

6070

THE RIVERSIDE NATURAL HISTORY

EDITED BY
JOHN STERLING KINGSLEY

ARTICLES BY
C. C. ABBOTT, J. A. ALLEN, W. B. BARROWS, E. A. BIRGE, H. C. BUMPUS, S. F. CLARKE,
J. H. COMSTOCK, E. D. COPE, E. COUES, G. DIMMOCK, H. EDWARDS, D. G. ELLIOT,
W. FAXON, C. H. FERNALD, J. W. FEWKES, W. F. GANONG, S. GARMAN, T. GILL,
A. F. GRAY, R. HITCHCOCK, L. O. HOWARD, A. HYATT, D. S. JORDAN,
D. S. KELLCOTT, J. S. KINGSLEY, W. N. LOCKINGTON, S. LOCK-
WOOD, G. MACLOSIE, O. T. MASON, C. S. MINOT, A. S.
PACKARD, C. V. RILEY, W. B. SCOTT, L. STEJNEGER,
P. R. UHLER, S. W. WILLISTON, C. W.
WOODWORTH, R. R. WRIGHT

Illustrated

*BY MORE THAN TWENTY-TWO HUNDRED WOOD-CUTS IN THE TEXT, ONE
HUNDRED AND SIXTY-EIGHT FULL-PAGE ENGRAVINGS,
AND TWELVE PLATES IN COLOR*

VOLUME V.
MAMMALS



BOSTON AND NEW YORK
HOUGHTON, MIFFLIN AND COMPANY
The Riverside Press, Cambridge

CONTENTS.

| | PAGE | | PAGE |
|--|------|--|------|
| CLASS X. — MAMMALIA | 1 | ORDER VI. — SIRENIA. <i>J. S. Kingsley</i> | 210 |
| SUB-CLASS I. — ORNITHODELPHIA. | | ORDER VII. — PROBOSCIDEA. <i>George Macloskie</i> | 215 |
| <i>R. R. Wright</i> | 11 | ORDER VIII. — HYRACOIDEA. <i>J. S. Kingsley</i> | 229 |
| ORDER I. — MONOTREMATA | 11 | ORDER IX. — TOXODONTIA. <i>W. B. Scott</i> | 231 |
| SUB-CLASS II. — DIDELPHIA. <i>R. R. Wright</i> | 20 | ORDER X. — UNGULATA. <i>R. R. Wright</i> | 233 |
| ORDER I. — MARSUPIALIA | 20 | SUB-ORDER I. — PERISSODACTYLA | 235 |
| SUB-CLASS III. — MONODELPHIA | 46 | SUB-ORDER II. — ARTIODACTYLA | 262 |
| ORDER I. — BRUTA OR EDENTATA. | | GROUP I. — SUINA | 263 |
| <i>Theodore Gill</i> | 46 | GROUP II. — RUMINANTIA | 276 |
| SUB-ORDER I. — LORICATA | 47 | SUPER-FAMILY I. — TYLOPODA | 279 |
| SUB-ORDER II. — TARDIGRADA | 53 | SUPER-FAMILY II. — TRAGULINA | 287 |
| SUB-ORDER III. — VERMILINGUIA | 59 | SUPER-FAMILY III. — PECORA | 289 |
| SUB-ORDER IV. — FODENTIA | 60 | ORDER XI. — CARNIVORA | 353 |
| SUB-ORDER V. — SQUAMATA | 62 | SUB-ORDER I. — FISSIPEDIA | 354 |
| ORDER II. — RODENTIA. <i>Elliott Coues</i> | 68 | SUPER-FAMILY I. — ARCTOIDEA. <i>Samuel Lockwood</i> | 354 |
| SUB-ORDER I. — HEBETIDENTATA | 72 | SUPER-FAMILY II. — CYNOIDEA. <i>W. N. Lockington</i> | 408 |
| SUB-ORDER II. — DUPLICIDENTATA | 73 | SUPER-FAMILY III. — ÆLUROIDEA. <i>W. N. Lockington</i> | 431 |
| SUB-ORDER III. — SIMPLICIDENTATA | 81 | SUB-ORDER II. — PINNIPEDIA. <i>W. N. Lockington</i> | 466 |
| ORDER III. — INSECTIVORA. <i>Theodore Gill</i> | 134 | ORDER XII. — PRIMATES. <i>R. R. Wright</i> | 480 |
| SUB-ORDER I. — BESTIÆ | 135 | SUB-ORDER I. — LEMUROIDEA | 481 |
| SUB-ORDER II. — DERMOPTERA | 156 | SUB-ORDER II. — ANTHROPOIDEA | 493 |
| ORDER IV. — CHIROPTERA. <i>Theodore Gill</i> | 159 | LIST OF IMPORTANT PUBLICATIONS ON MAMMALS | 529 |
| SUB-ORDER I. — FRUGIVORA | 162 | | |
| SUB-ORDER II. — ANIMALIVORA | 163 | | |
| ORDER V. — CETACEA. <i>W. N. Lockington</i> | 178 | | |
| SUB-ORDER I. — DELPHINOIDEA | 182 | | |
| SUB-ORDER II. — BALENOIDEA | 195 | | |
| SUB-ORDER III. — PHOCODONTIA | 203 | | |

size the female somewhat exceeds the male, and may attain a length of almost seven feet.

A second South American species from the Andes occurs under very different circumstances from the above-mentioned form. It is always found at high levels on the Corderillas, ascending to between seven and eight thousand feet. The skin is uniformly covered with hairs an inch in length and mostly brownish black, whence it is spoken of as the Hairy Tapir, and is known to naturalists as *T. roulini* from its first describer, M. Roulin. The hairs on the nape and sides are a little longer. There is a white spot at the corners of the mouth which may extend on to the cheeks; the end of the snout and the edging of the ears are also white, while the sides are of a bluish hazel instead of brown. In length the hairy tapir measures fifty-four inches, and stands twenty-six inches high at the shoulder.

Two species of tapir have been recently discovered in Central America which present so many important points of difference from the South American species that Dr. Gill established the separate genus *Elasmognathus* for them. They rather approach the Indian species in the structure of the skull, but are characterized by the ossified nasal septum. *E. bairdii* from Nicaragua is forty-two inches long and twenty-three high. It is brownish black on the upper parts, but the face is rufous and the throat and chest dirty white. Professor Verrill has described the young of this species as of reddish brown color with ten longitudinal rows of white patches on the sides blending into stripes. The sides of the face and the legs are also striped. *E. dowi*, the second species, is found both on the Pacific and Atlantic slopes of Central America, being recorded from Guatemala and the east coast of Costa Rica. This species wants the rufous cheeks of the latter form. Little is known of the habits of these Central American species, but Dr. Gill suggests that the great difference in the structure of the skull is probably associated with some difference of habit.

The living members of the family RHINOCERIDÆ have only three toes on each foot, the second, third, and fourth, and these are equally long, but the weight of the body does not rest upon the small hoofs which cover the terminal joints, but rather upon a hard, rough pad which is formed on the under surface of the toes higher up. The third toe alone is symmetrical in itself, its last joint being somewhat similar to the coffin bone of the horse. The skin is excessively thick, a circumstance which induced the older zoologists to associate the rhinoceroses with the elephants and hippopotami as "Pachydermata." It may be converted into a series of impenetrable shields, the surfaces of which are marked off into tubercles between which the scanty hairs spring. The head is elongated like the tapirs, but proportionately broader. The leaf-eating species have a prehensile upper lip, but it is never prolonged into a rounded proboscis. The middle line of the nose bears one or two horns, destitute of a bony core, and composed of agglutinated fibres which are developed in the same way as hairs. No canine teeth are present even in the milk set; the incisors are $\frac{3}{2}$ in the milk set, but disappear partly or entirely in the permanent set; the molars are $\frac{7}{7}$, and their surface has a pattern intermediate in complexity between that in the tapir and the horse. The tail has twenty-two vertebræ instead of twelve.

The living species of rhinoceros, six in number, are equally divided among three sub-genera, *Atelodus*, *Ceratorhinus*, and *Rhinoceros*. The first of these is confined to Africa; the second and third extend from the larger islands of the Malay Archipelago up the Malay peninsula to British Burmah, Assam, Bengal, and as far north as the foot

of the Himalayas. The genera are readily distinguished by the nature of the skin, which in the African forms, *Atelodus*, does not shape itself into the distinct shields so characteristic of the Indian one-horned rhinoceros (*Rhinoceros* proper), while the genus *Ceratorhinus* is intermediate between the others in this respect. Again, the two former genera have two median horns, while the latter has only one. The African species are destitute of incisor and canine teeth, while these are arranged according to the formula $i. \frac{1}{1}, c. \frac{0}{0}$, in the Indian species.



FIG. 126. — *Atelodus bicornis*, two-horned rhinoceros.

A somewhat detailed account of the habits and mode of life of the African rhinoceroses will enable us to dispense with any long descriptions of the Indian species, which in fact are much less known both to sportsmen and naturalists.

After a residence of eight years in south Africa, F. C. Selous has communicated to the Zoological Society of London the result of his observations on the species of rhinoceros met with there. He distinguishes two; the large, square-mouthed, grass-eating species (*A. simus*), and the smaller, prehensile-lipped form which feeds exclusively on bush (*A. bicornis*). Twenty years ago *A. simus* (*Umhofo* of the Matabele, *Chukuru* of the Bechuanas) was very common in the western half of south

Africa, now it is almost extinct there, and will soon only exist in a few small tracts of south east Africa near the River Sabi.

Although *A. simus* is generally spoken of as the white rhinoceros there is not much difference of color between it and *A. bicornis*. "It is a huge ungainly beast with a disproportionately large head, a large male standing six feet six inches at the shoulder. Like elephants and buffaloes they lie asleep during the heat of the day, and feed during the night, and in the cool hours of early morning and evening. Their sight is very bad, but they are quick of hearing, and their scent is very keen; they are, too, often accompanied by rhinoceros birds (*Buphaga africana*), which, by running about their heads, flapping their wings and screeching at the same time, frequently give them notice of the approach of danger, and are further of service in ridding them of parasites. When disturbed they go off at a swift trot, easily distancing a man on foot, but they are no match for a good horse."

The anterior horn of a full grown animal is from eighteen inches to over four feet in length, a cow having a thinner and usually a longer horn than a bull. Occasionally they are curved backwards, but generally straight and flattened by friction on the anterior surface. The posterior horn may vary from three or four inches to two feet, and there appears to be as much variation in relative length as in individuals of *A. bicornis*.

The prehensile-lipped rhinoceros (*A. bicornis*) (Upeygan of the Matabele, Borele of the Bechuanas) is still fairly numerous in many districts of southeast Africa. Between the Chobe and Zambesi Rivers there appear to be none, but they extend north of that through central Africa into Abyssinia. They feed exclusively on leaves and young shoots, a circumstance which accounts for their presence in many tracts where *A. simus* would be unable to procure its livelihood. These rhinoceroses are very quick and restless in their movements, but Selons acquits them of the surliness and moroseness which most travellers ascribe to them, and considers that there is much less danger in hunting them than in hunting the lion, elephant, or buffalo.

The old Dutch hunters and also the Kaffirs distinguish a third species, which has been scientifically described as *A. keitloa*, and which is characterized by the second horn being equal in length to the first. It is the blue rhinoceros of the colonists and the keitloa of the natives. Selons points out, however, that there are all gradations between the one and the other, while the habits of the keitloa are precisely similar to those of the ordinary black rhinoceros. Both, for example walk and run with their heads high in the air, while *A. simus* carries its head low, and when feeding rubs its anterior horn on the ground, a circumstance which enables one to distinguish an anterior horn of this species from one belonging to the other. Again, the female of *A. simus* guides with her horn her young calf in front of her, while the calves of *A. bicornis* follow their mothers.

For the following description of the habits and modes of hunting of the Abyssinian variety of the African rhinoceros (keitloa) we are indebted to Sir S. Baker's "Nile Tributaries of Abyssinia."

"I had been observing the country for some time from my high station when I suddenly perceived two rhinoceroses emerge from a ravine; they walked slowly through a patch of high grass, and skirted the base of the hill upon which we were standing. Presently they winded something, and they trotted back and stood concealed in the patch of grass. Although I had a good view of them from my present position, I knew that I should not be able to see them in their covert if on the same level; I there-

fore determined to send to the tent for my other horse, and to ride them down. In the meantime I watched the rhinoceroses; both animals lay down in the yellow grass, resembling masses of stone. They had not been long in this position before we noticed two pigs wandering through the grass directly to windward, towards the sleeping rhinoceroses. In an instant these animals winded the intruders, and, starting up, they looked in all directions, but could not see them as they were concealed by the high grass. Having been thus disturbed, the rhinoceroses moved their quarters and walked slowly forward, occasionally halting and listening; one was about a hundred yards in advance of the other. They were taking a direction at the base of the hill that would lead them directly upon the spot where Tétel was tied to the tree. I observed this to Taher Noor, as I feared they would kill the horse. 'Oh, no,' he replied, 'they will lie down and sleep beneath the first tree, as they are seeking for shade; the sun is like fire.' However, they still continued their advance, and, upon reaching some rising ground, the leading rhinoceros halted, and I felt sure that he had a clear view of the horse, that was now about five hundred yards distant, tied to the tree. A ridge descended from the hill, parallel with the course the animals were taking; upon this I ran as quickly as the stony slope permitted, keeping my eye fixed upon the leading rhinoceros, who, with his head raised, was advancing directly towards the horse. I now felt convinced that he intended to attack it. Tétel did not observe the rhinoceros, but was quietly standing beneath the tree. I ran as fast as I was able, and reached the bottom of the hill, just as the wilful brute was within fifty yards of the horse, which now for the first time saw the approaching danger. The rhinoceros had been advancing steadily, at a walk, but he now lowered his head, and charged at the horse at full speed.

"I was about two hundred yards distant, and for the moment I was afraid of shooting the horse, but I fired one of the Reilly, No. 10, rifles; the bullet, missing the rhinoceros, dashed the sand and stones into his face, as it struck the ground exactly before his nose, when he appeared to be just into the unfortunate Tétel. The horse in the same instant reared, and breaking the bridle, it dashed away in the direction of the camp, while the rhinoceros, astonished at the shot, and most likely half blinded by the sand and splinters of rock, threw up his head, turned round, and trotted back upon the track by which he had arrived. He passed me at about a hundred yards' distance, as I had run forward to a bush, by which he trotted with his head raised, seeking for the cause of his discomfiture. Crack! went a bullet against his hide, as I fired my remaining barrel at his shoulder; he cocked his tail, and for a few yards he charged toward the shot, but he suddenly changed his course, and ran round several times in a small circle; he then halted, and, reeling to and fro, he retreated very slowly, and lay down about a hundred yards off. Presently the wounded rhinoceros stood up, and, walking very slowly, followed by his comrade, he crossed a portion of rising ground at the base of the hill, and both animals disappeared. I found the rhinoceros lying dead about two hundred yards from the spot where he had received the shot, and I immediately perceived the companion, that was standing beneath a small tree. The ground was firm and stony, all the grass had been burned off except in a few small patches; the trees were not so thick together as to form a regular jungle. The rhinoceros saw us directly, and he valiantly stood and faced me as I rode up within fifty yards of him. I was unable to take a shot in this position, therefore I ordered the men to ride round a half-circle, as I knew the rhinoceros would turn towards the white horses, and thus expose his flank; this he did immediately, and firing well, exactly at the shoulder, I

dropped him as though stone dead. The number twenty-four bullet had not force to break the massive shoulder-bone, but had merely paralyzed it for the moment; up he jumped, and started off in full gallop. I saw the rhinoceros pelting away about a hundred and twenty yards ahead, and, spurring hard, I shot up to him at full speed, until within twenty yards, when round he came with astonishing quickness, and charged straight at the horse. I was prepared for this, as was my horse also. We avoided him by a quick turn, and again renewed the chase, and regained our position within a few yards of the game. Thus the hunt continued for about a mile and a half, the rhinoceros occasionally charging, but always cleverly avoided by the horse. Tétel seemed to enjoy the fun, and hunted like a greyhound. Nevertheless I had not been able to pass the rhinoceros, who had thundered along at a tremendous pace whenever I had attempted to close; however, the pace began to tell upon his wounded shoulder; he evidently went lame, and as I observed at some distance before us the commencement of the dark-colored rotten ground, I felt sure that it would shortly be a case of 'stand still.' In this I was correct, and upon reaching the deep and crumbling soil, he turned sharp round and made a clumsy charge, that I easily avoided. He stood panting, at bay. Riding Tétel close to his flank I fired both barrels of the little Fletcher into the shoulder. He fell to the shots, and, stretching out his legs convulsively, died immediately.

"The drinking hour is about 8 P.M., or two hours after sunset, at which time the rhinoceros arrives at the river from his daily retreat, which is usually about four miles in the interior. He approaches the water by regular paths, made by himself, but not always by the same route; and after drinking he generally retires to a particular spot beneath a tree, that has been visited upon regular occasions. In such places large heaps of dung accumulate. The hunters take advantage of this peculiarity of the rhinoceros, and they set traps in the path to his private retreat; but he is so extremely wary, and so acute is the animal's power of scent, that the greatest art is necessary in setting the snare. A circular hole, about two feet deep and fifteen inches in diameter, is dug in the middle of his run, near the tree that has been daily visited; upon this hole is placed a hoop of tough wood, arranged with a vast number of sharp spikes of a strong elastic wood, which, fastened to the rim, meet at the centre, and overlap each other as would the spokes of a wheel in the absence of the hub if lengthened sufficiently. We will simplify the hoop by calling it a wheel without a centre, the spokes sharpened and overlapping in the middle. This instrument being fitted neatly above the hole, a running noose of the strongest rope is laid in a circle upon the wheel, the other extremity of the rope is fastened to the trunk of a tree that has been felled for that purpose, and deeply notched at one end to prevent the rope from slipping. This log, which weighs about five or six hundred pounds, is then buried horizontally in the ground, and the entire trap is covered with earth and carefully concealed; the surface is smoothed with a branch instead of the hand, as the scent of a human touch would at once be detected by the rhinoceros. When completed, a quantity of the animal's dung is swept from the heap upon the snare. If the trap is undiscovered, the rhinoceros steps upon the hoop, through which his leg sinks into the hole, and upon his attempt to extricate his foot the noose draws tight over the leg; as the spiked hoop, fixing tightly into the skin, prevents the noose from slipping over the foot. Once caught, his first effort to escape drags the heavy log from the trench. As the animal rushes furiously away, this acts as a drag, and by catching in the jungle and the protruding roots of trees, it quickly fatigues him. On the following morning the hunters discover the

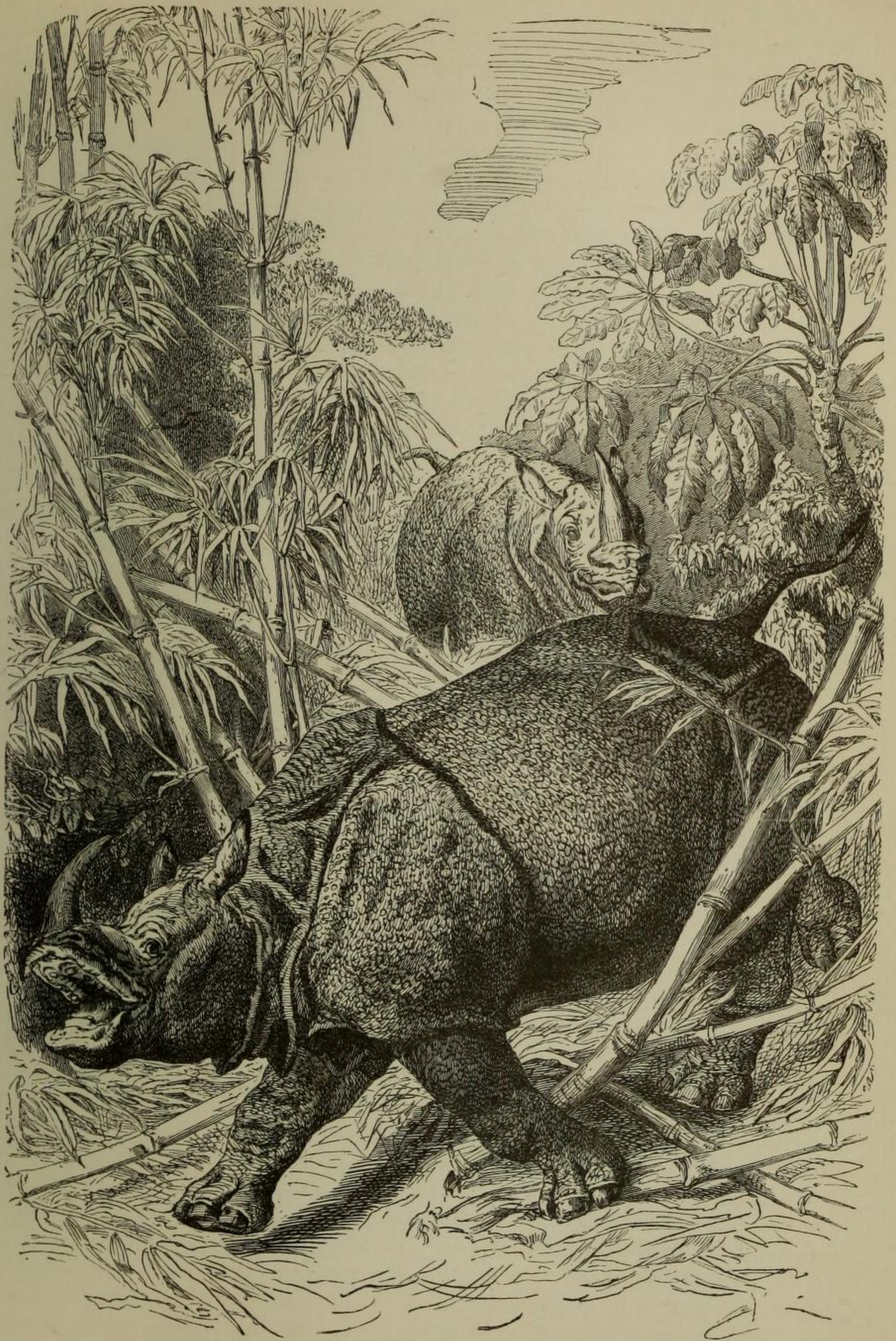
rhinoceros by the track of the log, that has ploughed along the ground, and the animal is killed by lances or by the sword. The hide of a rhinoceros will produce seven shields; these are worth about two dollars each, as simple hide, before manufacture. The horn is sold in Abyssinia for about two dollars per pound, for the manufacture of sword-hilts, which are much esteemed if of this material."

The rhinoceros is sometimes hunted with the sabre, the hunter galloping up behind and severing the hamstrings. Unlike the elephant the rhinoceros can walk on three legs, so one cut does not disable him. The Abyssinian form (keitloa) measures only five feet six to five feet eight inches at shoulder. The power of scent is so good that it detects a stranger at five hundred or six hundred yards. Baker observes that a rhinoceros will generally charge down upon the object that it smells but does not see, rushing with three loud whiffs resembling a jet of steam from a safety valve. In thick jungle such a charge may be very unpleasant. The cry is insignificant, not unlike the harsh, shrill sound of a penny trumpet.

The genus *Ceratorhinus* differs from the African forms and agrees with the following genus in the arrangement of the teeth. It possesses two horns, and although its skin is not folded into shields as in the rhinoceros, yet the marking off of a distinct cape over the shoulder, and a similar if less distinct fold on the haunch, indicate that the two species to be now described occupy in this respect a position intermediate between the African and Indian forms. The internal anatomy bears out this view of the generic distinctness of the Sumatran rhinoceros. The best known species, *C. sumatrensis*, is not confined to Sumatra, but is found in Borneo as well as on the Malaccan peninsula. The skin is of a dark slate color, thinly covered with black hairs more than an inch long, situated mostly on the back and outsides of the legs. The entire length is about eight feet, exclusive of the tail, which measures twenty-two inches. The ears are lined with black hairs not merely fringed, and there is no gland at the back of the feet as in the Indian rhinoceros.

C. lasiotis, recently separated as a distinct species by Mr. Selater, is perhaps a northern representative of the Sumatran species, being found in Chittagong and Assam. It differs from it in various important points, being taller by six inches at the shoulder, and having a smoother and paler skin. The ears have a distinct hairy fringe, and are much wider apart, while the tail is shorter and terminated by a tuft of long brown hairs. The general color is light brown, owing to the rufescent hairs which are longer and finer than in the allied species.

The one-horned species of rhinoceros form the genus *Rhinoceros* in the narrower sense of the term, and includes two species, *R. indicus* and *R. sondaicus*. The former appears to be confined to the Terai region of Nepaul and Bhootan and to the upper valley of the Brahmapootra in Assam. It is one of the largest species, attaining a length of ten feet six inches, and half that height at the shoulder. The skin is folded over into a complete series of shields, each of which is again marked off into tubercles of an irregularly round outline. From between these tubercles arise, especially in young animals, the few coarse hairs which the animal possesses. The skin on the hinder parts of the cheeks may possess tubercles of greater size, occasionally in older animals of almost horn-like appearance. A folded collar surrounds the neck and hangs down into a rigid dewlap below. Over the withers is a single shield of somewhat triangular form, the point projecting backwards; above each fore-leg is another of similar shape, arranged in such a manner as to form a cape over the neck and shoulders. The trunk is covered with the thick skin marked off into tubercles, but the hind-



Rhinoceros indicus, Indian rhinoceros.

quarters have each a heavy shield hanging down as far as the knee-joint, and sub-divided near the top by a less deep longitudinal fold running towards the root of the tail. The tail is sparingly haired towards the extremity, the hairs being coarse and bristly like those on the margin of the somewhat long and narrow ears. The horn may attain a length of three feet, but is generally less in the specimens found in captivity. Sclater has recorded that, in the Zoological Gardens in London, a male and a female rhinoceros of this species were placed in adjoining enclosures, and the male, in the course of his attempts to tear up the strong iron railing separating him from his companion, tore off his horn. Although the result was evidently painful, and was accompanied by a considerable flow of blood, still a new horn began to replace the old one. It is not to be doubted that such reproduction of a lost horn may also take place in nature, giving rise in certain cases to horns of abnormal form. Sclater also states that an old female which had been a long time in the gardens had, by always working at the bars of her cage, caused the horn to grow straight forwards instead of upwards.

The Javanese species, *R. sondaicus*, is much smaller than the other, from which it is distinguished by a separate saddle-shaped shield over the nape of the neck, behind which is the cape over the withers and shoulders. The upper lip is also much larger and more extensile. It was formerly thought to be confined to Java, but is now known to extend north into British Burmah, and the Sunderbans of Bengal, as well as into Borneo.

A Malay offered Mr. Bock, in Borneo, a fine specimen of one of the horns of this species, for which he wanted eighty florins. This fancy price was occasioned by the demand which exists for rhinoceros horns among the Chinese, who use them as medicine, or rather ointment for healing wounds, and especially snake bites. The horns of other species appear to be regarded with great respect in various eastern countries, as drinking-cups made of them are said to show at once the presence of poison in the cup.

Although the living species of rhinoceros are so few in number and so limited in their geographical distribution, such was not the case in former geological periods. Professor Cope recognizes some twenty-seven fossil species, of which more than half ranged through North America in miocene times. All probably descended from tapir-like Lophiodontidæ, which are abundant in eocene strata both in Europe and America, and the genus *Triplopus* of Cope, from the upper eocene of Wyoming, was likely a link in the chain of descent.

One of the earliest European rhinoceroses, *Aceratherium*, from lower miocene strata, had four toes on the fore-feet, and no horn. *Coenopus*, from the White River formation, is the nearest ally of that genus, but has only three toes on the fore-feet. *Aphelops*, from higher miocene strata, had not yet acquired the horn, but possessed the reduced number of teeth characteristic of the more recent rhinoceroses. The *Dicera-therium* of Professor Marsh, one of the earliest of the American genera, had a tuberosity for a horn on *each* nasal bone, — a peculiarity inherited from some of the tapir-like eocene ancestors, but not transmitted to any more recent forms. The rhinoceroses died out in America at the end of the miocene period; not so, however, in the old world, for, apart from the living species described, three, belonging to a distinct genus (*Cœlodonta*), in which the septum of the nostrils was more or less ossified, ranged over the whole of Europe and North Asia in pliocene times. One of these, *R. antiquitatis* or *tichorhinus*, persisted after the mammoth, and every now and then in Siberia more or less well-preserved frozen carcasses of this extinct animal

are found. The most recent find of this sort was in 1877 on a tributary of the Jana, where a complete carcase of an immature animal was unearthed. All the tissues were much dried up, except a thick layer of fat underneath the skin. The head only and a hoof were preserved. This species is sometimes known as the Woolly Rhinoceros from the abundant hair. The front half of the head is covered with thick short hair, but the hinder half, the ears and neck, bear wool, in which stiff hairs from one to two inches in length were intermingled. The general color of the coat varied from fawn color to reddish-yellow. Remains of grass-like food were found between the teeth. There is no prehensile upper lip like what we have seen to be characteristic of all the living forms except the African white rhinoceros. This species further resembles the African congener in having two horns, and no dermal shields on the trunk. An allied form, *R. merki*, is found under similar circumstances, an entire carcase having been recently discovered near Werknejansk, East Siberia.

The family EQUIDÆ, including the horses, asses, and zebras, although now confined, as far as its wild representatives are concerned, to Asia and Africa, was nevertheless at one time widely spread over the surface of the globe, and it has been possible for American palæontologists, with the rich fossil remains in our pliocene and miocene strata, to construct a complete pedigree leading back to the Palæotheridæ. The following particulars are characteristic of the living members of the family.

The skin is soft and hairy, with the exception of the horny patches (chestnuts) on the inner surface of both, or only the fore, pairs of legs; and those behind the joint between the metapodial and pastern bones (the ergot or spur). The hair forms a mane on the neck, and a more or less bushy tail. The weight of the body is supported upon the third toes alone in both fore and hind feet (hence "Solidungula" and "Solipeda"), the terminal joints of these being broadened out into a 'coffin' bone which is clad with the hoof. The so-called 'splint bones' are the only representatives of the second and fourth toes, and are the upper ends of the metacarpals and metatarsals of these, the joints of the toes not being present at all. The metapodials of the third toes are so extremely long that the wrist and ankle joints form about the middle of the leg, and are known respectively as the 'knee' and 'hock.' The outer bones of the fore-arm and leg, the ulna and fibula, can hardly be said to enter into the formation of these joints, for only their upper ends are distinctly separate, while the lower are fused with the radius and tibia. The peculiar form of the joints of the third toe has introduced several terms into veterinary anatomy; thus the first joint is the 'pastern' or 'fetter' bone, the second the 'coronary,' and the last the coffin bone. Behind the metapodio-phalangeal joint, are two sesamoid bones, and behind that between the coronary and coffin bones, a third, the so-called navicular. The hoof closely surrounds the coffin bone; its dense part, the 'wall,' is only formed on the anterior and lateral surface of the bone; the greater part of the under surface is covered by the 'sole' bounded by the wall externally. The 'frog' is a horny mass projecting towards the sole between the 'bars' of the wall, diverging behind to the heels of the frog, which are continuous above and at the sides with the 'coronary frog-band.' The skull is much elongated and the lower jaw much elevated behind. The milk teeth are arranged according to the following formula, $i. \frac{3}{3}, c. \frac{1}{1}, m. \frac{4}{4}$; of the grinders the first milk grinder is not replaced by a permanent molar, so that the adult formula is $i. \frac{3}{3}, c. \frac{1}{1}, m. \frac{6}{6}$. The upper canines in the adult are late of development and may not appear in the mare. There is a wide diastema (gap