PART IV. THE THERIA.

The Superficial Facialis Musculature.
The Stylohyoideus Muscle.
The Posterior Digastric Muscle,
The Mandibular Muscles.
The Branchial and Hypobranchial Muscles.

In Part I of this work, dealing with the fishes, instead of describing the muscles of each species before proceeding to those of the next, each was described for the whole of each group. The object was to focus attention upon muscle groups and entities, rather than the musculature of the fishes themselves.

It appeared to the writer that the muscular systems of the vertebrata had been evolved, by adaptive modification, from some generalized fish type, and quite early it appeared that a deal of this adaptive modification might be observed in the conditions presented by the elasmobranchian cephalic musculature.

Therefore, the first portion of this work was devoted to establishing muscle groups and muscle entities, and at the same time, to an inquiry as to whether the varying complexity of the arrangement and modification of these, essentially similar, groups and entities in the process of functional adaptation in conformity with or response to skeletal changes within the fishes shed any light on their origin from a more generalized condition.

In that first part of the work the objective in view was deemed best attained by contrasting and comparing the muscles of the several segments, and it is believed that the comparisons made justified the belief that one could recognize, in the musculature of the mandibular and hyoid segments, certain of the muscles of the branchial segments, but more or less highly modified in adaptation to the changed form and/or function of the skeletal arches to which they are attached or otherwise related.

Passing to the Tetrapoda, it was decided that the study of the further modification of these muscles would be best carried out by observing their variation in relation to the whole of the muscles of each form studied. Having established the groups and entities, it became necessary to study their modification, and the range of their variations relative to other muscles and to the skeleton.

In this last section of the work there will be a return to the first method of study, firstly, because so many Therian types have already been fully described that it would be a work of supererogation to present the descriptions of a further series, and secondly because we have reached our goal. That goal has been to study the evolution of the musculature of the vertebrata with a view to determining the origin of those of the Theria, and especially that of the Mammalia. Clearly, then, it is not the function of this work to describe the wide variation of the Therian cephalic muscles, but simply to compare representative examples with those of the lower vertebrata.

Looking back, we recognize that in our passage from the fishes to the amphibians, it was the branchiate forms amongst the latter that presented us with the chain of beacons which assisted us in our passage along the stream of evolution. True, the chain was far from complete, many guiding lights appeared to be missing and others were hard to understand, but this chain of beacons made possible and profitable a passage which must have been much more difficult and much less satisfactory had we been called upon to pass directly from the fishes to the abranchiate amphibia.

Our further journey down the stream, from the amphibian territory to that of the Reptilia, was no more difficult than that from the fishes to the Amphibia. A surprising number of the guiding lights shone clearly, and with a good deal of confidence we have arrived at the farther confines of the Saurian territory, feeling that we have been able to chart the main current fairly correctly.

Briefly, it is believed that the evolution of the cephalic muscles, from the elasmobranchian type to the saurian, has been followed step by step and has been found to be relatively gradual and without markedly abrupt changes. It is now believed that the change from the saurian to the therian arrangement is really no more abrupt. The Mammalia have a remarkable and complex set of facial muscles which, at first sight, appear to be entirely new muscles, without anything to represent them in the lower forms.