

shown emerging, and the tenth is cut through at its ganglion. Here we have a nearly perfect section of the occipital arch, the upper part being a little imperfect, and the notochord is seen to be bridged over by cartilage in the occipital condyle (*nc.,oc.c.*).¹

Sixth Stage. Embryos two-thirds ripe; total length, 3 inches; length of head, 7 lines.—(a.) “Chondrocranium.”—The primordial or cartilaginous skull is now quite perfect, and some bony tracts have appeared in it. It is now perfectly Chelonian in every respect, and a certain cartilaginous tract,—viz., the alisphenoidal,—which remains in one form or another in other types, has here been absorbed, and this is correlated with the modification of certain investing bones and visceral bars, such as is seen in no other type.

This type is, indeed, very instructive, for whilst showing its Chelonian nature very early in the embryo, it retains a number of characters throughout the whole embryonic period that are very generalised for a reptile, being such as we see in their perfection in the anamniotic “Anura.”

Thus, whilst these shielded types are the most curiously modified of all the cold-blooded Sauropsida, they are built up, so to speak, upon the foundation of the underlying low Batrachian forms, the stigma and stamp of which they, in spite of their higher nature, never lose, yet they are all conformed to a pattern, as new as it is perfect. Another thing to be noted is this, namely, that the Batrachian characters are developed late, after the skull has undergone all its principal metamorphoses; or rather, in metamorphosing, these characters appear, last for a considerable time if they are not permanent, and in some things are life-long.

In like manner the Batrachians themselves, whose descent has to be counted from two lines, namely, from the Lamprey-tribe and the tribe of the Sharks and Skates (Marsipobranchii and Elasmobranchii), in these the suctorial fish is pre-potent and dominates the larval stage; but when the later metamorphosis begins, then the higher Selachian characters appear. These, however, are not retained in their simple uncombined form, nor are they kept to their old functions, but they form unwonted combinations for special purposes in these higher organisms. The “old things” of the Lamprey tribe are partly done away, and partly put to new purposes, in new shapes; partly absorbed, and partly transformed.

And so it is in the Chelonia and in all ascending and improving types; the materials are the same as in low kinds, but “the old order changeth, yielding place to new.” Of this we may be certain, that if the structure and development of the extinct types could be known—a thing impossible and only imaginable—every modification of

¹ The reader is asked to compare the three sets of sections together, and these also with the solid sections and dissections. Many things studied by me in the sections were not drawn, and others that are drawn are neither lettered nor described, for I have been careful not to overload the subject; but the chondrocranium, with the most important parts of the nervous centres and nerves, have been selected for portrayal and description. Several such memoirs as the present would be needed for an exhaustive account of the development of all the organs, even of the cephalic region only, to say nothing of the rest of the organism.