

THE EVOLUTION OF THE ANAMNIOTA.

By

H. LEIGHTON KESTEVEN, D.Sc., M.D., Ch.M.

Bullahdelah, New South Wales.

Contents.

Introduction and Thesis.

The Elasmobranch Age.

1. The Pregnathostomes.
2. The Evolution of the Jaws.
3. The Evolution of the Lungs.

The Teleostome Age.

1. The Elasmobranchs and the Chondrostei.
2. The Crossopterygii, Dipnoi and Amphibians.
3. The Dipnoi and the Amphibians.

The Evolution of the Cheiropterygium.

Anomalous Structures and Resemblances.

"Since the days when Gegenbauer and Thatcher and Balfour propounded their views on the origin of the limbs, vertebrate morphology has not been standing still. Great increases have been made in our knowledge. Now, in considering the working hypotheses of these earlier days of morphology, we should remember that increase in our knowledge may greatly alter our point of view, and it seems in my humble opinion that it is conducive to progress, not so much to search for new detailed facts which may bolster one or other of existing hypotheses, as to endeavour to make an impartial survey of the facts as we know them and then to consider carefully whether the body of facts so surveyed seems to suggest a working hypothesis drawn up on the original lines or one drawn up on somewhat different lines."¹

Thus, without asking his permission, I call upon Professor Graham Kerr to provide an introduction to a paper on speculative morphology.

That which follows is an attempt to harmonize the facts of development and adult anatomy of the Anamniota. In no case, I am well aware, would I be justified in writing Q.E.D. at the end of any section or argument. Basing conclusions on unavoidably scanty circumstantial evidence, the student of evolution who adopts a dogmatic attitude or positive language, such as that italicized by Professor Kerr at the foot of page 278, betrays an unphilosophic mind or a partisan conviction. None of our working hypotheses can be proven, they are but statements of probabilities, and, as such, then, the conclusions arrived at herein are presented.

My conclusions are embodied in the diagram below, so that in it I present, as it were, a thesis which it is intended to defend in the following pages. The two most radical conclusions which it is intended to convey by the diagram are:

1. The Chondrostei are bony Elasmobranchs.
2. The Dipnoi are primitive amphibians.

¹ Kerr.—*In* The Work of J. S. Budgett, 4to., Cambridge, 1907, pp. 277-8.