

rhinoceros with huge, column-shaped legs. The largest terrestrial mammals of all times belonged to this group, the genera *Paraceratherium*, *Indricotherium*, and *Benaratherium*. The *Indricotherium asiaticum* was five meters in height and seven meters long. The bones of this giant animal, which were approximately thirty-five million years old, were found in Kazakhstan on the banks of the Tschulka River. Those giant rhinoceros became extinct during the Miocene without leaving any descendants.

However, this list nowhere near exhausts the multitude of prehistoric forms of rhinoceros. There were slender-footed, long-legged rhinoceros, for example, the predominantly hornless *Aceratherium* which had long tusks in the lower jaw; furthermore, there were short-footed savannah types like the genus *Teleoceras* from North America and the genus *Brachypotherium* from Europe; and finally, there was the North American-Eurasian genus *Diceratherium*, which had two horns side by side on the nose. Another extinct line of the rhinoceros are the Elasmotheria from the glacial period of Eurasia. *Elasmotherium* was a giant form with a skull almost one meter long. This skull bore on its forehead a huge bony pad on which a correspondingly large horn must have sat. The dental enamel of the molars was ruffled, which is unknown in any other rhinoceros.

Compared to this multitude of forms in the tertiary and glacial rhinoceros, the surviving four genera appear rather stunted in spite of their size. They all live in remote habitats, seemingly because they have not been able to compete any longer with the other ungulates, especially the ruminants. Above all, however, human influence has basically changed wide areas of Africa and Asia, thus making them uninhabitable for rhinoceros. Since man first pursued animals, the rhinoceros have been hunted. The pictures in the Early Stone Age caves of Pech-Merle, Rouffignac, Colombière, and Les Trois Frères tell an obvious story. But they also show that these animals already had mystical significance in earlier times.

The present-day rhinoceros (family Rhinocerotidae) are either hairless or barely villous. HRL 200-400 cm, TL 60-76 cm, BH (shoulder) 100-200 cm, weight 1000-3600 kg. The surface of skin is distinctly sectioned, especially in the Asiatic species. On the nasal bone are one to two horns. There are 24-34 teeth arranged as follows: $\frac{0-1 \cdot 0 \cdot 3-4 \cdot 3}{0-1 \cdot 0-1 \cdot 3-4 \cdot 3}$. The gestation period is 419-550 days. One young is born.

It is commonly held that rhinoceros horns consist of matted hair. This is not quite correct. The horns consist throughout of ceratin, and they do not have a bony pith like the horns of cattle. Under a microscope, however, one can see that the individual rods are not coated with an individual protective layer as is real hair. They adhere densely together in layers, thus they resemble neither the hair nor the horn of a ruminant, but rather the material of the hoof. This construction

▷ Rhinoceros

1. Great Indian Rhinoceros (*Rhinoceros unicornis*)
2. Javan Rhinoceros (*Rhinoceros sondaicus*)
3. Sumatran Rhinoceros (*Dicerorhinus sumatrensis*)
4. Square-lipped Rhinoceros (*Ceratotherium simum*)
5. Black Rhinoceros (*Diceros bicornis*)

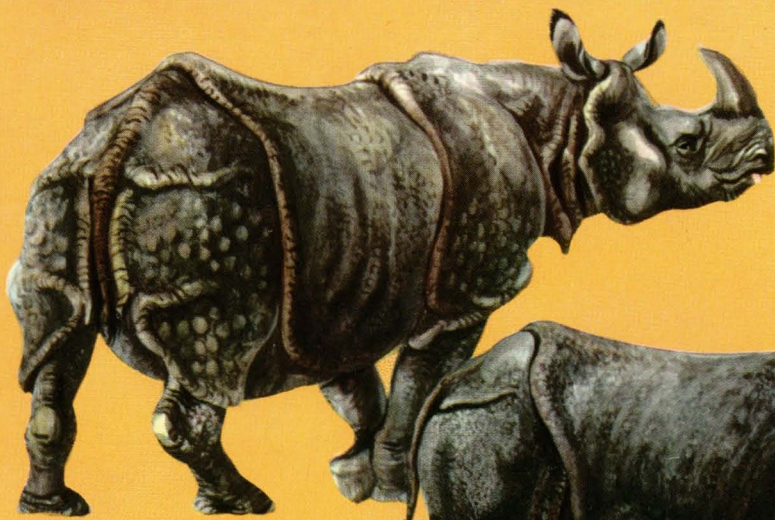
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A black rhinoceros mother with her sub-adult young. The African black rhinoceros (*Diceros bicornis*) is the only species of rhinoceros which still occurs rather frequently in many areas of its distribution.

Present-day rhinoceros by E. M. Lang

Distinguishing characteristics

Of what does the horn consist?









gives the nose horn a stiffness and quality similar to a ruminant's horn with a pith. The nose horn sits on a bony dome formed by the nasal bone; it may unravel in places, causing it to look like a growth of hair. If it is torn off by accident, only a lightly bleeding area remains on the nose. Soon a new horn begins to grow. In young animals a horn may be replaced completely.

Except for the elephants, we find the largest terrestrial mammals among the rhinoceros. However, these handsome mammals provide a classical example of the extent to which man is responsible for the decrease and extinction of large mammals. Superstition played a dominant and especially destructive part in the disappearance of many rhinoceros species. The Chinese, as well as other Asiatic peoples, believe that powdered rhinoceros horns make an aphrodisiac. Many centuries ago the powder made from these horns was sold in East Asiatic pharmacies at a high price. Since the rhinoceros are easy to kill, they have been poached ever since; now, after the almost total extinction of the Asiatic species, those in Africa are poached. Years ago, on the black market, people in Africa paid approximately fifteen dollars for a kilogram of nose horn. The medium-sized horn of a great Indian rhinoceros literally is worth its weight in gold, as well-informed people have confirmed. In 1965 the price for an Asiatic horn was no less than \$1125 for one kilogram. The strong faith in the healing powers of these "remedies" increases the prices constantly and stimulates natives and agents to kill even the very last rhinoceros without regard for the laws protecting the animals.

John A. Hunter, who may claim the sad record for having killed the highest number of rhinoceros, shredded rhinoceros horn and made it into a dark brown tea. "Even though I drank several portions of the brew," he writes, "I am sorry to say that I did not feel any reaction whatsoever, perhaps because I did not believe in it, or maybe because I was not in the right company." The possible medicinal effect of the horn has recently been carefully tested, thanks to the initiative of A. Schaurte. There, too, not the slightest effect could be demonstrated. Perhaps the Asiatic superstition is based on the fact that the great Indian rhinoceros do copulate for about one hour during which the bull ejaculates approximately every three minutes. To become capable of such sexual prowess seems to be desirable to many Asiatic people.

Skillfully carved cups of rhinoceros horn used by Indian and Far Eastern potentates to test beverages for the possibility of containing poison, may indicate a similar belief. Today these rhinoceros horn cups are rare collector's items. An example from the Calcutta Zoo shows how far superstition can go: All great Indian rhinoceros who die there are immediately removed by the keepers, cut up, and sold at an immense price to fanciers. In Assam, when one of the few surviving great Indian rhinoceros was shot with official approval, as hap-

Extinction because of superstition

Black rhinoceros (*Diceros bicornis*) like to take dust baths. These gray giants are often accompanied by cattle egrets (*Bubulcus ibis*) which do not, as formerly presumed, collect the parasites from the rhinos, but rather eat the insects the rhinos stir up.

pened a few years ago when the English Queen visited the country, not only the nose horn but also the skin, the skeleton, the muscles, and even each hair went to the black market trade. As was confirmed not only by Professor Ullrich, the director of the Dresden Zoo, but also by other visitors of the Kazirange Game Reserve in Assam, poachers even in the nineteen sixties still dug many traps there for the rhino.

Therefore, all species of rhinoceros are threatened by extinction and urgently need all possible protection. In Africa, only in the National Parks and in the protected areas will one find a good rhinoceros population. The situation in Asia is much more critical. Of the once abundant great Indian rhinoceros, there are presently only a few hundred animals left, whose further existence is not at all assured. The closely related Javan rhinoceros' extinction is imminent; it is only in a tiny area, the Ujung-Kulon Reserve in Java, that 25 to 40 animals are found. The number of surviving Sumatran rhinoceros on the Malayan continent is unknown; according to official statements, there are 170 to 600 animals left. If the World's Nature Conservation efforts do not succeed in establishing effective measures for protection, our descendants will not see a living Javan or Sumatran rhinoceros. Unfortunately, not even the most general data of the life and behavior of these animals are known. The few surviving ones have to lead such a secretive life that any close survey or research is technically impossible.

The original, yet also the smallest, living species of rhinoceros is the SUMATRAN RHINOCEROS (♂ *Dicerorhinus sumatrensis*, Color plate, p. 37). HRL 250-280 cm, BH (shoulder) 110-150 cm. It is the sole villous rhinoceros. There are two nose horns; the maximal length of the anterior one is 25 cm; the second one is, in most cases, only a blunt protuberance (or hump). The skin is only slightly sectioned (semi-plated); the ears are fringed with hair; and the coat, while dense, thins out in older animals. Formerly the distribution was over all of East India and Indonesia; presently there are only infrequent sightings. These animals are very rare.

The great Marco Polo (1254-1324), on his travels through East Asia, had seen the Sumatran rhinoceros in the Malayan Archipelago and described it. However, there is hardly anything known about the life in the wild of this animal which will soon become extinct. Earlier zoologists distinguished between the original form on the island of Sumatra (*Dicerorhinus sumatrensis*) and a continental form (*Dicerorhinus sumatrensis lasiotis*), which was also called the rough-eared rhinoceros. But in comparison with specimens in museums and pictures from the wild, this opinion is open to question. According to cautious present-day estimates, there are only a few hundred of these animals on the island of Sumatra, some others on the island of Borneo, in Burma, in Siam, and in the Malaysian preserve of Sungei Dusun (Selangor). But the timber industry, the establishment of rubber plan-

Asiatic rhinoceros



Fig. 2-1. Former and present distribution of the Sumatran rhinoceros (*Dicerorhinus sumatrensis*). This species now exists only in those few places which are marked by triangles on the map.