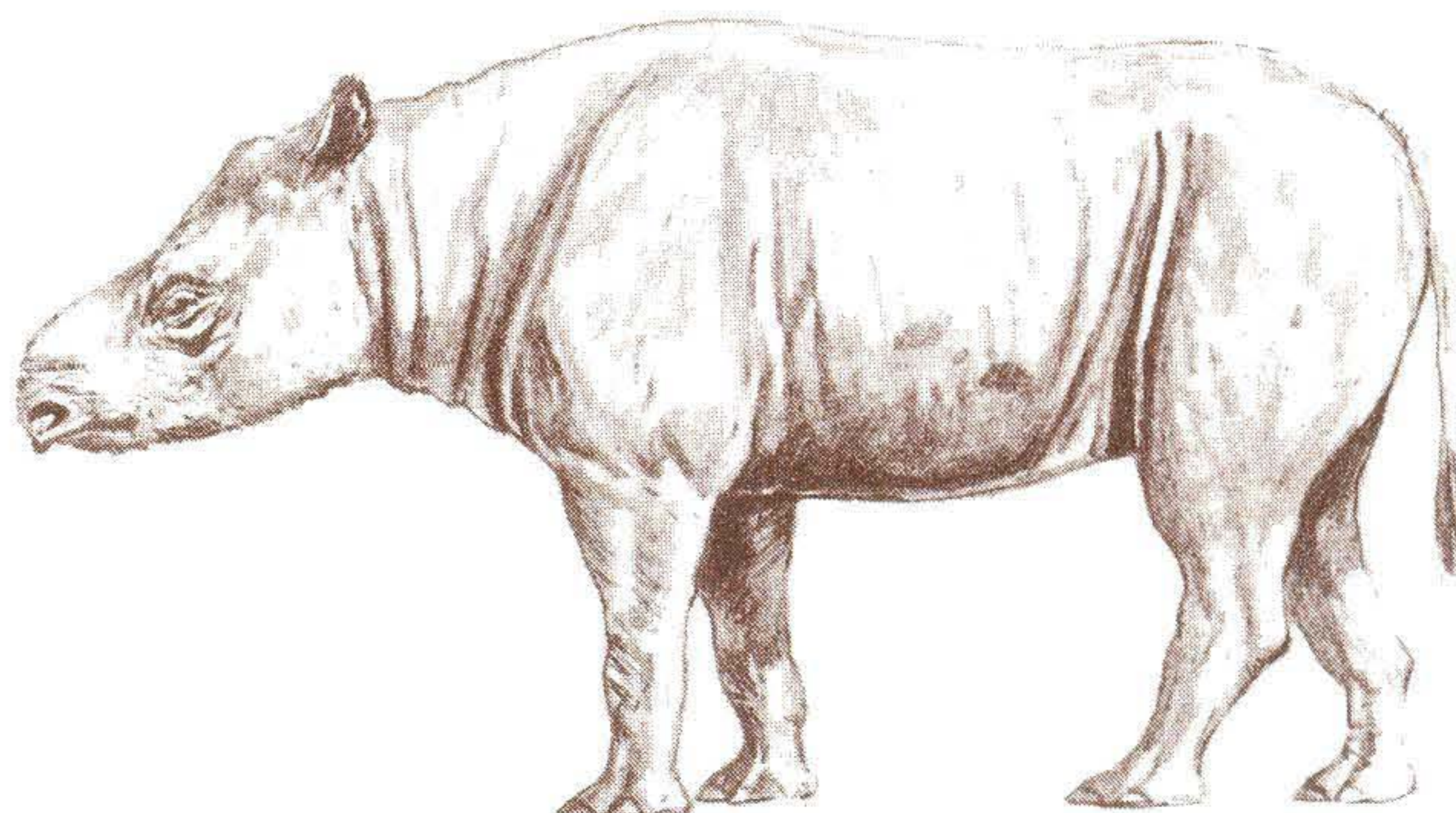




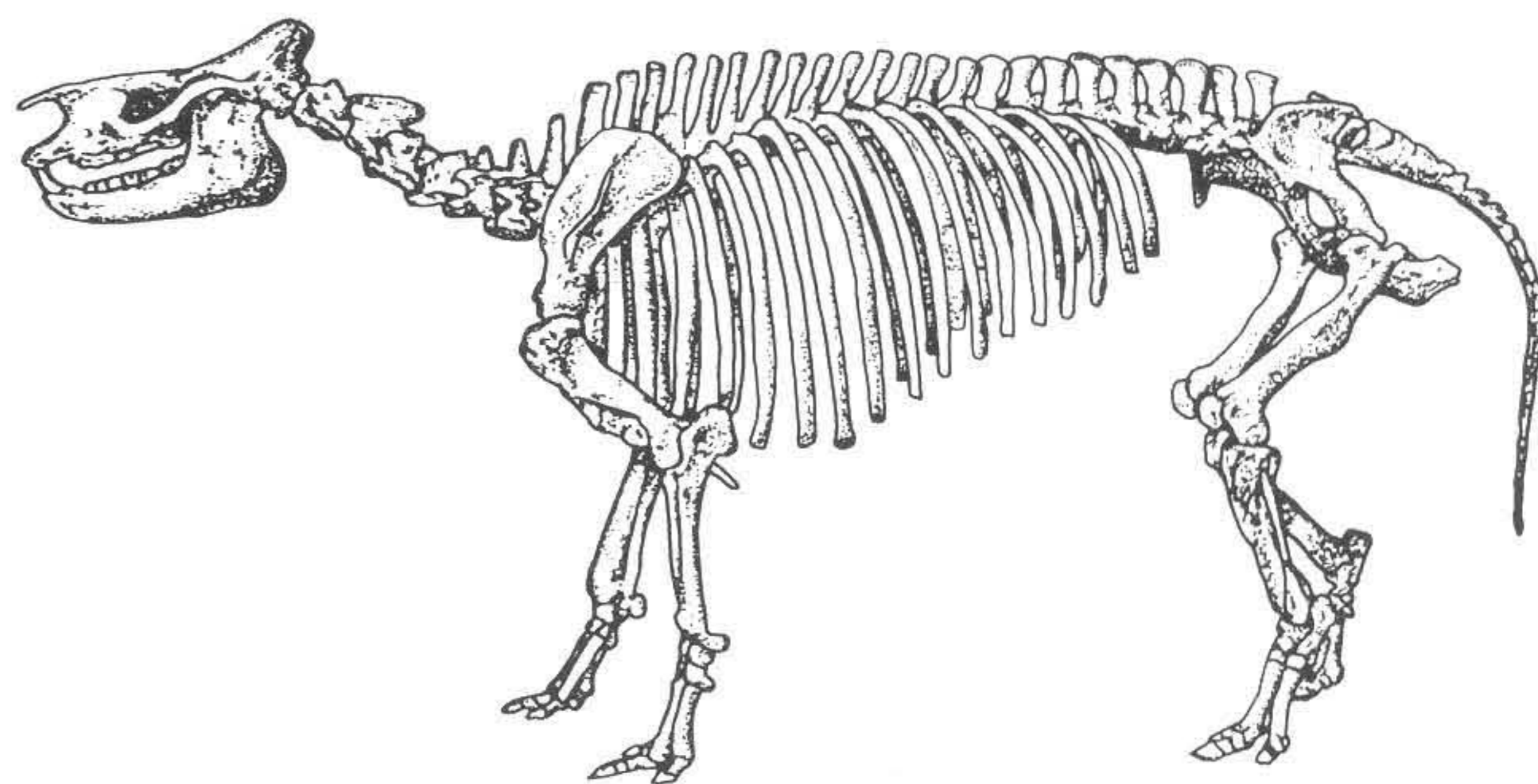
The five species of living rhinoceroses are to be found in tropical Africa, India, Sumatra and Java. The Great Indian rhinoceros (*Rhinoceros*) and the White African rhinoceros (*Ceratotherium*) may each approach 4 tonnes in weight, the largest land mammals today after the elephants. They live in woodland savannah, grazing and browsing and each has two nasal horns. Other rhinoceroses are rather smaller, with one or two horns and are forest browsers. During the Pleistocene there was a large diversity of rhinoceroses in different parts of the world. The woolly rhinoceros (*Coelodonta*) was widespread from Britain to eastern Siberia, but never crossed Beringia into America. It is clearly depicted in the cave paintings of Palaeolithic man with its two large horns and long shaggy coat. The nasal region was supported by an ossified medial septum; the incisors were absent and the cheek teeth very high crowned. Like the woolly mammoth, the woolly rhinoceros was highly adapted to grazing the temperate and tundra grasslands. Another Pleistocene rhinoceros was *Elasmotherium* from the steppes of southern Russia; this was a very large rhino with a skull 75 cm long. Instead of a nasal horn, it had an enormous 2-metre-long horn originating on the forehead, which has given rise to its alternative name, the giant unicorn. The incisors were lacking and it would have used its lips to pluck grasses. The cheek teeth have very complex enamel patterns, cementum and extremely high crowns; it was the most specialized grazer evolved among the rhinoceroses.



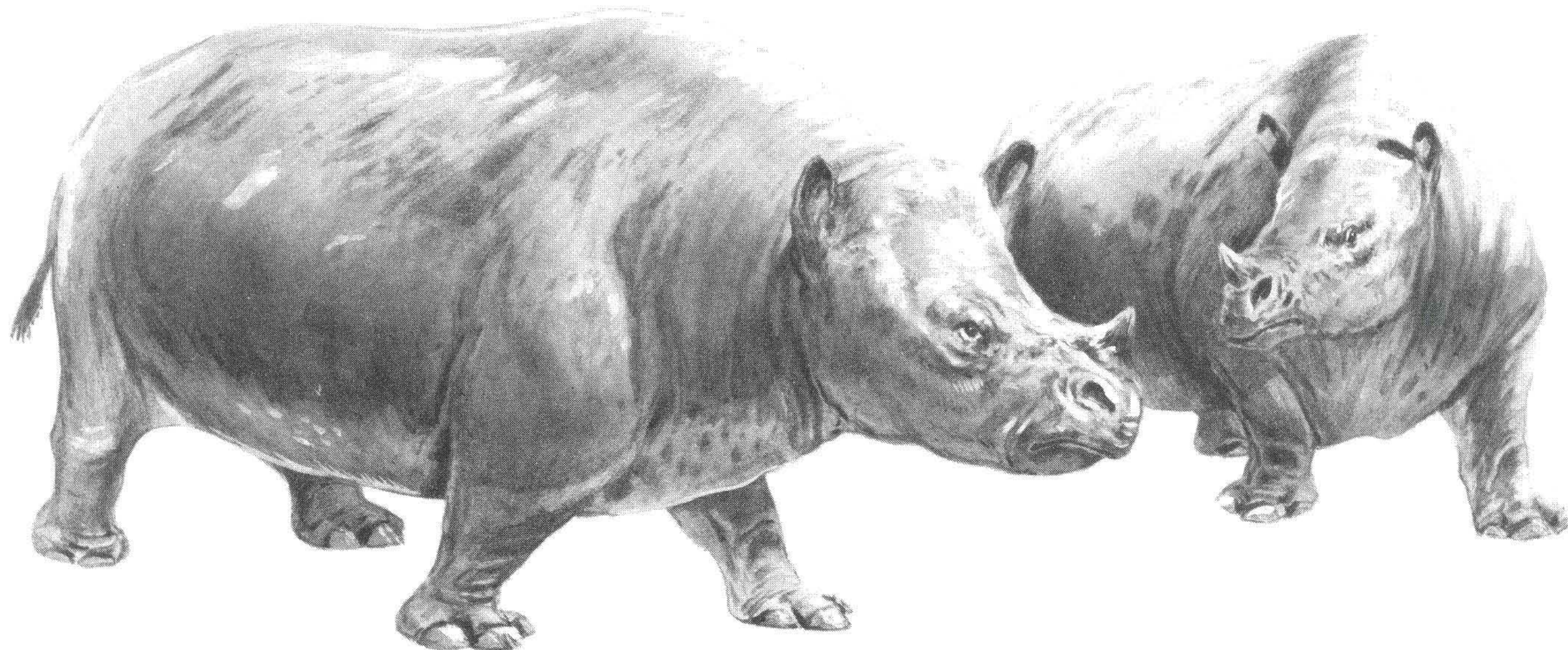
Cave painting in red ochre of a woolly rhinoceros by late palaeolithic man from Font-de-Gaume, southern France.

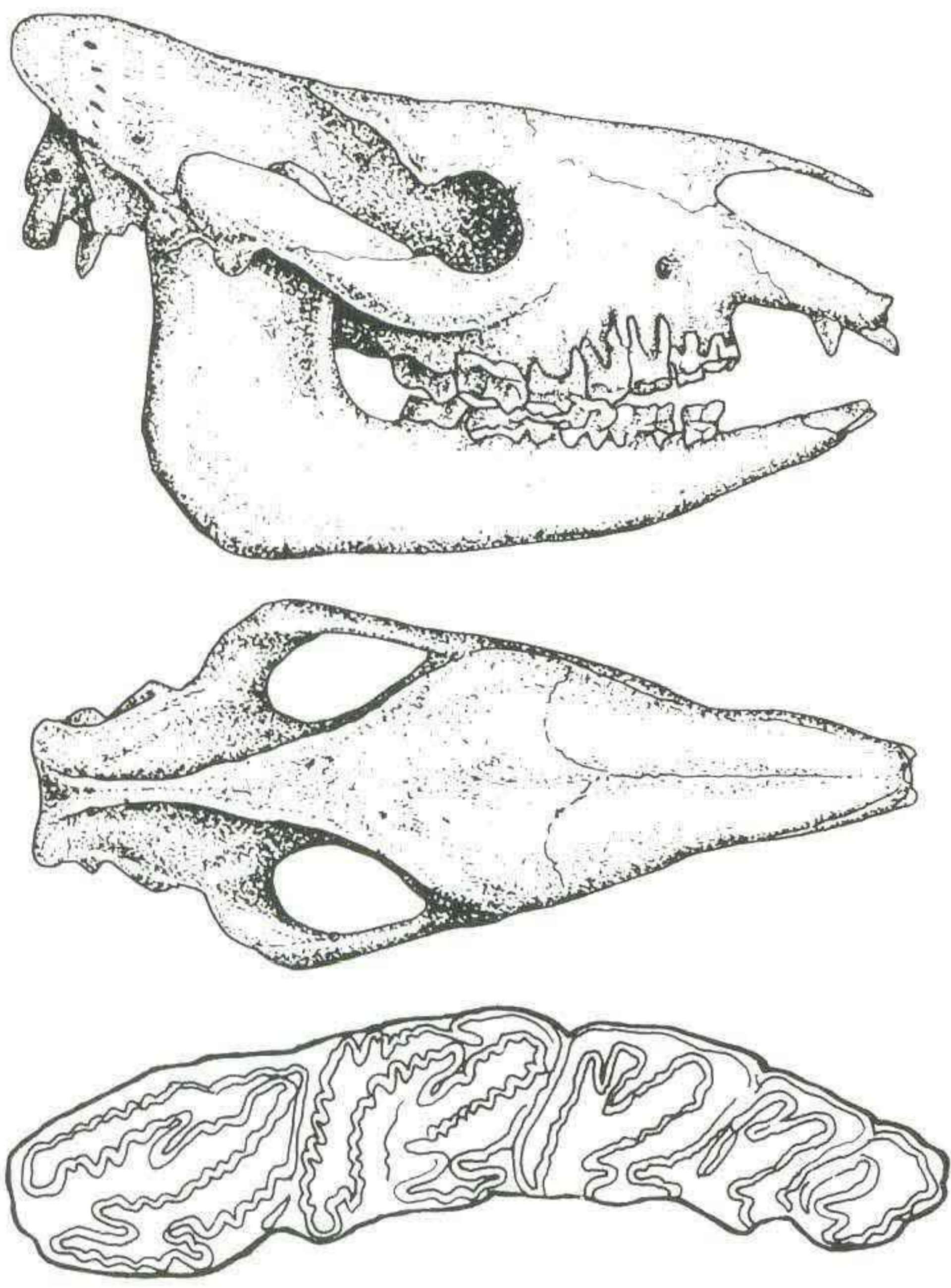


Above; restoration, and below, skeleton of *Caenopus* (length 2.5 m) and skull (length 50 cm), an early true rhinocerotid from the Oligocene of North America. (After Osborn & Scott).

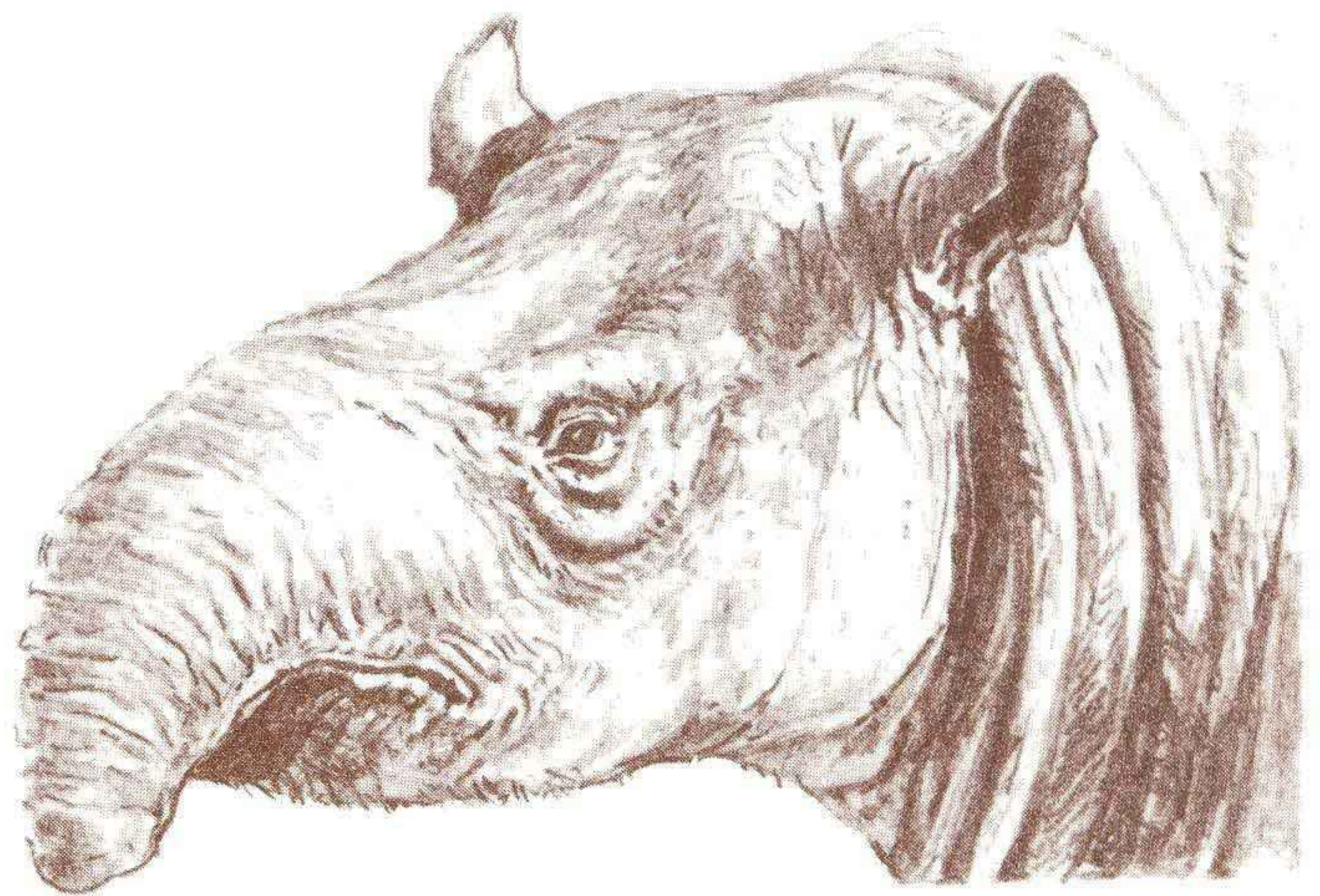


Restoration of *Teleoceras* from the Miocene of Kansas, a hippopotamus-like rhinoceros with a small nasal horn.

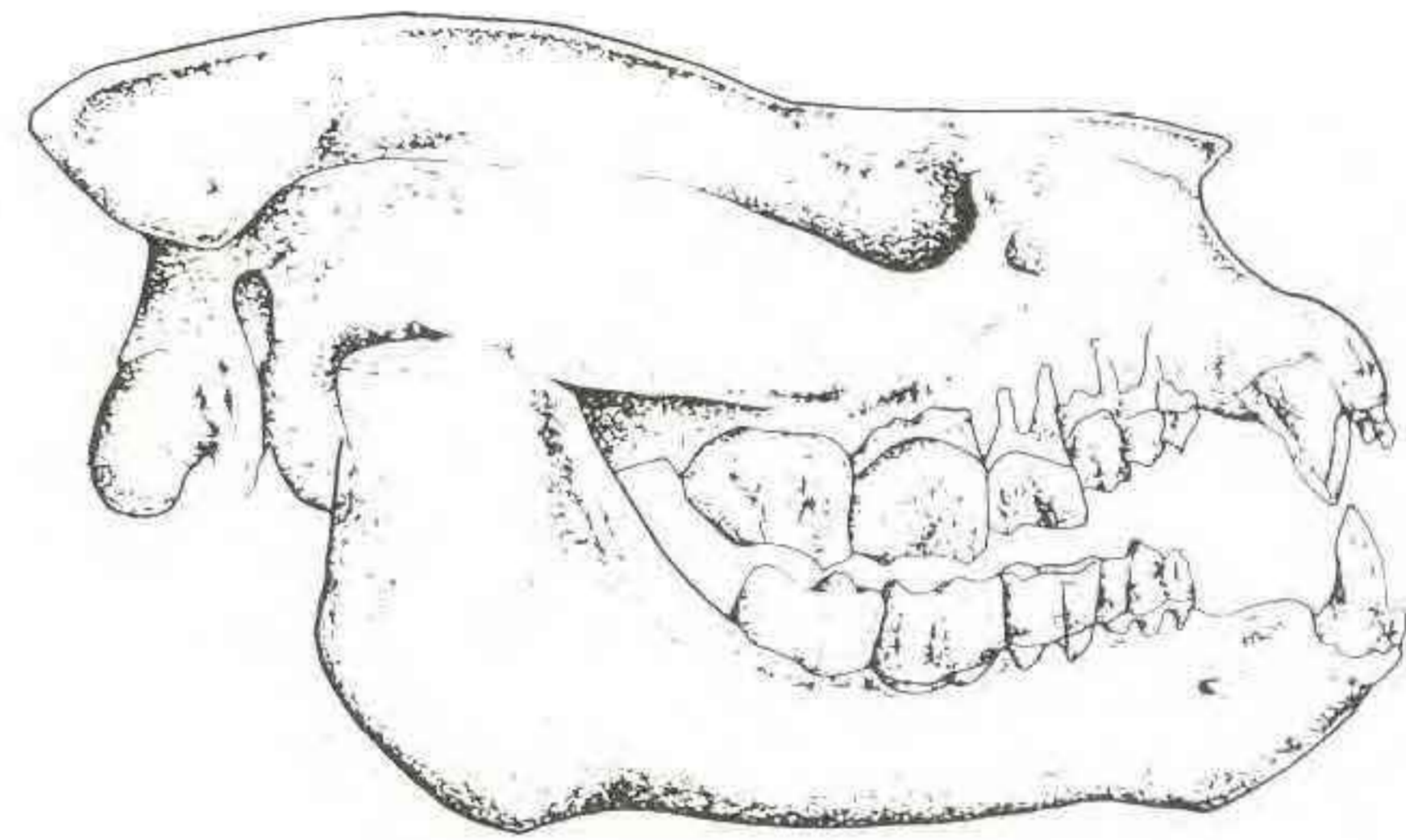
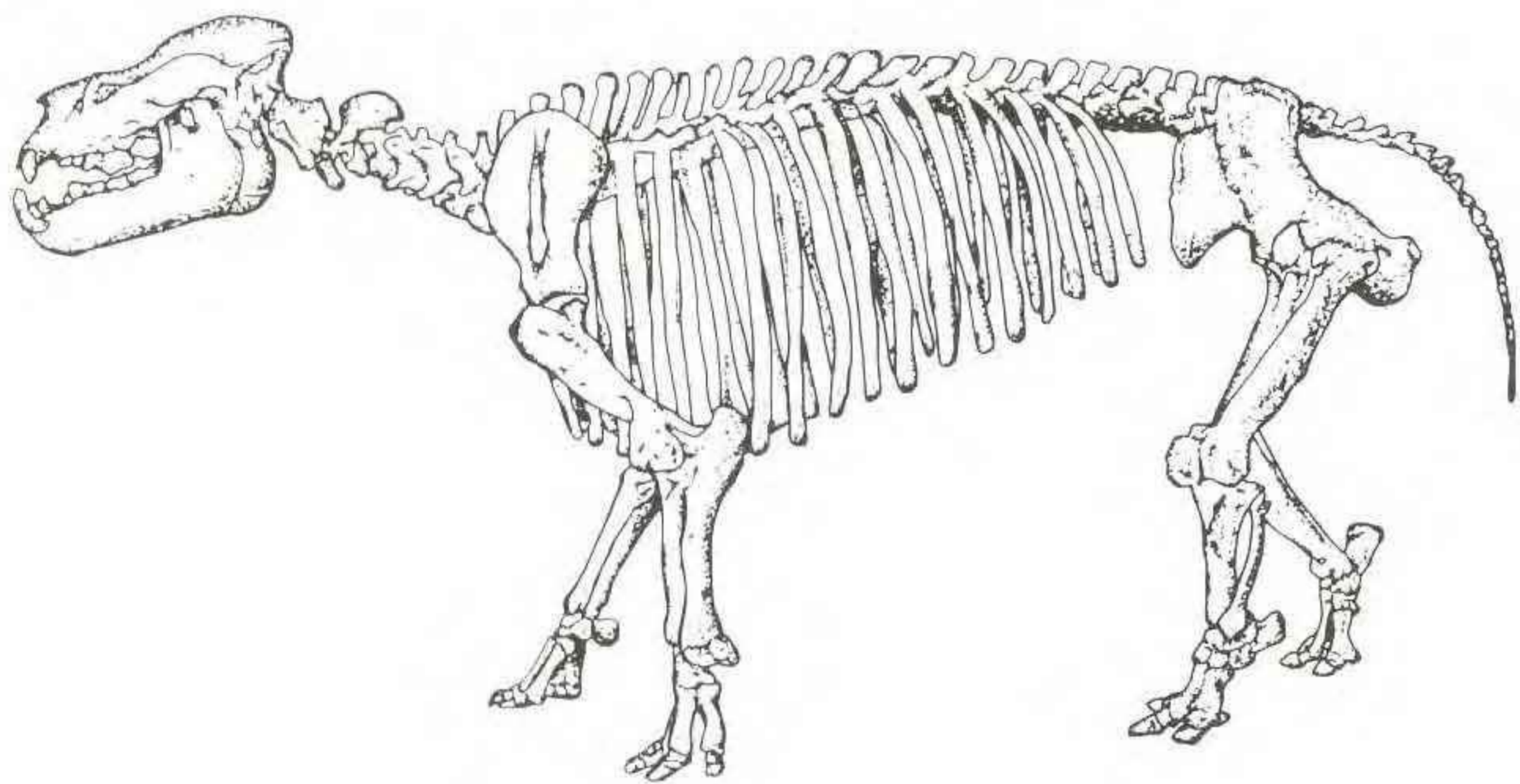




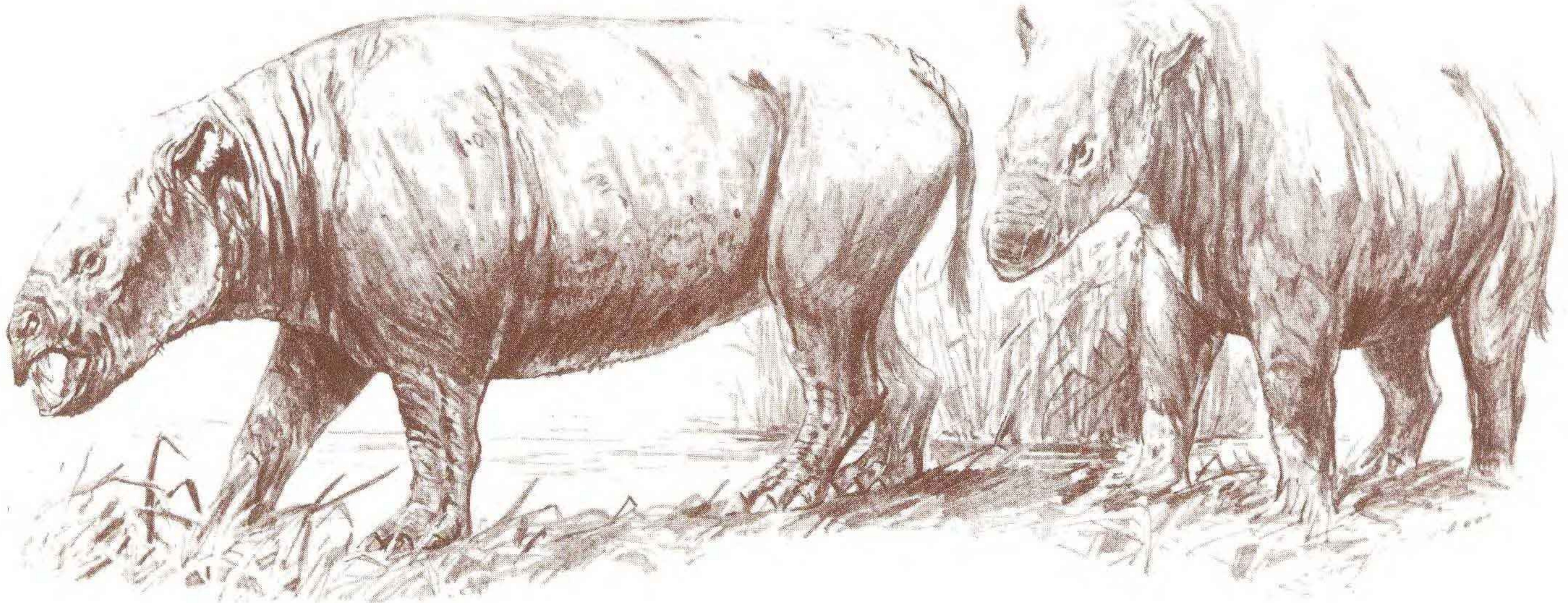
Skull of *Elasmotherium* (length 75 cm) and cheek dentition (length 22 cm). The tooth enamel is characteristically heavily crinkled. (After Brandt).



Restoration of *Cadurcodon*, an amynodont rhinoceros with elongate proboscis, from the Oligocene of Mongolia.



Restoration, skull (length 56 cm) and skeleton (length 4 m) of *Metamynodon*, a large semi-aquatic hippo-like rhinoceros from the Oligocene of North America. Note the large canine tusks. (After Scott & Osborn).



*Chalicotheres*

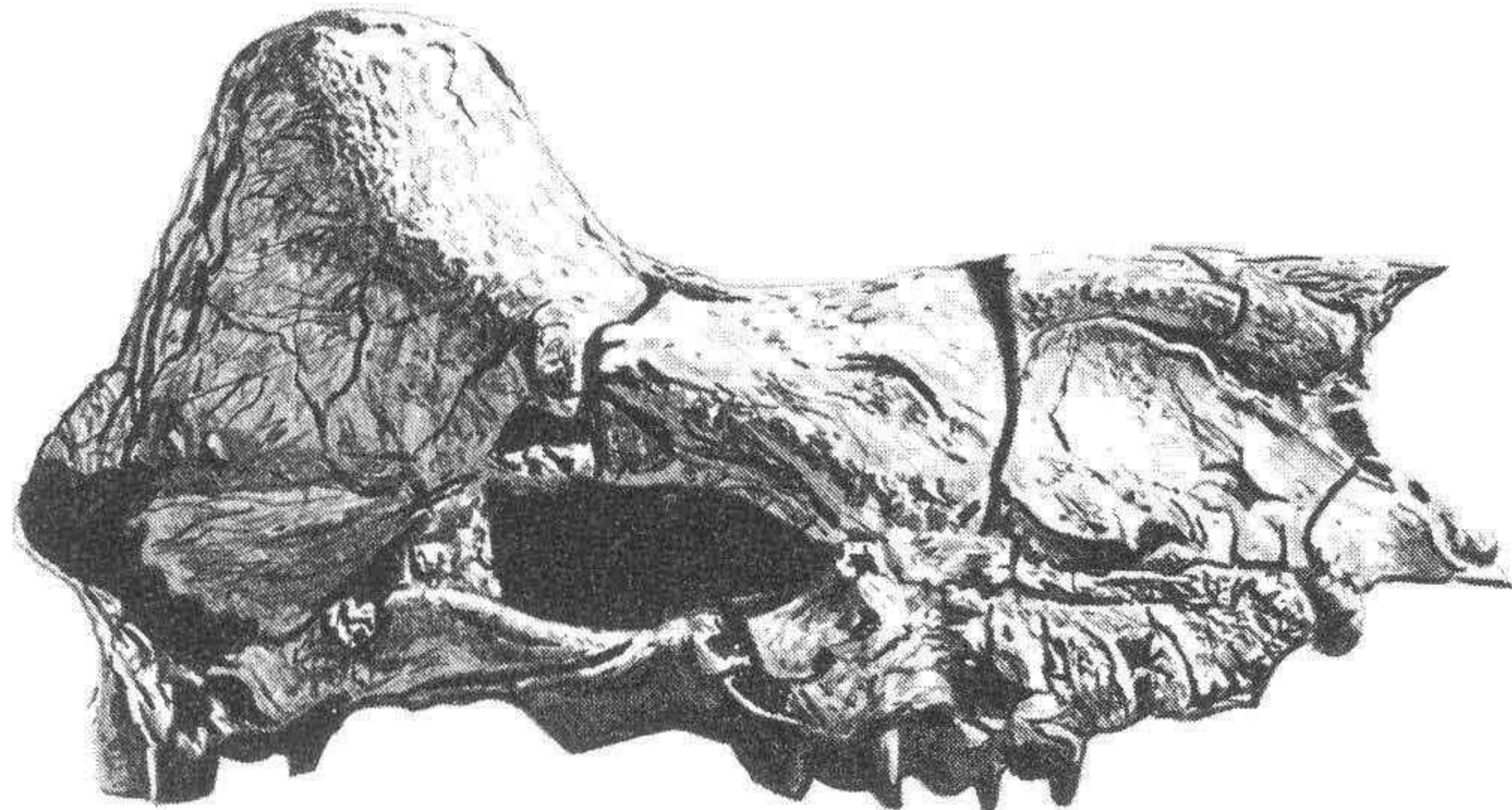
Periodically come reports from the Kakamega forests in Kenya of sightings of the Nandi bear. The beast is described as having a gorilla-like stance with forelimbs longer than the hind, with clawed feet like a bear and with a horse-like face. Could the beast be a survivor of the chalicotheres, thought to have become extinct in East Africa during the Pleistocene? The description above would fit with the skeletal remains of these

Restoration of *Chalicotherium grande*. This strange browser had very short hind legs and walked on the knuckles of its forefeet which had long inwardly turned claws.

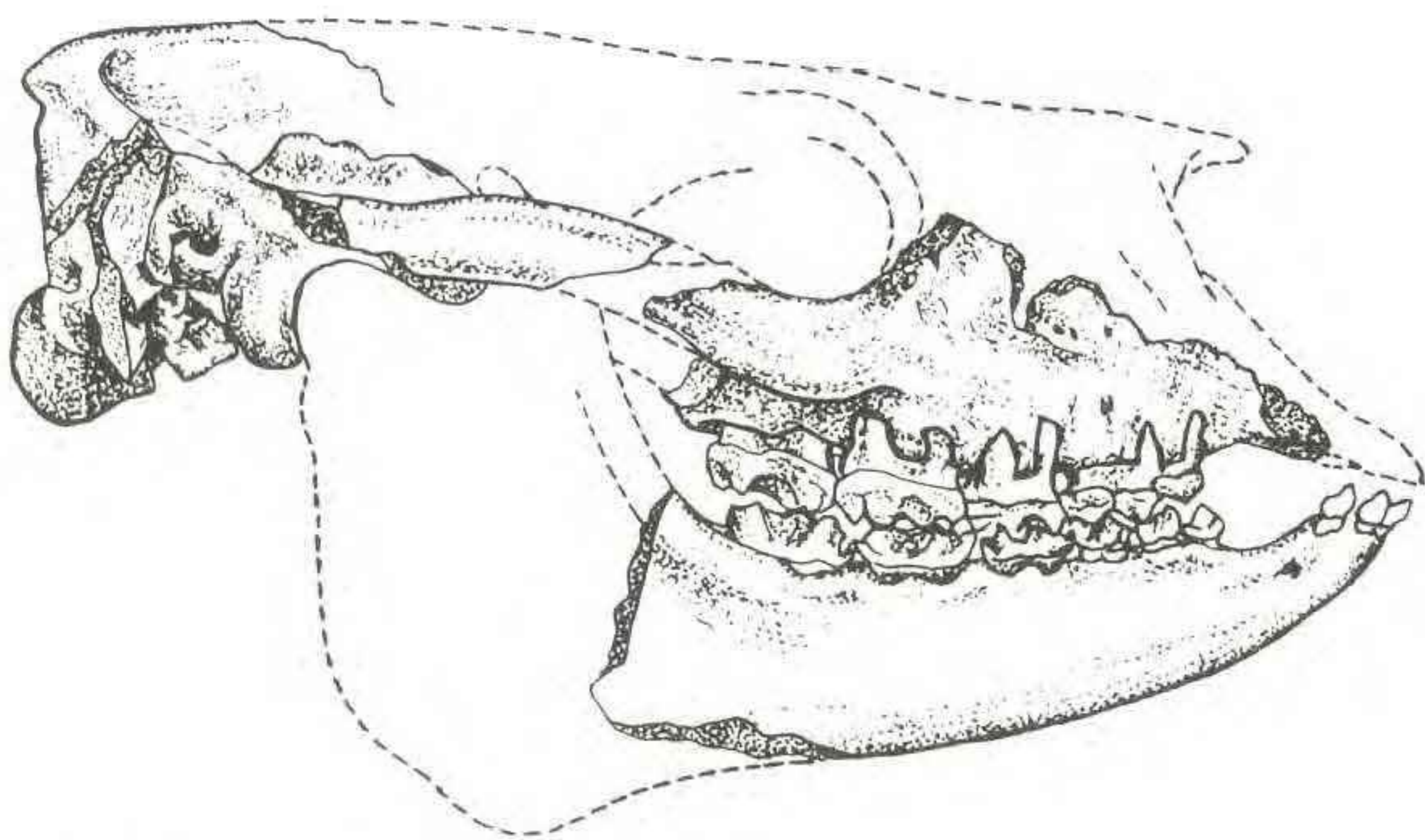


extraordinary animals, which though never abundant in the fossil record, are known from Eocene times onward and have been found in North America, Eurasia and Africa. *Litolophus* from the Eocene of Mongolia was about sheep-sized. *Moropus* from the Miocene of America was horse-sized with an elongate horse-like face and some had domed skulls; the cheek teeth retained simple premolars and the molars were bunolophodont. It was probably a bipedal browser, using its long forearms and curved claws to hook down leafy branches in the

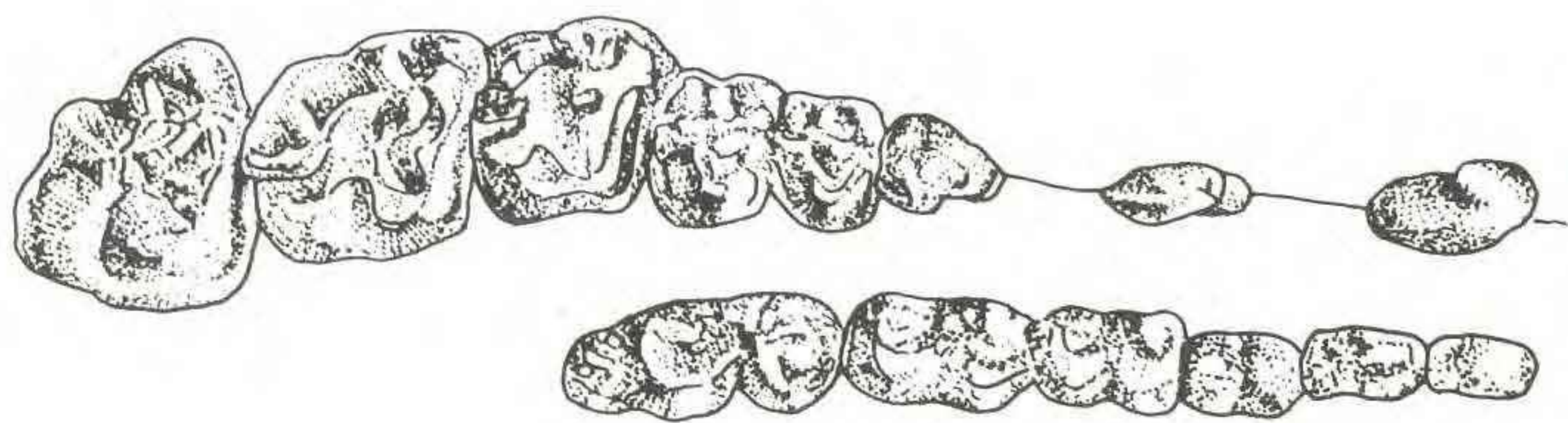
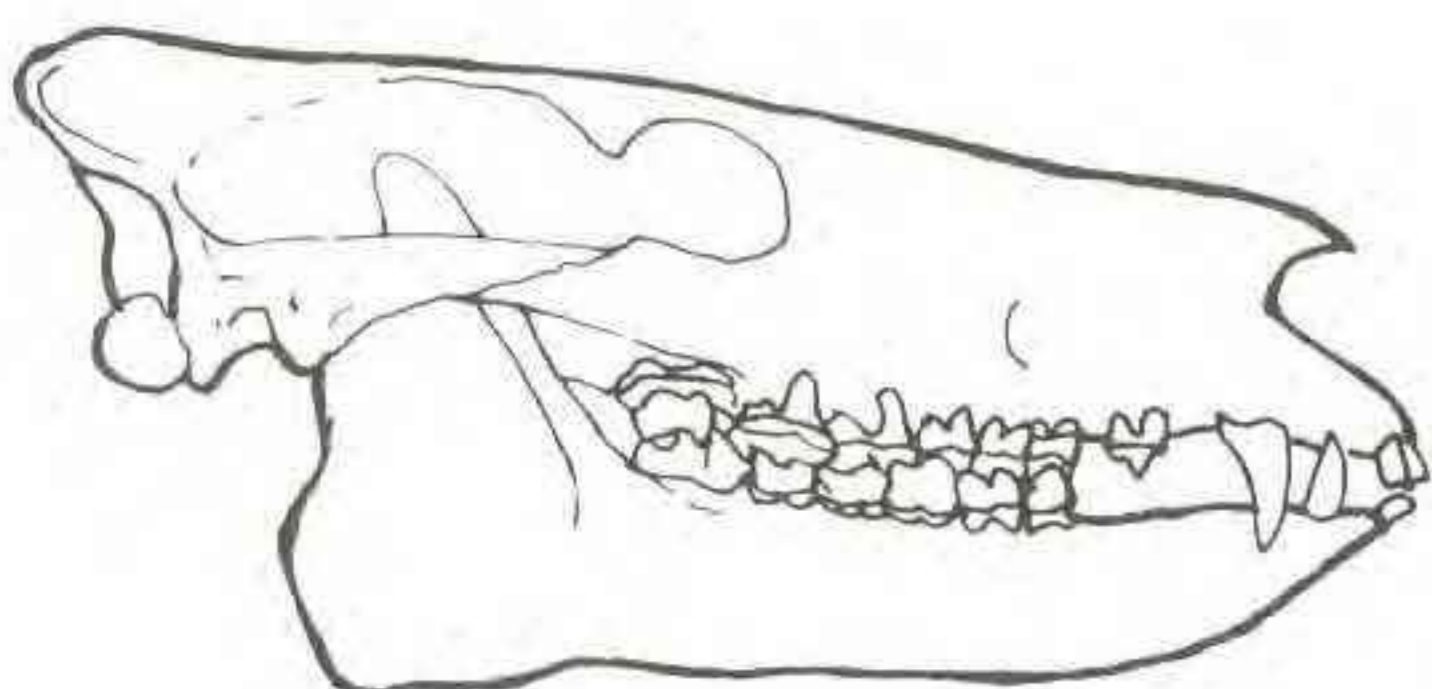
wooded savannahs in which it lived and it may additionally have used its claws to uproot tubers for water in the dry season. *Chalicotherium* itself is known from the Miocene of Eurasia and Africa; it was a forest browser, which may account for its rarity in the fossil record. While the skull and dentition are typical of perissodactyls and closely similar in many ways to titanotheres (see below), the limbs with their curved claws are very un-ungulate like, and reflect a specialized adaptation to bipedal browsing.



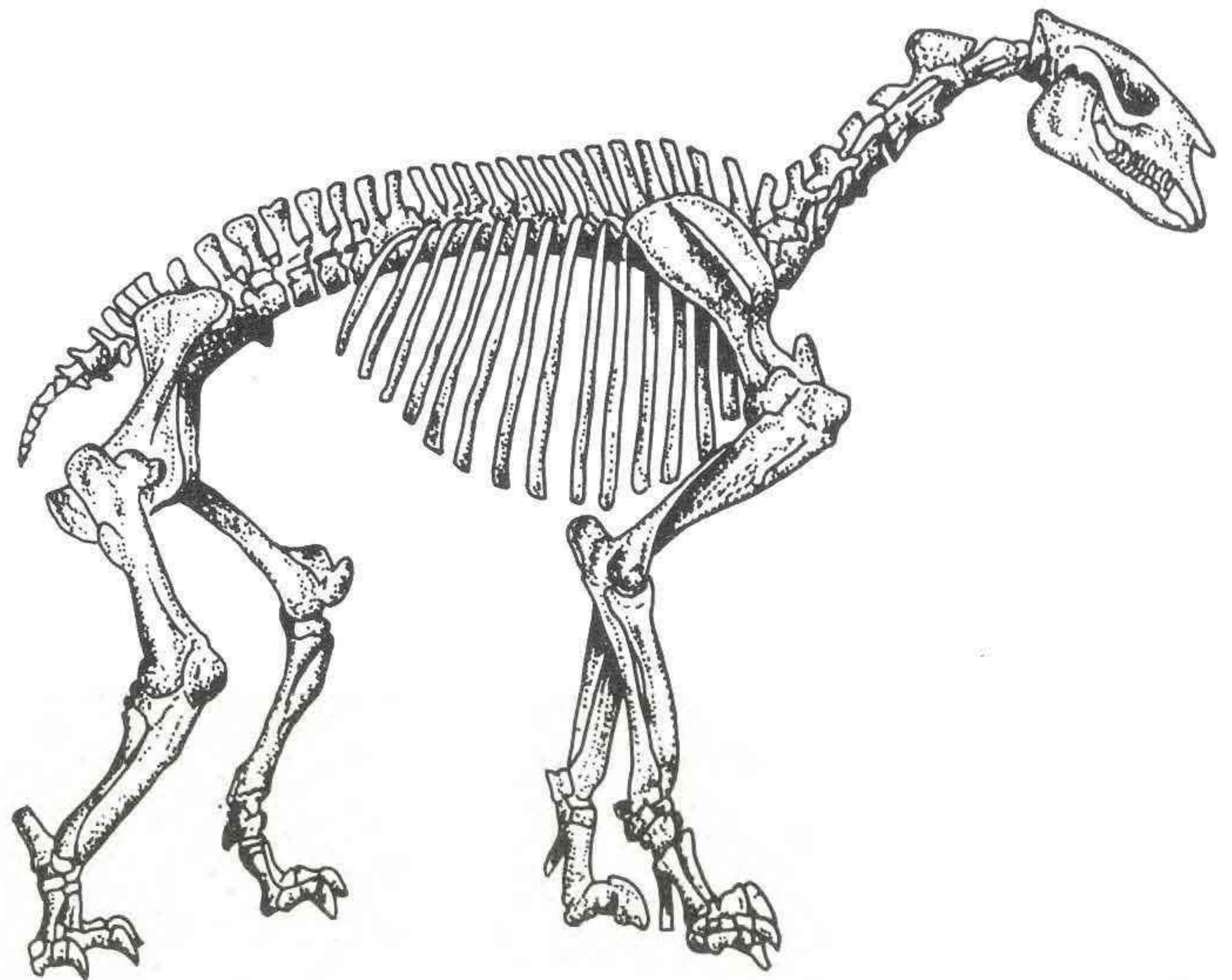
Skull (length 30 cm) of a chalicothere from the Miocene of Wyoming with domed roof; probably used by males in sparring contests. (After Munthe & Coombs).



Skull of *Chalicotherium grande*, a large chalicothere from the European Miocene.



Top, skull (length 30 cm), and above, dentition of *Litolophus*, a late Eocene eomorpid from Mongolia; this animal was a sheep-sized relative of the chalicotheres. (After Colbert & Radinsky).



Above, skeleton (after Gregory), and below, restoration of *Moropus*, a 3-metre-long chalicothere from the Miocene of North America. Note the sloping hindquarters, short hind legs and peculiar clawed feet that were probably used to pull down branches to reach the foliage.

