are low and wide spread. The scapula is long, as also are the coracoid and the acromion; but the scapula reaches far outward, and the acromion from thence inward, so that the arch is stretched out, as it were, sidewise, and the shoulder joints are carried close to the edges of the body. The sacrum is broad, the iliac bones are nearly parallel, and the pelvis is as broad across the hip joints

¹ See Chap. 1, Sect. 5, p. 263.

² The regular alternation which is observed in the increase and enlargement of the bony derm and of the true skeleton, especially at the ends of the ribs, is an additional proof that the shield is not to be considered as formed by a dilatation of the ribs only, but chiefly by the ossification of the derm. The differences noticed by Owen, in his paper on the fossil

Trionyx, (Transact. Paleont. Society, 1849,) as far as they relate to the extension of the ribs beyond the solid carapace and to the form of its rim, are not specific, but may be observed in a series of specimens of the same species, in different stages of ossification. I have satisfied myself of this by a careful comparison of fourteen skeletons of *Aspidonectes spinifer*, and *muticus*, of all ages.