

# MAMMALIA.

THEIR VARIOUS ORDERS AND HABITS

POPULARLY ILLUSTRATED BY TYPICAL SPECIES.

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WITH 267 ENGRAVINGS.

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As will be observed on the title-page, this work does not profess to be a complete account of the Mammalia, but a popular description of their various Orders, illustrated by typical examples; the general arrangement of their classification being new, and certainly most simple.

The early portion was edited by E. BLYTHE, Esq., F.Z.S. This acknowledgment is necessary, as that part was remodelled and considerably augmented. Otherwise this book is a free translation.

PARKER GILLMORE  
("UBIQUE").

March 12, 1870.

animal. In the palace of the Vatican, at Rome, on the bas-relief which forms the plinth of the ancient colossal statue of the Nile, is given pretty correctly the outline of the Hippopotamus. One sees other very exact representations in certain mosaics at Pompeii, and again on the medals of Adrian, which represent so frequently the banks of the Nile.

The Hippopotamus has been seen only on very rare occasions at Rome. Scaurus, when edile, exhibited one. Augustus showed another during the *fêtes* which were instituted in honour of his triumph over Cleopatra. The emperors, Commodus and Heliogabalus also caused a few of these animals to be brought there. But none appeared in Europe in the middle ages, and it is only within the last few years that the Jardin des Plantes, at Paris, and the Regent's Park Gardens, at London, has been able to procure living specimens of this Pachyderm.

*Rhinocerotidæ*, Rhinoceroses.—Remarkable for their great size and for their strength, the Rhinoceroses ought, for this double reason, to rank immediately after the Elephant. Their most *prominent feature*—we do not mean a joke—which is unique in the Mammalia, is that that they have on their nose one or two horns, filled up and solid. Hence the name, which is derived from two Greek words (*ῥίν*, nose, and *κερας*, horn).

Rhinoceroses were much more numerous in remote eras than they are at present. There have existed numerous different species, several of them living in temperate and even in cold climates—as France, Germany, and Russia. These animals are no longer found, except in the hottest portions of the Old World.

Aristotle says nothing of the Rhinoceros; but Athenæus, Pliny, and Strabo mention it in their works. The first Rhinoceros mentioned in history figured in a *fête* given in Egypt by the King Ptolemy Philadelphus. Later, Pompey, Augustus, the emperors Antoninus and Heliogabalus, brought some into Europe, and made them fight in the Coliseum, at Rome, sometimes with the Hippopotamus, sometimes with the Elephant. We must then pass on to the sixteenth century to find in European history any new mention of these animals. In 1513, Emmanuel, the King of Portugal, received from India a one-horned Rhinoceros. Albert Durer made an engraving of it on wood, which was for a long time copied and

reproduced in works on natural history. Only this representation of it is very inexact; for Albert Durer had executed it after an incorrect drawing sent him from Lisbon into Germany. During the eighteenth century, a Rhinoceros was brought to Holland; two were taken to London at the end of the same century. The menagerie at Versailles bought one of these last-named animals, which very soon died, and was dissected by Mertrud and Vicq d'Azyr. Since the beginning of our century, Europe has received many of these gigantic and curious quadrupeds (but only of one species until quite recently).

The Great Indian Rhinoceros inhabits the regions situated beyond the Ganges, and especially the valley of Opam, along the base of the eastern Himalaya Mountains. It is more than three mètres in length and two mètres in height. Its head is short and triangular; its mouth, of a moderate size, has an upper lip, which is longer than the lower, pointed and movable. It has in each jaw two strong incisive teeth. Its eyes are small; its ears are rather long and movable. The horn upon its nose is pointed, conical, not compressed, sometimes two feet in length, and slightly curved backwards. This singular weapon is composed of a cluster of hairs closely adherent; for when the point is blunted, it is often seen divided into fibres resembling the hairs of a brush. This horn is, however, very solid, hard, of a brownish red on the outside, of a golden yellow inside, and black in the centre.

The neck of this animal is short and covered with folds and creases. Its shoulders are thick-set and heavy; its ponderous body is covered with a skin remarkable for the deep wrinkles or creases with which it is furrowed, backwards and across the fore-quarters, and across the thighs. Thus, as it were, to all appearance cut up into plaits of mail, the Great Indian Rhinoceros seems to be covered with a cloak made for it. This cloak has, indeed, been compared to a suit of armour of well adjusted pieces. The hide is, however, so thick and hard that, without these creases or folds, the animal, imprisoned, as it were, in its armour, could scarcely move. It is of a dark colour, nearly bare, generally provided only with a few coarse and stiff hairs on the tail and ears, occasionally with curly woolly hairs on certain parts of the body.

The Great Indian Rhinoceros (Fig. 35) is heavy and more massive than even the Elephant, on account of the shortness of its limbs. The feet have each three toes, of which one sees nothing but the hoof which covers them. The tail is short and thin.



Fig. 35.—Indian one-horned Rhinoceros (*R. indicus*).

This huge Pachyderm lives alone in the forests and near rivers and marshes, because it is fond of wallowing in the mud, like the wild boar, which it somewhat resembles in its

habits. Though such a powerful animal, it rarely attacks before it is interfered with; the other large animals fear it, and consequently leave it unmolested. Its horn only serves it for moving branches out of its way and for clearing a road for itself in the thickets, in the midst of which it passes its taciturn existence. Some naturalists have said that it uses its tusks for tearing up the roots on which it is fond of feeding; but in order to turn up the soil, the animal, from the position of its horn and from that horn being curved backwards, would be obliged to assume an attitude which the shortness of its neck and its general conformation render impossible.\*

Its principal food consists of roots, of succulent plants, and of small branches of trees, which it tears off, seizes, and breaks with its upper lip, which is elongated and movable, and which it uses with great adroitness, almost in the same way in which the Elephant uses its trunk. When it is kept in a state of captivity, it eats bread, rice, bran soaked in water, hay, and carrots.

Its clumsy shape, its short legs, its belly almost touching the ground, render this animal very ugly and ill-favoured. Its diminutive eyes seem to indicate a low order of intelligence. And so the Rhinoceros is a dull beast, brusque, and almost untameable. When it is not irritated, its voice has a great analogy to the grunting of a pig; if it is angered it utters sharp, piercing cries, that can be heard at great distances.

The female has only one young one, which she carries for nine months, and which she tends with great care. It is dangerous to be thrown in contact with the female at this period.

In India, in former times, the Rhinoceros was hunted on light, quick horses. The huntsmen followed it from afar off, and without any noise, till the animal became tired and was obliged to lie down and sleep. Then the sportsmen approached it, taking care to keep to leeward, for it has a very acute sense of smell. When they were within shot, they dismounted, aimed at the head, fired, and galloped away; for if the Rhinoceros is only wounded, it rushes furiously upon its aggressors. When struck by a bullet, it abandons itself wholly to rage. It rushes straight forward, smashing, overturning, trampling under foot, and crushing to atoms every-

\* A wounded Rhinoceros of this species has been seen to cut the reeds on either side of it as perfectly as if done with the sharpest incisive instrument.—Ed.

thing which is unfortunate enough to be in its road. Its pursuers can avoid these formidable attacks by making digressions to the right or left, for the course taken by the Rhinoceros is always rectilinear, never turning out of its direction or retracing its steps.

If the Indians dare to run the risks involved in such dangerous sport, it is because the skin and horn of the animal are of great value. Sportsmen also find the skin of the Rhinoceros of utility: it is made into leather, which is so hard that it can only be cut with great difficulty by the best steel.

The Indians like the flesh of the Rhinoceros; but the Chinese are excessively fond of it. After swallows' nests, lizards' eggs, and little dogs, there is nothing to be compared, according to the Chinese, to the tail of a Rhinoceros, or to a jelly made with the skin from this animal's belly! Let us add, that the Chinese attribute to the horn of this Pachyderm marvellous properties, amongst others that of destroying the effects of the most deadly poisons. The Asiatic kings, who had too often to be afraid of poisoned beverages, had their drinking-cups made of the horn of the Rhinoceros; these cups were considered by them of inestimable value.

In menageries, the Asiatic Rhinoceros is generally a gloomy, but a mild and obedient animal. But sometimes the constraint in which it is retained gives it fits of impatience and fury, when it becomes dangerous. In its despair it has been known to dash its head violently against the walls of its stable. Generally, however, it recognises its keeper's authority, and shows itself conscious of his presence and grateful to him for his care.

There exists at Java a peculiar representative of the Asiatic Rhinoceros. This species has only one horn. Again another species, peculiar to Sumatra, has two horns.

The African Rhinoceros was known to the ancients, for its effigy is found on medals struck in the time of the Emperor Domitian. It has on its nose two conical horns, inclined backwards; the foremost horn is seventy centimètres long, the second much shorter. It is a large animal; its skin has no wrinkles, nor folds, and is almost entirely bare (Fig. 36).

This Rhinoceros inhabits Caffraria, the Hottentot country, and probably the whole of Southern Africa. It lives in the forests



which overshadow the banks of the great rivers, and is still more shy than the Asiatic Rhinoceros. It is hunted, and supplies the same products as make valuable the Asiatic species.

A species, or a simple variety of the Rhinoceros,—about the



Fig. 36. —Two-horned African Rhinoceros (*R. Boritii*).

habits of which and the manner of hunting it, the English traveller, Bruce, has given some details,—is met with near the ponds and rivers of Abyssinia. Hidden during the day in the thickets, it

sallies out at night, to eat the young boughs covered with leaves. After feeding it wallows, covering itself with repeated layers of mud, to preserve it from the sting of the gad-flies—its small but troublesome enemies. When the mud is dry, it falls off, exposing the animal to fresh attacks. To allay the irritation caused by these annoying insects, it rubs itself against the trunks of trees, and during this operation it grumbles and grunts so loudly that it betrays its place of retreat to the hunters, who attack it and kill it by shooting arrows into its flank, the most vital portion of its body, and in which a wound is certain to produce death. Other hunters, called in the language of the country *agageer* (ham or hock cutters, *coupe-jarrets*), pursue on horseback and kill the Rhinoceros with extraordinary courage and address. Two men ride on the same horse. The one is dressed, and armed with javelins; the other is naked, and has nothing but a long sword in his hand. The first sits on the saddle, the second rides behind him on the horse's rump. Directly they have got on the track of the quarry, they start off in pursuit of it, taking care to keep at a great distance from the Rhinoceros when it plunges into the thickets, in the midst of which it opens for itself a broad passage, which closes as the animal passes on, but the moment it arrives in an open spot they pass it, and place themselves opposite to it. The animal, in a rage, hesitates for a moment, then rushes furiously upon the horse and its riders. These avoid the assault by a quick movement to the right or the left, and the man who carries the long sword lets himself slide off on to the ground without being perceived by the Rhinoceros, which takes alone notice of the horse. Then the courageous hunter, with one blow of his formidable Durandal, cuts through the tendon of the ham or hock of one of the monster's hind legs, which causes it to fall to the ground, when it is despatched with arrows and the sword. The grandees of Abyssinia also engage in the pursuit of the Rhinoceros. But they attack these animals with guns. It is in this way also that the Hottentots and the colonists of the Cape of Good Hope hunt this Pachyderm.

From late researches we are convinced that there are at least six existing species of Rhinoceros—three in Asia and three in Africa; and they differ so much from each other that Dr. Gray has referred them to four generic divisions, which are quite as distinct

as the genera recognised in other families, and indeed more so than in many.

The geographical range of the Great Indian Rhinoceros would appear to be at present restricted, or very nearly so, to the *tarai*, an unhealthy marshy tract at the foot of the Himalaya, skirting the territories of Nipâl, Sikhim, and Bhotan. As remarked by an experienced naturalist, Dr. Jerdon, in his *Mammals of India*, this animal "is more common in the eastern portions of the *tarai* than the western, and is most abundant in Assam and the Bhotan Dooars. I have heard from one sportsman," he adds, "of its occurrence as far west as Rohilkund, but it is certainly rare there now, and indeed along the greatest part of the Nipâl *tarai*; and, although a few have been killed in the Sikhim *tarai*, they are more numerous east of the Teesta river." Dr. Jerdon suspects that it has crossed the great river Brahmaputra, and that it may be found in some of the hill ranges to the east and south of that river. From the dimensions given of a pair killed in the Garrow hills, in the territory indicated, we conclude that such must be the case, and that both of the One-horned Rhinoceroses are there met with; but from recent investigations it would appear that from thence southward, it is completely replaced by the *R. sondaicus*, a smaller kind, which has generally been supposed to be peculiar to the island of Java.

The difference between these two species of One-horned Rhinoceros is not sufficiently striking to be noticeable by an ordinary beholder, unless perhaps he might chance to have the rare opportunity of comparing the two together; and thus there are sportsmen who have killed both species in their respective haunts, but have failed to discriminate them apart, considering the smaller kind to be merely not fully grown. The *R. sondaicus* is about (or almost) a third less in size than the *R. indicus*, and its coat of mail is much the same, except that the tubercles on the hide are considerably smaller and of uniform size throughout, and (at least in the young animal) the polygonal facets of the skin have a few small bristles growing upon a depression in the centre of each of them. One marked distinction at all ages consists in this, that the strong fold or plait at the setting on of the neck, which is continued across the shoulders in the smaller species, or *R. sondaicus*, is not continued across in the larger one, or *R. indicus*, but

curves backward and terminates over the blade-bone in the latter. In *R. sondaicus* the neck-folds are less heavy and pendulous, and the posterior plait which crosses the buttock from the base of the tail is less extended, not reaching to the great vertical fold anterior to the hind-quarters, as it does in *R. indicus*. Of numerous skulls examined of both of them, those of each varying considerably in contour, the width in some being conspicuously greater than in others, the depth of the ascending portion of the lower jaw—from the condyle to base—averages twelve inches in adults of *R. indicus*, and never exceeds nine inches in *R. sondaicus*. The length of skull from occiput to tip of united nasal bones (measured by callipers) is,—in *R. indicus*, two feet (half an inch more or less, English measure); in *R. sondaicus*, a foot and three-quarters at most. Breadth of bony interspace between the tusks of the lower jaw,—in *R. indicus*, one and a half to one and three-quarters inches; in *R. sondaicus*, three-quarters to one inch. The skulls of *R. sondaicus* examined were from the Bengal Sundarbans, the Tenasserain provinces, and Java; and it was from a Javanese skull that the illustrious anatomist, Cowper, first discriminated it as a distinct species from the others; the same individual skull being figured in the *Ossemens Fossiles* of Baron Cuvier, who, in that work, rightly indicates the animal as being a little smaller than the other (*d'une taille un peu moindre*), and as otherwise much resembling it; but in his subsequently published second edition of the *Règne Animal*, while mentioning the particular distinction of the great neck-fold, he refers to his brother's figure in the *Planches des Mammifères*, as illustrative of his *R. javanas*. Professor Schirz, however, gives the species of Frederic Cuvier as *R. javanicus*.

But the late Dr. Horsfield had previously well figured the animal, in his *Zoological Researches in Java*, as *R. sondaicus* of Cuvier, and by the same name it has since been figured and described in the great Dutch work of Dr. Salomon Müller and Professor Semminck. Now M. Frederic Cuvier's figure of his supposed Javanese Rhinoceros represents, most decidedly, a young animal of the Asiatic Two-horned Rhinoceros, which does not inhabit Java! And it is a better figure of the latter than the one which he gives as representing that two-horned species. Both are copies of drawings by native artists, sent by MM. Diard and Dusancel; and in the former instance the posterior horn had been

overlooked, though a rudiment of it would certainly have been apparent at the age represented. That figure has misled naturalists, who have designated the animal as *le Petit Rhinoceros de Java*; whereas Horsfield was informed that the individual figured by him grew afterwards to a height of five feet seven inches, which must surely be a mistake! Four feet seven inches was the probable measurement, even if taken round the curve of the body. A sporting writer, describing one which he killed in the Garrow hills, gives the height of it as four feet four inches. "It proved to be a male, with a pretty large horn, and he was a very powerful animal." Other Rhinoceroses (doubtless *R. indicus*) killed in the same tract of territory are described as exceeding six feet in height, which is probably an exaggeration, or at least they must have been measured round the curvature of the body as they lay dead, which in so bulky a carcass would add some inches to the alleged stature. As the smaller example (doubtless *R. sondaicus*) had "a pretty long horn," we may be certain that he was full grown, and may, accordingly, infer with some confidence that both species inhabit the hill territory known as the Garrows, and probably also the Khásya and Jhyntea hills, if not still farther eastward.

Dr. Jerdon remarks (in the excellent work already cited) that "the *R. sondaicus* is found at present in the Bengal Sundarbáns, and a very few individuals are stated to occur in the forest tract along the Máhánuddi river, and extending northwards towards Midaspore; and also on the northern edge of the Ráj máhal hills, near the Ganges. Several have been killed quite recently," he adds, "within a few miles of Calcutta." According to another writer, they are or were "found in great numbers at the bottom of the Ráj máhal and Sikri Gulli hills, but are seldom seen in the district of Purneah. They live chiefly upon growing rice and vegetable roots, the horn enabling them to procure vegetable matter embedded in the earth." Having a horn suitable for the purpose, they may thus use it; but the nasal horn in this group of Pachyderms varies so much in shape and direction, according to the species, that it is not always suitable for such employment; and it may well be asked of what use is the strong horn of some of them, which in the Keitloa Rhinoceros of Africa is sometimes as long as the anterior one, while in some individuals of the Asiatic Two-

horned species, the fore-horn is so very much elongated and curves so far backward that it is difficult to imagine how it could be put to any service. An experienced sporting writer remarks of one of the single-horned species, that "it is a mistake to suppose that the horn is their most formidable weapon. I thought so myself at one time," he adds, "but have long been satisfied that it is merely used in defence, and not as an instrument of offence. It is with their cutting-teeth" (lower canines) "that they wound so desperately. I killed a large male," this writer asserts, "which was cut and slashed all over its body with fighting; the wounds were all fresh, and as cleanly made as if they had been done with a razor—the horn could not have been used here. Another one he had wounded stood, and out of pure rage cut at the jungle right and left, exactly as a Boar uses his tusks. A medical friend had a man, who was sauntering through the forest, actually disembowelled by a Rhinoceros. He examined the wound immediately, and I heard him say afterwards that if it had been done with the sharpest instrument, it could not have been cleaner cut. Such, then, could not have been done with the horn."\*

In Java the *R. sondaicus* is reputed to be rather a timid animal; but an instance is related of one attacking a sailor's watering party in that island; † and the full-grown Garrow Rhinoceros before mentioned (as standing four feet five inches in height) had killed a man and a boy some days before he was shot. This smaller One-horned Rhinoceros appears to be diffused more or less abundantly over the whole Indo-Chinese region (or the countries lying eastward of the Bay of Bengal), and through the Malayan peninsula, but it does not appear to inhabit Sumatra. In Java, according to Professor Reinhardt, it is "found everywhere in the most elevated regions, ascending with an astonishing swiftness even to the highest tops of the mountains." Dr. Horsfield also notices that "it prefers high situations, but is not limited to a particular region or climate, its range extending from the limit of the ocean to the summits of mountains of considerable elevation. Its retreats are discovered by deeply excavated passages, which it forms along the declivities of mountains and hills. I found these occasionally of great depth and extent." Of one of the single-horned species of this genus, an observer remarks, "It is surprising to see how

\* *Bengal Sporting Magazine*, 1836, part ii., p. 158.

† *Zoologist*, p. 1328.

rapidly, and without the least exertion, as it seems, these huge, heavily-built, unwieldy-looking animals get over the ground, consisting of the densest jungle, of hill-reeds, bushes, and brush-wood, and thick *sál*-saplings, interspersed with large trees. Awkward as is their gait, they trot very fast; I say *trot*, for their movement more nearly resembles a trot than anything else, though actually it is rather a gait between a trot and a canter. Elephants with howdahs have no chance with them in the chase, and unless dropped with the first shot, or they suddenly stop and turn to stand at bay, thus exposing the fatal spot in the temple within fair ball-distance, they generally manage to escape. It is useless firing at the body.\* This was written before the present far more efficient style of weapon came into use (the low trajectory rifle), or the terrible explosive shell was invented, which is now so fatally destructive to the largest of land quadrupeds, as well as to the most gigantic of marine Cetaceans.

In the early part of the sixteenth century of our era the famous Mogul Emperor Báber (the great-grandson of Timour Lang, or Tamerlane, and the founder of the dynasty of the Great Mogul) mentions incidentally, in his public memoirs, the occurrence of the Rhinoceros, the wild Buffalo, and the Lion in the neighbourhood of the city of the Benáres, and the wild Elephant in the vicinity of Chunar. In his notice of the animals peculiar to Hindustán, after describing the Elephant, the imperial author remarks, "The Rhinoceros is another. This also is a huge animal. The opinion prevalent in our countries that a Rhinoceros can lift an Elephant on its horn is probably a mistake. It has a single horn over its nose upwards of a span in length; but I never saw one of two spans." (From this it would seem that the particular species referred to is *R. sondaicus*, inasmuch as Báber would probably have been able to obtain larger examples of the horn of *R. indicus*.) "Out of one of the largest of these horns I had a drinking vessel made and a dice-box, and about three or four fingers' bulk of it might be left. Its hide is very thick. If it be shot at with a powerful bow drawn up to the arm-pit with much force, the arrow enters three or four fingers' breadth. They say, however, that there are parts of its skin that may be pierced and the arrows enter deep. On the sides of its two shoulder-blades, and of its

\* Linndar remarks, "Viscera ad equina accedunt."

thighs, are folds that hang loose, and appear at a distance like cloth housings dangling over it. It bears more resemblance to the Horse than to any other creature. As the Horse has a large stomach, so has this animal; as the pastern of the Horse is composed of a single bone, so also is that of the Rhinoceros. It is more furious than the Elephant, and cannot be rendered so tame and obedient. There are numbers of them in the jungles of Peshauar and Hashuagar, as well as between the river Sind and Behreh in the jungles. In Hindustân, too, I frequently killed the Rhinoceros. It strikes powerfully with its horn, with which, in the course of these hunts, many Men and many Horses were gored. In one hunt it tossed with its horn, a full spear's length, the Horse of a young man named Máksûd, whence he got the name of Rhinoceros Máksûd.\*

Again, in the course of his narrative, he states, "We continued our march till we came near Bekrâm, and there halted. Next morning we continued halting in the same station, and I went out to hunt the Rhinoceros." And again, "We crossed the *Sia Ob*" (black water), "in front of Bekrâm, and formed our ring lower down the river. When we had gone a short way, a man came after us with notice that a Rhinoceros had entered a little wood near Bekrâm, and that they had surrounded the wood and were waiting for us. We immediately proceeded towards the wood at full gallop, and cast a ring round it. Instantly on our raising the shout, the Rhinoceros issued out into the plain, and took its flight. Hûmâiun, and those who had come from the same quarter, never having seen a Rhinoceros before, were greatly amused. They followed it for nearly a kos" (two English miles), "shot many arrows at it, and finally brought it down. This Rhinoceros did not make a good set at any person or any horse. They afterward killed another Rhinoceros. I had often amused myself with conjecturing how an Elephant and Rhinoceros would behave if brought to face each other. On this occasion the elephant-keepers brought out the Elephants, so that one Elephant fell right in with the Rhinoceros.

\* Some of the royal Emperor Báber's remarks are amusingly correct. Thus, of the common large Indian Frogs (*Rana tigrina*), he remarks, "The Frogs of Hindustân are worthy of notice. Though of the same species as" (*i.e.*, akin to) "our own, they will run six or seven *guz*" (twelve or fourteen feet) "on the face of the water." During our long residence in India, we have known more than one naturalist traveller to have been at once struck with this peculiarity.—Ed.



As soon as the Elephant-drivers put their beasts in motion; the Rhinoceros would not come up, but immediately ran off in another direction." In a modern Rhinoceros hunt the Elephants are too apt to turn tail, and the great Indian Rhinoceros sometimes charges them; but we remember no instance of an Elephant being wounded by an infuriated Rhinoceros.

"In the jungles round Chunar," remarks the founder of the dynasty of the Great Mogul, "there are many Elephants;" and elsewhere he asserts that the Elephant "inhabits the district of Kalpe" (or Culpee), "and the higher you advance from there towards the east, the more do the wild Elephants increase in number." Upon which his able translator remarks justly, in a note penned more than half a century ago, that "the improvement of Hindustân since Báber's time must be prodigious. The wild Elephant is now confined to the forests under Himâla, and to the ghâts of Malabar. A wild Elephant near Karrah, Mánikpore, or Kalpe, is a thing, at the present day, totally unknown. May not their familiar existence in these countries down to Báber's days be considered as rather hostile to the accounts given of the superabundant population of Hindustân in remote times?"

The description which Báber gives of a Mailed and Single-horned Rhinoceros is unmistakable; but it still seems passing strange that these huge Pachyderms should have been killed with arrows. At the present day the Rhinoceros has long been extirpated, with not so much as a tradition of it remaining in all the parts where Báber mentions its former occurrence; but in the desert region north-west of Delhi the Lion was numerous within the memory of living man, and there we learn that already hardly a tradition remains of this formidable animal as a former and comparatively recent inhabitant of the extensive desert tract in question.

*Ceratorhinus*, Gray. This genus is founded on the Two-horned Rhinoceros, *C. sumatranus*, a comparatively small animal, which certainly never much exceeds four feet in height; but its horns sometimes attain a beautiful development, more especially the anterior one, which is much longer than the other, slender except at base, and has a graceful curvature backward, more or less decided in different individuals; the other, or posterior horn, is not placed close behind the first, as in the different two-horned African species, but at a considerable distance from it, and it has

a corresponding backward curvature. An anterior horn of this small Rhinoceros in the British Museum measures thirty-two inches along its front, and is seventeen inches in span from base to tip. We have seen a pair of horns of this Rhinoceros beautifully carved and polished, and set with the bases upwards and on a parallel in a carved black wooden stand, similar to those upon which Chinese metallic mirrors are mounted; and the Chinamen give such extravagant prices for fine specimens that they are exceedingly difficult to be got hold of by any one else. We have seen a pair upon the head, the value of which was estimated at five guineas; and the price, as usual, increases with the size and length to a sum much higher.

The Asiatic Two-horned Rhinoceros has a comparatively smooth hide, which is somewhat thinly, though conspicuously, covered with short and coarsish black hair throughout: there are folds about the neck, a distinct fold behind the fore quarters, a slight fold, or rather crease, anterior to the hind limbs, and another slight fold at some distance above the hock; but nothing comparable to the plaits of mail of the two One-horned Rhinoceroses. Inside of the folds the skin is of a sullied pinkish colour, and elsewhere its hue is brownish ashy. Its hide is rough, but not thick or hard, being easily cut through with a knife; where thickest it does not exceed one third of an inch, decreasing to a quarter of an inch on the belly. The form of the skull approximates to certain of the extinct Rhinoceroses of the European-Asiatic continent, which were also two-horned, and the huge northern (extinct) *R. tichorhinus*, which is known to have been thickly clad with woolly hair. The Indian *R. platyrhinus* (likewise extinct), of the late Dr. Valconer more especially, is just an immensely magnified representation of the diminutive existent *C. sumatranus*.

The earliest description of the Asiatic Two-horned Rhinoceros is by Mr. William Bell, then surgeon at Bencoolen, in Sumatra; it is to be found in the *Philosophical Transactions* for 1793. In the same year the second edition of Pennant's *History of Quadrupeds* appeared, giving a slight notice of the species, also as an inhabitant of Sumatra; but little was at that time known of the geographical limits of the range of particular species, and Pennant never suspected its non-identity with the then known Two-horned Rhinoceros of Africa. Bell gave a tolerable figure of the beast,

and three representations of its skull; and Sir T. Stamford Raffles remarks that "Dr. Bell's description and representation of this animal are extremely correct," save that the folds of the skin "are rather more distinct and defined than in Dr. Bell's figure." He adds that the natives of Sumatra "assert that a third horn is sometimes met with; and in one of the young specimens procured, an indication of the kind was observed." In Mr. C. J. Andersson's work, entitled *Lake Ngámi*, the same is remarked of one or more of the ordinary Two-horned Rhinoceroses of Africa. This traveller writes:—"I have met with persons who told me that they had killed Rhinoceroses with three horns; but in all such cases (and they have been but few) the third or hindermost horn is so small as to be scarcely perceptible." It is remarkable that Linnæus referred to Rhinoceroses bearing a third horn,\* and this seems to be a not unlikely character to have been developed more frequently in certain of the extinct species of *Rhinocerotidæ*. A rudimentary *second* horn may, indeed, be seen upon the forehead of the large female of *R. indicus* in the London Zoological Gardens; and the alleged third horn referred to by Linnæus, Raffles, and Andersson, we suspect to be merely a slight appearance of the same kind.

The Asiatic Two-horned Rhinoceros has been supposed, until recently, to be peculiar to the island of Sumatra, as the smaller One-horned Rhinoceros is to that of Java; but both of them are widely diffused over the Indo-Chinese countries, and throughout the Malayan peninsula, the smaller One-horned being likewise found in Java, and the Asiatic Two-horned also in Borneo as well as in Sumatra. We have information of the two-horned species having been killed in one of the hill ranges immediately to the southward of the Bráhma-putra river, so that its range may be said to extend northward into Assam (where, however, exceedingly rare), and a native female has recently been captured near the station of Chittegong, to the south-east of the Bengal Sundarbáns, where *R. sondaicus* inhabits, and not the great One-horned Rhinoceros, which is so commonly brought alive to Europe, these captured animals being usually brought down from Assam. It is worthy of notice that the full-grown

\* To his description of *R. bicornis*, it is added, "Rarior est Rhinoceros tricornis, tertia tum cornu ex alteratro priorem excrecente." (Gmelin's edition, A.D. 1788.)

female of the Two-horned Asiatic Rhinoceros become very speedily tame and tractable. We have reason to believe that the Rhinoceroses mentioned by Du Halse as inhabiting the province of Quáng-si, in the south-east of China, are of this small two-horned species.

So long ago as in 1838, the late Dr. Helfer remarked that the Tenasterian provinces (now constituting the southern portion of British Burmah) "seem to be a convenient place for this genus; for I dare to pronounce almost positively," he then wrote, "that the three known Asiatic species occur within their range. The *R. indicus* being found in the northern part of these provinces, in that high range bordering on Zimmay, called the 'Elephant-tail' Mountain; the *R. sondaicus*, on the contrary, occupies the southernmost part; while the two-horned *R. sumatranus* is to be found throughout the extent of the territories from the 17th to the 10th degree of north latitude. In character the *R. sondaicus* seems to be the mildest, and can be easily domesticated (tamed), the powerful Indian Rhinoceros is the shyest, and the double-horned the wildest."\* Mason (in 1850, in his work entitled, *Burmah*) remarked that "the common Single-horned Rhinoceros is very abundant. The Double-horned is not uncommon in the southern provinces;" and then he alludes to the alleged fire-eater of the Burmans, supposing that to be *R. sondaicus*, as distinguished from the common single-horned kind, which he thought was *R. indicus*. "The fire-eating Rhinoceros," he tells us, "is so called from its attacking the night fires of travellers, scattering the burning embers, and doing other mischief, being attracted by unusual noises, instead of fleeing from them as most wild animals do." Now Professor Oldham's camp-fire was attacked by a Rhinoceros, which he fired at with a two-ounce ball; and three days afterwards the body was found, and proved to be of the Two-horned species. The skull of that individual is now in the museum of Trinity College, Dublin. The commonest of the African Rhinoceroses has been known to manifest the same propensity, and so has even the ordinary American Tapir; but we have never heard of the Malabar Tapir doing so, and the range of that animal extends into the more southern of the Tenasterian provinces. In general, however, the Asiatic Two-horned Rhino-

\* *Journal of the Asiatic Society of Bengal*, vol. vii. p. 861.

ceros is an exceedingly shy and timid animal, and Sir T. Stamford Raffles remarks of it:—"They are not bold, and one of the largest size has been seen to run away from a single wild dog." (*Canis rutilans*, a peculiar species). Dr. Cantor heard of it in the Malayan peninsula, as an inhabitant of Province Wellesley, frequenting only the densest and most inaccessible jungles. He also gives both *R. indicus* and *R. sondaicus* as inhabiting the Malayan peninsula, but did not procure specimens or other *indiciæ*, and we doubt if he wrote on personal knowledge, or that he had actually seen and compared the skulls of both species. It may be added that *C. sumatranus*, like *R. sondaicus* is found at all elevations, but that the two do not usually inhabit the same districts.

In the course of personal investigations in the province of British Burmah, the author of these *addenda* obtained the spoils of both the lesser One-horned and of the Asiatic Two-horned Rhinoceroses. Of the latter a full-grown male was staked within a distance of not more than five miles of him, in Upper Mor-tabon, but the intervening ground was impracticable, and he only succeeded in obtaining the facial portion of the skulls, with the two horns attached to the skin covering it. The small size of the bones seemed to indicate a young animal, but when, after maceration in water, the skin (with the horns attached to it) was separated from the bone, the complete ankylosis of the nasals proved that it was by no means immature. The thought occurred that the horns of a Rhinoceros, consisting merely of agglutinated hairs, might, under rare circumstances, be shed in a mass, and subsequently renewed, which was the only way that the small size of the horns upon this tolerably aged animal could be accounted for. We have since learned that a great One-horned Rhinoceros, at this time living in the Zoological Garden at Moscow, did actually shed a horn, which is now in the museum of that city, and that another has since grown in its place. So the rudimentary frontal horn of the old female of the same species now in the London Zoological Gardens was roughly broken off on one occasion, and the blood flowed very profusely; but another hornlet has since been developed in its place, and there can now be no doubt that the same occasionally happens with wild animals.

The genera of *Rhinocerotidæ* differ remarkably in the conformation of the lips. In *Rhinoceroses* (as limited by Dr. Gray, *i. e.*, to the two One-horned species) the upper lip is prehensile, extensible, and pointed, while the lower lip is very broad and square; in the Asiatic *Ceratorhians*, and in the African *Rhinoster*, the upper lip is similarly formed, and the lower lip corresponds with it, though without having a pointed and prehensile tip; and in *Ceratotherium* both lips are broad and non-prehensile. Those *Rhinoceroses* which have the upper lip prehensile are habitual browsers, while the flat-lipped are habitual grazers. In the African *Rhinoceroses* there are no lower incisor-teeth, and the grinders come much more forward, or nearer to the cleft of the mouth. They further agree in bearing two horns, one situated behind the other, and in having no distinct folds or plaits to the hide; though in *Rhinoster* we perceive the same crease near the hind limbs as in *Ceratorhians*, and there is a slight appearance of folds upon the neck. Their skin is smooth and hairless, excepting only a fringe of black bristly hairs upon the ears, and a few also at the tail-tip. Such are the known African *Rhinoceroses*, which divide, nevertheless, into two well-marked genera—*Rhinoster* (with prehensile upper lip), and *Ceratotherium* (with non-prehensile upper lip). These are respectively known to sporting travellers as the Black and the White African *Rhinoceroses*, which differ much in habits and disposition; and the White one is the largest of the whole group, being next in size among existing land animals to the Elephants.

*Rhinoster*.—This is the name applied by the people of Dutch descent in South Africa to all *Rhinoceroses*, though now technically limited by Dr. Gray to one section of them; and there are certainly two species of this particular section or genus, one of which, *R. keitloa*, is considerably larger than the other, *R. bicornis*, and exhibits certain other differences. In general, these two animals are the *Keitloa* (or *Khetloa*) and the *Borèlè* of travellers in the interior of South Africa; but Mr. Chapman styles the first the true *Borèlè*, and calls the other the *Borelengani* or *Kenin-gani*. The former is the one figured and described by the late Sir C. Cornwallis Harris as the “Black Rhinoceros,” and the latter is that of which a living example, procured in Abyssinia, was received in the London Zoological Gardens in 1868. Both species,

however, have been ascertained to inhabit Abyssinia as well as the more southern parts of Africa. The Keitloa is said to grow to six feet high at the shoulder, and may at least approach that size, whereas the Borèlè would not probably exceed five feet. The horns of the Keitloa are much longer than in the other species, and its hind horn especially (which is straight and laterally much compressed) grows to two feet and a half or more in length, being not unfrequently as long as the anterior horn, though oftener the latter is still longer, and considerably more so than the other. In the Borèlè the posterior horn is much shorter, and is generally about half the length of the anterior one, which seldom exceeds two feet. Both of these are fierce and energetic animals—especially the smaller species—and so active and swift of foot that they cannot be overtaken on horseback. “Both species,” writes W. C. J. Andersson, “are extremely fierce, and, excepting the Buffalo, are, perhaps, the most dangerous of all the beasts of Southern Africa. Seen in its native wilds, either when browsing at its leisure, or listlessly sauntering about, a person would take this beast to be the most stupid and inoffensive of creatures; yet, when his ire is roused, he becomes the reverse, and is then the most agile and terrible of animals. The Black Rhinoceroses are, moreover, subject to sudden paroxysms of unprovoked fury, rushing and charging with inconceivable fierceness animals, stones, and bushes; in short, every object that comes in their way.” “The Black Rhinoceros,” writes Gordon Cumming also, “is subject to paroxysms of sudden fury, often ploughing up the ground for several yards with its horns, and assaulting large bushes in the most violent manner. On these bushes they work for hours with their horns, at the same time snorting and blowing loudly, nor do they leave them in general until they have broken them to pieces. During the day they will be found lying asleep, or standing indolently in some retired part of the forest, or under the base of the mountains, sheltered from the power of the sun by some friendly grove of umbrella-topped mimosas. In the evening they commence their nightly ramble, and wander over a great extent of country. They usually visit the fountains between the hours of nine and twelve o’clock at night; and it is on these occasions that they may be most successfully hunted, and with the least danger.”

The Keitloa, according to Mr. Chapman, is nearly as large as the *Mohogu*, or White Rhinoceros (so called). "He is of a dark neutral grey colour, as seen from a distance. This animal droops behind, and has a stiff, clumsy, and awkward walk. He feeds on bushes and roots, is nervous and fidgety when discovered, but confines his movements generally only to the head and horns, moving them about in an undecided manner, first one way, then the other. He is not nearly so excitable as the *Borelengani*. The latter is a dumpy, plump-looking animal, of a very dark colour, particularly lively in his actions, and seemingly always on the trot, always very nervous, wary, and fidgety, often flying round in a fury, whether he has observed danger or not, making the hunter sometimes believe that he has been discovered. When he fancies that he does see or hear anything, he lifts one foot, tosses up his horn and nose and sinister little eyes, and presents altogether a picture of the most intense and earnest scrutiny and attention, wheeling round with great rapidity, and, by his active gestures and startling snortings, often rendering the nerves and aim of an inexperienced hunter very unsteady. On the whole his actions, when undisturbed, are like those of a lively and busy Pig." Elsewhere he remarks, that whilst "the White Rhinoceros likes the open plains, where there is just bush enough to shelter him from sun and wind, the *Borèlè* likes the thorny jungle, and the most secluded and retired spots of it; the Keitloa (or large Black Rhinoceros) being more an inhabitant of rocky hills."

All Rhinoceroses are fond of wallowing in mud, with which the body is not unfrequently encrusted; and their senses of hearing and smell are most acute, but not that of vision, so that they may be closely approached by keeping to leeward of them. On one occasion the waggon of a friend of Mr. Andersson was attacked by one of these animals. "We heard shouting and firing, and on looking in the direction whence the noise proceeded, discovered to our horror, a Rhinoceros rushing furiously at us at the top of his speed. Our only chance of escape was the waggon, into which we hurriedly flung ourselves. And it was high time that we should seek refuge, for the next instant the enraged beast struck his powerful horn into the bottom plank of the waggon with such force as to push the waggon several paces forward, although it was standing in very heavy sand. Most fortunately he attacked



the vehicle from behind; for if he had struck it at the side he could hardly have failed to upset it, ponderous as it was. From the waggon he made a rush at the fire, overturning the pot we had placed alongside of it, and scattering the burning brands in every direction. Then, without doing any further damage, he proceeded on his wild career."

*Ceratotherium*.—The Flat-lipped or White Rhinoceros (so called from its general pale colour) is a very different animal from those of which we have been treating. It grows to more than six feet and a half high at the withers, where there is a sort of square hump, and its head is a foot longer than in the Keitloa, with an exceedingly long anterior horn, attaining to more than four feet in length, whilst the hind horn is very short, not exceeding seven or eight inches. "Its colour," remarks Mr. Chapman, "is of such a light neutral grey, as to look nearly as white as the canvas tilt of a waggon." His fellow-traveller, Mr. Baines, describing a freshly-killed one, tells us that "the skin was of a light pinky grey, deepening into a bluish neutral tint on parts of the head, neck, and legs. The limbs, shoulders, cheeks, and neck were marked with deep wrinkles, crossing each other so as to have a lozenge-shaped reticulated appearance; but the only approach to a fold was a slight collar-like mark across the throat. The mouth was very small, and the limbs were dwarfish compared with the bulk of the carcass. The eyes were small and set flat on the side of the head, with no prominence of brow, and in such a position that I should doubt very much the assertion that the Rhinoceros can see only what is straight before it. I should think, on the contrary," continues Mr. Baines, "that anything exactly in front would be absolutely hidden from its view." Mr. Chapman estimated the weight of one of these White Rhinoceroses as being probably not less than 5000 lbs.

"The male," he says, "measures six feet eight inches at the withers, carries his head so low that the chin nearly sweeps the ground, is constantly swaying his head to the right and left when suspicious, and its calf, instead of going behind or at the side, always precedes the dam, and when fleeing is helped on by her horn or snout. The back of this animal is tolerably straight, the croup being as high, or even higher, than the withers. It moves each ear alternately backwards and forwards when excited,

and the ears, when thrown forward, turn as if on a pivot, so as to bring the orifice innermost. In the other African Rhinoceroses the two ears are moved together, and not alternately. The ears are pointed or tufted."

This animal is of a comparatively mild and gentle disposition; and, unless in defence of its young, or when hotly pursued, or wounded, will very rarely attack a man. "It is gregarious in families," remarks Mr. Chapman, "the individuals comprising which are greatly attached to each other; and it utters a long sound, and not such a startling, whistling snort as the *Borèlè* does. It is an indolent creature, and becomes exceedingly fat by eating grass only." Elsewhere, he remarks of a herd of eight which he observed at a drinking place—"The Rhinoceroses, all of which were of the white kind, occupied each twelve minutes to drink their fill, after which they wallow in the mud, or else go to their regular sleeping-places. At these their dung is found accumulated sometimes to the amount of a ton or more. They like the warmth of the manure to lie in. The sounds emitted by these animals is something like the coughing of a Horse, and when in distress, a stifled asthmatic cry; when in pain they squeal like a storm-whistle." According to Gordon Cumming, and others, their flesh is excellent, and even preferable to beef. The speed of this species is very inferior to that of the others, so that a person well mounted can easily overtake and shoot them.

In old individuals of the White Rhinoceroses, having exceedingly long and heavy anterior horns, the latter hang over much forward; and such have been supposed to exemplify a peculiar species, for which the name of *C. Oswellii* has been proposed. They are also designated *Kobábá* in the interior of South Africa. Mr. Chapman writes:—"I believe that wherever guns are to be found at present, the White Rhinoceros is not allowed to reach its prime, and will soon be extinct. In newly-opened countries we always find long-horned Rhinoceroses at first. These are selected and shot by every new comer for their long horns. I have never found a person yet who could conscientiously say that he had seen a young or middle-aged *Kobábá* that was distinguished from a *Mohogu*—not even a Bechuana or Bushman." That traveller, however, nevertheless believes in the existence of a second species of flat-lipped and grass-eating African Rhinoceros,

though he has favoured us with no intelligible description of it.

Fossilized bones of the Rhinoceros are met with in great quantities in tertiary and diluvian soils. We will only mention here the *R. tichorinus*, which was greater in size than the African Rhinoceros, and had a very elongated head, supporting two long horns. The remains of this Pachyderm is pretty often found in the bone caverns (*cavernes à ossements*), and in the alluvions of rivers of France and England. In Siberia the remains of the *R. tichorinus* are very plentiful; they are mixed up with those of the Mammoth. In 1771 was discovered, in the midst of the ice of that region, a carcass, very nearly entire, of the antediluvian Rhinoceros, with its skin, its hair, and its flesh intact.\* In the excavations made, preparatory to building the new Hôtel de Ville, at Paris, an omoplate of the *R. tichorinus* was found.

*Hyrax*.—Cuvier has placed next to the Rhinoceros a pretty little animal, the Hyrax of the Cape of Good Hope, which is not larger than a Rabbit. It is rather clumsily made; its body elongated, and low on its legs; its head thick and heavy; its muzzle obtuse. Its coat, silky and very thick, is of a brownish grey above, of a greyish white below. It inhabits the mountains covered with woods near the Cape of Good Hope, and lives in the midst of the steepest and most precipitous rocks, either in a burrow, or in a fissure of the rocks, or in a hole in a tree. Quick, alert, and timid, it eats herbs, like the Hare, and is easily tamed. The naturalist, Boitard, in his work, *Le Jardin des Plantes*, is very angry at seeing the bonds of form, of grandeur, of aspect, of habits, of intelligence, broken through by Cuvier, so that he may class this little beast, on account of the structure of its teeth, with the monstrous Rhinoceros. Let us be angry with him; but, while we quite understand the complaints of sentimental zoology, let us put the Hyrax in the place assigned to it by scientific zoology.

The Hyrax of Syria is the Saphan of Scripture. Buffon has described it, and modern naturalists have studied it.

*Tapir*.—Three species of Tapir are known; two live in South America; the third is peculiar to India. The Indian and one of

\* See Figuier's *The World before the Deluge*: Chapman & Hall.