CONTRIBUTIONS TO THE CRANIAL OSTEOLOGY OF THE FISHES.

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The Skull of *Neoceratodus forsteri*: A Study in Phylogeny.

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INTRODUCTION AND ACKNOWLEDGMENT.

Recent work on the development of the Dipnoi, ganoids, and amphibians, and the increase of our knowledge of the constitution of the stegocephalian and cotylosaurian skulls, throw much light on the interpretation and significance of the structure of the adult skull of *Neoceratodus*. That this was so very soon became apparent to me whilst engaged upon a general survey of the skull of *Neoceratodus* in connection with a paper on the evolution of the Anamniota[1] and it was then decided to investigate the matter in more detail at a later date.

In the following pages I have recorded the observations made and the conclusions arrived at after comparing the various structures with those of the fishes and primitive tetrapods. This work has been made possible by the kindness of Dr. Thos. L. Bancroft, of Eidsvold, Queensland, who forwarded me three adult heads carefully preserved in alcohol; to him my thanks are tendered.

From one of these heads I have been fortunate in preparing a chondrocranium in a perfect state of preservation, denuded of every last scrap of tissue and of the investing bones, the latter being, of course, available for study as separate disarticulated bones. This was effected by over two years' careful maceration in alternating changes of calcium hypochlorite solution and water. Another of the skulls was dissected with a view to studying the relation of the nerves and more important blood vessels to the cranium. The third was divided along the sagittal plane; one-half was dissected to expose the bones in situ, the other was more rapidly macerated with a view to determining the extent and relations of the subnasal and labial cartilages. I failed to find the labial cartilages, and have reason to believe that the structures so named are fibro-cartilaginous, as are the subnarial cartilages, and, like them, devoid of serial homological significance.

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[1] Kesteven.—REC. AUSTR. MUS., xviii, 1931, pp. 167-200.