GALEOPITHECUS. COLUGO.

Generic Character.

Dentes Primores superiores nulli.	Front-teeth in the upper jaw none.
Inferiores sex, lati, breviusculi,	In the lower six, short, broad,
distantes, pectinati.	distant, pectinated.
Laniarii brevissimi, trianguli,	Canine-teeth very short, trian-
lati, acuti, serrati.	gular, broad, sharp, serrated.
Molares quatuor, truncati,	Grinders four, truncated, and
prominentiis conicis muri-	muricated with conical
cati.	protuberances.
Pellis volatica corpus caudam artusque ambiens.	Flying-skin surrounding the body, limbs, and tail.

HIS singular animal, which, from its size and extraordinary conformation, claims a conspicuous place among the productions of Nature, has but lately been examined with the degree of exactness necessary for ascertaining clearly its generic characters. It is to Dr. Pallas that we owe the exact knowledge of these particulars, and an accurate description, accompanied by good figures, may be found in the Transactions of the Academy of Petersburg, for the year 1780.

GALEOPITHECUS VOLANS .- FLYING COLUGO

Galcopithecus Volans.

Lemur Volans. L. caudatus, membrana ambiente volitans. Li Syst. Nat. p. 45.

Vespertilio admirabilis. Bontius Jova. 68. t. 69. Felis volans ternatea. Seba mus. 1. p. 93. t. 58. f. 2, 3. Cato-Simins volans Camelli. Petiv. gaz. 14. t. 9. f. 8. Galeopithecus. Pallas act. acad. petrop. 1780. p. 280. t. 7, 8. Flying Macauco. Pennant Quadr. 1. p. 234. pl. 50.

THE Colugo is a native of the Molucca and Philippine islands, where it is said to frequent woody places, and to feed principally on fruits. It almost constantly resides on trees, and makes use of its membranes in the same manner as the flying squirrel. In descending from the top of a tree, it spreads its membranes, and balances itself to the place it aims at in a gentle manner; but in ascending it uses a leaping pace. It has two young, which are said to adhere to its breasts by the mouth and claws. The whole length of the animal is about three feet: the breadth, when expanded, nearly the same: the tail is slender and about a span long. The membrane, or expansile skin, by which it is enabled to fly, is continued, on each side, from the neck to the fore feet; thence to the hind feet; and again to the tip of the tail: it is not naked, like the skin of a bat's wing, but covered with fur, in the same manner as the body: the inner or lower side, however, appears membranaceous, and is marked by nume-

FLYING COLUGO.

rous veins and fibres dispersed through it. The whole upper side of the animal is generally of a deep ash-colour, most so in those which are full-grown, and blacker in the younger or less advanced specimens: the back also, in the full-grown animals, is crossed transversly with blackish lines; towards the edges, is commonly a tinge of yellowish, and the whole under side, both of the body and membrane, is of a yellowish colour. The head is long: the mouth rather small; the tongue; according to Dr. Pallas, fleshy, broad, rounded. attenuated on the edges, and ciliated with papillæ, as in the Opossums: it is also slightly beset with papillæ on its surface. There are no fore-teeth in the upper jaw, but in the lower are six, which are short, broad, and pretty deeply pectinated, so as to resemble little combs on their upper part: the canine teeth, or at least those which Dr. Pallas considers as such, are shaped somewhat like the petrifactions known by the name of glossopetre, being triangular, very broad at their base, very short, sharp-pointed, and serrated : the grinders, or molares, which are generally four, both above and below, are of an abrupt or truncated form, and roughened with conical protuberances. The ears are small, round, membranaceous, and marked internally by numerous semicircular transverse streaks, as in a bat. The legs are clothed with a soft yellow down: there are five toes on each foot, united by a common membrane, and terminating in large, thin, broad, very sharp crooked claws.

FLYING COLUGO.

This animal is said to be called by the Indians Caguang, Colugo, and Gigua. It was first described by Bontius, in his History of Java. He informs us, that it is found in Guzarat, in India; that it is a gregarious animal, and flies principally in the evening; and that its body is of the size of a cat, and is covered above with a soft grey fur, like that of a rabbit; that the head is oblong, the ears small and round, and that it has five strong claws on each foot, by which it holds firmly whatever it seizes, and that it feeds chiefly on fruits. Camelli, in his enumeration of the animals of the Philippine isles, published by Petiver in the Philosophical Transactions, describes it as about the size of a cat, shaped like a monkey, but more slender, and of the length of about three spans from head to tail; but adds, that in some parts it arrives at a far larger size, so as to equal a Chinese umbrella in expanse. He describes the colour on the upper parts as dusky, and elegantly variegated with whitish streaks on the back, running beyond the body over the flying membrane: the face he compares to that of a monkey, and the manner of flight to that of a flying squirrel : Camelli adds, that the young adhere to the teats of the parent by their mouth and claws; but it is remarkable, that in his manuscript on this subject, now preserved in the British Museum, he expressly asserts that the female is furnished with two sacs or pouches on her belly, in which she carries her young while sucking. "Fæmella ad

ventrem binos habet quasi sacculos, in quibus catuli ubera sugientes hærent." Camell. Mss. Mus. Brit.

Linnæus, judging of this animal's place in systematic arrangement, from the figures and descriptions of authors, but not having had an opportunity of examining its generic characters himself, placed it in the genus Lemur, to which he supposed it most allied; but was careful, at the same time, to observe, that, as its teeth had not been examined, its real genus was, of course, not determinable. By the Count de Buffon it was, with unpardonable negligence, entirely omitted; nor was it till Dr. Pallas's description in the Petersburgh Transactions appeared, that its genuine characters were ascertained.

In the publication entitled Magazin Encyclopédique, we meet with an account of the teeth of this animal, by Mons. Geoffroy, who appears to have examined with peculiar accuracy the specimens belonging to the Museum of the Prince of Orange.

Mr. Geoffroy observes, that in the form and disposition of the teeth it differs not only from the Lemures, but from all other quadrupeds. He is also of opinion, that the foremost of what Dr. Pallas considers as canine, should, in reality, be considered as cutting teeth; since they are inserted into the incisive or intermaxillary bone: all the teeth, taken together, are of so anomalous a cast as to make it difficult to determine the intention of Nature in their formation; but Mr.

FLYING COLUGO.

Geoffroy is inclined to think them calculated for feeding on insects, though the animal is usually said to live on fruits.

With respect to other particulars of this animal, we are informed by Mr. Geoffroy that the coecum, in a specimen dissected by Mons. Cuivier, was extremely large and voluminous; whereas, in the Bat, to which the Colugo may be allowed to bear some affinity, that part is wanting. Dr. Pallas has observed, that the liver is divided into two lobes, of which the right is entire and broader than the left, which is by far the longest, extended downwards, and divided into three segments.

There are, according to Mons. Geoffroy, two varieties (perhaps sexual differences) of the Colugo, viz. one of the colour usually described, viz. cinercous, with transverse darker and lighter undulations; the other of a fine cinnamon or ferruginous colour, most vivid on the back, and paler beneath, and without any kind of variegation. There are also some trifling differences in the teeth of this reddish kind from those of the grey; but they are not such as to enable us to judge whether they are owing to age, or to a specific difference.

In the Leverian Muscum is a fine specimen, in which the grey colour seems to predominate, owing to the very numerous whitish stripes across the back, as described by Camelli. This is the specimen figured in Mr. Pennant's Quadrupeds, and in the present work. Those figured in Seba



FLYING COLUGO.

are probably young ones; they are described as of a ferruginous colour both above and below; yet in the coloured copies of that work, and particularly in the British Museum copy, once the property of Sir Hans Sloane, they are represented of a very deep or blackish cinereous above, and pale ferruginous beneath.

Lastly, In order that nothing might be wanting which might tend to convey a clear idea of an animal so curious, the excellent figure with which Dr. Pallas's account is accompanied in the Petersburgh Transactions, is also added in the present publication.

VESPERTILIO BAT.

Generic Character.

Dentes omnes erecti, acuminati, approximati.

Manus palmatæ volitantes Ha membrana corpus cingente.

Hands palmated with a membrane furrounding the body and giving the animal the power of flight.

THE curious formation of these animals cannot be contemplated without admiration: the bones of the extremitics being continued into long and thin processes, connected by a most delicatelyformed membrane or skin, capable, from its thinness, of being contracted at pleasure into innumerable wrinkles, so as to lie in a small space when the animal is at rest, and to be stretched to a very wide extent for occasional flight.

Should a speculative philosopher, not aware of the anatomical impossibility of success, attempt, by means of light machinery, to exercise the power of flight, he could not hit on a more plausible idea than that of copying the structure described. Accordingly a celebrated author has most justly and judiciously represented a sage theorist busied in imitating, for this purpose, "the folding continuity of the wing of a Bat."

The species of this extraordinary genus are numerous, and may be divided into the *tailed* and the *tailless* Bats.



COMMON BAT.

Vespertilio Murinus. V. caudatus, naso oreque simplici, auriculis capite minoribus. Lin. Syst. Nat. p. 47.

Tailed Bat, with simple or inappendiculated nose, and ears smaller than the head.

Vespertilio murini coloris, auriculis simplicibus. Briss. Quadr. p. 158. n. 1.

Chauve-souris. Buff. 8. p. 114. pl. 16. Short-eared English Bat. Edwards, pl. 201. f. 2. Common Bat. Pennant Quadr. 2. p. 319.

THIS is about two inches and a half, if measured from the nose to the tip of the tail, and the extent of the wings, when fully expanded, is about nine inches. It is of a mouse-colour, tinged with reddish: the wings and ears black: these latter are small and rounded.

LONG-EARED BAT.

Vespertilio Auritus. V. caudatus, ore nasoque simplici, auriculis duplicatis capite majoribus. Lin. Syst. Nat. p. 47.

Tailed Bat, with inappendiculated nose, and double cars larger than the head.

Vespertilio murini coloris, auriculis duplicibus. Briss. Quadr. 160. Vespertilio auriculis quaternis. Johnst. av. p. 34. 1. 20. Long-eared English Bat. Edwards, pl. 201. f. 3. Oreillar. Buff. 8. p. 118. pl. 17. f. 1. Long-eared Bat. Pennant Quadr. 2. p. 320.

Great-eared Bat. Speculum Linna anum, pl. 7.

THIS species, in its general appearance, is nearly similar to the former, though rather small-

er; and the fur has less of the reddish tinge; but what immediately distinguishes it as a species, is the very great size of the ears, which are more than an inch long and of a very considerable width: they are slightly rounded at the tips, and are furnished internally, as in most others of this genus, with a kind of secondary auricle or internal flap, so placed as to serve by way of a valve or guard to the auditory passage. Linnæus, even in the twelfth edition of the Systema Naturæ, seems to entertain a doubt whether this species be really distinct from the former, or merely a sexual difference.

This and the former are the two most common species in this country; and are those which we so often see fluttering about in the evenings of summer and autumn; frequently uttering a sharp, stridulous note or scream during their flight, and pursuing the various kinds of insects on which they feed; particularly moths. They are sometimes taken by throwing up the heads of burdock whitened with flour; which the Bats, either mistaking for some insect, or casually dashing against, are caught by the hooked prickles and brought to the ground.

The Bat is capable, like the Mouse, of being tamed to a certain degree; and we are assured by Mr. White, in his Natural History of Selborne, that he was much amused in the summer of the year 1766 with the sight of a tame Bat. "It would take flies out of a person's hand. If you gave it any thing to eat, it brought its wings

round before the mouth, hovering, and hiding its head, in the manner of birds of prey when they red. The adroitness it shewed in shearing off the wings of the flies, which were always rejected, was worthy of observation, and pleased me much. Insects seemed to be most acceptable, though it did not refuse raw flesh when offered ; so that the notion that Bats go down chimnies and gnaw men's bacon, seems no improbable story. While I amused myself with this wonderful Quadruped, I saw it several times confute the vulgar opinion, that Bats, when down on a flat surface, cannot get on the wing again, by rising with great ease from the floor. It ran, I observed, with more dispatch than I was aware of, but in a most ridicuand grotesque manner."-White's Selb.

Bats are commonly supposed to produce two young at a birth; which they suckle for a considerable time. When recently born they adhere most tenaciously to the breast of the parent, so as not to be removed without difficulty.

Bats lodge in great numbers in the cavities of old buildings, under the projections of walls, in the hollows of trees, in rocky places, &c. &c. During winter they lie torpid in these recesses, ill the warmth of the vernal atmosphere invites them abroad to make their evening excursions. When taken torpid and brought into a warm situation, they awake from their slumber, and again expand their wings. During this state of torpidity the circulation of the blood is not to be

perceived in the smaller vessels; but when thus awakened by warmth it again becomes visible by the microscope. This was first observed by Leev. enhoeck, who could perceive no appearance of circulation in such as were taken in their torpid state; but on bringing them to the fire, the circulation soon became very brisk.

Bats are said to drink on the wing, like swallows, by sipping the surface, as they play over pools and streams. They love to frequent waters, not only for the sake of drinking, but on account of the insects, which are found over them in the greatest plenty. "As I was going (says Mr. White), some years ago, pretty late, in a boat from Richmond to Sunbury, on a warm summer's evening, I think I saw myriads of Bats between the two places: the air swarmed with them all along the Thames, so that hundreds were in sight at a time."—White's Selb.

The general appearance of the Bat, together with its nocturnal flight, must be confessed to excite the idea of something hideous and dismal; and for this reason the ancients consecrated it to Proscrpine, and supposed it to be one of the inhabitants of her dusky regions: and it cannot fail to occur to the recollection of every one, that painters, in their representations of fiends and demons, usually exhibit them with the leathern wings of the Bat. It is also equally evident, that the fabulous Harpies of the ancients must have originated from a similar source: the larger Bats of India and Africa, by a little poetical exaggera-

tion of their manners, answering extremely well to the general description of those monsters.

Linow not whether it may be worth while to mention the celebrated experiments of Spallanzani, respecting a supposed additional sense or faculty in Bats, enabling them, when deprived of sight, to avoid any obstacles as readily as when they retained their power of vision. These experiments are cruel, and, perhaps, do not lead to any very important discoveries in the animal œconomy: nevertheless, that I may not seem entirely to neglect a phenomenon which has been thought worthy of attention by several eminent experimentalists, I shall here give a short abstract of the professor's observations.

Having observed that Bats would fly in the darkest chambers with precision, and not even touch the walls, he found them equally exact in their motions when the eyes were closely covered; and at length he destroyed the eves, and covered the socket with leather; and even in this state the animal continued to fly with the same precision as before; avoiding the walls, and cautiously suspending its flight in seeking where to perch. It even flies out at a door without touching the architraves. The abbé repeated his experiments on several species of bats; and with the same success. These experiments were repeated by Vassaili at Turin, by Rossi at Pisa, Spadon at Bologna, and Jurin at Geneva. The professor's arguments for supposing that in these instances no other sease can supply the place of sight are these:

" Touch cannot, in this case, supply the place of sight, because an animal covered with hair cannot he supposed to have that sense very delicate - Inflying through the middle of a sewer which turned at right angles, the Bats regularly bent their flight at the curvature, though two feet distant from the walls. They discovered holes for their retreat.; found a resting-place on the cornice; avoided the branches of trees suspended in a room; flew through threads hung perpendicularly from the ceiling, without touching, though they were scarcely at a greater distance than that of their extended wings; and when the threads were brought nearer they contracted their wings to pass through them. They equally avoided every obstacle, though the whole head was covered with a varnish made of sandarach dissolved in spirit of winc.

"The ear could not have discovered a cornice or the threads: this sense, therefore, does not compensate the want of vision. Besides, Bats fly equally well when the ear is most carefully covered. The *smell* might possibly assist them; for when the nose was stopped, they breathed with difficulty, and soon fell. While they did fly, however, they avoided obstacles very well; and the smell could scarcely have assisted them in discovering the suspended threads. The *taste* must have been, in every respect, unequal to the task of supplying the place of sight."

From Mr. Jurin's anatomical observations on these animals, it appears that a very large proper-

tion of nerves is expanded on the upper jaw, the muzzle, and the organ of hearing; and these appeared to him, in a great degree, to account for the extraordinary faculty above described.

Mr. Carlisle's observations on this subject seem to prove that the sense of hearing in the Bat is uncommonly delicate, and is one of the principal causes of the dexterity with which these animals. even when blinded, avoid objects which would impede their flight. This gentleman collected several specimens of the Vespertilio auritus or large-eared Bat, and observed, that when the external ears of the blinded ones were closed, they hit against the sides of the room, without being at all aware of their situation. They refused every species of food for four days, as did a larger number which were afterwards caught and preserved in a dark box for above a week. During the day time they were extremely desirous of retirement and darkness; and, while confined to the box, never moved or endeavoured to get out during the whole day, and, when spread on the carpet, they commonly rested some minutes, and then beginning to look about, crawled slowly to a dark corner or crevice. At sunset the scene was quite changed: every one then endeavoured to scratch its way out of the box; a continued chirping was kept up, and no sooner was the lid of their prison opened than each was active to escape, either flying away immediately, or running nimbly to a convenient place for taking wing. When these Bats were first collected, several of the females had

V. I.

NOCTULE BAT.

young ones clinging to their breasts in the act of sucking. One of them flew with perfect ease, though two little ones were thus attached to her, which weighed nearly as much as their parent. All the young were devoid of down, and of a black colour.

NOCTULE BAT.

Vespertilio Noctula. V. caudatus, naso oreque simplici, auriculis ovalibus operculatis; operculo exili. Lin. Syst. Nat. Gmel. p. 48. Tailed Bat, with nose and mouth simple; oval ears and very small valves.

Noctule. Buff. 8. p. 128. pl. 18. f. 1. Great Bat. Pennant Brit. Zool.

THIS species is considerably larger than the former; its extended wings measuring from fourteen to fifteen inches: the length from nose to the tip of the tail about four inches and a half. The nose is slightly bilobated : the ears small and rounded: the body is fleshy and plump: the shoulders very thick and muscular; the fur very soft and glossy and of a bright chesnut-colour. This is an inhabitant of Britain and of France, but seems not to have been particularized as a distinct species, till described by M. Daubenton in Buffon's Natural History. It is said to be common in some parts of Russia, sheltering in caverns. It flies high in the air in search of food, and does not skim near the surface like the smaller Bats. It has been occasionally found in great quantities under the

HORSE-SHOE BAT.

eaves of old buildings, and has generally a strong and unpleasant smell.

HORSE-SHOE BAT.

Vespertilio Ferram equinum. V. caudatus, naso ferro equino simili, auribus caput aequantibus non operculatis, cauda dimidia corporis longitudine, Lin. Syst. Nat. Gmel. p. 50.

Bat with horse-shoe-shaped nose, valveless ears, and tail half the length of the body,

Fer à Cheval. Buff. 8. p. 131, 132. pl. 17, 20.

WITH a horse-shoe-shaped membrane at the tip of the nose: ears large, broad at the base, and sharp-pointed, inclining backward: no smaller or internal ear: colour of the upper part of the body deep cinereous; of the lower, whitish. There is said to be a greater and smaller variety: perhaps the male and female: the greater is above three inches and half long from the nose to the tip of the tail; the extent of wings above fourteen: this species is found in France, and, very rarely, in England: it is also said to be found about the Caspian Sea.

SEROTINE BAT.

Vespertilio Serotinus. V. caudatus flavoscens, auriculis economic emarginatis. Lin. Syst. Nat. Gmel. p. 41. Tailed yellowish Bat, with short emarginated ears. Serotine. Buff. 8. p. 129. t. 18. f. 2.

WITH a longish nose: ears short, but broad at the base: hair on the upper part of the body brown, mingled with ferruginous; the under part paler. Length from nose to rump two inches and a half: no tail. Native of France; and is also found in Russia.

PIPISTRELLE BAT.

Vespertilio Pipistrellus. V. caudatus ex atrofuscus, fronte convexa, auriculis ovatis, emarginatis, capite wix longioribus. Lin. Syst. Nat. Gmel. p. 48.

Tailed blackish-brown Bat, with convex front and ovate emarginated ears, scarce longer than the head.

Pipistrelle. Buff. 8. p. 129. t. 19. f. 1. Pipistrelle. Pennant Quadr. 2. p. 318.

This is a very small species, and is found in France. The colour of the upper part of the body is yellowish-brown; the under part dusky. The lips yellow: the nose small; the upper lip swelling out a little on each side: the ears broad. The length from nose to rump scarce an inch and quarter: the extent of wings about six inches or rather more.

BARBASTELLE BAT.

Vespen ilio Barbastellus. V. caudatus, buccis elatis pilosis, auriculis magnis inferius angulatis. Lin. Syst. Nat. Gmel. p. 48.

Tailed Bat, with elevated hairy cheeks, and large ears angulated on the lower part.

Barbastelle. Buff. 8. p. 130. pl. 19. f. 1. Barbastelle. Pennant Quadr. 2. p. 319.

The length of the Barbastelle is about two inches from nose to tail: its extent about ten inches: the upper part of the body is of a dusky brown; the under part ash-coloured: the forehead sunk: the cars broad and long; the lower part of the inner sides touching each other, and thus concealing the face and head when viewed in front: the nose short: the cheeks full; the end of the nose flattened. It is found in France.

LASIOPTER BAT.

Vespertilio Lasiopterus. V. caudatus, membrana pedes connectente latissima. Lin. Syst. Nat. Gmel. p. 50.

Tailed Bat, with the membrane connecting the feet extremely broad, and covered on the upper part with hair.

V. Lasiopterus. Schreb. Quadr. t. 57. B.

WITH the forehead very prominent and rounded: nose short: the general colour ferruginous; the upper part of the wings of a paler cast; the ends and lower parts black: this is one of the larger species.

ROUGH-TAILED BAT.

Vespertilio Lasiurus. V. caudatus labiis tumidis, caude lata. Lin. Syst. Nat. Gmel. p. 50.

Tailed Bat, with turnid lips and broad hairy tail. V. lasiurus. Schreb. Quadr. t. 62. B.

•WITH upright ears and small: tail broad at base; terminating in a point thickly covered with hair: colour a reddish-brown. A small species. Native country unknown.

MOLUCCA BAT.

Vespertilio Cephalotes. V. caudatus, capite magno, labiis productis, naribus spiralibus, verrucis subocularibus, auriculis parvis non operculatis. Lin. Syst. Nat. Gmel. p. 50.

Tailed yellowish-grey Bat, with large head, spiral nostrils, and small ears without valves.

V. cephalotes. Pallas Spicil. Zool.

THIS species was first described by Dr. Pallas, and is a native of the Molucca isles. The head is large; the nose thick: the ears small: the nostrils tubular, terminating outwards in the form of a screw: the upper lip is divided: the tongue covered with papillæ and minute spines: the claw or thumb joined to the wing by a membrane; and the first ray of the wing terminated by a claw: the end of the tail reaches beyond the membrane: the colour of the head and back is a greeish-ash: length from nose to rump three inch²⁸

NEW-YORK BAT.

and three quarters: extent of wir rs about fifteen. Mr. Pennant observes, that the specimen of this amound in the Leverian Museum is of a fine strawcolour. the belly dull white.

STRIPED BAT.

 Vespertilio Pictus. V. caudatus, naso simplici, auriculis infundibuliformibus appendiculatis. Lin. Syst. Nat. Gmel. p. 42.
 Tailed Bat, with simple nose and funnel-shaped appendiculated

ears.

Autre Chauve-Souris. Buff. 10. p. 92. pl. 20. f. 3.

This is a Ceylonese species, and is one of the smaller Bats, measuring from nose to the end of the tail two inches. Its colour above is brown; the wings striped with black, and sometimes with tawny and brown: it varies sometimes in the colour of the body, which is reddish brown, with the under parts whitish: the nose is small and short: the ears short, broad, and pointing forwards.

NEW-YORK BAT.

Vespertilio Noveboracensis. V. caudatus, cauda longa, naso brevi acuto, auribus brevibus rotundis. Lin. Syst. Nat. p. Gmel. p. 50.
Long-tailed ferruginous Bat, with short sharp nose, short round ears, and a white spot at the base of each wing.
New-York Bat. Pennant Quadr. 2. p. 313.

LENGTH from nose to tail two inches and a half: tail one inch and eight tenths: extent of

BEARDED BAT.

wings ten inches and a half. The head is shaped like that of a mouse: top of the nose a little bifid: ears short, broad, and rounded: no cutting-terms two canine in each jaw: tail very long, inclosed in the membrane, which is of a conic shape: head, body, and whole upper side of the membrane which encloses the tail, covered with long, soft hair of a bright tawny-colour, lightest on the head and beginning of the back: the belly paler: at the base of each wing a white spot: the wings thin, naked, and dusky; and the bones of the hind legs very slender. This is a native of North America, and seems to have been first described by Mr. Pennant: it is also found in New Zealand.

BEARDED BAT.

 Vespertilio Hispidus. V. caudatus pilosus, naribus canaliculatis, auriculis longis augustis. Lin. Syst. Nat. Gmel. p. 48.
 Tailed hairy Bat, with channeled nostrils and long narrow ears.
 Bearded Bat, Pennant Quadr. 2. p. 313.

A SMALL species: colour above reddish-brown; beneath whitish, tinged with yellow: nostrils open for a great way up the nose: hair on the forehead and under the chin very long: ears long and narrow: tail included in a very veiny membrane.

SLOUCH-EARED BAT.

Vespe tilio Auripendulus. V. caudatus naso obtuso, auribus magnis dependentibus acuminatis.

Tailed Bat, with abtuse nose, and large pendent ears with pointed tips.

Slouch-eared Bat. Pennant Quadr. 2. p. 313.

WITH large pendulous ears, pointed at the ends: nose obtuse: tail long, included in a membrane, and terminated with a hook: colour above deep chesnut; lighter on the belly, and cinereous on the sides: length three inches and four lines: extent of wing fifteen inches. Native of Guiana.

SLENDER-TAILED BAT.

Vespertilio Lepturus. V. caudatus, naribus tubulatis, auriculis longis, obtusis operculatis, membranæ utrique pedes connectenti annexo interius marsupio. Lin. Syst. Nat. Gmel. p. 50.

Tailed Bat, with tubular nostrils, slender tail, and a purse-shaped cavity on the interior part of each of the wings.

Pouch Bat. Pennant Quadr. 2. p. 312.

Slender-tailed Bat. Pennant Quadr. 2. p. 315.

WITH the nose somewhat lengthened: the end thickest, and beset with fine whiskers: the chin divided by a furrow: ears long, and rounded at the ends: on each wing, near the second joint, is a small purse or pouch: the tait is only in part involved by the membrane; the end hanging out:

BULL-DOG BAT.

colour of the body cinereous-brown; the under parts paler; length an inch and half. Native of Surinam.

SENEGAL BAT.

Vespertilio Nigrita. V. caudatus ex flavescente fuscus, capitis parte anteriore, pedibus caudaque nigris.

Tailed yellowish brown Bat, with the fore part of the head, the feet, and the tail black.

Senegal Bat. Pennant Quadr. 2. p. 312.

WITH a long head: nose a little pointed: ears short and pointed: head and body a tawny brown, mixed with ash-colour; under parts paler: the two last joints of the tail extending beyond the membrane: length from nose to rump above four inches: extent of wing twenty-one inches Native of Senegal.

BULL-DOG BAT.

Vespertilio Molossus. V. caudatus, cauda longa ustra membranam connectentem protensa, labio superiore pendulo. Lin. Syst. Nat. Gmel. p. 49.

Bat, with pendulous upper lip, and long tail stretching beyond the connecting membrane.

Bull-dog Bat. Pennant Quadr. 2. p. 311.

In this species the nose is thick: the cars broad and round; the edges touching each other in front: the lips are pendulous: the upper part (



PERUVIAN BAT.

of the body of a deep ash-colour; the lower paler: the tail long; the five last joints entirely disengaged from the membrane. Length above two inches; extent nine and a half. Inhabits the West Indies.

PERUVIAN BAT.

Vespertilio Leporinus. V. caudatus, labio superiore bifide. Lin. Syst. Nat. Gmel. p. 47.

Tailed Bat, with the upper lip bifid.

Noctilio Americanus. N. labio superiore varicoso. Lin. Syst. Nat. ed. 12. p. 88.

Vespertilio cato similis Americanus. Seb. mus. 1. p. 89. t. 55. f. 1. Peruvian Bat. Pennant Quadr.

LINNEUS, as Mr. Pennant well observes, carried away by the love of system, placed this species, in the twelfth edition of the Systema Naturæ, under a distinct genus, by the name of Noctilio: stationing it at a great distance from the rest of the Bats, in the order Glires, next to the Squirrels. This he did merely on account of its having only two cutting-teeth in each jaw. But succeeding observations have conspired to prove that the number and disposition of the teeth differs greatly in the different species of the Bats; so that if a too rigid regard were paid to this particular, several distinct genera might be instituted instead of one; but the general characters of the Bats are so striking as to render this perfectly unnecessary.

CORDATED BAT.

The Peruvian Bat has a head something like a Pug-Dog: the cars large and strait; sharp at the ends, and pointing forwards: two canine-teeth, and two small cutting-teeth between in each jaw: tail enclosed in the membrane, which joins to each hind leg, and is also supported by two long cartilaginous ligaments involved in the membrane: colour of the fur iron-grey: body equal in size to a middling rat: extent of wing two feet five inches. Mr. Pennant observes, that Mr. Schreber's figure of this species is erroneously coloured; being represented of a straw-colour. It is a native of Peru. An extraordinary conformation, according to Seba, takes place in the legs of this Bat; the tibia and fibula being placed separately from each other, and each invested by its own distinct and hairy skin. These, however, seem to be nothing more than the two cartilaginous ligaments mentioned by Mr. Pennant.

The remaining species (except the last) are distinguished by having no tails.

CORDATED BAT.

Vespertilio Spasma, V. ecaudatus naso foliato obcordato. Lin. Syst. Nat. p. 47.

Tailless Bat, with a doubly heart-shaped leaf-like membrane on the nose.

Glis volans ternatanus. Seb. 1. 1. 56. f. 1. Cordated Bat. Pennant Quadr. 2. p. 310.

WITH very broad and long ears: at the end of the nose an upright heart-shaped membrane: (in



Seba's figure the membrane is doubly heartshaped, or with two cordated divisions one above the other). The colour of the whole animal is a pale reddish brown: the hind legs are connected by a web: the body is thick and plump: the extent of wing, according to Seba's figure, seems to be about fifteen inches: length of body from nose to rump near four inches. Native of Ceylon and the Molucca islands.

LEAF BAT.

Vespertilio Soricinus. V. ecaudatus, rostro producto, naso foliato cordato. Lin. Syst. Nat. Gmel. p. 47.
Tailless Bat, with lengthened snout furnished with a heart-shaped leaf-like membrane.
Leaf Bat. Pennant Quadr. 2. p. 309.
Bat from Jamaica. Edwards, pl. 201. f. 1.

WITH small rounded ears: membrane on the nose in form of an ovate, pointed leaf: a web between the hind legs: fur of a mouse-colour, tinged with red: size of a common Bat.

JAVELIN ·BAT.

Vespertilio Hastatus. V. ecaudatus, naso foliato trifolii figuram emulante. Lin. Syst. Nat. Gmel. p. 47.

Tailless Bat, with a trefoil-shaped upright membrane on the nose.

La Chauve-Souris à fer de lance. Buff. 13. p. 226. pl. 33. and suppl. 7. p. 292. pl. 74.

Javelin Bat. Pennant Quadr. 2. p. 309.

Vespertilio perspicillatus? Lin. Syst. Nat. p. 47.

WITH large pointed ears: an erect membrane at the tip of the nose in the form of an ancient javelin, having on each side two upright processes: fur cinereous: size of a common Bat. Inhabits the warmer parts of America. This is by Mr. Pennant made synonymous with the V. perspillatus of Linnæus, which is, however, considered as a distinct species in the Gmelinian ecition of the Systema Naturæ.

GREAT SEROTINE BAT.

Vespertilio Nasutus. V. ecaudatus ferrugineus, naso longo apice declivi, auribus longis erectis rotundatis.

Tailless ferruginous Bat, with long nose sloping at the tip, and long upright rounded ears.

La Grande Serotine de Guianne. Buff. suppl. 7. p. 289. pl. 73. Great Serotine. Pennant Quadr. 2. p. 318.

WITH a very long, strait, and strong nose, sloping down at the end: ears long, erect, dilated towards the bottom, rounded at the end: colour of



SPECTRE BAT.

the upper parts a reddish chesnut: sides of a clear yellow; remainder of a dirty white: length five inches and eight lines: extent of wings two feet.

This species is described in the supplemental volume of the Count de Buffon's Natural History. It is a native of Guiana, where it is said to assemble in meadows and other open places in vast numbers; flying in company with Goatsuckers, and both together in such numbers as to darken the air.

SPECTRE BAT.

Vespertilio Spectrum. V. ecaudatus, navo infundibuliformi lanceolato. Lin. Syst. Nat. p. 46.

Tailless Bat, with funnel-shaped sharp-pointed membrane on the nose.

Canis volans maxima aurita ex nova Hispania. Seb. mus. 1. p. 92. 1. 58. f. 1.

Spectre Bat. Pennant Quadr. 2. p. 308.

THIS is a large species, and is a native of South America, where it is chiefly seen on palm-trees. The extent of wings is about two feet two inches or more; and from the nose to the rump seven inches and a half. It has a long nose; large teeth; long, broad, and upright ears: and at the end of the nose is an upright, long, conical membrane, bending at the end. Hair on the body cinereous, and pretty long; wings full of ramified fibres: the membrane extends from hind

VAMPYRE BAT.

leg to hind leg: there is no tail; but three tendons run from the rump to the edge of the membrane.

Mr. Buffon supposes this to be the Vampyre; but if the accounts of that animal's extraordinary faculty may be depended upon, we are still uncertain as to the species; Piso and others, who give the relation, omitting the particular description of the animal; and, indeed, it is most probable that the faculty which gave rise to the name is by no means confined to a single species, but may be practised by several of the larger Bats in warm climates.

VAMPYRE BAT.

Vespertilio Vampyrus. V. ecaudatus naso simplici, membrana inter femora divisa. Lin. Syst. Nat. p. 46.

Tailless Bat with the nose simple, or without any appendage, and the flying membrane divided between the thighs,

Vespertilio ingens. Clus. exot. 94.

Vespertilio volitans. Bont. Jav. 68. t. 69.

Canis volans ternatanus orientalis. Seb. 1. t. 57.

Roussette. Buff. 10. p. 55. t. 14. and 17.

Ternate Bat. Pennant Quadr. 2. p. 304.

Vampyre Bat. Spec. Lin. t. 8.

OF this tremendous animal there are some varieties in point of size and colour; or perhaps they may really be distinct races or species, though nearly allied. The largest, or the Great Ternate


VAMPYRE BAT.

Bat, is, in general, about a foot long, with an extent of wings about four feet; but sometimes it is found far larger, and it has been said that specimens have been seen of six feet in extent. The general colour of the body is a deep reddish brown; brighter on the upper part of the neck and shoulders, as well as on the under parts of the body. The nose is sharp and black: the teeth large and sharp: there are four cuttingteeth both above and below; and the canine-teeth are large and strong: the tongue is pointed, and terminated by sharp prickles: the ears are naked, blackish, and large, and are of a pointed form. The wings are black, or of the colour of those of the common Bat. The membrane is divided behind, quite to the rump; there being no tail: the single claw on the wings is large and strong; and those on the feet extremely so, as well as much curved.

This is the Bat to which Linnæus applied the title of Vampyre, on the supposition of its being the species of which so many extraordinary accounts have been given relative to its power of sucking the blood both of men and cattle. This it is supposed to perform by inserting its aculeated tongue into the vein of a sleeping person, in so peculiar a manner as not to excite pain; fanning, at the same time, the air with its wings, by which means the sleep is rendered still more. profound. . This is what appears at first so extraordinary as to justify a degree of scepticism as to the fact: it is, however, so solemnly related, and V. I. 10

VAMPYRE BAT.

seemingly so well authenticated, as almost to enforce belief. Mr. Condamine assures us, that the large Bats have, in certain parts of America, destroyed, by this means, all the great cattle introduced there by the missionaries. It is affirmed by Bontius, as well as Nieuhoff, that the Bats of Java attack those who lie with their feet uncovered, whenever they can gain access: and Gumilla, who mentions a greater and lesser kind, found on the banks of the Oronoque, declares them to be equally greedy after human blood: persons thus attacked have, in consequence, been near passing from a sound sleep into eternity. It is, therefore, very unsafe to sleep with open windows, or in the open air, in those regions.

P. Martyr, who wrote soon after the conquest of South America, says, that in the Isthmus of Darien, there are Bats which suck the blood of men and cattle, when asleep, to such a degree as to awaken, and even kill them.

Lastly, Though it seems to have escaped the attention of modern naturalists, the self-same faculty has been, time out of mind, attributed to the common European Bats, which are said to bite sleeping persons, and to suck the blood with the greatest avidity. This is mentioned by Aldrovandus, who seems to relate it as a generally-received opinion; observing, at the same time, that their attacks are infinitely inferior to the dangerous ones of the large exotic Bats in India and America.

PIT-NOSE BAT.

It remains to explain the reason of the term Vampyre, by which the above large species has been distinguished.

A Vampyre is an imaginary monster, supposed to suck the blood of sleeping persons. It also alludes to one of the most absurd superstitions that ever entered into the human mind. About the year 1732 an idea arose among the vulgar in some parts of Poland and Hungary, that certain bodies when interred, became possessed of the power of obsorbing blood from those who were so unfortunate as to pass over or stand near their graves, it was, therefore, supposed necessary to disinter such bodies and wound them with a sword, by which means this pernicious power was supposed to be put a stop to, and the blood they had unjustly gained was evacuated. Astonishing as this folly may appear, it is yet more astonishing that a great many treatises were written on the subject, and that some considerable time elapsed before the superstition was completely destroyed.

PIT-NOSE BAT.

Vespertilio Speoris. Schreb. suppl. Vespertilio caudatus, fostula frontali transversa. Tailed Bat, with a transverse frontal cavity.

THIS species, from Mr. Schreber's representation, appears to be about the size of the common Bat, which it also resembles in its general aspect,

PIT-NOSE BAT.

but differs in its colour, being of a pale yellowish ash-brown. Its principal character is a remarkable transverse concavity situated on the forehead, lined with a naked blackish skin : the nostrils are seated in a similar concavity at the tip of the nose. It is a native of India. The circumstance of the frontal cavity is not absolutely peculiar to this animal, having been observed, though in a much less conspicuous degree, in another species : the use of this peculiar formation seems as yet unknown.



ORDER

BRUTA.

BRADYPUS. SLOTH.

Generic Character.

Dentes Primores nulli utrin- || Cutting-teeth, none in either que. Laniarii obtusi, solitarii, molaribus longiores, occur-

santes. Molares utrinque quinque,

obtusi.

Corpus pilis tectum.

jaw. Canine-teeth obtuse, single, longer than the grinders,

placed opposite. Grinders, five on each side, obtuse.

Fore Legs much longer than the hind: Claws very long.

THREE-TOED SLOTH.

Bradypus Tridactylus. B. pedibus tridactylis, cauda brevi. Lin. Syst. Nat. p. 50. Sloth with three-toed feet and short tail. Ignavus. Clus. exot. p. 372. fig. p. 373. Ai. Buff. 13. p. 34. pl. 5, 6. Three-toed Sloth. Pennant Quadr. 2. p. 240. Museum Leverianum, vol. 2. p. 13. pl. 3.

BEFORE the discovery of the western hemisphere, the Tortoise seems to have been considered as the established representative of tardi-

ness: but those who attended to the natural history of the new world, were astonished to find in a genuine viviparous quadruped a much mor singular example of languid motion and habitu inactivity. The early accounts, however, of this extraordinary animal seem to have been or .en with some degree of exaggeration; and it was pretended that the creature could scarce advance a stone's throw in the space of fifteen days: that it required eight or nine minutes in order to move one foot to the distance of three inches: other accounts say, that the Sloth can scarcely move fifty paces in a day: all, however, who have had opportunities of examining this species in its native climates, agree in representing it as the most torpid of quadrupeds; that it seems to move with the utmost difficulty, and it never exerts its progressive powers except when urged by the necessity of obtaining food; when it climbs, with great labour, to the tops of trees; and having gained this situation. continues to reside there till it has despoiled the tree of its foliage and fruit, when it is obliged to descend and to seek a fresh situation: it is added, that in order to save itself the slow and laborious descent which it would otherwise be obliged to make, it suffers itself to fall to the ground; its tough skin and thick coarse hair sufficiently securing it from any unpleasant effect in its fall. The general appearance of the Sloth is extremely uncouth; the body is of a thick shape; the fore legs short; the hinder ones far longer: the feet, on all the legs, are very small, but

are armed each with three most excessively strong and large claws, of a slightly curved form, and sharp-pointed. The head is small; the face short. with a rounded or blunt snout, which is naked and of a blackish-colour: the eyes are small, black, and round: the ears rather small, flat, rounded, lying close to the head, and not unlike those of Monkies. The hair on the top of the head is so disposed as to project somewhat over the forehead and sides of the face, giving a very peculiar and grotesque physiognomy to the animal. The general colour of the hair on all parts is a greyish brown, and the hair is extremely coarse, moderately long, and very thickly covers the body, more especially about the back and thighs. A remarkable character as to colour in this species, is a wide patch or space on the upper part of the back, of a bright ferruginous or rather pale orange-colour, spotted on each side with black, and marked down the middle with a very conspicuous black stripe; wide at its origin, and gradually tapering to its extremity: it reaches more than half way down the back, and terminates in a sort of trifid mark; so that the whole gives a highly singular appearance to the animal, when viewed from behind. This particularity is remarkably distinct in the very fine specimen preserved in the Leverian Museum. So far as I am able to determine, from the inspection of numerous specimens, it is scarce, if at all, visible in the young animals, which are merely of an uniform greyish brown. The tail is nearly imperceptible, being so ex-

tremely short as to be concealed from view by the fur.

The Count de Buffon, in one of those flights of paradoxical eloquence in which he sometimes indulged, is not willing to allow this creature any share in contributing to the general beauty in the scale of animated nature; but considers it as an ill-constructed mass of deformity, created only for misery; which he thinks is the less to be wondered at, when, perhaps, the major part of mankind experience a similar fate.

" From a defect in their conformation, the miserv of these animals is not more conspicuous than their slowness. They have no cutting-teeth; the eves are obscured with hair; the chaps are heavy and thick ; the hair is flat, and resembles withered herbs; the thighs are ill jointed to the haunches; the legs are too short, ill turned, and terminated still worse; their feet have no soles, and no toes which move separately, but only two or three claws disproportionately long, and bended downwards, which move together, and are more hurtful to their walking, than advantageous in assisting them to climb. Slowness, habitual pain, and stupidity, are the results of this strange and bungled conformation. The sloths have no weapons either offensive or defensive. They are furnished with no means of safety; for they can neither fly nor dig the earth. Confined to a small space, or to the tree under which they are brought forth, they are prisoners in the midst of space, and cannot move the length of one fathom in an hour. They

drag themselves up a tree with much labour and pain: their cry and interrupted accents they dare only utter during the night. All these circumstances announce the misery of the Sloths, and recal to our minds those defective monsters, those imperfect sketches of nature, which, being hardly endowed with the faculty of existence, could not subsist for any length of time, and have accordingly been struck out of the list of beings. If the regions inhabited by the Sloths were not desert, but had been long occupied by men and the larger animals, these species would never have descended to our times; but would have been annihilated, as in some future period will be the case. We formerly remarked, that every thing that possibly could be did really exist: of which the Sloths are a striking example. They constitute the last term of existence in the order of animals endowed with flesh and blood. One other defect added to the number would have totally prevented their existence. To regard those bungled sketches as beings equally perfect with others, to call in the aid of final causes to account for such disproportioned productions, and to make Nature as brilliant in these as in her most beautiful animals, is to view her through a narrow tube, and to substitute our own fancies for her intentions. Why should not some animals be created for misery, since in the human species the greatest number of individuals are devoted to pain from the moment of their existence? Evil, it is true, proceeds more from ourselves than from Nature. For a single

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person who is unhappy because born feeble or deformed, there are millions rendered miserable by the oppression of their superiors. The animals, in general, are more happy, because the species have nothing to fear from individuals: to them there is but one source of evil; to man there are two. Moral evil, of which he himself is the fountain, has accumulated into an immense ocean, which covers and afflicts the whole surface of the earth. Physical evil, on the contrary, is restrained within very narrow bounds: it seldom appears alone: for it is always accompanied with an equal. if not a superior, good. Can happiness be denied to animals, when they enjoy freedom; have the faculty of procuring subsistence with ease; and possess more health, and organs capable of affording greater pleasure than those of the human species? Now the generality of animals are most liberally endowed with all these sources of enjoyment. The degraded species of Sloths are perhaps the only creatures to whom Nature has been unkind, and who exhibit to us the picture of innate misery."

With submission, however, to this lively naturalist, I should not hesitate to believe that the Sloth, notwithstanding this appearance of wretchedness and deformity, is as well-fashioned for its proper modes and habits of life, and feels as much happiness in its solitary and obscure retreats, as the rest of the animal world of greater locomotive powers and superior external elegance.

The sloth feeds entirely on vegetables, and par-

ticularly on leaves and fruit. Its voice is said to be so inconceivably singular, and of such a mournful melancholy, attended, at the same time, with such a peculiarity of aspect, as at once to excite a mixture of pity and disgust; and, it is added, that the animal makes use of this natural yell as its best mode of defence; since other creatures are frightened away by the uncommon sound. This, however, is far from being its only refuge; for so great is the degree of muscular strength which it possesses, that it is capable of seizing a dog with its claws, and holding it, in spite of all its efforts to escape, till it perishes with hunger; the Sloth itself being so well calculated for supporting abstinence, that the celebrated Kircher assures us of its power in this respect having been exemplified by the very singular experiment of suffering one, which had fastened itself to a pole, to remain in that situation, without any sustenance, upwards of forty days. This extraordinary animal is an inhabitant of the hotter parts of South America. It is nearly as large as a middle-sized dog.

VAR. ?

The stiff and awkward representation of this animal in Edwards's gleanings of Natural History, was executed from a dried specimen, which had been set up in that position. Edwards observes, that all the figures which he had seen were erroneous, in representing the hair as growing to the very roots of the claws; whereas; in the abovemen-

TWO-TOED SLOTH.

tioned specimen, it did not reach more than to within an inch and half of the claws; a bare space intervening. The consideration of this circumstance has induced some observers, with unnecessary scrupulosity, to consider it as a distinct species; but it is probable that this bare appearance round the feet was merely owing to some accidental circumstance. It is certain that the hair in uninjured specimens of the three-toed Sloth grows absolutely to the very roots of the claws; if, however, the above animal was in a truly natural state, it would justify a separation from the rest, as a variety rather than as a distinct species.

TWO-TOED SLOTH.

Bradypus Didactylus. B. manibus didactylis, cauda nulla. Lin. Syst. Nat. p. 51.

Sloth with two toes on the fore feet, and without a tail. Bradypus pedibns anticis didactylis, posticis tridactylis. Bris. Quadr. p. 22.

Unau. Buff. 13. p. 34. pl. 1. Two-toed Sloth. Museum Levreiaman, vol. 1. p. 79. No. 2. pl. 7. Pennant Quadr. 2. p. 242.

THIS species is also a native of South America; and it is asserted, on good authority, that it is likewise found in some parts of India, as well as in the island of Ceylon. In its general appearance, as well as in size, it bears a considerable resemblance to the former species: it is, however, somewhat more slender in its shape; covered with smoother or less coarse and harsh hair; and is of a



more uniform or less varied tinge; having no marks or shades of black and ferruginous as in the former; and, in particular, is strikingly distinguished, as a species, by having only two claws on the fore feet: it is also a much more active animal, and, even when imported into Europe, has been known, according to the testimony of the Count de Buffon, to ascend and descend from a tall tree several times in a day; whereas the three-toed Sloth with difficulty performs that operation in a whole day; and can scarce crawl some hundred yards in the space of many hours. The disposition of the hair on the head of the two-toed Sloth differs also from that of the former animal, and is directed immediately backwards, without being in the least reversed round the front as in that species. A very fine specimen may be seen in the Leverian Museum; and a young one not much larger than a Squirrel, and of a very light or whitish colour is in the British Museum, as well as a more advanced specimen, preserved in spirits.

In Mr. Carlisle's description of the remarkable disposition of the trunks of the subclavian and iliac arteries in the Lemur tardigradus, he very properly observed, that "it would be of some importance in physiology to ascertain whether the other slow-moving Quadrupeds have any peculiar arrangement of the arteries of their limbs," the single fact above recorded being hardly suffi-

TWO-TOED SLOTH.

cient for the foundation of any theoretical explanation of the slow movement of the muscles. The British Museum afforded an opportunity of investigating this particular in other slow-moving Quadrupeds, and Mr. Carlisle, at my request, examined the arteries of the Bradypus tridactylus, of all Quadrupeds yet known the slowest in its L movements: when the same remarkable distribution of vessels presented itself, both in the upper and lower limbs; and the small divisions of the artery, forming the surrounding cylinder, were still more numerous than in the Slow Lemur, viz. not less than 60 or 65, and in the lower limbs, at least, as many: these small cylinders were also connected by several lateral or anastomosing branches. We then opened a specimen of the Bradypus didactylus, an animal far less slow in its motions than the tridactylus. In this species a distribution indistinctly approaching to that above described was discovered, but with much fewer divisions, and more approaching to the usual distribution in other Quadrupeds. Lastly, A Lemur Loris, or Slender-limbed Lemur, was examined; when it appeared that the trunk of the artery, both in the upper and lower limbs, was surrounded by only four or five smaller cylinders, instead of the numerous ones so remarkable in the Slow Lemur, &c.



URSINE SLOTH.

Bradypus Ursinus. B. niger hirsutissimus, naso elongato nudo, pedibus pentadactylix.

Black Sloth, with very long shaggy hair, lengthened snout, and five-toed feet.

Ursine Bradypus, or Ursiform Sloth. Naturalise's Miscellany, vol. 1. p. 58.

Ursiform Sloth, Pennant Quadr. 2. p. 243. pl. 92. Petre Bear, Catton's Figures of Animals.

THIS, which is by far the largest species of Sloth, is a native of India, and has been but lately introduced to the knowledge of European naturalists. It was brought from the neighbourhood of Patna in Bengal. This animal has, at first sight, so much of the general aspect of a bear, that it has actually been considered as such by some observers; but it is no otherwise related to the Bear than by its size and habit, or mere exterior outline. This species I first examined with accuracy in company with Mr. Pennant, and with him collated its characters with those of the Sloths. I described it in the second volume of the Naturalist's Miscellany; and Mr. Pennant afterwards introduced it into the last edition of his History of Quadrupeds. An excellent figure had some time before been published by an ingenious artist, which has been repeated both in the Naturalist's Miscellany, and in the History of Quadrupeds; and is, on account of its superior accuracy, again copied in the present work. It expresses, in a peculiarly striking and just manner,

URSINE SLOTH.

the appearance of the animal; and is, besides, accompanied with a view of the open mouth, &c. to shew the situation and form of the teeth. I must here observe, that the figure represented in the Journal de Physique, though a good general representation of the animal in its walking posture, is erroneous in the article of the claws; those on the hind feet being shewn equally large with those of the fore feet; which is by no means the case.

The Ursine Sloth is about the size of a Bear. and is covered all over, except on the face, or rather the snout, which is bare and whitish, with long, shaggy, black hair; which on the neck and back is much longer than elsewhere. On the fore part of the body the hair points forwards; on the hinder part backwards. The eyes are very small: the ears rather small, and partly hid in the long hair of the head. It is totally destitute of incisores or front-teeth: in each jaw are two canine-teeth of a moderate size: those in the upper jaw are situated at the distance of two inches from each other: those in the lower jaw are placed somewhat less remote. The molares or grinders in the upper jaw are placed three on each side; of which the two most remote are double or lobed : the remaining one simple. In the lower jaw there. are on each side six grinders, of which the most remote or backward is simple; the two next double, and the three remaining ones simple. The tongue is smooth, and has nothing remarkable in its appearance. The nose or snout is of a

URSINE SLOTH.

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somewhat elongated form; it also appears as if furnished with a sort of transverse joint, or internal cartilage, which admits of a peculiar The claws on kind of motion in this part. the fore feet are five in number, and are excessively strong; moderately crooked, and sharppointed: those on the hind feet are shorter, and of a rounder shape. The tail is very short, and inconspictious. The animal, at the time this description was drawn up, was thought to be somewhat more than four years old. When first taken it is said to have been about the size of a raccoon. and to have sometimes barked in the manner of a dog. Its voice, however, when examined as above, was a sort of short, abrupt roar, which it uttered when much disturbed or irritated. It was a gentle and good-natured animal; it fed chiefly on vegetable substances and milk; was fond of apples, and did not willingly eat animal food, except of a very tender nature, as marrow, which it readily sucked from a bone presented to it. It was also delighted with honey, sugar, and other sweets. Its motions were not, as in the two former species, slow and languid, but moderately lively ; and it appeared to have a habit of turning itselfround and round every now and then, as if for amusement, in the manner of a dog when lying down to sleep. It was said to have a propensity to burrowing under the ground; and it was added, that it had been dug out of its subterraneous retreat by those who first discovered it.

V. I.

In compliance with the opinion of Mons. Cuvier, who appears to have accurately examined it, we shall here introduce this curious animal; hitherto unknown, except from its skeleton, discovered in a fossil state, some years ago, in South America; and which, Mr. Cuvier thinks, approaches much nearer to the genus Bradypus or Sloth than to any other yet known.

Mr. Cuvier's account is as follows:

"This skeleton is fossil. It was found a hundred feet beneath the surface of a sandy soil, in the vicinity of the river of La Plata. It only wants the tail, and some pair-bones, which have been imitated in wood; and the skeleton is now mounted at Madrid.

"This skeleton is twelve feet (French) long, by six feet in height. The spine is composed of seven cervical, sixteen dorsal, and four lumbar vertebræ: it has consequently sixteen ribs. The sacrum is short: the ossa ilia very broad; and their plane being almost perpendicular to the spine, they form a very open pelvis. There is no pubis or ischium; at least they are wanting in this skeleton, and there is no mark of their having existed when the animal was alive.

"The thigh bones are excessively thick, and the leg bones still more so in proportion. The entire sole of the foot bore on the ground in walk-



ing. The shoulder-blade is much broader than long. The clavicles are perfect, and the two bones of the fore-arm are distinct and moveable upon each other. The fore limbs are longer than the bind. To judge by the form of the last phalances, there must have been very large pointed claws, enclosed at their origin in a long sheath. There appears to have been only three of these claws on the fore feet, and a single one on the hind. The other toes seem to have been deprived of them, and, perhaps, entirely concealed beneath the skin.

"The head is the greatest singularity of this skeleton. The occiput is elongated and flattened, but it is pretty convex above the eyes. The two jaws form a considerable projection, but without teeth, there being only four on each side above and below, all grinders, with a flat crown, and grooved across. The breadth of the branches of the lower jaw, and the great apophysis placed on the base of the zygomatic arch, deserve particular notice.

"This quadruped, in its characters, taken together, differs from all known animals; and each of its bones, considered apart, also differs from the corresponding bones of all known animals. This results from a detailed comparison of the skeleton with that of other animals, and will readily appear to those who are conversant in such researches; for none of the animals which approach it in bulk have either pointed claws, or similarly formed head, shoulder-blades, clavicles, pelvis, or limbs.

"As to its place in the system of quadrupeds, it is perfectly marked by the sole inspection of the ordinary indicatory characters, that is, the claws and teeth. These shew that it must be classed in the family of unguiculated quadrupeds destitute of cutting-teeth; and, in fact, it has striking is lations with these animals in all parts of its body. This family is composed of the Sloth (Eradypus), Armadillo (Dasypus), Pangolin (Manis), Ant-Eater (Myrmecophaga), and Orycteropus or Cape Ant-Eater.

" The great thickness of the branches of the lower jaw, surpassing even that of the elephant, seems to prove that the vast animal was not content with leaves, but, like the elephant and rhinoceros, broke and ground the branches themselves; its close and flat-crowned teeth appearing very proper for that purpose. The position of the bones of the nose, having some analogy with that of the elephant and tapir, would induce a suspicion that our animal wore a trunk, but it must have been very short, since the length of the head and neck together equals that of the fore legs. However this be, we find in the absence of canine-teeth, and the shortness of the muzzle, sufficient characters to constitute a new genus in the family of the edentated, which ought to be placed between the Sloth and the Armadillo; since to the shape of the head of the former, it joins the teeth of the latter. It would be necessary to know particulars of which a skeleton cannot inform us, such as the nature of the teguments, the form of the tongue,

the position of the mammæ, &c. in order to determine to which of these it approached the most. In the mean time, I thought I might give it the generic name of MEGATHERIUM, and the trivial -6. of Americanum.

" It adds to the numerous facts which apprize us that the animals of the ancient world were all different from those we now see on the earth; for it is scarcery probable that, if this animal still existed, so remarkable a species could have hitherto escaped the researches of naturalists. It is also a new and very strong proof of the invariable laws of the subordination of characters, and the justness of the consequences thence deduced for the classification of organized bodies; and under both these views it is one of the most valuable discoveries which have for a long time been made in Natural History."

MYRMECOPHAGA. ANT-EATER.

Generic Character.

Dentes nulli. Lingua teres, extensilis. Os angustatum in rostrum.

Corpus pilis tectum.

Teeth, none. Tongue cylindric, extensile. Mouth lengthened into a somewhat tubular form. Body covered with hair.

I HE animals of this genus live entirely on insects, more particularly on the various kinds of Ants; in order to obtain which, they extend their tongue, which is of a very great length, and of a roundish or worm-like form, into the nests of those insects, and when, by means of the viscid moisture with which it is covered, a sufficient number are secured, they retract it suddenly into the mouth and swallow them. A part of the generic character of the Myrmecophaga is the total want of teeth, in which particularity it resembles no other animals except those of the genus Manis, in which the same circumstance takes place. There are, however, in the Ant-Eaters according to the observations of Mons. Broussonet, certain bones or processes not unlike teeth, situated deep



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at the entrance of the gullet or œsophagus; or rather, according to the celebrated Camper, at the lower end of the jaws. The species of Ant-Eaters are not numerous.

GREAT ANT-EATER.

Myrmecophaga Jubata. M. palmis tedradactylir, plantis pentadactylis cauda jubata. Lin. Syst. Nat. p. 52.
Grey-brown Ant-Eater, with four toes on the fore feet, five on the hind, long snout, and very long bushy tail.
Tamanoir. Buff. 10. p. 141. pl. 29.

Great Ant-Eater. Pennant Quadr. 2. p. 256. Museum Leverianum, vol. 1. p. 99. pl. 12.

THIS is by far the largest of the Ant-Eaters, being upwards of seven feet in length, from the tip of the nose to the end of the tail; but if measured to the origin of the tail, it is no more than about five feet and a half. It is an animal of an uncouth appearance: the head is small: the snout very long: the eyes small: the ears short and round: the shoulders thick and muscular, from whence the body tapers towards the tail; but the thighs are thick and stout: the colour of the animal is a deep grey, with a very broad band of black running from the neck downwards on each side the body, growing gradually narrower as it passes down; this black band is accompanied on the upper part by a streak of white; the fore legs are of a lighter cast than the hinder; and have a patch or spot of black in front no-

GREAT ANT-EATER.

much above the foot: the tail is black, extremely 1 long and bushy: the hair on the whole body, but especially on the tail, is very harsh and coarse :... there are four toes on the fore feet, and five on the hind; the two middle claws of the fore feet are extremely large and strong; which render this creature, though destitute of teeth, a very formidable adversary; since it has been known to destroy animals of much greater apparent strength than itself; fixing its claws upon them, and exerting such powerful strength as to kill them by continued laceration and pressure. It is a native of Brasil and Guiana: it is chiefly a nocturnal animal, and is said to sleep during the greatest part of the day in retired places. Its pace is somewhat slow, and its manners dull and heavy. It is said to swim with ease; at which time it flings its tail over its back. A living specimen was some years ago brought into Spain, and kept in the Royal Menagerie at Madrid: in this state of confinement it would readily eat raw meat cut small, and was said to swallow four or five pounds in a day. Its length was six feet, from the nose to the end of the tail, and its height was two feet. The specimen in the Leverian Museum is of superior size, and is commemorated by Mr. Pennant, in his History of Quadrupeds, as being the largest specimen he ever heard of. Its dimensions, however, do not seem to exceed those of a skin preserved in the British Museum, and which once belonged to that of the Royal Society. A beautiful figure of the Leverian speci-



MIDDLE ANT-EATER.

men is given in No. 2. of the Museum Leverianum, and is copied in the present work.

MIDDLE ANT-EATER.

Myrmecophaga Tetradactyla. M. palmis tetradactylis, plantis pentadactylis, cauda calva. Lin. Syst. Nat. p. 52. Ant-eater, with four toes on the fore feet, five on the hind, and half-naked prehensile tail.

THIS species, which is far inferior in size to the former, has a long slender nose, bending down a little: the mouth is black: the eyes small: the cars small and upright. The general colour of the animal is a palish vellow-brown; the hair somewhat shining, and of a hard nature: on each side of the neck is an oblique black or dusky band, crossing the shoulders, and passing toward the lower part of the back: the tail, which is covered with longer hair than the back, is thickish at the base, but tapers towards the end where it is nearly bare, having the same prehensile power as in some of the Monkies. On each of the fore feet are four toes, armed with strong claws, the middle ones extremely so. On the hind feet are five claws, small in comparison with the former. The length of the animal from nose to tail is one foot seven inches: of the tail ten inches. It inhabits the same parts of South America with the Great Ant-Eater, and its manners are similar. It also climbs trees, and occasionally clings by its tail to the branches.

THREE-TOED ANT-EATER.

Myrmecophaga Tridactyla. M. palmis tridactylis, palmis tetra dactylis, cauda willosa. Lin. Syst. Nat. p. 51.

Ant-Eater, with three toes on the fore feet, four on the hind and villose tail.

Tamandua-guacu. Seb. 1. p. 60. t. 37. and p. 65. t. 40. f. 1.

THIS, which must be considered as an obscure species, seems to have been first mentioned by Seba, and from him adopted by Linnæus and Brisson. The figures, however, which Seba gives, represent equally well the Four-toed Ant-Eater or Myrmecophaga tetradactyla of Linnæus, from which they only appear to differ in having pendulous ears, and three toes instead of four on the fore feet. It, therefore, seems highly probable that this supposed species may be rather a variety of the M. tetradactyla than truly distinct. Linnæus, in his slight description, mentions a lateral black band, and adds, that the tail is broad and villose, and that the animal carries it over its back and covers itself with it: he also says that the back has a longitudinal mane*. It is a native, according to Linnæus, of India.

In the Leverian Museum are two specimens of the M. tetradactyla, which in general appearance agree with the abovementioned figures of Seba, except having the head rather smaller in proportion, as well as the ears: yet there can be little doubt of their being in reality the same species.

* Neither this nor the black band are mentioned by Seba.



THREE-TOED ANT-EATER.

The Three-toed Ant-Eater of Seba may, therefore, be a mere variety of the Four-toed or Tetradactyla, and perhaps neither the black lateral band, nor the pendulous cars, ought to considered as constituting a permanent or specific character. It is remarkable that Mr. Pennant, in his History of Quadrupeds, makes no mention of the M. tridactyla.

For the satisfaction of the reader, Seba's figure of this supposed species is represented in the present work, and those who are conversant in natural History will readily perceive that it can scarce be allowed to differ from the Myrmecophaga tetradactyla. On the other hand, I ought not to omit an observation of Mr. Vosmaer, who received from the Cape of Good Hope a specimen preserved in spirits of wine, and which he supposed to be a new-born animal, though as large as a young pig. He affirms that Seba's figures are very good; that they represent a perfectly distinct species, viz. that of which he received the young; but that the fore feet are furnished with four claws. Thus, in reality, the Seban animal, though erroneously mentioned as having only three toes on the fore feet, may still be, in all other respects, a very exact representation of a species not yet perfectly described; while the Linnæan tridactyla must continue unknown, unless he really meant the animal of Seba.

LITTLE ANT-EATER.

Myrmecophaga Didactyla. M. palmis didactylis, plantis tedradactylis cauda prehensili,

Ant-Eater, with two toes on the fore feet, four on the hind, and prehensile tail.

M. palmis didactylis, plantis tetradactylis, cauda villosa. Lin. Syst. Nat. p. 51.

Tamandua seu Coati Americana alba, Seb. 1. p. 60. t. 37. f. 3. Little Ant-Eater. Edw. pl. 220. Fourmiller. Buff. 10. p. 144. pl. 30.

THIS is an animal of great elegance. It is not superior in size to a squirrel; measuring little more than seven inches from the nose to the tail, which is longer than the body and head: the head is small; the snout sharpened and slightly bent downwards: the legs are short; the fore feet have only two claws on each, the exterior one much larger and stronger than the interior: on each of the hind feet are four claws of moderate size: the ears are very small and hid in the fur: the eves are also small. The whole animal is covered with a beautiful soft, and somewhat crisped or curled, fur, of a pale yellow-colour, or rather yellow-brown: the tail, which is very thick at the beginning or base, gradually tapers to the tip; and the lower surface, for about the space of four inches from the tip, is bare, the tail in this species being prehensile, and the animal commonly residing on trees, and preying on ants, by means of its long tongue, in the manner of other species. It is a native of Guiana. This species has been most elegantly figured both by Seba and Edwards; but the figure




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in the Natural History of the Count de Buffon is, by some mismanagement, so conducted as to give a very erroneous idea both of the habit of the animal and the structure of the feet. The representation in the present work is from a beautiful specimen in the Leverian Museum.

CAPE ANT-EATER.

- Myrmecophaga Capensis. M. palmis tetradactylis, rostro longo, auriculis magnis pendulis, cauda corpore breviore ad apicem attenuata. Lin. Syst. Nat. Gmel. p. 53.
- Ant-Eater, with four toes on the fore feet, long snout, large pendent ears, tail shorter than the body, and attenuated towards the tip.

Cochon de Terre, Buff. suppl. 6. p. 230. pl. 31. Cape Ant-eater. Pennant Quadr. 2. p. 261.

THE Count de Buffon, having formerly asserted that none of the South American animals were found in the continent of Africa, and that none of the African ones were to be found in South America, thinks proper, in his supplemental volume, to maintain his former dogma, and is not willing to consider this species as a genuine Ant-Eater, though it possesses the usual character, viz. mouth without teeth; of a long form; and a long retractile tongue.

The Cape Ant-Eater is a large animal, measuring about three feet and a half from the tip of the nose to the beginning of the tail; and the tail measures one foot nine inches. The general

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colour of the animal is grey, or like that of a Rabbit, but deeper; and tinged with reddish on the sides and belly: the legs are blackish; the head is of a conic shape; the nose long, and somewhat abruptly blunt at the end like that of a hog: the tongue is very long, flat, and slender: the ears about six inches long; upright (in the dried specimen), and extremely thin: they are also thinly scattered over with fine hairs: the hair on the head and upper parts is short, and lies close or smooth as if glued to the skin; it is longest and loosest on the sides and legs: the tail is thick at the base, and gradually tapers to a point. The fore feet have four toes; the hind ones, five; and the claws on all the feet are very strong. This species inhabits the neighbourhood of the Cape of Good Hope, where it lives under ground, and is called by the name of the Ground Hog. It feeds principally on ants. It is said to be often hunted out of its retreats by the Hottentots, who consider it as a good food. The description of this animal is given by Mr. Allamand, from a dried skin sent from the Cape; and he observes, that it is doubtful whether the ears in the living animal are erect or pendent: in a foctus described by Dr. Pallas*, they were pendent.

The animal mentioned by Kolbe, in his account of the Cape of Good Hope, seems extremely allied to this, except that it is expressly said to have pendent ears. It is said by Kolbe to be of the weight

* Pallas Miscell. Zool. 64.



ACULEATED ANT-EATER.

of an hundred pounds, and to have a long head and tongue: if it fastens its fore feet into the ground, the strongest man cannot pull it away: it has four claws on the fore feet; feeds on ants, and burrows under ground, coming out chiefly by night to feed.

Some have been inclined to form a distinct genus from this species, under the title of Orycteropus; but this seems perfectly unnecessary, it being a genuine Myrmecophaga.

It is possible that the disputed figures in Seba, mentioned under the article Myrmecophaga tridactyle, may belong to this species.

ACULEATED ANT-EATER.

Myrmecophaga Aculeata, M. aculeata, cauda brevissima. Vivarium Natura, tab. 109.

Spiny Ant-Eater, with very short tail. Porcupine Ant-Eater. Naturalist's Miscellany, pl. 109. Aculcated Ant-Eater. Pennant Quadr. 2. p. 262.

THE Aculeated Ant-Eater is one of those curious animals which have been lately discovered in the vast island, or rather continent, of Australasia or New Holland; and is a striking instance of that beautiful gradation, so frequently observed in the animal kingdon, by which creatures of one tribe or genus approach to those of a very different one. It forms a connecting link between the very distant Linnæan genera of Hystrix (Porcupine) and Myrmecophaga (Ant-Eater), having

ACULEATED ANT-EATER.

the external coating and general appearance of the one, with the mouth and peculiar generic characters of the other. This animal, so far as may be judged from the specimens hitherto imported. is about a foot in length. The whole upper parts of the body and tail are thickly coated with strong and very sharp spines, of a considerable length, and perfectly resembling those of a Porcupine, except that they are thicker in proportion to their length; and that, instead of being encircled or annulated with several alternate rings of black and white, as in that animal, they are mostly of a sellowish white with black tips; the colour paining down to some little distance on the quil, and being separated from the white part by , circle of dull orange: others have but a very slight appearance of black towards the tips. The head, legs, and whole under parts of the body, are of a deep brown, or sable, and are thickly coated with strong, close-set, bristly hair. The tail is extremely short, slightly flattened at the tip, and coated on the upper part of the base with spines, at least equal in length to those of the back, and pointing perpendicularly upwards. The snout is long and tubular, and perfectly resembles in structure that of the M. jubata, or Great Ant-Eater; having only a very small rictus or opening at the tip, from whence is protruded a long lumbriciform tongue, as in other Ant-Eaters. The nostrils are small, and seated at the extremity of the snout. The eyes are very small and black, with a pale blue iris. The legs are very short and

ACULEATED ANT-EATER.

thick; and are each furnished with five rounded, broad toes: on the fore feet are five very strong, long, and blunt claws, of a black colour: on the hind feet are only four claws: the thumb, which is broader than the rest of the toes. being destitute of a claw: the first claw on the hind feet is extremely long, somewhat curved, and sharp-pointed; the next rather shorter, but of similar appearance; the two remaining ones far shorter, very slightly curved, and not sharppointed. In its mode of life this animal resembles the rest of the Ant-Eaters, being generally found in, the midst of some large ant-hill: it burrows with great strength and celerity under ground, when disturbed; its feet and legs being most excessively strong, and short, and wonderfully adapted to this purpose. It will even burrow under a pretty strong pavement, removing the stones with its claws; or under the bottom of a wall. During these exertions its body is stretched or lengthened to an uncommon degree, and appears very different from the short or plump aspect which it bears in its undisturbed state.

It cannot escape the observation of every scientific naturalist, that, in consequence of the discovery of this curious animal, the Linnæan character of Myrecophaga is, in part, rendered inapplicable. Since, therefore, the genera of *Manis* and *Myrmecophaga* differ only in the external covering. the former being coated with scales, and the latter with hair, it would, perhaps, be not improper to conjoin the two genera, to add this as a new spev. I. 12^{-2}

STRIPED ANT-EATER.

cies, and to give as part of the generic character * Corpus pilis, squamis, vel aculeis tectum. Or it might even constitute a new genus, which would differ from those of Manis and Myrmecophaga, in having the body covered with spines.

STRIPED ANT-EATER.

Myrmecophaga Striata. M. flavescens, fusco transversim fasciata, maxilla superiore longiore.

Yellowish Ant-Eater, with transverse dusky bands, and the upper jaw longer than the lower.

Le Tamandua. Buff. suppl. 3. p. 381. pl. 56. Striped Ant-Eater. Pennant Quadr. 2. p. 259.

THIS is figured in the 3d vol. of the supplement to the Count de Buffon's Quadrupeds; and appears to be clearly a distinct species from any of the former. The nose is taper; the upper mandible extending very far beyond the lower: the eyes extremely small: the ears round and short: the tail covered with long hairs, so as to have a slightly bushy appearance: on the fore feet are five toes. The body and tail are of a vellowish-brown or tawny-colour; with the under parts white: the body is marked with broad, distant, blackish, transverse stripes, and the tail is annulated with similar ones. The length of the specimen, from nose to tail, was thirteen French inches; of the tail seven inches and a half. It is a native of Guiana.

MANIS.

Generic Character.

Dentis nulli. Lingua teres, extensilis. Os angustatum in rostrum. Corpus squamis tectum. Teeth, none. Tongue cylindric and extensile. Mouth narrowed into a snout. Body covered with scales.

THE genus Manis presents an appearance not less extraordinary than that of Dasypus or Armadillo; being covered on every part, except on the belly, with extremely strong and large horny scales, constituting a suit of armour still more powerful than in the following genus, and capable of defending the animals, when rolled up, from the assaults of the most ferocious enemies. This external covering, together with the uncommon length of body and tail, gives an aspect so much resembling that of a Lizard, that these creatures are commonly known by the title of Scaly Lizards, though no otherwise allied to the Lizard tribe than in their unusual covering : they may be allowed, however, in a general view of the animal kingdom, to form a kind of shade or link of approximation between the proper viviparous quadrupeds and the Lizards.

LONG-TAILED MANIS.

They are animals of a harmless nature, and feed in the same manner as the Ant-Eaters, by thrusting out their very long tongue into the nests of ants and other insects, and swallowing their prey by suddenly retracting it, having no teeth, and differing from the Ant-Eaters, in scarce any other circumstance but that of their scaly integument. They are found in India and the Indian islands.

LONG-TAILED MAN1S.

Manis pedibus tetradactylis, cauda longissima. Manis with four-toed feet and very long tail. Manis Tetradactyla. M. pedibus tetradactylis. Lin. Syst. Nat. p. 53. Lacerta indica guanæ congener. Aldr. ovip. dig. 668. Scaly Lizard. Grew's Rarities, p. 46.

Le Phatagin. Buff. 10. p. 180. pl. 34. Four-toed Manis. Naturalists' Miscellany, pl. 36. Long-tailed Manis. Permant Quadr. 2. p. 252.

THIS animal, known in India by the name of the Phatagen, is of a very long and slender form: the head is small; the snout narrow: the whole body, except beneath, covered with broad, but sharp-pointed scales, which are striated throughout their whole length: the tail is more than twice the length of the body, and tapers gradually to the tip. The legs are very short; scaled like the body, and on each of the feet are four claws, of which those on the fore feet are stronger than





SHORT-TAILED MANIS.

those of the hind. The colour of the whole animal is an uniform deep brown, with a cast of yellowish, and with a glossy or polished surface. The Manis tetradactyla grows to the length of five feet, measuring from the tip of the nose to the extremity of the tail.

SHORT-TAILED MANIS.

Manis pedibus pentadactylis, cauda corporis longitudine. Manis with five-toed feet, and tail the length of the body. Manis Pentadactyla. M. pedibus pentadactylis. Lin. Syst. Nat.

p. 52. Lacertus indicus squarnosus. Bont. Jav. p. 60. Pangolin. Buff. 10. pl. 34. Five-toed Manis. Naturalists' Miscellany, pl. 11. Short-tailed Manis. Pennant Quadr. p. 253.

THIS species differs from the former, in being of a much thicker and shorter form: the tail, in particular, differs greatly in proportion from that of the preceding, being not so long as the body; very thick at the base, and from thence gradually tapering, but terminating very obtusely. The head is small as in the former; the ears small and rounded: the feet furnished with five toes each, of which those on the fore feet are extremely strong, except the exterior one, which is much smaller than the rest. The whole animal is covered with most extremely thick, strong, and large scales, which in the full-grown speci-

SHORT-TAILED MANIS.

mens are perfectly smooth, but in those which are smaller are slightly striated about half way from the base. Sometimes a few bristles appear between the scales, but in others this is not observable. The scales differ in shape from those of the preceding, being much wider and larger in proportion to the body and tail. The colour of the whole animal is a very pale yellowbrown, and the surface is glossy, as in the former species. In India it is called the Pangoelling. In the neighbourhood of Bengal it is named Vajracite, or the Thunderbolt Reptile, from the excessive hardness of the scales, which are said to be capable even of striking fire like a flint. It is found in different parts of India, and perhaps also in Guinea; this is on the authority of Des Marchois, who says it is called Quogelo by the negroes; that it grows to the length of eight feet, of which the tail is four; that it lives in woods and marshy places, and feeds on ants, by laying its long tongue across their paths. It is said to walk slowly; but, when pursued, rolls itself up, and is then so securely armed that even a leopard attacks it in vain. It is also said sometimes to destroy the elephant, by twisting itself round the trunk, and thus compressing that tender and sensible organ with its hard scales. We are told in the Asiatic Researches, that the Malabar name of this animal is Alungu; and that the natives of Bahar call it Bajar-cit, or the Stone vermin; and in the stomach of the one examined and described

BROAD-TAILED MANIS.

in the above work was found about a teacupful of small stones, which it is supposed to have swallowed for the purpose of facilitating digestion. It was only thirty-four inches long from the nose to the end of the tail; and a young one was found in it.

The figure given in the Asiatic Researches is considered as a variety, differing a little in the proportion of some of its measurements from that described by the Count de Buffon, &c. In reality, it should seem to be the variety slightly described and figured in the Philosophical Transactions; and which Mr. Pennant has introduced into the last edition of his History of Quadrupeds as a distinct species, under the title of the Broadtailed Manis. This we shall, in compliance with that excellent zoologist, describe in a separate article, though we think it may be doubted whether it should be really considered as a distinct species. Specimens of the Manis pentadactyla have sometimes been seen of the length of six feet from the nose to the tip of the tail.

BROAD-TAILED MANIS.

Manis cauda latissima. Manis with extremely broad tail. Broad-tailed Manis. Pennant Quadr. 2. p. 254. New Manis. Phil. Trans. 60. p. 36. pl. 11.

THIS animal is figured in the 60th volume of the Philosophical Transactions: it was killed in

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the house of a merchant at Tranquebar, having been discovered in the cavity of a wall. When pursued, it rolled itself up in such a manner as to leave only the back and tail visible. It was with great difficulty destroyed. It had five toes on the fore feet, and four on the hind: the scales were of the shape of a muscle; the belly quite smooth; the exterior scales ended in a sharp point, somewhat incurvated: the tail was very broad, decreasing to a point: the whole length of the animal was a German ell and five eighths: the tail half an ell and a span broad in the broadest part.

Of animals inhabiting regions so remote, it is impossible to obtain more than a partial intelligence as to the exact distinction of species, sex, and variety: we must, therefore, be content to remain in doubt whether the above-described animal, as well that mentioned in the Asiatic Researches, should be considered as distinct from the species already known or not.

In reality, however, these differences do not seem sufficient to constitute a specific distinction; and are, probably, owing to the differences of age and sex. In the British Museum are specimens of different sizes, which shew these gradations. In one the scales, all over the animal, are so regularly and completely truncated at the extremity, as to exhibit the appearance of so many hexagons. In another they are remarkably broad and rounded; and, in a third, which is a very

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large specimen, they are less obtuse at the tips, and somewhat irregularly terminated, as if notched, or worn through age. The proportional breadth of the tail also varies somewhat in these specimens, and seems greatest in those which are least advanced in age.

DASYPUS. ARMADILLO.

Generic Character.

Dentes molares plures, absque primoribus, absque laniariis.

Corpus cataphractum testa ossea zonis intersecta. Body coated with a shelly armour, divided into zones.

HE Armadillos are natives of South America, and are readily distinguished from all other Quadrupeds by the singular covering with which Nature has ornamented them; and which forms a complete suit of armour, divided into bands or shelly zones, in such a manner as to accommodate itself to the various postures of the body; and exhibiting a most beautiful example of deviation from the general structure and appearance in quadrupeds. The Armadillos are innoxious animals, and inhabit subterraneous retreats or burrows, which they readily excavate by means of their large and strong claws. They wander about chiefly by night, and devour various roots and grain; and are, therefore, considered as injurious to plantations. They also occasionally prey on the smaller animals of different kinds; worms, insects,

ARMADILLO.

&c. In a state of captivity they readily eat animal food, and that in considerable quantity.

They are themselves considered as excellent food, and are, therefore, dug out of their subterraneous cavities, and sold for the table. When old, however, their flesh acquires a strong musky scent, and becomes unfit for use. When attacked, the Armadillos roll themselves up into the form of a ball, and thus become, in a degree, invulnerable. Nothing can exceed the curious mechanism by which this is performed; nor is it possible to view without admiration the appearance of the animal thus coiled up, and secured from common contingencies.

Armadillos are said to drink frequently, and they often grow extremely fat. They are very prolific animals, and are said to breed three or four times a year, and to bring several young at a birth. The species are determined by the number of shelly zones on the body. In enumerating these, however, it is remarkable that most authors vary; and the exact discrimination of all the species seems yet a desideratum in natural history. This, perhaps, arises partly from the inattention of draughtsmen and engravers, when representing the animals, and partly from different authors counting differently the bands on some of the species; which are so placed as to make it difficult, in some instances, to distinguish the ultimate or bounding zones of the body, from the scaly divisions on the fore and hind parts of the animal, and which, like the bands, are disposed into a

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kind of zones, though less strongly marked. (Some species, however, are so clearly defined by J this mode of distinction, as to be at all times readily ascertained.

THREE-BANDED ARMADILLO.

Dasypus Tricinctus. D. tegmine tripartito, pedibus pentadactylis. Lin. Syst. Nat. p. 53.

Armadillo, with the armour divided into three bands, and fivetoed feet.

Tatou, v. Armadillo. Red. exper. 91. 1. 92. Tatu apara. Marcgr. bras. 232.

Tatu, &c. Seb. 1. p. 62. 1. 38. f. 2, 3.

THIS may be considered, perhaps, as the most elegant of the whole genus; the pattern of the armour being peculiarly neat, and well defined; and the colour of the animal more pleasing than in most other species, viz. a clear yellowish-white. The head, shoulders, and hind part of the body, are coated with regular hexagonal divisions, curiously studded or tuberculated on the surface; and the zones of the body are extremely distinct, and only three in number: they are divided or marked into numerous transverse segments or squares; the tail is very thick and short. The legs are covered with hexagonal divisions or segments similar to those on the shoulder, but smaller: the ears are rather large, and the claws smaller than in most other species: it is a native of Brazil.





SIX-BANDED ARMADILLO.

Dasypus Sexcinctus. D. cingulis senis, pedibus pentadactylis. Lin. Syst. Nat. p. 54.

Armadillo with six bands, and five-toed feet. Tatu, v. Armadillo prima Marcgravii. Raj. Quadr. 233. Armadillo. Olear. mus. p. 7. t. 6. f. 4. Encoubert, ou Tatou a six bandes. Buff. 10. p. 209. pl. 42. and suppl. 3. p. 285. pl. 57.

This is also a species of great elegance; and, in its general appearance, much resembles the former; but is furnished with six bands instead of three: the tail is very thick-at the base, and is short in proportion to the animal; the claws are very large and strong. The bands are marked into oblong squares, as in the former.

VAR.

This animal appears to vary as to the number of its bands: the specimens both in the British and Leverian Museums having eight bands instead of six; in all other respects they agree with the six-banded one. A particular character of this species seems to be the remarkable breadth and flatness of the head, which is larger in proportion than in others of the genus. The Leverian eight-banded variety is of a very fair yellowish-white: that in the British Museum is of a much deeper colour, approaching to an iron-grey, but whitish in some parts.

SEVEN-BANDED ARMADILLO.

Dasypus Septemeinetus. D. cingulis septenis, palmis tetradactylis, plantis pentadactylis. Lin. Am. Acad. 1. p. 281. Syst. Nat. p. 54. Armadillo with seven bands, and four toes on the fore feet, and five on the hind.

It is impossible to consider this in any other light than as a mere variety of the nine-banded Armadillo, in which the pattern of the armour, and the relative proportions of the parts, are sufficient to ascertain the species, whatever may happen to be the number of the zones.

NINE-BANDED ARMADILLO.

Dasypus Novemcinctus. D. cingulis novem, palmis tetradactylis, plantis pentadactylis. Lin. Syst. Nat. p. 54.

Armadillo with nine zones, four toes on the fore feet, and five on the hind.

Cataphractus scutis duobus, cingulis novem. Briss. Quadr. 42. Tatus. Gesn. Quadr. p. 935.

Cachicame, ou Tatou à neuf bandes. Buff. 10. p. 215. pl. 37. Nine-banded Armadillo. Pennant Quadr. 2. p. 248.

THE number of bands or zones in this species is generally nine: they are extremely distinct or well defined, and are transversly marked by very numerous wedge-shaped or acutely-triangular figures alternating with smaller opposite ones: the head is smaller, longer in proportion, and sharper snouted than in any other species: the fore and hind parts of the shield or covering are marked by very nu-

NINE-BANDED ARMADILLO.

merous flat, rounded scales or tubercles, with smaller ones interposed: the ears are moderately large, and upright; the tail is longer than in any other species, and tapers gradually to the tip. It is marked by transverse rows of longish hexagonal divisions on each joint: on the fore feet are four toes, and five on the hind: the claws moderately large and strong:

VAR.

Though this species preserves, in general, its specific character of nine bands; yet this is not always to be depended on, since specimens sometimes occur in which only eight bands are visible. A specimen of this kind occurs in the British Museum; and the Count de Buffon assures us, that he has observed two specimens with eight bands only, which in every other respect perfectly resembled the nine-banded ones. He is, therefore, of opinion (and in this we clearly agree with him), that the number of bands, in this species, constitutes not a specific, but a sexual difference: the eight-banded one he supposes to be the male. The general colour of this species is a palish irongrey; but specimens often occur in Museums of a vellowish-brown cast, having probably lost a part of their original tinge. The scales on the anterior and hinder parts are also sometimes of an angular form instead of round.

The young specimens of this animal also exhibit a difference as to the pattern or marking of

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the bands; which, instead of the triangular or wedge shaped marks before described, have a simple series of long-oval marks throughout each band; and the ultimate bands are not so distinctly defined as in the adult animal.

The Seven-banded Armadillo, Dasypus septemcinctus, of Linnæus and others, as before observed, is not a distinct species; but a mere variety of this; as is also the Eight-banded Armadillo, Dasypus octocinctus. Lin. Syst. Nat. Gmel.

TWELVE-BANDED ARMADILLO.

Dasypus cingulis duodecim.

Armadillo with twelve zones.

Dasypus Unicinctus. Lin. D. tegmine tripartito, cingulis duodecim. Lin. Syst. Nat. p. 53.

Tatu seu Armadillo Africanus. Seb. 1. p. 57. t. 30.

Kabassou ou Tatou a douze bandes. Buff. 10. p. 218. pl. 40. and var.? major, pl. 41.

Twelve-banded Armadillo. Pennant Quadr. 2. p. 249.

The Twelve-banded Armadillo, according to the character generally given in authors, should have twelve zones or bands; but it is certain that this number is not very accurately observed by Nature: and perhaps thirteen or fourteen is the more general number. The individuals also appear to vary in some other particulars. That described by the Count de Buffon and Mr. Pennant, under the title of the Twelve-banded Armadillo, has broad upright ears; the head is thick and broad, and is marked above into large



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angular divisions; the crust on the shoulders into oblong pieces inclining to a squarish form: that on the rump into hexagonal ones; (the Count de Buffon describes them as square, though hexagonal in the figure): the fore feet have five toes, with very large and strong claws: the hind feet have the same number, but smaller: the tail is somewhat shorter than the body; and is said by Buffon to have no crustaceous* covering; differing, in that respect, from every other species: his figure represents it covered with roundish tubercles. The length of this animal, from the nose to the tail, is about a foot; the tail about seven inches, or less.

Var.?

GREATER TWELVE-BANDED ARMADILLO.

This, which is by far the largest of all the Armadillos, differs from the former in the pattern of the shield on the interior and hinder part of the body; all the divisions consisting of oblong squares: the tail also differs, being longer than the body. The measures of the specimen described and figured by Buffon, are thus given,

* By this, however, we are by no means to understand that the tail is merely covered by skin; on the contrary, it is guarded by scaly tubercles, which secure it almost as strongly as the armour on that of other species; and, indeed, the chief difference is, that these strong tubercles are not, strictly speaking, set in jointed rings, but scattered.

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viz. from nose to tail two feet ten inches, and the tail about one foot eight inches. This, Mr. Pennant says, is the largest he ever heard of: in the British Museum, however, is a specimen of exactly similar dimensions, and which is accurately represented on the annexed plate. The head is rather small than large; and the snout is sharpish: the ears small and sharp: the claws excessively large and strong. The bands, which are thirteen in number, are scarce distinguishable from the rest of the armour, which both before and behind is marked out into narrow zones, divided into numerous oblong squares : these bands on the fore part of the animal are narrower or more closely set than on the hind part, and the whole exactly agrees with Buffon's figure entitled Autre Kabassou (vol. 10. pl. 41.) The colour of the whole animal is a pale yellowish-grey.

The figures given in plate 30. vol. 1. of Seba, seem to be young ones, and consequently do not exhibit with sufficient distinctness some of the characters: their heads seem remarkably thick or blunt; and the tail of one of them is represented as perfectly void of any covering; of the other covered with square scaly divisions: the ears in both very large.

EIGHTEEN-BANDED ARMADILLO.

Dasypus 18-cinctus. D. cingulis octodecim. Armadillo with eighteen zones.

Dasypus cingulo simplici. Lin. Syst. Nat. Gmel. p. 55. Weezle-headed Armadillo. Grew. mus. reg. soc. p. 19. t. 1. Cirquincon, ou Tatou à dix-huit bandes. Buff. 10. p. 220. Eighteen-banded Armadillo. Pennant Quadr. 2. p. 250.

THIS was first described by Grew, in the last century, under the name of the Weezle-headed Armadillo. The description was composed from a specimen in the Museum of the Royal Society, and is as follows:

" His head in figure almost like a Weezle's, whence I take leave for his name. It is three inches and a half long; his forehead two inches and a half broad, and very flat; the end of his nose half an inch. His eyes small, a quarter of an inch long. His ears two inches distant one from another; an inch long. His body or trunk eleven inches long, about six broad. His tail five inches and a half long; near the buttocks an inch and a quarter over; the extremity the fifth of an inch. His fore leg two inches and a half long, three quarters broad; on which there are five toes: whereof the three foremost are an inch long, the other two half an inch: all with claws the third of an inch. On his hinder foot (which is somewhat bigger) he hath also five toes, as in the foremost. His head, back, sides, legs, and tail, are covered with a shelly armour. His

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head-piece, as also the shells on his legs, are composed of roundish scales, a quarter of an inch over. His neck-piece is a single plate, composed of little pieces, a quarter of an inch square. His shoulder-piece consisteth of several ranks or rows of such-like square pieces, but not set together by any articulation or moveable conjunction. His back-piece, reaching also over his buttocks to his tail, is composed of several plates, in number eighteen, moveably joined together by as many intermediate skins. The foremost and greatest of these plates consist of square pieces, half an inch long, and a quarter broad. The hindermost, of square and round ones together. The extreme part of the shell, next the tail, is parabolic. The fore part of the tail is surrounded with six rings; consisting of little square pieces. The other half with scales. His breast, belly, and ears, all naked."

This species seems most allied to the Twelvebanded Armadillo. It appears not to have been figured by any author except Grew, whose representation is far from elegant, but which, for the satisfaction of the reader, it was thought proper to introduce.

The name unicinctus, applied, as a trivial, by Linnæus, must be confessed to be not very proper; since it seems to imply a simple or undivided zone on the animal, instead of eighteen.

The following are clearly no other than varieties, viz. the Seven-banded of Linnaus, Am. Acad.

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vol. The Sexcinctus, pl. 72. of Schreber, and the Octocinctus, pl. 73. of the same author. All three being varieties of the Novemcinctus, or Nine-banded Armadillo.

The Cheloniscus of Columna, aquat. 2. p. 15. t. 16. seems to be no other than a variety of the Three-banded, or *Tricinctus*.

The Four-banded Armadillo of Molina, mentioned in his Natural History of Chili, may perhaps be a distinct species. Molina also mentions an Armadillo with eleven bands, with four toes on the fore feet and five on the hind.

RHINOCEROS.

Generic Character.

Cornu solidum, perenne, conicum, naso insidens.

SINGLE-HORNED RHINOCEROS.

Rhinoceros Unicornis. R. cornu unico. · Lin. Syst. Nat. Gmel. p. 57. Rhinoceros with a single horn. Rhinoceros. Parsons Phil. Trans. vol. 42. Buff. 11. p. 174. pl. 7. Edwards, pl. 221.

THE Rhinoceros is the largest of land animals, the Elephant alone excepted. It is of a highly uncouth and awkward form. The back, instead of rising, as in the Elephant, sinks in considerably: the head is moderately large and long: the upper lip protrudes or hangs over the lower in the form of a lengthened tip; and, being extremely pliable, answers the end of a small proboscis; and is useful to the animal in catching hold of the shoots of vegetables, &c. and delivering them into the mouth. On the nose is situated a very



SINGLE-HORNED RHINOCEROS.

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strong, slightly curved, sharp-pointed horn, which. in the full-grown animal, is sometimes three feet in length, and eighteen inches in circumference at the base. The mouth has four cutting-teeth, which are placed at each corner of each jaw: there are also six grinders in each jaw; of which the first 'is remote from the cutting-teeth. (In strict propriety it may be doubted whether the four teeth first mentioned should be called by the title of cutting-teeth.) The cars are moderately large, upright, and pointed: the eyes small: the skin naked, rough, and tuberculated, or marked with very numerous, large, callous granulations: it is destitute of hair, except a few straggling and very coarse bristles on some parts of the head, &c. About the neck the skin is disposed into several large plaits or folds: another fold of the same kind passes from the shoulders to the fore legs; and another from the hind part of the back to the thighs: the tail is slender, flattened at the end, and covered on the sides with very stiff and thick black hairs: the belly is somewhat pendulous, or shaped like that of a hog: the legs very short, strong, and thick: the feet marked into three large hoofs, all standing forwards. The general height of the Rhinoceros is about eight feet; but it is said that some have been seen in Sumatra and Java which nearly equalled the size of the Elephant; though they appeared lower, on account of the sinking back; the pendulous abdomen, and short legs.

The Rhinoceros is a native of several parts of

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India. as well as of the islands of Java, Sumatra, &c. This animal falls far short of the Elephant in sagacity and docility. It is, however, of a quiet and inoffensive disposition, but very furious and dangerous when provoked or attacked; he is said to run with great swiftness, and, from his strength and impenetrable covering, is capable of rushing with resistless violence through woods and obstacles of every kind; the trees bending like twigs while he passes between them. In general habits and manner of feeding the Rhinoceros resembles the Elephant; residing in cool sequestered spots, near waters, and in shady woods: it delights in rolling occasionally in the mud, in the manner of a hog. Its skin is so hard as to be impenetrable by any common weapons, except on the belly: it_ is even said, that, in order to shoot a full-grow? Rhinoceros of advanced age, it is necessary to make use of iron bullets; those of lead having been known to be flattened against the skin.

The bones of the Rhinoceros, like those of the Elephant, are often found in a fossil state in various parts of the world; and in the year 1772 an entire Rhinoceros was found buried in the banks of a Siberian river, in the ancient frozen soil, with the skin, tendons, and some of the flesh, in the highest state of preservation. It was discovered in the sandy banks of the river Witin, which falls into the Lena, below Jakutsk, in N. lat. 64. A full account of this curious discovery is given by Dr. Pallas, in the 17th vol. of the Petersburgh Transactions.
SINGLE-HORNED RHINOCEROS.

The first specimen of the common or Indian Rhinoceros ever imported into Europe since the time of the Romans, is supposed to have been that which was presented to Emanuel, king of Portugal, in the year 1513. It gave rise to the first figure of the Rhinoceros by Albert Durer; but it is concluded, and not without good reason, that he never saw the animal himself, but received from some correspondent the drawing from which he secuted his figure, which evidently appears to have been decorated with fictitious folds, plaits, scales, and scollopings, and, besides the horn on the nose, has a smaller one situated on the back of the neck. This figure of Albert Durer's has been frequently copied in works on natural history, and occurs in Gesner, Aldrovandus, &c. &c. The other figures of the Rhinoceros, afterwards published, though free from Albert Durer's errors, were still faulty; and it was not till the year 1743 that a faithful representation of this animal was presented to the public. This appeared in the Philosophical Transactions, and the figure was executed under the superintendance of Dr. Parsons, an excellent zoologist of that period. The celebrated Edwards also, in the first volume of his "Gleanings of Natural History," published a beautiful representation of the same specimen. The animal, however, was but young, and the horn, of course, but in its first approach towards elongation. The figure in the Count de Buffon's Natural History seems to have been the next authentic representation, and appears to have been some-

what more advanced in age than that figured by Edwards and Dr. Parsons.

TWO-HORNED RHINOCEROS.

Rhinoceros Bicornis. R. cornubus duobus. Lin. Syst. Nat. Gmel. p. 57. Rhinoceros with two horns. Sparmann act. Holm. 1778. Two-horned Rhinoceros. Pennant Quadr. 1. p. 150. Buff. supples. pl. 6.

THIS species is found in various parts of Africa, and seems to have been the kind which was known to the ancient Romans, and by them exhibited in their public shows and combats of animals. In size it equals the common or single-horned species; and its habits and manner of feeding are the same: but it differs greatly in the appearance of its skin, which, instead of the vast and regularly marked armour-like folds of the former, has merely a very slight wrinkle across the shoulders, and on the hinder parts, with a few fainter wrinkles on the sides, so that, in comparison with the common Rhinoceros, it appears almost smooth: the skin, however, is rough or tuberculated, especially in the larger specimens: but what constitutes the specific or principal distinction is, that the nose is furnished with two horns, one of which is smaller than the other, and situated above it, or higher up on the front. These horns are said to be loose when the animal is in a quiet state,



but to become firm and immoveable when it is enraged. This observation is confirmed by Dr. Sparman, who observed, in a specimen which he shot in Africa, that they were fixed to the nose by a strong apparatus of muscles and tendons, so as to allow the animal the power of giving them a steady fixture on proper occasions. This, indeed, is treated by Mr. Bruce, the celebrated Abyssinian traveller, as an absurd idea; but, on inspecting the horns and skin on which they are seated, it does not appear that they are firmly attached to or connected with the bone of the cranium.

Mr. Bruce is also of opinion that the common or Single-horned Rhinoceros is found in many parts of Africa, as well as in Asia; and in this there surely seems no improbability.

The figure of the two-horned species in Mr. Pennant's History of Quadrupeds seems to represent the whole animal scaly; the roughness of the skin being probably somewhat too harshly expressed in the engraving.

That in the supplement to Buffon, vol. 6. pl. 6. is a much superior representation.

The figure of the Two-horned Rhinoceros, in Mr. Bruce's travels, is unquestionably a copy of Buffon's representation of the common Rhinoceros, with the addition of a second horn. Whether this was done merely to save trouble, or whether the specimen seen by Mr. Bruce had really the same kind of folds and roughnesses on its skin as the common species, or, lastly, whether it was

a real variety of that animal, it is not easy to determine; but the latter seems the most favourable construction, and (if we allow that species to be found in Africa) is by no means an improbable supposition; since all other travellers, who have seen and described the two-horned species, agree in affirming that the very strong plaits and armour-like appearance of the skin, which so strikingly distinguish the common Rhinoceros, are not visible, or, at least, but very obscurely visible, in the two-horned species.

Mr. Bruce's description of the manner of feeding, as well as of some other particulars relative to the Two-horned Rhinoceros, seems highly worthy of notice. He informs us, that, " besides the trees capable of most resistance, there are, in the vast forests within the rains, trees of a softer consistence, and of a very succulent quality, which seem to be destined for his principal food. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out so as to increase his power of laying hold with this in the same manner as the Elephant does with his trunk. With this lip, and the assistance of his tongue, he pulls down the upper branches which have most leaves, and these he devours first; having stript the tree of its branches, he does not therefore abandon it, but, placing his snout as low in the trunk as he finds his horns will enter, he rips up the body of the tree, and reduces it to thin pieces, like so many laths; and when he has thus prepared it, he embraces as much of it

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as he can in his monstrous jaws, and twists it round with as much ease as an ox would do a root of celery, or any such pot-herb or gardenstuff.

"When pursued, and in fear, he possesses an astonishing degree of swiftness, considering his size, the apparent unwieldiness of his body, his great weight before, and the shortness of his legs. He is long, and has a kind of trot, which, after a few minutes, increases in a great proportion, and takes in a great distance; but this is to be understood with a degree of moderation. It is not true, that in a plain he beats the horse in swiftness. I have passed him with ease, and seen many worse mounted do the same, and though it is certainly true that a horse can very seldom come up with him, this is owing to his cunning, but not his swiftness. He makes constantly from wood to wood, and forces himself into the thickest part of them. The trees that are frush, or dry, are broke down, like as with a cannon shot, and fall behind him and on his side in all directions. Others that are more pliable, greener, or fuller of sap, are bent back by his weight and velocity of his motions. And, after he has passed, restoring themselves like a green branch to their natural position, they sweep the incautious pursuer and his horse from the ground, and dash them in pieces against the surrounding trees.

"The eyes of the Rhinoceros are very small, and he seldom turns his head, and, therefore, sees nothing but what is before him. To this he

owes his death, and never escapes if there is so much plain as to enable the horse to get before him. His pride and fury, then, make him lay aside all thoughts of escaping, but by victory over his enemy. He stands for a moment at bay, then, at a start, runs straight forward at the horse, like the wild boar, whom, in his manner of action, he very much resembles. The horse easily avoids him, by turning short to aside; and this is the fatal instant: the naked man, with the sword, drops from behind the principal horseman, and, unseen by the Rhinoceros, who is seeking his enemy, the horse, he gives him a stroke across the tendon of the heel, which renders him incapable of further flight or resistance.

" In speaking of the great quantity of food necessary to support this enormous mass, we must likewise consider the vast quantity of water which he needs. No country but that of the Shangalla, which he possesses, deluged with six months' rain, and full of large and deep basons, made in the living rock, and shaded by dark woods from evaporation, or watered by large and deep rivers, which never fall low or to a state of dryness, can supply the vast draughts of this monstrous creature: but it is not for drinking alone, that he frequents wet and marshy places; large, fierce, and strong as he is, he must submit to prepare himself against the weakest of all adversaries. The great consumption he constantly makes of food and water necessarily confine him to certain limited spaces; for it is not every place that can maintain



him; he cannot emigrate, or seek his defence among the sands of Atbara."

The adversary just mentioned is a fly (probably of the genus (Estrus), which attacks the Rhinoceros, as well as the Camel and many other animals, and would, according to Mr. Bruce, as easily subdue him, but for the stratagem which he practises of rolling himself in the mud by night, by which means he clothes himself in a kind of case, which defends him from his adversary the following day. The pleasure that he receives from thus rolling in the mud, and the darkness of the night, deprive him of his usual vigilance and attention. The hunters steal secretly upon him, and while lying on the ground, wound him with their javelins; mostly in the belly, where the wound is mortal.

SUMATRAN RHINOCEROS.

In the Philosophical Transactions, for the year 1793, we also meet with a good figure of a Twohorned Rhinoceros, with an accurate description, by Mr. Bell, surgeon, who had resided some time in Sumatra. The specimen, however, which he describes, was but young, and probably far short of its full size.

"The mape of the animal was much like that of the hog. The general colour was a brownishash; under the belly, between the legs and folds of the skin, a dirty flesh-colour.

"The head much resembled that of the Singlehorned Rhinoceros. The eyes were small, of a brown-colour; the *membrana nictitans* thick and strong.

"The skin surrounding the eyes was wrinkled. The nostrils were wide. The upper lip was pointed, and hanging over the under.

"There were six *molares*, or grinders, on each side of the upper and lower jaw, becoming gradually larger backward, particularly in the upper. Two teeth in the front of each jaw.

"The tongue was quite smooth.

"The ears were small and pointed, lined and edged with short black hair, and situated like those of the Single-horned Rhinoceros.

"The horns were black; the larger was placed immediately above the nose, pointing upwards, and was bent a little back: it was about nine inches long. The small horn was four inches long, of a pyramidal shape, flattened a little, and placed above the eyes, rather a little more forward, standing in a line with the larger horn, immediately above it. They were both firmly attached to the skull, nor was there any appearance of joint or muscles to move them.

"The neck was thick and short, the skin on the under side thrown into folds, and these folds again wrinkled.

"The body was bulky and round, and from the shoulder ran a line or fold, as in the Singlehorned Rhinoceros, though it was but faintly

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marked. There were several other folds and wrinkles on the body and legs; and the whole gave rather the appearance of softness.

"The legs were thick, short, and remarkably strong; the feet armed with three distinct hoofs, of a blackish-colour, which surrounded half the foot, one in front, the others on each side. The soles of the feet were convex, and of a light colour, and the cuticle on them not thicker than on the foot of a man who is used to walking.

"The whole skin of the animal is rough, and covered very thinly with short black hair. The skin was not more than one third of an inch in thickness, at the strongest part; under the belly it was hardly a quarter of an inch; any part of it might be cut through with ease by a common dissecting knife.

"The animal had not that appearance of armour which is observed in the Single-horned Rhinoceros.

"Since I dissected the male, I have had an opportunity of examining a female, which was more of a lead-colour: it was younger than the male, and had not so many folds or wrinkles in its skin; of course it had still less the appearance of armour."

The height of the first of these specimens, or the male, was, according to Mr. Bell, four feet four inches at the shoulder; nearly the same at the rump; and eight feet five inches from the tip of the nose to the end of the tail.

V. I.

Upon the whole, there can be little doubt that there are, in reality, three different species of Rhinoceros, viz. the common or single-horned Asiatic Rhinoceros, which seems to admit of occasional varieties, and may, perhaps, be sometimes furnished with a second or smaller horn; the African double-horned Rhinoceros with a rough or tuberculated skin, which was the species known to the ancient Romans; and, lastly, the Sumatran double-horned Rhinoceros, described and figured by Mr. Bell in the Philosophical Transactions.

The skulls of the above animals, compared together, exclusive of other characters, afford sufficient grounds for supposing a real difference of species. It is also necessary to observe here, that the Sumatran species, being furnished with *dentes primores*, or fore teeth, seems, of course, to contradict the character of the order *Bruta*, in which it is here placed. The common Rhinoceros also, when young, is provided with fore teeth, which are afterwards lost; as is probably the case in the Sumatran species.

In the twelfth edition of the Systema Natura the genus Rhinoceros was stationed among the *Belluæ*. In reality, however, where other prominent characters appear, and which are of themselves sufficient for the purpose of investigation, this scrupulous attention to the nature and situation of the teeth is the less important.

Mons. Geoffroy, in the Magazin Encyclopédique, is inclined to believe that there either exist, or, at least, have existed, no less than five differ-

ent species of Rhinoceros, viz. 1. The Rhinoceros Africanus cornu gemino of Camper, who has given a figure of the skull in the Petersburgh Transactions for the year 1777. 2. The species found fossil in Siberia, and which, Mons. Geoffroy contends, is different from the common two-horned Rhinoceros, though of that division in the genus. 3. That of which the skull is figured by Camper, and described by him in a letter to Dr. Pallas in the abovementioned volume of the Petersburgh Transactions: this is a single-horned species, and was confounded, even by Camper, with the common Rhinoceros. 4. The common Single-horned Asiatic Rhinoceros. 5. The Sumatran Rhinoceros, described by Mr. Bell in the Philosophical Transactions.

ELEPHANT.

Generic Character.

Dentes Primores nulli utrin-
que.Cutting-leeth none in either
jaw.Laniarii superiores elongati;
inferiores nulli.Tusks in the upper jaw.Proboscis longissima prehen-
silis.Proboscis very long, prehen-
sile.Corpus nudiusculum.Body nearly naked.

GREAT ELEPHANT.

Elephas Maximus. Lin. Syst. Nat. p. 48. Great Elephant. Pennant Quadr. 1. p. 165. Elephantus. Gesn. Quadr. 337. Aldr. Quadr. soliped. l. 1. p. 418. Johnst. Quadr. pl. 7, 8, 9. Buff. 11. pl. 1. and suppl. 3. pl. 59. and 6. pl. 2. Edwards, pl. 221.

HE stupendous size, strength, and sagacity of the Elephant, have, in all ages, rendered in the admiration of mankind. Though possessed of power superior to every other quadruped, it is guiltless of unprovoked violence, and wanders

about the woods of Asia and Africa in a state of majestic mildness. Elephants are naturally gregarious. Large troops assemble together, and live in a kind of society. They feed only on vegetables, and are fond of the young shoots of trees. The Elephant is generally of a deep ashcoloured brown, or nearly blackish; but in some parts of India it is said to be found, though very rarely, of a white colour. In the young animals the tusks are not visible: in the more advanced state of growth they are extremely conspicuous: and in the full-grown animal they advance several feet from the mouths of their sockets: it is but rarely that the tusks are seen in the females; and, when they appear, they are but small, and their direction is rather downwards than upwards: this is also the case in some specimens of the male Elephant; so that there appears to be some variation in this respect in different individuals. Tusks have sometimes been seen upwards of ten feet long; particularly from the Mosambique and Cochinchina.

The teeth which are imported into Europe are generally from Africa, where they are frequently found in the woods. Instances have sometimes occurred, in which, on sawing a tooth, a brass bullet has been found completely imbeded in the central part of the tooth; the ivory having gradually grown over it, and enclosed it.

The Elephant is undoubtedly the largest of all terrestrial animals, arriving at the height of twelve feet; though the more general height

seems to be from nine to ten feet*. Elephants are commonly found in the midst of shady woods, being equally averse to extreme heat as to cold: they delight in cool spots, near rivers, and frequently bathe themselves in the water, and even roll in the mud. They are also capable of swimming with great ease. Their general food consists of the tender branches of various trees, as well as of grains and fruits. It is for this reason that their incursions are so much dreaded in plantations of various kinds, where they are said occasionally to commit the most violent depredations; at the same time, injuring the crops by trampling the ground with their vast feet. The trunk of the Elephant may justly be considered as one of the miracles of Nature; being, at once, the organ of respiration, and the instrument by which the animal supplies itself with food; conveying whatever it eats into the mouth by its assistance. By this instrument also it drinks; first sucking up the water by the trunk, and then pouring it into the mouth. This wonderful organ is, as it were, composed of a vast number of flexible rings, and consists of a double tube, with a somewhat flattened circular tip, furnished with a projecting point, or fleshy moveable hook, of extreme sensibility, and with which it can pick up the smallest object at

* How much the size of these animals has been exaggerated may be judged from the account given by Dr. Hill, who, in his Natural History, tells us, that the Elephant, when at full growth, measures from seventeen to twenty feet in height, from the ground to the highest part of the back. Vide Hill's Nat. Hist, of Animals, p. 565.

pleasure. The trunk, being flexible in all directions, performs the office of a hand and arm. On its under surface it is somewhat flattened, and is circularly formed on the upper. At the end of the trunk are situated the nostrils. The teats in the female Elephant are two in number, and are situated at a small distance behind the fore legs. The eyes are extremely small; the ears very large, somewhat irregularly waved on the edges, and pendulous. In each jaw are four large and flat grinding teeth, with the upper surfaces flat, and scored or striated with numerous transverse furrows. In the upper jaw are the two tusks before described. The form of the whole animal is extremely awkward: the head very large: the body very thick: the back greatly arched: the legs extremely thick, very short: and the feet slightly divided into, or rather edged with, five rounded hoofs: the tail is of a moderate length, and is terminated by a few scattered hairs, of great thickness, and of a black-colour : the general colour of the skin is also dusky or blackish, as before mentioned, and has a few thinly scattered hairs or bristles dispersed over it, and which are somewhat more numerous about thented whos

phant are, in all probability, somewhat exaggerated, and must consequently be received with a degree of limitation: but there is no reason to doubt that they are possessed of a greater degree of intelligence than most other quadrupeds (the

dog excepted); and that, when in a state of domestication, they may be taught to perform many operations, requiring not only strength but skill in their execution. It appears, from the most authentic information, that they are highly attached to those who have them under their care: that they are grateful for attentions shewn them, and mindful of any injury received; which they generally find some means of retaliating. Some elegant anecdotes of this kind are related by Pliny; and the laborious Aldrovandus has collected many others. Mr. Pennant has admitted some into his History of Quadrupeds. The celebrated story of the taylor of Delli is a remarkable example of the Elephant's sagacity. In that city an Elephant, passing along the streets, put his trunk into a taylor's shop, where several people were at work: one of them pricked the end of the trunk with his needle: the Elephant passed on; but, in the first dirty puddle, filled his trunk with the water, and returning, squirted every drop among the people who had offended him, and spoiled the rich garments they were at work upon.

It is said that Elephants have been taught to lade vessels with goods, which they have stowed in proper order, and with much address. ^{hty},

The Indian Elephants, but more especial object e of the island of Ceylon, excel the African Elephants in size and strength. Those of India are said to carry with ease three or four thousand weight. In a state of nature they use the tusks for tearing up trees, and the trunk for breaking

the branches. It has been affirmed that they run as swiftly as a horse can gallop; but Mr. Pennant assures us, that what has been said on this subject is a mistake; and that a nimble Indian can easily outstrip them.

The contrivances for taking Elephants are various. The Cevlonese sometimes surround the woods with numerous bands, and drive with lighted torches, and all manner of noises, the Elephants which inhabit them, till they are at length entrapped into a particular spot surrounded with strong pallisades, so as to prevent all escape. 'At other times a kind of decoy or female Elephant is sent out in order to induce some of the males to pursue her, who are by this means secured. When a wild Elephant is taken, it still remains to reduce it to a quiet state; and to tame it, in order to be made useful: this is effected by throwing ropes round the legs and body, which are well secured; and two tame Elephants, properly instructed, are placed on each side. The captive animal finds himself gradually so fatigued by his ineffectual struggles, and so much soothed by the caresses occasionally given by the trunks of the tame Elephants, by the food from time to time presented to him, and the water with which he is refreched by pouring it over him, that in the space of some days he becomes completely tame, and is placed with the rest of the domesticated troop. Sometimes, in order to subdue them the more effectually, they are deprived of sleep for a considerable space.

Great care is taken by the grandees of India in the management and decoration of their Elephants; which, after their daily feeding, bathing, oiling, and rubbing, are often painted about the ears and head with various colours, and their tusks are surrounded with rings of gold or silver; and when employed in processions, &c. they are clothed in the most sumptuous trappings.

By the ancient Indians they were much used in war; and we are told that Porus, the Indian monarch, opposed the passage of Alexander over the Hydaspes with eighty-five Elephants. Buffon also imagines that some of the Elephants which were taken by Alexander, and sent into Greece, were employed by Pyrrhus against the Romans. The Romans received their Elephants from Africa, and that in great numbers; since it appears that Pompey entertained the people with a show of eighteen in the space of five days; which were all destroyed in conflicts with armed men. Fifty lions were also exhibited in the same space. The crying and distress of the wounded Elephants is said to have excited much commiseration among the Roman people. It is highly remarkable, if true, that the young Elephants do not attach themselves to their dams in particular, but suck indiscriminately the females of the whole herd Mr. Bruce, however, in his travels, gives a particular description of the more than common attachment of a young Elephant to its dam, which it endeavoured to defend, when wounded, and with much fierceness assaulted the invaders. The young Ele-



phants do not suck by the trunk, but by the mouth, as represented on the plate annexed.

It is a most curious fact, and may well 'excite our astonishment, that skeletons resembling those of Elephants are occasionally found in a fossil state, and in large quantities, at a great depth under the surface, in the most northern parts of Asia *. "All the Arctic circle (says Mr. Pennant) is a vast mossy flat, formed of a bed of mud or sand, seeming the effect of the sea, and which gives reason to think that that immense tract was in some very distant age won from it. With them are mixed an infinitely greater number of marine bodies than are found in the higher parts of that portion of Asia. I give the fact: let others, more favoured, explain the cause how these animals were transported from their torrid seats to the Arctic regions : I should have recourse to the only one we have authority for; and think that phenomenon sufficient: I mention this, because modern philosophers look out for a later cause : I rest convinced : therefore to avoid contradicting what can never be proved."

We must by no means here omit the fossil bones, viz. jaws, vertebræ, thigh-bones, and tusks, which are often found in some parts of North America: they are commonly found about five or six feet below the surface, on the banks of the river Ohio,

* A scrupulous anatomical investigation of these bongs seems to prove, according to some late observations of the French naturalists, that they are in reality different from those of the Exphant, notwithstanding their general similarity; and are, therefore, to be numbered among the precises of lost animals, mown only from their fossil remains.

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not far from the river Miame, seven hundred miles from the sea coast. Of these the thighbones are much thicker in proportion than in the common Elephant: the grinders or side-teeth are very different from those of the Elephant, and, instead of having a flat top with numerous transverse scores, as in that animal, are pretty deeply lobed, like the teeth of carnivorous animals: the tusks bear a great resemblance to those of the common Elephant, but have an inclination to a spiral curve towards the smaller end*: in their common texture they perfectly resemble common ivory. It seems, therefore, extremely clear that this animal must have been a species differing from the common Elephant, but greatly resembling it. Whether it may yet exist in any of the unexplored parts of the globe, must be left to future investigations to determine. These bones are not peculiar to the northern regions of America, but have also been found in Siberia, in Peru, and in the Brasils; and it has been remarked that they are found at greater depths than the remains of the common Elephant, in strata, which are supposed to have been the ruins of the old world, after the event of the deluge.

The Elephant brings only one young at a time: very rarely two: the young are about three feet high when they are first born; and continue grow-

The tusks of the common Elephant have sometimes not only ; i inclination to a spiral bend, but are actually twisted into two or inree spiral curvatures, as in that described and engraved in Grew's Muscum Regalis Societatis; an I which is now preserved in the British Museum.

ing till they are sixteen or twenty years old they are said to live a hundred or a hundred and twenty years.

In the Philosophical Transactions, for the year 1799, we find some curious particulars relative to the natural history of the Elephant, by Mr. Corse, whose residence in India afforded him opportunities of investigating the subject with exactness.

From these observations it appears that something must be subtracted from that elevated character with which this animal has been so frequently honoured; and that neither its docility nor its memory can be allowed a very high rank, when compared with those of some other animals; and that the scrupulous delicacy, which, as it was pretended, forbad all public demonstration of its passions, is a mere fable. A female Elephant has also been known to forget her young one, after having been separated from it for the short space of only two days, and to repel its advances. An Elephant, also, which had escaped from its confinement, has again suffered itself to be trepanned. and reconducted to its state of captivity; thus contradicting, in a remarkable manner, the Horatian sentiment:

> Quæ bellua ruptis, Cuth semel effugit, reddit se prava catenis?*

Both male and female Elephants, Mr. Corse informs us, are divided by the matives of Bengar

> * What beast, deliver'd from the broken chain,-Perverse in folly, seeks his bonds again ?

into 'two casts, viz. the Koomarcah, and the Merghee. The first consists of the large or fullbodiedykind; the second of the more slender, with longer legs and thinner trunk in proportion; it is also a taller animal, but not so strong as the former. A large trunk is always considered as a great beauty in an Elephant, so that the Koomareah is preferred not only on this account, but for his superior strength in carrying burthens, &c. Many indistinct varieties are again produced from the intermixture of these two breeds. The torrid zone seems to be the natural clime of the Elephant, and the most favourable for the production of the largest and hardiest race; and when this animal migrates beyond the tropics, the species degenerates. On the coasts of Malabar, Elephants are taken as far north as the territories of Coorgah Rajah; but these, according to Mr. Corse, are much inferior to the Ceylonese Elephant.

Mr. Corse's observations on the teeth of the Elephant, and the gradual progress of dentition, are extremely curious. The principal particulars are the following:

"The tusks in some female Elephants are so small as not to appear beyond the lip, whilst in others they are almost as large and long as in one variety of the male, called Mooknah. The grinders are so much alike in both sexes, that one description may serve for both. The largest tusks, and from which the best ivory is supplied, are taken from this circumstance, in opposition

to the Mooknah, whose tusks are not larger/than those of some females. An Elephant is said to be perfect when his ears are large and rounded. not ragged or indented at the margin: his eyes of a dark hazel-colour, free from specks: the roof of his mouth and his tongue without dark or blackish spots of any considerable size: his trunk large: his tail long, with a tuft of hair reaching nearly to the ground. There must be five nails on each of his fore feet, and four on each of the hind ones: his head well set on, and carried rather high: the arch or curve of his back rising gradually from the shoulder to the middle, and thence descending to the insertion of the tail; and all his joints firm and strong. In one variety of the Elephant the tusks point downwards, projecting only a little way beyond the trunk. The tusks in Elephants are fixed very deep in the upper jaw; and the root or upper part, which is hollow, and ... 'ed with a core, goes as high as the insertion of the trunk, round the margin of the nasal opening to the throat; which opening is just below the protuberance of the forehead. Through this opening the Elephant breathes, and by its means he sucks up water into his trunk: between it and the roots of the tusks there is only a thin bony plate. The first or milk-tusks of an Elephant never grow to any considerable size, but are shed between the first and second year, when not two, inches in length. The time at which the tusks cut the gum varies considerably: sometimes a young Elephant has his tush's at five months old, and sometimes not till seven. Even in a fortus,

which has arrived at its full time, these deciduous tusks are formed. A young Elephant shed one of his milk-tusks on the 6th of November, 1790, when about thirteen months old; and the other on the 7th of December, when above four months old. Two months afterwards the permanent ones cut the gums, and on the 19th of April, 1791, they were an inch long. Another young Elephant did not shed his milk-tusks till he was sixteen months old, which proves that the time of this process varies considerably. The permanent tusks of the female are very small, compared with those of the male; and do not take their rise so deep in the jaw. The largest Elephant tusks Mr. Corse ever saw in Bengal did not exceed the weight of seventy-two pounds avoirdupois: at Tiperah they seldom exceed fifty pounds each. Both these weights are very inferior to that of the tusks brought from other parts to the India House, where some have weighed 105 pounds each. These, Mr. Corse suspects, were from Pegu. The African Elephant is said to be smaller than the Asiatic: yet the ivory-dealers in London affirm that the largest tusks come from Africa, and are of a better texture, and les liable to turn yellow, than the Indian ones. The increase of the tusks arises from circular layers of ivory, applied internally, from the core on which / they are formed; similar to what happens in the horns of some animals.

The grinders of Elephants may be considered as composed of several distinct laminæ or teeth, each 'covered with its proper enamel; and these

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teeth are merely joined to each other by an intermediate softer substance, acting as a cement.) This structure, even at first glance, must appear very curious, being composed of a number of perpendicular laminæ, which may be considered as so many teeth; each covered with a strong enamel, and joined to one another by the common osseous matter: this, being much softer than the enamel, wears away faster by the mastication of the food; and in a few months after these teeth cut the gum, the enamel rises considerably higher, so that the surface of each grinder soon acquires a ribbed appearance, as if originally formed with ridges. The number of these teeth, or portions, of which an Elephant's grinder is composed, varies from four to twenty-three, according as the animal advances in age; so that a grinder or case of teeth in a fulligrown Elephant is more than sufficient to fill one side of the mouth. The shape of the minders of the lower jaw differs from those of the upper, which are very convex on the back part, whereas the lower has a bent or curved direction, adapting itself to the shape of the jaw; and is concave on the surface. The grinders, like the tusks, are already formed, even in the very young animal. The first set of grinders, or milk-teeth, begin to cut the gum eight or ten days after birth: they are not shed, or cast, as the milktusks are, but are gradually worn away during the time the second set are coming forward. Mr. Corse could not ascertain the exact time at which the second set of grinders make their appearance,

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SUKOTYRO.

but when the Elephant is two years old, the second set are then completely in use. At about this period the third set begins to cut the gum, and from the end of the second to the beginning of the sixth year, the third set comes gradually forward as the jaw lengthens, not only to fill up this additional space, but also to supply the place of the second set, which are, during the same period, gradually worn away, and their fangs or roots obsorbed. From the beginning of the sixth to the end of the ninth year, the fourth set of grinders comes forward, to supply the gradual waste of the third set. After this period other sets are produced, but in what time, and in what proportion, is not yet ascertained; but it is reasonable to conclude, that every succeeding grinder takes a year longer than its predecessor to be completed; and consequently, that the fifth, sixth, seventh, and eighth set of grinders will take from five to eight years (and probably much longer) each set, before the posterior lamina has cut the gum.

SUKOTYRO.

THAT we may not seem to neglect so remarkable an animal, though hitherto so very imperfectly known, we shall here introduce the Sukotyró, This, according to Niewhoff, its only describer, and who has figured it in his travels to the East Indies, is a quadruped of a very singular shape. Its size is that of a large ox: the snout like that

PLATYPUS.

Generic Character.

Os anatinum.

Mouth shaped like the bill of a duck. Feet webbed.

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Pedes palmati.

OF this most extraordinary genus the first description appeared in the Naturalist's Miscellany; but as the individual there described was the only one which had been seen, it was impossible not to entertain some distant doubts as to the genuine nature of the animal, and to surmise, that, though in appearance perfectly natural, there might still have been practised some arts of deception in its structure. I, therefore, hesitated as to admitting it into the present History of Quadrupeds. Two more specimens, however, having been very lately sent over from New Holland, by Governor Hunter, to Sir Joseph Banks, the suspicions before mentioned are now completely dissipated. I shall, therefore, here repeat my first description in the work above mentioned, and have only to obser "e, that the genus should be placed, as there proposed, next to that of Myrmecophaga, in the present order of Bruta.

SUKOTYRO.

of a hog: the ears long and rough; and the tail thick and bushy. The eyes are placed upright in the head, quite differently from those of other. quadrupeds. On each side the head, next to the eyes, stand the horns, or rather teeth, not quite so thick as those of an Elephant. This animal feeds upon herbage, and is but seldom taken. It is a native of Java, and is called by the Chinese Sukotyro. This is all the description given by Niewhoff. The figure is repeated in Churchill's Collection of Voyages and Travels, vol. 2. p. 360. Niewhoff was a Dutch traveller, who visited the East Indies about the middle of The last century, viz. about the year 1563, and continued his peregrinations for several years. It must be confessed that some of the figures introduced into his works are not remarkable for their accuracy.





DUCK-BILLED PLATYPUS.

Platypus Anatinus. Vivarium Natura, tab. 385. The Duck-billed Platypus. Naturalist's Miscellany, pl. 385.

THE animal exhibited on the present plate constitutes[°] a new and singular genus, which, in the Linnæan arrangement of quadrupeds, should be placed in the order *Bruta*, and should stand next to the genus Myrmecophaga.

Of all the Mammalia yet known it seems the most extraordinary in its conformation; exhibiting the perfect resemblance of the beak of a Duck engrafted on the head of a quadruped. So accurate is the similitude, that, at first view, it naturally excites the idea of some deceptive preparation by artificial means; the very epidermis, proportion, serratures, manner of opening, and other particulars of the beak of a shoveler, or other broad-billed species of duck, presenting themselves to the view: nor is it without the most minute and rigid examination that we can persuade ourselves of its being the real beak or snout of a quadruped.

The body is depressed, and has some resemblance to that of an Otter in miniature: it is covered with a very thick, soft, and beaver-like fur, and is of a moderately dark brown above, and of a subferruginous white beneath. The head is flattish, and rather small than large: the mouth or shout, as before observed, so exactly resembles. that of some broad-billed species of duck that it

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might be mistaken for such: round the base is a flat, circular membrane, somewhat deeper or wider below than above, viz. below near the fifth of an inch, and above about an eighth. The tail is flat, furry like the body, rather short, and obtuse, with an almost bifid termination : it is broader at the base, and gradually lessens to the tip, and is about three inches in length: its colour is similar to that of the body. The length of the whole animal from the tip of the beak to that of the tail is thirteen inches: of the beak an inch and half. The legs are very short, terminating in a broad web, which on the fore feet extends to a considerable distance beyond the claws; but on the hind feet reaches no farther than the roots of the claws. On the fore feet are five claws, strait, strong, and sharp-pointed: the two exterior ones somewhat shorter than the three middle ones. On the hind feet are six claws, longer and more inclining to a curved form than those on the fore feet: the exterior toe and claw are considerably shorter than the four middle ones: the interior or sixth is seated much higher up than the rest, and resembles a strong, sharp spur. All the legs are hairy above: the fore feet are naked both above and below; but the hind feet are hairy above, and naked below. The internal edges of the under mandible (which is narrower than the upper) are serrated or channeled with numerous strize, as in a duck's bill. The nostrils are small and round, and are situated about a quarter of an inch from the tip of the bill, and are about the eighth of an


DUCK-BILLED PLATYPUS.

inch distant from each other. There is no appearance of teeth: the palate is removed, but seems to have resembled that of a duck: the tongue also is wanting in the specimen. The ears or auditory foramina are placed about an inch beyond the eyes: they appear like a pair of oval holes of the eighth of an inch in diameter; there being no external ear. On the upper part of the head, on each side, a little beyond the beak, are situated two smallish oval white spots; in the lower part of each of which are imbedded the eves, or at least the parts allotted to the animal for some kind of vision; for from the thickness of the fur and the smallness of the organs they seem to have been but obscurely calculated for distinct vision, and are probably like those of Moles, and some other animals of that tribe ; or perhaps even subcutaneous; the whole apparent diameter of the cavity in which they were placed not exceeding the tenth of an inch.

When we consider the general form of this animal, and particularly its bill and webbed feet, we shall readily perceive that it must be a resident in watery situations; that it has the habits of digging or burrowing in the banks of rivers, or under ground; and that its food consists of aquatic plants and animals. This is all that can at present be reasonably guessed at: future observations, made in its native regions, will, it is hoped, afford us more ample information, and will make us fully acquainted with the natural history of an animal which differs so widely from all other quadrupeds;

DUCK-BILLED PLATYPUS.

and which verifies in a most striking manner the observation of Buffon, viz. that whatever was possible for Nature to produce, has actually been produced.

On a subject so extraordinary as the present, a degree of scepticism is not only pardonable, but laudable; and I ought perhaps to acknewledge that I almost doubt the testimony of my own eyes with respect to the structure of this animal's beak; yet must confess that I can perceive no appearance of any deceptive preparation; and the edges of the rictus, the insertion, &c. when tried by the test of maceration in water, so as to render every part completely moveable, seem perfectly natural; nor can the most accurate examination of expert anatomists discover any deception in this particular.

The Platypus is a native of Australasia or New Holland, man for brack and a his in the

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TRICHECHUS. WALRUS.

Generic Character.

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Dentes Primores (adulto) nulli || Fore-teeth (in the full-grown

Laniarii superiores solitarii.

T. Maria Alto Stationed and Molares ex osse rugoso utrinque.

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Water for all the an true and him

Labia geminata. Pedes posteriores compedes

coadunati in pinnam. tribute the Iven pade

utrinque. animal) none either above or below. Tusks solitary, in the upper jaw. Grinders, with wrinkled surfaces. Lips doubled. Hind-feet, at the extremity of the body, uniting into a

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I HE genus Trichechus is entirely marine; and contains but very few species : of these the principal is the Trichechus Rosmarus, or, as it is sometimes called, the Sea Horse, or Walrus.

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Trichechus Rosmarus, T. dentibur Ianiariis superioribus exertis remotis. Lin. Syst. Nat. Gmel. p. 59.
Trichechus with distant, exserted tusks.
Rosmarus. Jonst. pisc. t. 44.
Le Morse. Buff. 13. p. 358. pl. 54.
Arctic Walrus. Pennant Quadr. 2. p. 266. Cook's last woy. vol. 2. p. 456. pl. 52. Naturalist's Miscellany, pl. 76.

THIS animal inhabits the northern seas, and is principally found within the Arctic circle. It grows to a very large size, having been sometimes seen of the length of eighteen feet, and of such a thickness as to measure twelve feet round the middle of the body. The Walrus is of an inelegant form; having a small head, short neck, thick body, and short legs; the lips are very thick, and the upper lip is indented or cleft into two large rounded lobes: over the whole surface of this part are scattered numerous semitransparent bristles, of a yellowish tinge, and of such a thickness as almost to equal a straw in diameter: they are about three inches long, and are slightly pointed at their extremities: the eyes are small: instead of external ears there are only two small, round orifices: the skin on the whole animal is thick, and more or less wrinkled, and is scattered over with short brownish hair: on each foot are five toes, all connected by webs, and on each toe is a small nail: the hind feet are considerably broader than the fore feet: the tail is extremely short. In the upper jaw are two large and long



tusks, bending downwards: there are no cuttingteeth, but in each jaw, both above and below, are four roundish grinders with flat tops: the tusks are sometimes upwards of two feet in length, but are more generally of about one foot long; and it sometimes happens that the two tusks are not perfectly equal in length. The chief resorts of the Walrus are the seas about the northern parts of America. They are found in the gulph of St. Laurence, according to Mr. Pennant, between latitude 47 and 48, which seems to be the most southern latitude in any part of the globe. They are also found in Davis's Straits, and within Hudson's Bay, it lat. 62. They inhabit the coast of Greenland; and are found in great numbers about Spitsbergen, and on the floating ice in those parts. They occur likewise on the coasts of Nova Zembla, and on the head lands stretching towards the North Pole.

They are gregarious animals, and are sometimes seen in vast multitudes on the masses of floating ice so frequent in the northern seas. They are said to produce their young early in the spring; and rarely bring more than one at a birth: their food consists of sea plants, shell-fish, &c.

The Walrus is a harmless animal, unless provoked or attacked, in which case it becomes furious, and is extremely vindictive. When surprised upon the ice, the female is said first to provide for the safety of the young, by flinging it into the sea, and immediately precipitating itself

after it, carrying it to a secure distance, and then returning; with great rage, to revenge the injury. They will sometimes attempt to fasten their teeth on the boats, with an intent to sink them; or rise in numbers under them to overset them; at the same time shewing all the marks of rage, by roaring in a dreadful manner, and gnashing their teeth with great violence; if once thoroughly irritated, the whole herd will follow the boats till they lose sight of them. They are strongly attached to each other; and it is said that a wounded Walrus has been known to sink to the bottom, rise suddenly up again, and bring with it multitudes of others, which have united in an attack upon the boat from whence the insult came.

The Walrus has been tolerably well figured by Jonston, and this figure has been copied by succeeding writers. An excellent representation is also given in pl. 52. of the last voyage of our illustrious navigator, Captain Cook. It is easy, however, to perceive a remarkable difference between the tusks of this last, and those of the former kind figured in Jonston, and it clearly 1 appears, that though this difference is not such as to justify our considering them as two distinct species, yet it obliges us to remark them as varieties; and it should seem, that, in the regions then visited by Captain Cook, viz. the icy coasts of the American continent, in lat. 70, the Walrus is found with tusks much longer, thinner, and far more sharp-pointed, in proportion, than the common Walrus; and they have a slight inclination



to a subspiral twist: there is also a difference in. the position of the tusks in the two animals; those of the variety figured in Captain Cook's voyage curving inwards in such a manner as nearly to meet at the points, while those of the former divaricate. These differences appear very striking on collating different heads of these animals. Something may, however, be allowed to the different stages of growth as well as to the difference of sex. In order that these differences may be the more clearly understood, we have figured both varieties on the annexed plates; and, as a farther illustration of the subject, we shall give, in the celebrated navigator's own words, the description of a herd of Walruses on a floating mass of ice in the abovementioned latitude.

"They lie, in herds of many hundreds, upon the ice; huddling one over the other like swine; and roar or bray very loud; so that in the night, or in foggy weather, they gave us notice of the vicinity of the ice, before we could see it. We never found the whole herd asleep, some being always upon the watch. These, on the approach of the brat, would wake those next to them; and the aarm being thus gradually communicated, the whole herd would be awake presently. But they were seldom in a hurry to get away, till after they had been once fired at. Then they would tumble one over the other into the sea in the utmost confusion. And if we did not, at the first discharge, kill those we fired at, we generally lost them, though mortally wounded. They did

not appear to us, to be that dangerous some authors have described; not even which all tacked. They are rather more so to app than in reality. Vast numbers of them would star low, and come close up to, the boats. But the state of a musquet in the pan, or even the bare'n burge of one at them, would send them down in stant. The female will defend the young the very last, and at the expence of her character whether in the water or upon the ice. the young one quit the dam, though she Land so that if you kill one, you are sure of the The dam, when in the water, holds the one between her fore fins.

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"Why they should be called sea-horse in this to say; unless the word be a corruption Russian name Morse; for they have not resemblance of a horse. This is, withou the same animal that is found in the Guld Laurence, and there called Sea-Cow. 1 tainly more like a cow than a horse, but this ness consists in nothing but the snout. it is an animal like a seal, but incom larger."

The teeth of the Walrus are used by ivory; but on this subject authors seen considerably, sc me representing them as to common ivory, and others greatly and more subject to turn yellow. The are now killed chiefly for the sake of the it is said that a very strong and elastic may be prepared from the skin.

INDIAN WALRUS.

chus Dugong. T. dentibus Ianiariis superioribus exsertis eximatis. Lin. Syst. Nat. Gmel. p. 60. Buff. 13. p. 374. pl. 56. Walrus. Pennant Quadr. 2. p. 369.

species is a native of the seas about the f Good Hope and the Philippine islands. not, however, seem to be very clearly to naturalists. The count de Buffon inis, that he had seen the two heads of this which had in the upper jaw two tusks, not ng directly out of the mouth, as in the n Walrus, but much shorter, being not alf a foot long; more slender, and rather ing large cutting-teeth than tusks; being very near each other in the fore part of The grinders also differ from those of lrus, being broader in proportion; of these e four on each side in the upper jaw, and the lower. The head is also said to be rper or narrower form. This species, in ippine islands, is said to be called by the Dugung.

WHALE-TAILED TRICHECHUS.

Trichechus Borealis. T. undus, cauda horizontali loco pedum posteriorum.

Hairless Trichechus, with a horizontal tail in place of hind feet. Trichechus borealis. Var. B. T. Manati. Lin. Syst. Nat. Gmel. p. 61.

Whale-tailed Manati. Pennant Quadr. 2. p. 292.

This animal seems to approach so nearly to the cetaceous or whale tribe, as scarce to deserve, according to Mr. Pennant, the name even of a biped; what are called the feet being little more than pectoral fins; which serve only for swimming, and are never used to assist the animal either in walking or landing; for it never goes ashore, nor ever attempts to climb the rocks like the Walrus and the Seal. It brings forth in the water, and, like the Whale, suckles its young in that element. Like the Whale it is also destitute of voice, and has also a horizontal tail, which is broad, and of the form of a crescent, without even the rudiments of hind feet.

So complete is the account given by Mr. Pennant of this animal, that we shall here dencer the most material parts of that author's description, rather than attempt a new one.

It inhabits the seas about Berings and the other Aleutian islands, which intervene between Kamtschatka and America, but never appears off Kamtschatka, unless blown ashore by a tempest. It is probably the same species which is found

WHALE-TAILED TRICHECHUS.

above Mindanao*, but is certainly that which inhabits near Rodiguez, vulgarly called Diego Reys, an island to the east of Mauritius, or the isle of France, near which it is likewise found. It is also probable that it extends to New Holland. They live perpetually in the water, and frequent the edges of the shores; and, in calm weather, swim in great droves near the mouths of rivers: in the time of flood they come so near the land that a person may stroke them with his hand: if hurt, they swim out to the sea, but presently return again. They live in families, one near another; each consists of a male, a female, a half-grown young one, and a very small one. The females oblige the young to swim before them, while the other old ones surround, and, as it were, guard them on all fides. The affection between the male and female is very great; for if she is attacked, he will defend her to the utmost, and if she is killed. will follow her corpse to the very shore, and swim for some days near the place it has been landed at.

They are vastly voracious, and feed not only on the fuci that grow in the sea, but such as are flung on the edges of the shore. When they are filled, they fall asleep on their backs. During their neals they are so intent on their food, that any one may go among them, indechoose which he likes best. Their back and sides are generally above water; and numbers of gulls, from

* Dampier, voy. 1. p. 321.

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time to time, perch on their backs, in o pick the insects which they find upon then

They continue in the Kamtschatkan and rican seas the whole year; but in winter t very lean, so that one may count their ribs are taken by harpoons fastened to a strong and after they are struck, it requires the t thirty men to draw then on shore. Som when they are transfixed, they will lay hold rocks with their paws, and stick so fast as the skin behind before they can be ford When a Manati is struck, its companion to its assistance; some will attempt to o the boat, by getting under it; others wi down the rope, in order to break it; and will strike at the harpoon with their tails, view of getting it out, which they often in. They have no voice, but make a not hard breathing, like the snorting of a horse

They are of an enormous size: some are eight feet long, and eight thousand pounds but, if the *Mindanao* species be the sar this, it decreases in size as it advances sou for the largest which Dampier saw there only six hundred pounds. The head, in preto the bulk of the animal, is small, oblow almost square: the nostrils are filled with bristles: the gape or rictus is small: the double: near the junction of the two jumouth is full of white tubular bristles, whi the same purpose as the laminæ in Wh prevent the food from running out w

WHALE-TAILED TRICHECHUS.

water: the lips are also full of bristles, which serve instead of teeth to cut the strong roots of sea plants, which, floating ashore, are a sign of the vicinity of these animals. In the mouth are no teeth, only two flat, white bones, one in each jaw, one above, another below, with undulated surfaces, which serve instead of grinders.

The eyes are extremely small; not larger than those of a sheep: instead of ears are only two minute orifices, which will scarce permit a quill to enter: the tongue is pointed and small: the neck thick; and its junction with the head scarce distinguishable; and the last always hangs down.

The circumference of the body near the shoulders is twelve feet; about the belly twenty; near the tail only four feet eight inches: the head thirty one inches: the neck near seven feet; and from these measurements may be collected the deformity of the animal. Near the shoulders are two feet, or rather fins, which are only two feet two inches long, and have neither fingers nor nails: beneath they are concave, and covered with hard bristles; the tail is thick, strong, and horizontal, ending in a stiff black fin, and like the substance of whalebone, being much split on the fore part, and slightly forked; but both end, are of equal length like the whale.

The skin is very thick, hard, and black: and full of inequalities like the bark of oak; and so hard as scarcely to be cut with an ax, and has no hair upon it: beneath the skin is a thick blubber, which is said to taste like oil of almonds. The

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flesh is coarser than beef, and will not so trify: the young ones taste like veal: the used for shoes, and for covering the sides o The Russians call this animal *Morskaia ko* Sea Cow, and *Kapustnik* or Eater of Herbs

ROUND-TAILED TRICHECHUS.

Trichechus Australis. T. pilonus, cauda horizontali loco j teriorum.

Hairy Trichechus, with a horizontal tail in place of hin Trichechus Australis. Var. and T. Manati. Lin. Gmel. p. 60.

Round-tailed Manati. Pennant Quadr. 2. p. 296.

This species grows to the length of four fifteen feet, and is found in the rivers of particularly in the river Senegal. A cospecimen occurs in the Leverian Museur is about six feet and a half long, and aboufeet eight inches in circumference in the thpart of the body; and in the thinnest part of the tail about two feet two inches.

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In this species the lips are thick; the small as peas; and there are two very smifices in the place of ears: in each jaw on each are nine grinding teeth; in all thirty-six: the is short and thicker than the head: the g thickness of the body is about the shoulders whence it gradually tapers to the tail, wi horizontal, broad, thickest in the middle, ing thinner to the edges, and quite round.



Thichechus Clusii. Clusius's Manati.

VAR.

In Clusius's Exotics is given a figure and description of a Manati from the West Indies; but it is not easy to ascertain the species. Clusius says it had short nails and broad feet; and that the tail was broad and shapeless. The Count de Buffon, in his supplement, vol. 6. makes it a distinct species. Mr. Pennant suspects it to be the same with the Guiana species above described.

> Trichechus Amazonius. Oronoko Manati, Pennant.

This is an inhabitant of the South-American rivers, and is said to grow to an enormous size. We are told by Father Gumilla, that one was taken in a lake near the Oronoko, which was so large that twenty-seven men could not draw it out of the water. On cutting it open, two young ones were found in it, which weighed twenty-five pounds apiece. This species is said most to abound in the river Amazons and the neighbouring lakes. Sometimes, however, they are found in the sea, and near the mouths of rivers. As an article of food it is said to be superior to any other animal of this genus, particularly the young.

It is taken by means of harpoons. At the time when the waters of the Oronoque (which annually

GUIANA TRICHECHUS.

overflow their banks) begin to return into the bed of the river, the Indians make dams acros the mouths of the shallow lakes formed by the f ds, and thus take great numbers of Manatis, so well as tortoises, fish, &c.

We must not here omit the curious history of a tame Manati, which, at the time of the arrival of the Spaniards, was kept by a prince of Hispaniola, in a lake adjoining to his residence. It was, on account of its gentle nature, called, in the language of the country, by the name of Matum. It would appear as soon as it was called by any of its familiars; for it hated the Spaniards, on account of an injury it had received from one of those adventurers. The fable of Arion was here realized. It would offer itself to the Indian favourites, and carry over the lake ten at a time, singing and playing on its back: one youth it was particularly enamoured with, which reminds me (says Mr. Pennant) of the classical parallel in the Dolphin of Hippo, so beautifully related by the younger Pliny. The fates of the two animals were very different: Matum escaped to its native waters by means of a violent flood : the Hipponensian fish fell a sacrifice to the poverty of the retired colonists *.

Trichechus ? Hydropithecus.
 Sea-Ape Manati. Pennant.

This species is only known from the description of Steller, who, near the coast of America, "aw a

* Vide Pet. Martyr's Decades of the Indies, Dec. 3. book 5.

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