# THE EVOLUTION OF HORN-LIKE ORGANS

by

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(With 16 Figures)
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## INTRODUCTION

In the evolution of mammals horn-like organs have appeared a number of times. We find them assuming a great variety of forms; small, skin covered pedicles in the Okapi (*Okapia*), large horn curls in sheep (*Ovis*), or many-pointed, bizarre bony paddles in moose (*Alces*). Horns originated on different areas of the head and grew from several tissues. We find horns on animals as distantly related as *Cervus*, a deer, and *Mylogaulus*, a miocene rodent. Also, we find horns evolving independently a number of times in closely related groups, such as in the ruminants and the rhinos. It is inherent in our concept of the selective force in evolution that these organs, whatever their shape, size or position should have been an important, adaptive feature of their owner. Yet the evolution of horns and antlers has been a puzzling problem. COLBERT (1955, p. 398) writes: "on the fact of it, we would think that one good pair of horns would enable a species of antelope to protect itself and spread widely. Yet in Africa there are literally dozens of antelope species with an astonishing variety of horns. There are straight horned Oryx, the twisted-horned elands, the spiral-horned Kudus, the curve-horned sable antelopes, the recurve-horned wildebeest and so on. And many of these antelopes seemingly live in the same environment. What, therefore, are the advantages of a Kudu's horns over an eland's horns, or *vice-versa*? These are questions still to be answered."

Since the time of COLBERT's (1955) writing, behaviour studies on ungulates have thrown new light on the function of horns. In particular WAL-

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Fig. 1. Horns evolved in great variety of form and size. Despite this diversity there are some main functional types towards which quite distantly related mammals converged. Such types are (I) (a) *Eobasileus* and (b) *Protoceras*. (II) (c) *Tetraceros* and (d) *Giraffokeryx*. (III) (e) *Arsinotherium*, (f) *Brontops* and (g) a dicerathere. (IV) (h)