

EVOLUTIONARY RATES AND TRENDS
IN RHINOCERUSES

BY HORACE ELMER WOOD, II¹

The rhinoceroses are not merely one more example of an evolutionary

condition. Like the horse, they belong to the order Perissodactyla.

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paralleling the horses, but making only the progress made by the horses from Early to Middle Miocene.

The baluchitheres were by a wide margin the largest of all land mammals. By the time of their extinction in the Early Miocene they had de-

mammalian line, during the Oligocene epoch. Their legs had elongated and their feet had emphasized the middle toe rather more than the contemporaneous Early Miocene horses. Their teeth, at the same time, compare more nearly with latest Eocene than with any Oligocene horse

growth in molarization of the molars and in the retention of lower canines

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medium) crowned teeth, represented by the living Sumatran and black rhinoceroses and most fossil forms. The white rhinoceros, the only living grazing form, has high crowned teeth. *Elasmotherium*, presumably a grazer, surpassed any horse in height of crown, being rivalled only by a few rodents. A few lines of rhinoceroses have even gone in for speed: *Diceratherium* and *Hyracodon*, or, as the extreme form, *Triplopus*, with its gazelle-like figure. The development of bulk has been much more

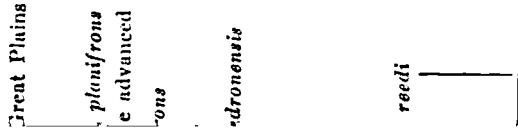
typical with the elasmotheres and the hyracitères or the most primitive

examples. A semiaquatic fluviatile habitat like that of the hippos has been adopted twice independently, in the amynodonts and in *Teleoceras*; the former developed hippo-like canine tusks, and the latter, a more extreme barrel-like torso than the hippo.

The rhinoceros horn, which may be described as a high cone of appressed fibers (like hair without follicles), is unique in the animal kingdom. Besides this original invention, which was never lost, have there been

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for this interpretation. The accompanying table shows the distribution in time and space of all known American amynodonts. No actual intergradation has yet been established in this sequence except between *Amyndon advenus* and *A. intermedius*, where there is either stratigraphic or morphologic intergradation, according to one's concept of species in paleontology. If species are defined strictly by their morphology,



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one specimen of *A. intermedius* is known from Uinta B and several members of *A. advenus* have been collected from a quarry in Uinta C. On the other hand, if species are defined partly in terms of their geologic levels and (purely theoretical²) opportunities to interbreed, then the two species can be separated stratigraphically but overlap somewhat in structure. There is a virtually unitary succession of progressively more specialized types at each ascending geologic level. Except for the occurrence of *Amynodon reedi* (the most primitive species) in Uinta B as well as in the probably earlier Poway conglomerate of California, and the somewhat aberrant Californian *Amynodontensis*, this series is a made-to-order