

INTRODUCTION

I N T R O D U C T I O N

Geologically, the origin of reptiles could be traced as far back as the days of the early amphibians. No fossil history of animals has provided so much interest and is so fully equipped with so much wealth of information as the rise and fall of the reptiles. There is consensus of opinion that the earliest forms distinguishable as reptilian, sprung up in the carboniferous period from some branch of the labyrinthodont amphibians. If this opinion regarding the origin of reptiles from primitive amphibians, many of which possessed an armour of heavy dermal bony plates be correct, then, the presence of similar plates in Chelonia, of bony scales and the gastralia in Crocodilia, is easily comprehensible and accountable. The rise of reptiles from these humble beginnings, their ascent to supremacy and the establishment of the "Golden Age of Reptiles" extending throughout the whole of the Mesozoic, and their rapid decline during the Cretaceous Period, nevertheless, make a fascinating story. The tempo of the story is continued with rise of their triumphant descendants, the birds and mammals, which not only proved worthy of the heritage but reached lofty heights on the tree of Organic Evolution.

The causes of the decline of the great Mesozoic reptiles which lasted more than a hundred million years, however, remain obscure though the sudden changes brought about in the configuration of the earth along with certain adverse

climatic changes thus effecting a biological inequilibrium with respect to vegetation and animal life, might well be a probable explanation. It might also be a possibility that the smaller and cleverer animals were in a better position to face such dynamic circumstances of environmental changes. Whatever be the causes, the fact remains that a multitude of reptiles, many of them giants, were sacrificed at nature's alter and preserved in the limbo of obscurity, leaving behind only five orders of reptiles of which one is represented by a mere dwindling remnant. This enactment of life in the universal drama of change referred to above has placed before us the surviving reptiles as unique and basic morphologico-physiological patterns for elucidating the paths of evolution of birds and mammals. The need therefore of comprehensive studies of a morphologico-physiological nature on this important group of vertebrates, cannot be overemphasized. Among the reptiles again, the Chelonia which are the direct descendants of the cotylosaurs and are highly modified, yet primitive, and least understood, are of special interest.

By saying this much, my aim is to make it clear that my investigational field is Reptilia as a whole, but at present I confine myself to certain aspects of their study which have through various circumstances claimed priority and in many cases with only particular reference to the Chelonia.

This study on reptiles has been first undertaken in collaboration with Dr. J. C. George. The preliminary reports on

the results published so far have been referred to in their appropriate contexts and also in the Bibliography.