

Friend and Foe
From
Field
AND FOREST

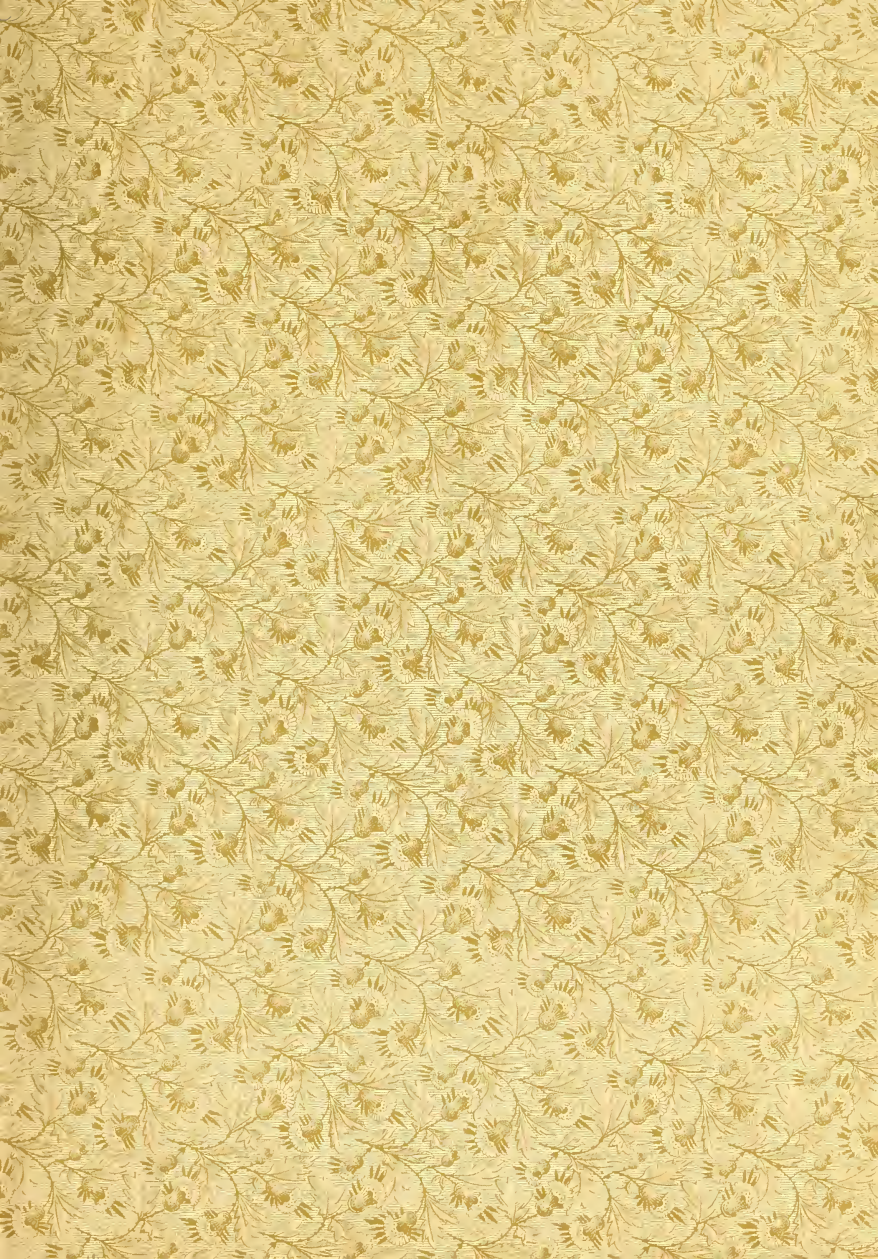


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FRIEND AND FOE

FROM

FIELD AND FOREST

A NATURAL HISTORY

OF THE

MAMMALIA.

*Arranged According to the Most Approved Methods of Leading Scientists. Devoid of
Technical Terms and Suited to the Wants of Young People.*

ILLUSTRATED WITH NEARLY THREE HUNDRED SPIRITED
DRAWINGS BY LEADING ARTISTS.

TOGETHER WITH

Eight Full Page Lithographs Printed in Colors.

EDITED BY MRS. GRACE TOWNSEND.

CHICAGO, PHILADELPHIA, STOCKTON, CAL.

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INTRODUCTORY.



ANIMALS possess a sort of fascination for nearly all classes of people. Their natural history has always been a most instructive subject, and its popularity increases year after year. It is a branch of knowledge which is entertaining at every age, and it is a favorite study with men of every race and country, and of every intellectual capacity. All children delight in having their little tasks associated with pictures of animals, and the alphabet is learned all the more readily by its being illustrated with spirited drawings of household pets and the terrible creatures of the woods. The marvels of the intelligence of the dog and horse are inexhaust-

ible sources of delight to young readers; and there are few greater pleasures than those which are felt when living animals, whose descriptions and habits have been the subject of instruction and amusement, are seen in some large menagerie or zoological garden. On the whole it is probable that few books are so interesting to young men and women as those which relate to animals, and it is their study which, in the majority of instances, leads to the desire for further knowledge of natural history. The young student soon begins to yearn for information regarding the manner in which different creatures live; how some breathe air; how others live in water; how it is that some fly, while others crawl; and he desires to connect the peculiar construction of animals with their method of life. Or he may be content with endeavoring to understand the names of animals, and the reasons why they are arranged or classified in a particular manner by scientific men. As years roll on, if the interest in natural history has not diminished, the man,

with increasing intelligence and scope of reading, masters the knowledge desired in his youth, and has the opportunity, should he care to grasp it, of the highest intellectual enjoyment. He can enter into the consideration and discussion of the mysterious problems of life; of its origin; of the reasons why animals differ; why they are distributed here and there, or limited in their position in the world; what connection there may be among those of the past and of the present, and of the relation between the creation and the Creator.

In whatever direction we turn our eyes, we everywhere meet the varied forms of animal life. Earth, air, water are all alike occupied by multitudes of living creatures, each fitted especially for the habitation assigned to it by nature. Every wood or meadow—nay, every tree or shrub, or tuft of grass—has its inhabitants. Even beneath the surface of the ground, numbers of animals may be found fulfilling the purposes for which their species were called into existence. Myriads of birds dash through the air, supported on their feathered pinions, or solicit our attention by the charming songs which they pour forth from their resting places; while swarms of insects, with still lighter wings, dispute with them the empire of the air. The waters, whether salt or fresh, are also filled with living organisms; fishes of many forms and varied colors, and creatures of yet more strange appearance, swim silently through their depths, and their shores are covered with a profusion of polypes, sponges, star fishes and other animals.

The study of these varied forms of life should prove a fascinating one and it is with the hope of rendering it still more attractive, that the editor and publishers have undertaken the production of this volume descriptive of animals belonging to the great class Mammalia. The book has been prepared with special reference to the wants of young readers and those possessing a limited knowledge of natural history as a science. To this end, wherever possible, technical and scientific terms have been carefully avoided. The division into the natural *orders* has been observed, but the many subdivisions have been omitted. It is to be hoped that this course, while impairing the book from a scientific standpoint, will yet render the text more readable, and at the same time stimulate the desire for a more thorough knowledge pertaining to the subjects herein contained.

THE MAMMALIA.

The term *Mammalia* is a name given to all those animals that bring forth their young alive and suckle them. They vary greatly in size, shape, appearance, manner of living and mode of locomotion. Within the class are included the monster elephant and the tiny mouse; the whale living entirely in the water and the bat living almost as exclusively in the air above the earth; the giraffe, with extended neck and eyes that command a wide expanse of country, and the mole burying itself beneath the earth's surface and with eyes so minute that their existence for ages was denied. Yet all these varied forms are constructed on the same general plan. In the limbs are the greatest differences seen. The regular number is four and for this reason the class is sometimes called *quadrupeds* or four-footed animals. It must not be forgotten however, that all four-footed creatures do not belong to the mammalia. Some reptiles walk on four limbs, while in some of the true mammalia, as in the whale, the hind limbs are only rudimentary in form. The fore limbs also vary greatly; the hand of the ape, the claw of the cat and the hoof of the horse may serve as examples. There are other and many very striking differences, but these we will leave for the naturalist to explain, the object of this book being to give a general rather than a specific description of the animals of this class. For the purpose of comparison the *mammalia* have been divided by naturalists into thirteen great *orders*, these orders have been again subdivided and the process of division repeated until like animals have been brought together into *families*; when their physical structures, natures and habits may be easily studied and compared. Beginning with the highest in the scale of animal life (save man) the division is as follows:

Order I.—QUADRUMANA.

“ II.—CHIROPTERA.

“ III.—INSECTIVORA.

“ IV.—CARNIVORA.

“ V.—CETACEA.

“ VI.—SIRENIA.

“ VII.—UNGULATA.

Order VIII.—PROBOSCIDEA.

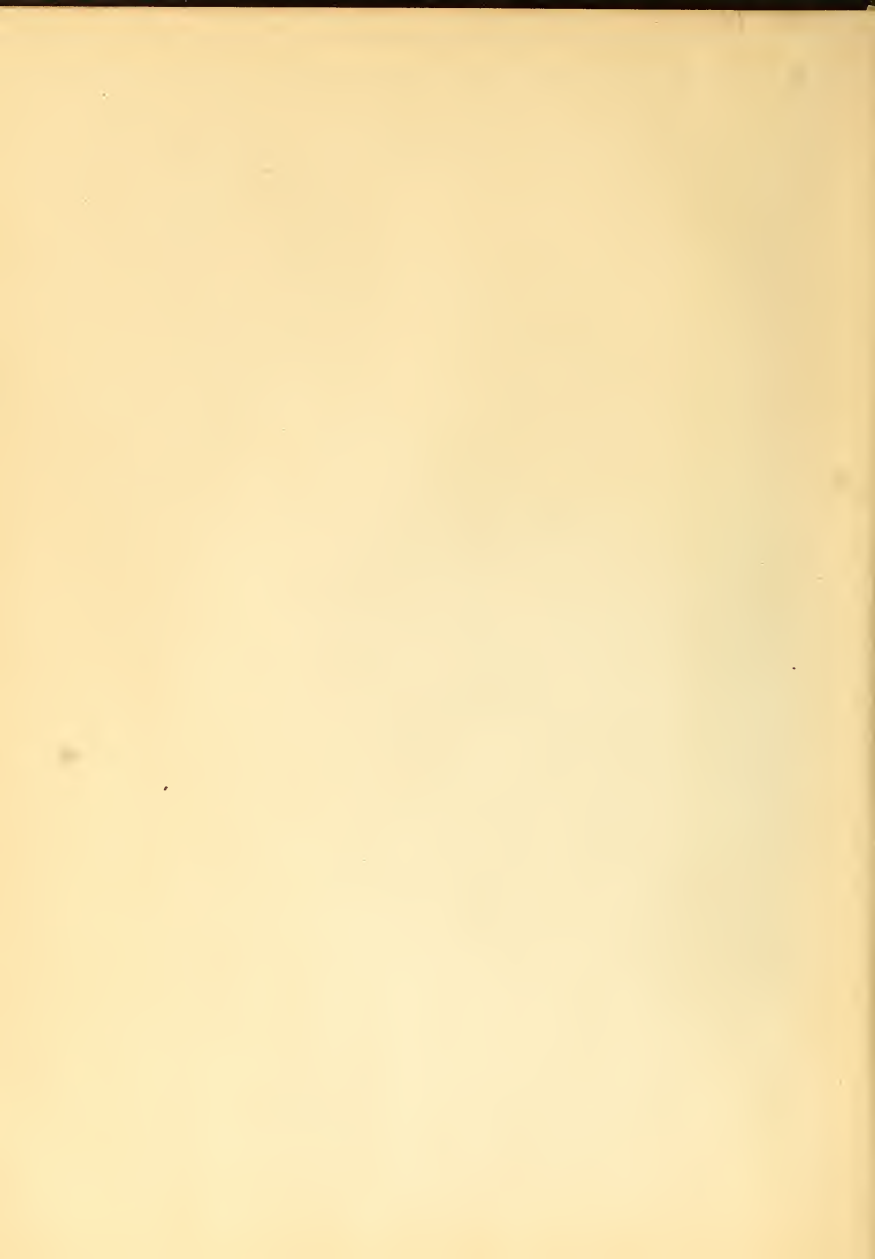
“ IX.—HYRACOIDEA.

“ X.—RODENTIA.

“ XI.—EDENTATA.

“ XII.—MARSUPALIA.

“ XIII.—MONOTREMATA.



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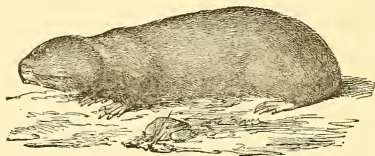
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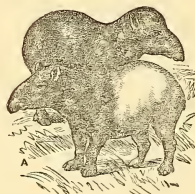
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CHAPTER I.

ORDER I.—QUADRUMANA.—THE APES AND MONKEYS.

If one of each kind of the Apes and Monkeys which are now living on the globe could be collected and placed in a large zoological garden, and if those

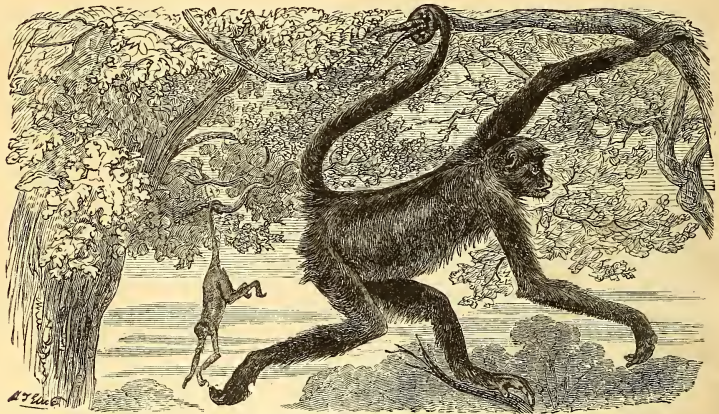


GROUP OF APES, MONKEYS AND A LEMUR.

which lived in former ages, and whose skeletons have been discovered by geologists, could be brought to life, and added to the whole, they would certainly form

a very amusing and remarkable assemblage. What endless fun there would be, what scamperings, skirmishes, and quarrels would take place, how they would grin, chatter, and pull tails all the live-long day; and as evening began, how some, which had been quiet spectators before, would commence howling, and how others would rush about amongst their tired and sleepy companions, with noiseless bounds until the return of daylight.

If each of these representative Monkeys could give an account of itself, whence it had come, how it had lived in its native forests and woods, and what it did with itself all day, a most interesting and novel Natural History Book could be compiled, for only the histories of a few have been written, and they are by no means always veracious. They would have come from Asia and many of its islands, from

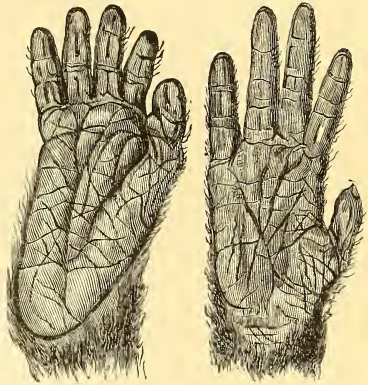


AMERICAN MONKEY, WITH PREHENSILE TAIL.

Africa, from South America and the Isthmus to the north, and Europe would have sent one from the rocks of Gibraltar. All natives of hot countries, and incapable of subsisting in cold and temperate climates, except by the aid of man; and yet, unless those of the same country had been properly introduced either by Dame Nature or by the chapter of accidents incident to such a very unlikely meeting as we are imagining, they would not know many of their fellows. There would be every shade of color, shape, and size; there would be many without tails, some with stumps, and others with long tails of no great use except to afford temptation to the mischievous; and not a few with fine large ones useful in the extreme, by acting as a fifth limb. Many would have very human faces and

sharp eyes, others would look more like dogs, and fierce enough, and there would be every variety of posture. Some would sit very well, others would go on all fours, and there would be others swinging with their long and strong arms, and making tremendous jumps and bounds, assisted in some by the prehensile tail. Some would want one kind of fruit, and others different kinds of vegetables, but only two or three tiny little ones would care much about grubs and eggs. All would have the very best possible limbs for climbing, grasping, picking, and stealing, and all would have good hands, that is to say, fingers and thumbs and wrists in front, also foot-hands, that is to say, feet with a great thumb-like toe behind. In a general sense they would all be four-handed or *Quadrumanous*, and this peculiarity would distinguish them from any interlopers who might have got into the assemblage unasked.

The limbs of the *Quadrumanus* vary greatly in their proportions, but in most of them the anterior are longer than the posterior: in all, they are admirably adapted to the purposes to which they are applied in climbing and leaping, by the slenderness of their forms, the flexibility of their joints, and the muscular activity with which these qualities are so strikingly combined. But of all their organs, there is perhaps none which exhibits so remarkable a discrepancy in every particular as the tail, which is entirely wanting in some, forms a mere tubercle in others, in a third group is short and tapering, in a fourth of moderate length and cylindrical; in a fifth



FOOT AND HAND OF A MONKEY.

extremely long, but uniformly covered with hair; in others, again, of equal length, divested of hair beneath and near the tip, and capable of being twisted around the branch of a tree, or any other similar substance, in such a manner as to support the whole weight of the animal, even without the assistance of its hands.

In none of them, it may be observed, the hands are formed for swimming, or the nails constructed for digging the earth; and in none of them is the naked, callous portion, which corresponds to the sole or the palm, capable of being applied like the feet of man or of the bear, to the flat surfaces on which they may occasionally tread. Even in those which have the greatest propensity to assume an upright posture, the body is, under such circumstances, wholly supported by the outer margins of the posterior hands. The earth, in fact, is not their proper place of abode; they are essentially inhabitants of trees, and every part of their organiza-

tions is admirably fitted for the mode of life for which they were destined by the hand of nature.

Throughout the vast forests of Asia, Africa, and South America, and more especially in those portions of these continents which are comprehended within the tropics, they congregate in numerous troops, bounding rapidly from branch to branch, and from tree to tree, in search of the fruits and eggs which constitute their principal means of subsistence. In the course of these peregrinations, which are frequently executed with a velocity scarcely to be followed by the eye, they seem to give a momentary, and but a momentary, attention to every remarkable object that falls in their way, but never appear to remember it again, for they will examine the same object with the same rapidity as often as it occurs and apparently



GROUP OF LEMURS.

without in the least recognizing it as that which they had seen before. They pass suddenly from a state of seeming tranquility to the most violent demonstrations of passion and sensuality, and in the course of a few minutes run through all the various phases of gesture and action of which they are capable, and for which their peculiar conformation affords ample scope. The females treat their

young with the greatest tenderness until they become capable of shifting for themselves, when they turn them loose upon the world, and conduct toward them from that time forward in the same manner as toward the most perfect strangers. The degrees of their intelligence, which in general is very limited, and is not capable of being made subservient to the purpose of man, except as a show in a menagerie, vary almost as much as the ever-changing outline of their form. From the grave and reflective orang-outang, whose docility and powers of imitation in his young state have been the theme of great wonder and equal exaggeration, to the coarse and brutal baboon, the gradations are gradual and easy. A remarkable circumstance connected with the development of the faculty of being educated, or perhaps we should rather say, with its gradual extinction, consists in

the fact that it is only in young animals which have not yet attained their full growth that it is capable of being brought into play—the older individuals even of the most tractable races, entirely losing their gayety, and with it the docility of their youth, and becoming at length nearly as stupid and as savage as the most barbarous of the tribe.

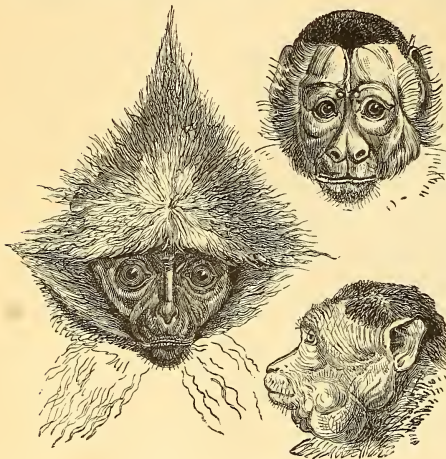
Although nearly all the monkeys, as well as the apes, live on fruits and the eggs of birds, still many of them devour small birds and quadrupeds, and some occasionally feed on fish. We are told that certain species display great address in getting at the flesh of shell-fish. The oysters of the tropical climates being larger than ours, the monkeys when they reach the sea-side, pick up stones and thrust them between the open shells, which are thus prevented from closing, and the cunning animals eat the fish at their ease. In order to attract crabs, they put their tails before the holes in which they have taken refuge. When they have fastened on the bait, the monkeys suddenly withdraw their tails, and thus drag their prey on shore.

From the very earliest ages the extraordinary resemblance of the monkey tribe to man has attracted the curiosity of mankind. The ancient Egyptians sculptured their forms on their granite monuments, and revered some species as gods. The modern Arabs regard them as the progeny of the evil one, for whom nothing is sacred, nothing venerable, who have been cursed since the day when God changed them from men into apes, and who still bear in strange combination the form of the devil and of man. We of the present day look upon them with mixed feelings. The caricature of the human form and human faculties which they exhibit is tolerable to us in the smaller, playful species, but abhorrent in the larger wilder kinds. They are at once too like and too unlike ourselves. Like man they stand upright; like man they have hands, a hairless face, and eyes looking directly forward. Yet even these hands, so like ours to the ordinary eye, are not the admirable instrument possessed by man; the thumb is shorter and more widely separated from the fingers, and the fingers cannot act separately like a man's. The haggard, hairy body, the long arms, the thin, calfless legs, the small receding skull, and the thin in-drawn lips, are all characteristics of the ape, the very opposite of those found in man.

Morally as well as physically, the apes constitute the "seamy side" of man. They are malicious, cunning, sensual, greedy, thievish, easily provoked to rage, and have human vices and defects. But they are not without what we name virtues. They are sagacious, cheerful, social, devotedly fond of their offspring, and display striking compassion towards the sick and the weak. Intellectually they are neither so much higher than other animals, nor so much lower than man, as is commonly maintained. The possession of a hand gives them great advantages over the rest of the animal kingdom, they have a strong tendency for imitating, and are easily taught actions which no other animals can perform. And if we compare the mental qualities of the ape with those of the dog, to the disadvantage of the former, we must remember that man has been for thousands of years training and

educating the dog, while the ape has had no opportunity of enjoying the elevating society of mankind. Taking this circumstance into account, we must recognize the ape as the most sagacious of beasts. Yet he is deceived and out-tricked with ease: his passions conquer his prudence. The Malays make a small hole in a gourd, and then place in the interior sugar or some fruits that apes love. The ape inserts its hand through the narrow opening, grasps a handful, and finds that it cannot be withdrawn again; it allows itself to be captured rather than lose its grasp on the dainties it has seized.

The Monkeys of the Old and the New world differ from each other in several remarkable points, some of which are characteristic of all the species of each; while



A CATARRHINE MONKEY. A PLATYRRHINE MONKEY.
MONKEY WITH CHEEK POUCHES.

others, although affording good and tangible means of discrimination, are but partially applicable. Thus the nostrils of all the species inhabiting the Old World, are anterior like those of man, and divided only by a narrow septum: in those of the New World, on the contrary, they are invariably separated by a broad division, and consequently occupy a position more or less lateral. It is from this difference of structure that the former are denominated *Catarrhinæ*, from the Greek *kata*, downward, and *rhin*, nose; and the latter *Platyrrhinæ*, from the Greek *platys*, flat, and *rhin*, nose; these terms being descriptive of the two families.

The tails of all the American monkeys are of great length, but they differ more or less from each other in the power of suspending themselves by means of that organ—a faculty which is nevertheless common to the greater number of them, and of which those of the Old World are entirely destitute. On the other hand, the American species never exhibit any traces of two remarkable provisions—the callousities on the haunches or of the cheek-pouches; both of which are nearly universal with the monkeys proper of the Asiatic and African races. For the former of these peculiarities, no use is known; the cheek-pouches, which are membrane sacks on each side of the mouth, are employed to carry food, and some are suffi-

ciently capacious to hold a supply for two days. These characteristics do not belong to the higher apes.

The *Quadrumana* embraces four sections—the *Monkey-like* family, the *Lemurs*, the *Aye-aye*, and the *Flying-lemurs*. These differ in many important respects, yet they all agree in having four hands, fitting them peculiarly for an arboreal existence. In many of the species the anterior limbs have but four fingers, with the thumbs confined to the hind feet. Notwithstanding the conformation, they are all as true quadrupeds as most of the clawed mammalia, for in a state of nature they appear never to walk on the hind legs, which are in fact too weak to be employed as in the human subject, for the sole organs of locomotion; and besides, the structure of the foot, even in those most resembling man, is such that when on the ground it treads on the side and not on the palm. The legs are also set in such a manner as to tread outward, and thus to be incapable of bearing great weight.

We shall embrace our description of the monkey family under the following divisions: 1st, THE MAN-LIKE APES; 2d, THE OLD-WORLD MONKEYS; 3d, THE AMERICAN MONKEYS.



A RING-TAILED MONKEY

CHAPTER II.

THE MAN LIKE APES.

The true apes make up the leading group of the quadrumana. These animals are destitute alike of tails and cheek pouches. They possess the highest intelligence and the greatest resemblance to man.

They are inhabitants of equatorial Africa, and of the great Asiatic islands and the adjacent mainland, and first and foremost amongst them is

THE AFRICAN GORILLA—Africa, to the south of the great desert, has always been a country of wonders, and highly attractive to imaginative and restless men; and its dark population, so ignorant and superstitious, has, from its love of the marvellous, shadowed the truth with much mystery. Hence, travellers in those tropical regions, which are so fatal to Europeans, have from the earliest times told of man-like creatures they had heard of and sometimes seen; and they have associated them in the equatorial part of the continent with human dwarfs, pigmies, and monsters. For centuries these degraded human races have been sought after, and now, whilst it is admitted that dwarfed men exist, it has come to light that most of the stories which led to the belief in their hideous associates were derived from the existence of large man-like apes—creatures of dread to the natives—whose traditions are full of credulous anecdotes about them. Hidden in the recesses of vast forests, where the silence of nature is intense, and moving with great activity, where men can hardly follow, these animals acquired most doubtful reputations, and their ugly personal appearance, so suggestive of violence, was magnified in every way in the eyes of the timid natives.

So dreaded were these apes, and so environed were they with a superstitious mystery, that Europeans had travelled and traded close to their haunts for centuries before one of them was seen by any other eyes than those of the native negroes.

The gorilla is found on the west coast of Africa. Their habits are ferocious, and instead of flying from man, as is generally the case with the chimpanzee, they boldly give him battle. They are said to utter a cry of *kha ah, kha-ah*, sharp and prolonged. Their huge jaws open widely at each expiration; the lower lip hangs upon the chin. The skin is wrinkled and contracted over the eyes, which gives them an aspect of inconceivable ferocity. The killing of one of these formidable

creatures is esteemed a great achievement among the negroes. Sometimes, the natives assert, when a company of villagers are moving rapidly through the shades of the forest, they become aware of the presence of the formidable ape by the sudden disappearance of one of their companions, who is hoisted up into a tree, uttering, perhaps, only a short choking sob. In a few minutes he falls to the ground a strangled corpse, for the animal, watching his opportunity, has let down his huge hind-hand and seized the passing negro by the neck with a vice-like grip, and has drawn him up into the branches, dropping him when life and struggling have ceased.

The missionaries, when they were established in the Gaboon region, found that all along the coast the gorillas were believed by the natives to be human beings, members of their own race degenerated. Some natives who had been a little civilized, and who thought a little more than the rest, did not acknowledge this relationship, but considered them as embodied spirits, the belief in transmigration of souls being prevalent. The majority, however, fully believed them to be men, and seemed to be unaffected by the arguments offered to disprove this fancy; and this was especially true of the tribes in the immediate vicinity of the locality. They believed them to be literally wild men of the woods. Nevertheless they were eaten when they could be got, and their flesh, with that of the chimpanzee and other monkeys, formed and still forms a prominent place in the bill of fare.

Impressed thus with a belief in their kinship and of their ferocity, it was not surprising that live gorillas could not be obtained by European travelers. Even a bold and skillful hunter of the elephant, when pressed to bring in one, declared he would not do it for a mountain of gold.

In 1847 the first sight of a part of a gorilla was obtained by a Mr. Savage, an American missionary; it was a skull, and its shape struck him as being so extraordinary that he believed the natives were correct in attributing it to the much-talked-of ape of whose ferocity and strength he had heard so much.

From the descriptions of the natives, who never attempted to interfere with the Gorilla except in self-defence, he learned that its height is above five feet, and it is disproportionately broad across the shoulders. It is covered with coarse black hair, which greatly resembles that of the Chimpanzee; with age it becomes grey, and this fact has given rise to the report that there are more kinds than one. Resembling a huge ape in shape, with a great body, comparatively short legs with large hind-thumbs, its bulk is considerable, and its arms, reaching further down than in man, enable it to grasp and climb well. It does not possess a tail, and the

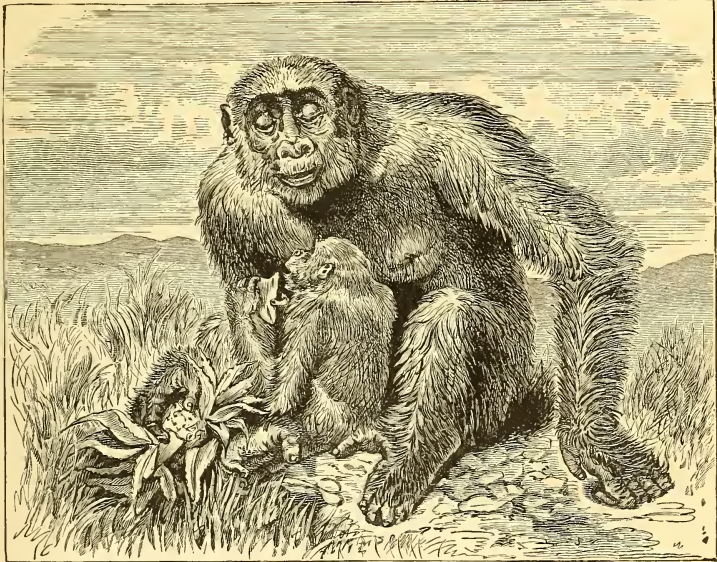


FRONT VIEW OF THE SKULL OF
THE GORILLA.

head has a wide and long black face, a very deep cheek, great brows over the deeply-seated hazel eyes, a flat nose, and a wide mouth with very strong teeth. The top of the head has a crest of longish hair, and elsewhere it is exceedingly thick and short. The belly is very large. From inquiry he ascertained that when walking, their gait is shuffling, and the body, which is never upright like that of man, moves from side to side in going along. Usually it walks by resting the hands on the ground and then bringing the legs between them, and swinging the body forward. They live in bands, and the females generally exceed the males in number. They are exceedingly ferocious, never running away from man, and the few that have been captured were killed by elephant hunters and native traders as they came suddenly upon them whilst passing through the woods.

It was said, at this time by the natives, that the Gorilla makes a sleeping place like a hammock, by connecting the branches of a sheltered and thickly-leaved part of a tree by means of the long, tough, slender stems of parasitic plants, and lining it with the dried, broad fronds of fern, or with long grass. This hammock-like abodes may be seen at different heights, from ten to forty feet from the ground, but there is never more than one such nest in a tree. They avoid the abodes of man, but are most commonly seen in the months of September, October and November, after the negroes have gathered in their outlying rice crops, and have returned from the "bush" to their valleys. So observed, they are described to be usually in pairs, or if more, the addition consists of a few young ones of different ages and apparently of one family. The Gorilla is not gregarious. The parents may be seen sitting on the ground munching fruit, whilst the young Gorillas are at play. This rural felicity, however, has its objectionable sides, for occasionally, if not invariably, the old male, if he is seen in quest of food, is usually armed with a short stick, which the negroes aver to be the weapon with which he attacks his chief enemy—the elephant. Not that the elephant directly or intentionally injures the Gorilla, but deriving its subsistence from the same source, the Ape regards the great proboscidian as a hostile intruder. When, therefore, he sees the elephant pulling down and wrenching off the branches of a favorite tree, the Gorilla stealing along the bough, strikes the sensitive proboscis of the elephant with a violent blow of his club, and drives off the startled giant trumpeting shrilly with pain. In passing from one tree to another the Gorilla is said to walk semi-erect, with the aid of his club, but with a waddling and awkward gait; when without a stick, he has been seen to walk as a man, with his hands clasped across the back of his head, instinctively balancing its forward position. If the Gorilla is surprised and approached, whatever the ground may be, he betakes himself, on all fours, dropping the stick, and makes his way very rapidly, with a kind of sidelong gallop, resting on the front knuckles, to the nearest tree. There he meets his pursuer, especially if his family is near and requiring his defence. No negro willingly approaches the tree in which the male Gorilla keeps guard, even with a gun. The experienced negro does not make the attack, but reserves his fire in self-defence. The enmity

of the Gorilla to the whole negro race, male and female, is uniformly attested. Thus, when young men of the Gaboon tribe make excursions into the forests in quest of ivory, the enemy they most dread to meet is the Gorilla. If they have come unawares too near him with his family, he does not, like the lion, sulkily retreat, but comes rapidly to the attack, swinging down to the lower branches, and clutching at the nearest foe. The hideous aspect of the animal, with his green eyes flashing with rage, is heightened by the skin over the orbits and eyebrows



FEMALE GORILLA AND YOUNG.

being drawn rapidly backwards and forwards, with the hair erected, producing a horrible and fiendish scowl. If fired at, and not mortally hit, the Gorilla closes at once upon his assailant, and inflicts most dangerous if not deadly wounds with his sharp and powerful tusks. The commander of a Bristol trader once saw a negro at the Gaboon frightfully mutilated from the bite of a Gorilla, from which he had recovered. Another negro exhibited to the same voyager a gun barrel bent and partly flattened by a wounded Gorilla in its death struggle.

The strength of the Gorilla is such as to make him a match for a lion, whose strength his own nearly rivals. Over the leopard, invading the lower branches of

his dwelling place, he will gain an easier victory; and the huge canine teeth, with which only the male Gorilla is furnished, doubtless have been given to him for defending his mate and offspring.

The descriptions of the habits and anatomy of the Gorilla, fragmentary as they were, excited great interest in the minds of many travelers, and especially in that of Du Chaillu, an American traveler, who, in 1855, determined to explore Gorilla Land, and to obtain some of the great Apes, dead or alive.

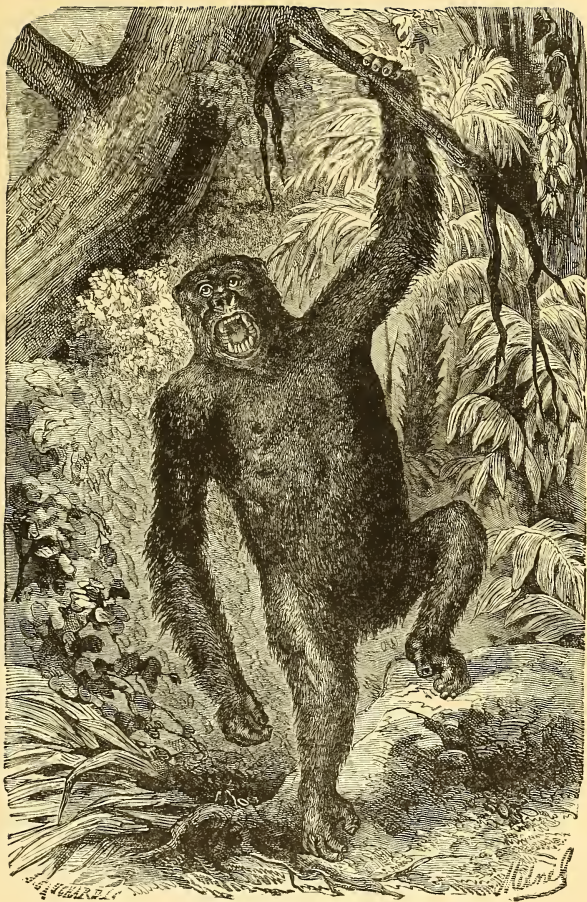
Soon after reaching their native haunts, he and his companions got on track of an old male, and suddenly, as they were creeping along in silence, which made a heavy breath seem loud and distinct, the woods were at once filled with the



FACE OF THE GORILLA.

tremendous barking roar of the Gorilla. Then the underbrush swayed rapidly just ahead, and presently before them stood an immense male. He had gone through the jungle on all fours, but when he saw the party he erected himself and looked them boldly in the face. "It stood about a dozen yards from us, and was a sight I think I never shall forget. Nearly six feet high, with immense body, huge chest, and great muscular arms, with fiercely glaring large, deep gray eyes, and a hellish expression of face, which seemed to me like some nightmare vision—there stood before us the king of the African forest. He was not afraid of

us. He stood there and beat his breast with his huge fists till it resounded like an immense bass drum, which is their mode of offering defiance; sometimes giving vent to roar after roar. The roar of the Gorilla is the most singular and awful noise heard in these African woods. It begins with a sharp bark like an angry dog, then glides into a deep bass roll, which literally and closely resembles the roll of distant thunder along the sky, for which I have sometimes been tempted to take it when I did not see the animal. His eyes began to flash fiercely, for we stood motionless, on the defensive, and the crest of short hair which stands on his forehead began to twitch rapidly up and down, while his powerful fangs were shown as he again set forth a tremendous roar. He advanced a few steps, then stopped to utter that hideous roar again; advanced again, and finally stopped when at the distance of about six yards from us, and then, just as he began another of his roars, beating his breast with rage, we fired and killed him. With a groan which had something terribly human in it, and yet was full of brutishness, he fell forward



MALE GORILLA.

on his face. The body shook convulsively for a few minutes, the limbs moved about in a struggling way, and then all was quiet; death had done its work, and I had leisure to examine the huge body. It proved to be five feet eight inches high, and the muscular development of the arms and breast showed the immense strength it had possessed."

Du Chaillu once had a capital view of some Gorillas at their meal. News having come that Gorillas had been recently seen in the neighborhood of a plantation on the Fernandez Vas River, just south of the equator and not far from the West African coast, he got up early and went into it. He writes: "The plantation was a large one, and situated on broken ground, surrounded by the virgin forest. It was a lovely morning; the sky was cloudless, and all around was as still as death, except the slight rustling of the tree tops, moved by the gentle land breeze. When I reached the place, I had just to pick my way through the maze of tree stumps and half-burned logs by the side of a field of casada.

"I was going quietly along the borders of this when I heard in the grove of plantation trees toward which I was walking a great crushing noise like the breaking of trees. I immediately hid myself behind a bush, and was soon gratified with the sight of a female Gorilla; but before I had time to notice its movements, a second and third emerged from the masses of colossal foliage; at length, no less than four came in view. They were all busily engaged in tearing down the larger trees. One of the females had a young one following her. I had an excellent opportunity of watching the movements of the impish-looking band. The shaggy hides, the protuberant abdomens, the hideous features of these strange creatures, whose forms so nearly resemble man, made up a picture like a vision in a morbid dream. In destroying a tree, they first grasped the base of the stem with one of their feet, and then with their powerful arms pulled it down, a matter of not much difficulty with so loosely-formed a stem as that of the plantain. They then set upon the juicy fruit of the tree at the base of the leaves, and devoured it with great voracity. While eating they made a kind of chuckling noise, expressive of contentment. Many trees they destroyed, apparently out of pure mischief. Now and then they stood still and looked around. Once or twice they seemed on the point of starting off in haste, but recovered themselves and continued their work. Gradually they got nearer to the edge of the dark forest, and finally disappeared." On the next day he was carrying a light gun, having given his heavy double-barreled rifle to a boy to carry, when, in a deep hollow flanked with sugar-cane, he saw on the slope opposite him a gigantic Gorilla standing erect, and walking directly towards him. Pointing his rifle, he turned to look for the boy, but he had seen the Gorilla and bolted forthwith. The huge beast stared at Du Chaillu for about two minutes, and then, without uttering any noise, moved off to the shade of the forest, running nimbly on his hands and feet.

Anxious to possess some adult Gorillas, Du Chaillu offered rewards to the native hunters, and on one occasion they brought in three live ones, one being full-

grown. This was a large adult female, who was bound hand and foot, and with it was her female child, screaming terribly, and the third was a vigorous young male, who was also tightly bound. The female had been ingeniously secured by the negroes to a strong stick, the wrists being bound to the upper part, and the ankles to the lower, so that she could not reach to tear the cords with her teeth. It was dark when they were brought in, and the scene was wild and strange in the extreme. "The fiendish countenances of the Caliban-ish trio, one of them distorted by pain, for the mother Gorilla was severely wounded, were lit up by the ruddy glare of native torches." The young male was secured by a chain, and Du Chaillu gave him the name of Tom. His feet and hands were untied, and he immediately showed his want of gratitude by rushing at his possessor, screaming with all his might; but the chain was happily made fast, and he did no harm. The old mother Gorilla was in an unfortunate



BACK OF THE HAND OF YOUNG GORILLA.



PALM OF THE FOOT OF YOUNG GORILLA.

plight. She had an arm broken, and a wound in

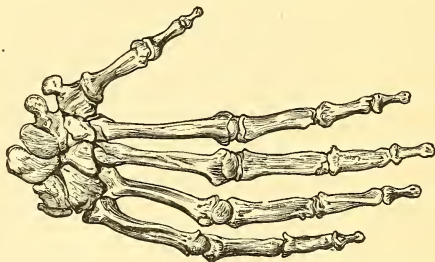
the chest, besides being dreadfully beaten about the head; she groaned and roared many times during the night, probably from pain. She lived until next day, her moanings were more frequent in the morning, and they gradually become weaker as her life ebbed out. Her death was like that of a human being, and her child clung to her to the last, and tried to obtain milk from her breast after she was dead. The young one was kept alive three days on goat's milk, but it died on the fourth day. The young male would not be photographed, for pointing the camera at him made the irascible little thing a small demon, but after some attempts his likeness was taken. The same traveler came suddenly on a band of Gorillas in a forest: "a whole group was on a tree hidden by the dense foliage. They bolted off making the thinner boughs bend with their weight, and

an old male, apparently the guardian of the flock, made a bold stand, and glared at him through an opening. As soon as voices were heard, the shaggy Ape roared a

cry of alarm, scrambled to the ground through the entangled lianas that were around the tree trunk, and soon disappeared into the jungle."

Having had, then, so many opportunities of seeing Gorillas alive and dead, Du Chaillu, of course, added largely to the knowledge of their general shape and habits, and obtained skins for stuffing, and bones for the anatomists. Five specimens were sent over by him to England, and great discussions took place; some naturalists asserting that the ferocity and courage of the great Ape were imaginary, and others believing in the truth of Du Chaillu, whose only fault was over-sensational writing, and who strenuously denied many of the native stories. Then the anatomists had a great quarrel about the brain of the creature, and handled each other very severely. Of the nature of the outside of the Gorilla there could be no doubt, fortunately, for there are the stuffed skins and bones to be seen, and an examination of those in the national collection will prove how closely Savage must have questioned the natives who gave him reliable information, and how little can be added to his description. Du Chaillu says that in length the adult Gorillas vary as much as men, and believes the tallest are six feet two inches in height, but that the average is from five feet two inches to five feet eight inches. The females are smaller, or have a lighter frame, their height averaging about four feet six inches. The color of the skin in the Gorilla, young as well as adult, is intense black, so far as the face, breast, and palms of the hands are concerned. The fur of a grown, but not aged specimen, is iron-gray, and the individual hairs are ringed with alternate stripes of black and gray. It is long on the arms, and slopes downward from the shoulder to the elbow, and upwards from the wrists to it. The head is covered with reddish brown hair, which is short, and reaches the short neck. The chest is bare in the adults, and thinly covered with hair in the young males. In the female the breast is bare, and the hair elsewhere is black with a red tinge, but it is not ringed as in the male; moreover, the reddish crown which covers the scalp of the male is not apparent in the female until she has almost become full grown. The eyes are deeply sunken: the immense overhanging long ridge giving the face the expression of a constant savage scowl. The mouth is wide, and the lips are sharply cut, exhibiting no red on the edges, as on the human face. The jaws are of tremendous weight and power. The huge eye-teeth or canines, of the male, which are fully exhibited when in his rage, he draws back his lips and shows the red color of the inside of his mouth, lend additional ferocity to his aspect. In the female these teeth are smaller. The almost total absence of neck, which gives the head the appearance of being set into the shoulders, is due to the backward position of the joints which fix the head to the spine, and this allows the chin to hang over the top of the front of the chest. The brain-case is low and compressed, and its lofty top ridge causes the profile of the skull to describe an almost straight line from the back part or occiput, to the ridge over the brow. The immense development of the muscles which arise from this ridge, and the corresponding size of the jaw, are evidences of the great strength of the animal. The eyebrows are thin, but not

well-defined, and are almost lost in the hair of the scalp. The eyelashes are thin also. The eyes are wide apart, and the ears, which are on a line with them, are smaller than those of man, but very much like his. In a front view of the face the nose is flat, but somewhat prominent—more so than in any other Ape; this is on account of a slightly projecting nose-bone, very unusual in Apes. The chest is of great capacity; the shoulders being exceedingly broad. The abdomen is of immense size, very prominent, and rounded at the sides. The front limbs have a prodigious muscular development, and are very long, extending nearly as low as the knees. The fore-arm is nearly of uniform size from the wrist to the elbow, and, indeed, the great length of the arms, and the shortness of the legs, form one of the chief differences between it and man. The arms are not long when compared with the trunk, but they are so in comparison with the legs. These are short and decrease in size from below the knee to the ankle, having no calf. The hands, especially in the male, are of immense size, strong-boned and thick; the fingers are short and large, the circumference of the middle finger at the first joint being five and a half inches in some Gorillas. The skin on the back of the fingers, near the middle, is callous and very thick, which shows that the most usual mode of progression of the animal is on all-fours, and resting on the knuckles. The thumb is short and not half so thick as the fore-



HAND BONES OF THE GORILLA.

finger; and the hand is hairy as far as the division of the fingers which are covered with short thin hairs. The palm of the hand is naked, callous and intensely black. The nails are black, and shaped like those of man, but are smaller in proportion, and project very slightly beyond the ends of the fingers. They are thick and strong, and always seem much worn. The hand of the Gorilla is almost as wide as it is long, and in this it approaches nearer to those of man than any other Apes. The foot is proportionally wider than in man; the sole is callous, and intensely black, and looks somewhat like a giant hand of immense power and grasp. The transverse wrinkles show the frequency and freedom of movement of the two joints of the great toe-thumb, proving that they have a power of grasp. The middle toe, or third, is longer than the second and fourth, and this is unlike the foot in man. The toes are divided into three groups, so to speak; inside the great toe, outside the little toe, and the three others partly united by a web. Du Chaillu thinks that in no other animal is the foot so well adapted for the maintenance of the erect position, and he believed that the Gorilla is much less of a tree-climber

than any other Ape. The foot of the Gorilla is certainly longer than the hand, as in man.

The Gorilla has a large head, and one is at once struck with the width and length of the face, and the great prominent brows immediately over the eyes. There appears to be no forehead, for the head recedes rapidly backwards, and then comes a high ridge of hair, in old males, running from before backwards on the top of the scalp, and meeting another which is less prominent, and placed across the back of the skull, from the back of one ear to the front of the other. The animal has the power of moving the flesh and skin which constitute the scalp freely forwards and backwards, so that when it is in rage its scowl is made all the more threatening and ugly by its frowning and bringing down the hairy ridge to close above the eyes. The hazel eyes are large, and they are separated by a small, prominent bridge belonging to the nose, the rest of which is broad and flattened out. The jaws project forwards, and are long and wide, the teeth being large and strong, and visible when uncovered by the fleshy and rather hairy lips. The ears are small for the size of the head, when they are compared with those of other Apes, and they, as well as the skin of the face, are naked and dark.

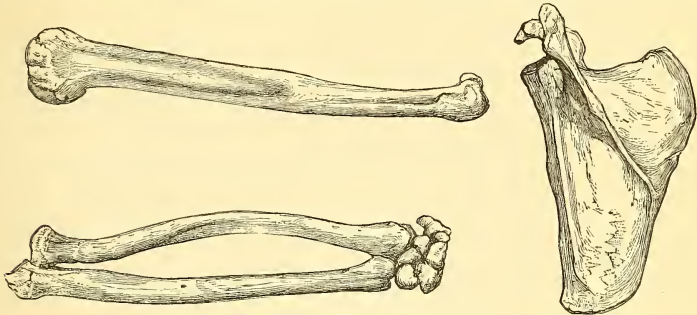
Nature has been kinder to the females so far as beauty is concerned, for they have less marked crests of hair, smaller brows, and shorter side teeth, and therefore more amiable faces under all circumstances.

With all its great strength, the head of the great Ape cannot move as readily on the neck as that of weaker man, for the skull is not placed on the neck end of the back-bone quite in the same manner, and its position is not that which is admirably (as in us) adapted for carrying the head erect. In climbing trees, the Gorilla, like a man under the same circumstances, lifts up the arms over the head, and clasps or holds on with one hand, but the position of the hand is not the same. Apes seize instinctively with the knuckles towards them, and not with the ends of the fingers and palm as man. Although they have such strong arms, covered with a stout skin and with hairs sloping downwards, the Gorilla manages to break them and then Nature endeavors to repair the injury. In the skeleton of an old male Gorilla in the British Museum there are proofs of a former fracture of the humerus or upper arm-bone. The arm was broken across, and as it could not be kept quiet Dame Nature has not done her work as well as a modern surgeon could on a patient whose arm he could put in splints, for it is thickened, shortened, and twisted.

Many attempts have been made to obtain a live Gorilla for exhibition, but these have been only partially successful. Mr. Moore describes a young one brought to Liverpool by the German African Society. He states: "I found the little creature romping and rolling in full liberty about the private drawing-room, now looking out of the window with all becoming gravity and sedateness, as though interested, but not disconcerted, by the busy multitude and novelty without, then bounding rapidly along on knuckles and feet to examine and poke fun at some new comer; playfully mumbling at his calves, pulling at his beard (a special

delight), clinging to his arms, examining his hat (not at all to its improvement), curiously inquisitive as to his umbrella, and so on with visitor after visitor. If he becomes over-excited by the fun, a gentle box on the ear would bring him to order like a child, like a child only to be on the romp again immediately. He points with the index finger, claps with his hands, pouts out his tongue, feeds on a mixed diet, decidedly prefers roast meats to boiled, eats strawberries, as I saw, with delicate appreciativeness, is exquisitely clean and mannerly. The palms of his hands and feet are beautifully plump, soft, and black as jet. He has been eight months and a half in the possession of the Expedition, has grown some six inches in that time, and is supposed to be between two and three years of age."

Du Chaillu insists on the ill-temper, ferocity and untamable nature of the young Gorilla, as the results of his experience. One was brought to him about three years of age, with its neck put in the cleft of a stick to keep it quiet, and after



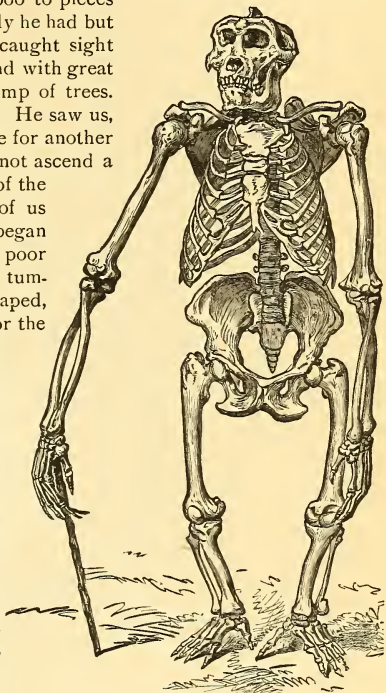
BONES OF THE FORE-ARM AND ARM OF THE GORILLA—
SIDE VIEW.

SHOULDER OR BLADE-BONE.

much trouble they got it into a bamboo cage. It was a little black thing of two feet six inches in height, and its habits, escapes and death are amusingly told. "As soon as I had the little fellow safely locked in his cage, I ventured to approach to say a few encouraging words to him. He stood in the farthest corner, but as I approached, he bellowed and made a precipitate rush at me; and though I retreated as quickly as I could he succeeded in catching my trouser leg, which he grasped with one of his feet and tore, retreating immediately to the corner farthest away. This taught me caution for the present, though I had a hope still to be able to tame him. He sat in his corner looking wickedly out of his gray eyes, and I never saw a more morose or more ill-tempered face than had this little beast. The first thing was, of course, to attend to the wants of my captive. I sent for some of the forest berries which these animals are known to prefer, and placed these and a cup of water within his reach. He was exceedingly shy, and would neither

eat nor drink till I had removed to a considerable distance. The second day found Joe, as I had named him, fiercer than the first. He rushed savagely at any one who stood even for a moment near his cage, and seemed ready to tear us all to pieces. I threw him some pineapple leaves, of which I noticed he ate only the white parts. There seemed no difficulty about his food, though he refused now, and continued during his short life to refuse, all food except such wild leaves and fruits as were gathered from his native woods for him. The third day he was still morose and savage, bellowing when any person approached, and either retiring to a distant corner or rushing to attack. On the fourth day, while no one was near, the little rascal succeeded in forcing apart two of the bamboo rails which composed his cage, and made his escape. I came up just as his flight was discovered, and immediately got all the negroes together for pursuit, determining to surround the wood and recapture my captive. I was startled by an angry growl issuing from under my low bedstead. It was Master Joe, who lay there hid, but anxiously watching my movements. I instantly shut the windows, and called to my people to guard the door. When Joe saw the crowd of black faces he became furious, and, with his eyes glaring, and every sign of rage in his little face and body, got out from beneath the bed. We shut the door at the same time and left him master of the premises, preferring to devise some plan for his easy capture rather than to expose ourselves to his terrible teeth. How to take him was now a puzzling question. He had shown such strength and such rage already, that not even I cared to run the chance of being badly bitten in a hand-to-hand struggle. Meantime Joe stood in the middle of the room looking about for his enemies, and examining, with some surprise, the furniture. I watched with fear, lest the ticking of my clock should strike his ear, and perhaps lead him to an assault upon that precious article. Indeed, I should have left Joe in possession, but for a fear that he would destroy the many articles of value or curiosity I had hung about the walls. Finally, seeing him quiet, I dispatched some fellows for a net, and opening the door quickly, threw this over his head. Fortunately we succeeded at the first throw in perfectly entangling the young monster, who roared frightfully, and struck and kicked in every direction. I took hold of the back of his neck, two men seized his arms, and another the legs, and thus held by four men this extraordinary little creature still proved most troublesome. We carried him as quickly as we could to the cage, which had been repaired, and there once more locked him in. I never saw so furious a beast in my life as he was. He darted at every one who came near, bit the bamboos of the house, glared at us with venomous and sullen eyes, and in every motion showed a temper thoroughly wicked and malicious. As there was no change in this for two days thereafter, but continual moroseness, I tried what starvation would do toward breaking his spirits; also, it began to be troublesome to procure his food from the woods, and I wanted him to become accustomed to civilized food, which was placed before him. But he would touch nothing of the kind; and as for temper, after starving him twenty-four hours, all I

gained was that he came slowly up and took some berries from the forest out of my hand, immediately retreating to his corner to eat them. Daily attentions from me for a fortnight more did not bring me any further confidence from him than this. He always snarled at me, and only when very hungry would he take even his choicest food from my hands. At the end of this fortnight I came to feed him, and found that he had gnawed a bamboo to pieces slyly, and again made his escape. Luckily he had but just gone; for, as I looked around, I caught sight of Master Joe making off on all-fours, and with great speed, across the little prairie, for a clump of trees. I called the men up, and we gave chase. He saw us, and before we could head him off made for another clump. This we surrounded. He did not ascend a tree, but stood defiantly at the border of the wood. About one hundred and fifty of us surrounded him. As we moved up he began to yell, and made a sudden dash upon a poor fellow who was in advance, who ran, tumbled down in affright, and, by his fall, escaped, but also detained Joe sufficiently long for the nets to be brought to bear upon him. Four of us again bore him struggling into the village. This time I could not trust him to the cage, but had a little light chain fastened around his neck. This operation he resisted with all his might, and it took us quite an hour to securely chain the little fellow, whose strength was something marvelous. Ten days after he was thus chained he died suddenly. He was in good health, and ate plentifully of his natural food, which was brought every day for him; did not seem to sicken until two days before his death, and died in some pain. To the last he continued entirely untamable; and, after his chains were on, added the vice of treachery to his others."



SKELETON OF THE GORILLA.

In one of his hunting excursions Du Chaillu obtained a younger Gorilla than the last, but its end was sad enough.

"I was accessory to its capture," writes Du Chaillu, "and we were walking along in silence, when I heard a cry, and presently saw before me a female Gorilla,

with a tiny baby Gorilla hanging to her breast and suckling. The mother was stroking the little one, and looking fondly down at it; and the scene was so pretty and touching that I held my fire, and considered—like a soft-hearted fellow—whether I had not better leave them in peace. Before I could make up my mind, however, my hunter fired and killed the mother, who fell without a struggle. The mother fell, but the baby clung to her, and, with pitiful cries, endeavored to attract her attention. I came up, and when it saw me it hid its poor little head in its mother's breast. It could neither walk nor bite, so we could easily manage it; and I carried it, while the men bore the mother on a pole. When we got to the village another scene ensued. The men put the body down, and I set the little fellow near. As soon as he saw his mother he crawled to her, and threw himself on her breast. He did not find his accustomed nourishment, and I saw that he perceived something was the matter with the old one. He crawled over her body, smelt at it, and gave utterance, from time to time, to a plaintive cry—'Hoo, hoo, hoo!' which touched my heart. I could get no milk for this poor little fellow, who could not eat, and consequently died on the third day after he was caught. He seemed more docile than the other I had, for he already recognized my voice, and would try to hurry toward me when he saw me."

The reason why the Gorilla flourishes in Western Equatorial Africa is probably because the great Carnivora, or beasts of prey, are not found in the dense forests and open prairies which cover the country. The jungle begins where the sea ceases, and then comes the virgin forest, extending some degrees north and south of the equator, and reaching unknown distances inland. There are no Lions, and but few Leopards, Hyenas and Jackals to be met with; and the great African beasts—the Rhinocerides, Giraffes, Zebras, etc., absent. Snakes, Lizards and a vast insect world abound, and there are birds of prey. The Elephant is scarce, and, indeed, miles and miles may be traversed without hearing or seeing any signs of large animal life. But of all the mammals the Monkeys are the most numerous, and the Gorilla reigns supreme. He has the forest to himself, and but few enemies. He has companions, however, nearly of his own size, and whose description we owe to Du Chaillu, and they are so constructed, anatomically, that they link on, as it were, this greatest of all Apes with the well-known Chimpanzee, which is also indigenous to the Gorilla land. The new Apes are the Nschiego Mbouvé, or Tschiego, and the Koolo-Kamba.

CHAPTER III.

MAN-SHAPED MONKEYS—CONTINUED.

THE NSCHIEGO MBOUVE which attains the height of four feet, and has a spread of arms of seven feet, was discovered by Du Chaillu in the Gaboon district. It is remarkable for building very comfortable shelters, and this led to its being found; for Du Chaillu, in one of his excursions, was trudging along rather tired of sport, when he saw a most singular looking shelter built on the branches of a tree. He thought it had been made by the natives, and asked whether the hunters had the habit of sleeping in the woods, but was told, to his great surprise, that it was a nest built by an Ape. Moreover, one of the natives told him that it was a curious creature, which had a bald head.

Many of the nests were seen subsequently, and it was noticed that they were generally built about fifteen or twenty feet from the ground, and invariably on a tree which stands slightly apart from others, and which had no lower bough beneath the shelter. Occasionally they are to be seen at the height of fifty feet; and it would appear that the altitude has something to do with the dread of the few flesh-eating and destructive beasts, such as the Leopard. The loneliest parts of the forest are chosen, for the animal is shy, and is very rarely seen, even by the negroes. The materials for the nest consist of leafy branches, and it is collected by the male and the female also, who tie them together, and to the tree, very neatly with twigs of the vine. The roof is so well constructed that it closely resembles human work, and it throws off the rain admirably, for it is neatly rounded at the top. During its construction, the female gathers the branches and vines, whilst the male builds; but afterward they do not occupy the same shelter, the male making another close by in a neighboring tree. The roof, which is usually some six or eight feet in diameter, is more or less dome-shaped, or something like an extended umbrella; and the Nschiego gets under it and clasps the tree, or squats on a bough, so that its head is just beneath the under surface. The nests are not occupied permanently, and usually for not more than eight or ten days, for the Apes, living upon wild berries of a certain kind, select spots where they are plentiful, and leave them when the store is exhausted. Du Chaillu never saw many nests together, and he does not think the animals live in troops, but only in pairs. Sometimes a solitary nest is seen, inhabited by a Nschiego, whose silvery hair

denotes its age, and probably its desire for solitude after a long and troublesome life.

Being desirous of obtaining one of these shelter makers, as they were evidently new to science, Du Chaillu took every precaution to surprise his prey; but it is best to tell the story in his own words:

"We traveled with great caution, not to alarm our prey, and had a hope that by singling out a shelter, and waiting till dark, we should find it occupied. In this hope we were not disappointed. Lying quite still in our concealment (which tried my patience sorely), we at last, just at dusk, heard the peculiar 'Hew, hew, hew,' which is the call of the male to his mate. We waited till it was quite dark, and then I saw what I had so longed all the weary afternoon to see. A Nschiego was sitting in his nest. His feet rested on the lower branch, his head reached quite into the little dome of the roof, and his arm was clasped firmly round the tree trunk. This is their way of sleeping. After gazing till I was tired through the gloom at my sleeping victim, two of us fired, and the unfortunate beast fell at our feet without a struggle, or even a groan. We built a fire at once, and made our camp in this place, that when daylight came I might first of all examine and skjn my prize. The poor Ape was hung up to be out of the way of insects, and I fell asleep on my bed of leaves and grass, as pleased a man as the world could well hold. Next morning I had leisure to examine the Nschiego.

"I was at once struck with points of difference between it and the Chimpanzee. It was smaller, and had a bald black head. This is its distinctive character. This specimen was three feet eleven inches high, or long. It was an adult. Its skin, where there is no hair, is black, and the thick breast and abdomen are covered with short and rather thin blackish hairs. On the lower part of the abdomen the hair is thinnest, but this is not perceived unless looked at carefully, as the skin is the color of the hair. On the legs the hair is of a dirty gray, mixed with black. The shoulders and back have black hair between two and three inches long, mixed with a little gray. The arms down to the wrist have also long black hair, but shorter than in the Gorilla. The hair is blacker, longer, glossier and thinner in general than that on the Gorilla, and the skin is not so tough. I noticed that the bare places, where the hair is worn off by contact with hard substances in sleeping, were different from the bare places which are so conspicuous on the common Chimpanzee.

"It is not as powerful an animal as the Gorilla, its chest is not so large, but the arms and fingers are a little longer, and this is the case with the toes also. The nose is not so prominent, but the mouth is wider and the ears are larger. Its chin is rounder, and has more small hairs, and the side of the face is thinly covered with hair, commencing about the middle of the ear, and these would seem to be signs of an incipient beard and whiskers. The lower parts of the body are bare, and the skin is white there."

Apparently the disposition and temper of the Nschiego are better than those of the Gorilla; it is less ferocious, and is even docile in captivity. It has not the hideous expression of the great Ape, for there is something of a forehead above the ridge of the eyebrow, and there are no great crests on the head, which is rounder than that of the Gorilla. The teeth are rather smaller, but are of the same number. The height is less than that of the female Gorilla, as a rule; and the male of this bald kind is larger than its female; whilst the little young ones differ



THE NSCHIEGO MBOUVÉ.

in their color from both, being white. Finally, it would appear that there are hard callous pads on the back of the fingers, that the hand is larger than the feet, and that the tips of the fingers reach a little below the knee.

Subsequently he had a very good opportunity of substantiating his statements about the nests.

“On our way down, at sunset of the third day, we heard the call of a Nschiego Mbouvé. I immediately caused my men to lie down, and was just getting into a hiding place myself, when I saw, in the branches of a tree at a little distance, the

curious nest or bower of this Ape; hard by, on another tree, was another shelter. We crept up within shot of this nest, and then waited, for I was determined to see once more the precise manner in which this animal goes to rest. We lay flat on the ground, and covered ourselves with leaves and bush, scarcely daring to breathe, lest the approaching animal should hear us. From time to time I heard the calls. There were evidently two, probably male and female. Just as the sun was setting, I saw an animal approach the tree. It ascended by a hand-over-hand movement, with great rapidity, crept carefully under the shelter, seated itself on the crotch made by a projecting bough, its feet and haunches resting on this bough; then it put one arm about the trunk of the tree for security.

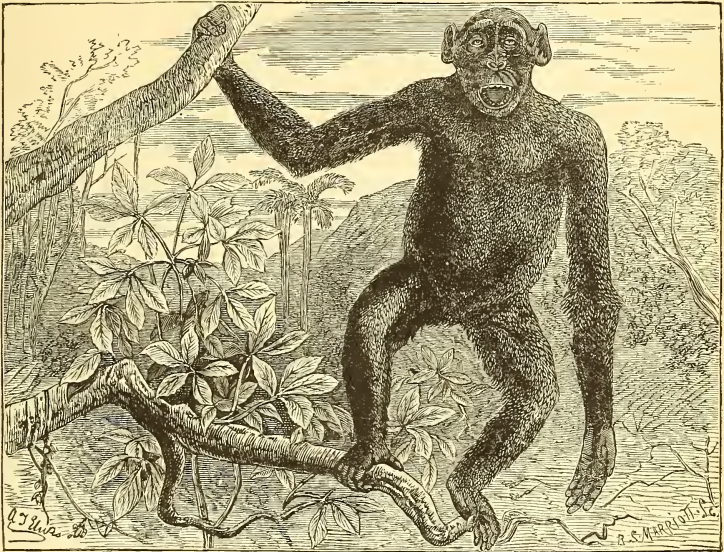
"Thus, I suppose, they rest all night; and this posture accounts for some singular abrasions of hair on the side of the Nschiego Mbouvé. At a little distance off I saw another shelter made for the mate. No sooner was it seated that it began again to utter its call. It was answered; and I began to have the hope that I should shoot both animals, when an unlucky motion of one of my men roused the suspicions of the Ape in the tree. It began to prepare for descent, and, unwilling to risk the loss of this one, I fired. It fell to the ground dead. It proved to be a male, with the face and hands entirely black. As we were not in haste, I made my men cut down the trees which contained the nests of these Apes. I found them made precisely as I have before described, and as I have always found them, of long branches and leaves, laid one over the other very carefully and thickly, so as to render the structure capable of shedding off water. The branches were fastened to the tree in the middle of the structure by means of wild vines and creepers, which are so abundant in these forests. The projecting limb on which the Ape perched was about four feet long. There remains no doubt in my mind that these nests are made by the animal to protect it from the nightly rains. When the leaves begin to dry to that degree that the structure no longer throws off water, the owner builds a new shelter, and this happens generally once in ten or fifteen days. At this rate the Nschiego Mbouvé is an animal of no little industry."

THE KOOLO-KAMBA. This kind of Troglodyte is celebrated for saying koola-koola over and over again as its favorite cry, for having a very extraordinary frog-like figure, and for being one of those creatures which are exceedingly interesting to zoologists, because they are, as it were, half one thing and half another. A neighbor of the great Apes already noticed, it associates also with the common Chimpanzee, in the quiet forests of Western Equatorial Africa. In one of these Du Chaillu first saw it, and he describes his discovery as follows:—

"We had hardly got clear of the Bashikoway ants and their bites when my ears were saluted by the singular cry of the Ape I was after. 'Koola-koola! koola-koola!' * it said several times. Gambo and I raised our eyes, and saw, high up on a tree branch, a large Ape. We both fired at once, and the next moment the poor

*Koola is the cry, and Kamba means "to say."

beast fell to the ground with a heavy crash. I rushed up, anxious to see if indeed, I had a new animal. I saw in a moment that it was neither a Nschiego Mbouvé, a Chimpanzee, nor a Gorilla. Again I had a happy day—marked for ever with red ink in my calender. The animal was a full-grown male, four feet three inches high, and was less powerfully built than the male Gorilla, but as powerful as either the Chimpanzee or Nschiego Mobuvé. When it was brought into Obindji, all the people, at once exclaimed, 'That is Koolo-Kamba.' Then I asked them about the other Apes I already knew, but for these they had other names and did not at



THE KOOLO-KAMBA.

all confound the species. For all these reasons I was assured that my prize was indeed a new animal; a variety at least of those before known. The Koolo-Kamba has several distinctive marks: a very round head, whiskers running quite around the face and below the chin; the face is round, the cheek-bones prominent, the eyes sunken, and the jaws not very prominent, less so than in any of the Apes. The hair is black and long on the arm, which was, however, partly bare. The Koola is the Ape of all the great Apes now known, which most nearly approaches man in the structure of its head; for the capacity of the cranium is somewhat greater, in

proportion to the animal's size, than in either the Gorilla or the Nschiego Mbouvé. Of its habits these people could tell me nothing, except that farther in the interior it was found more frequently, and that it was like the Gorilla, very shy and hard of approach." They are rare animals, and Du Chaillu met with this one only; it was as large as a female Gorilla, and from its structure was evidently a great climber.

On looking at the head of the Koolo-Kamba, one is struck with the large ears, which are larger than those of the Apes already described, and almost as large, but less detached, as those of the Chimpanzee. The skull is globular, and with a low contracted forehead receding behind the brow crests; but there are only faint ridges on its sides, although the muscles of the jaw are large, and they come from the sides of the skull. The head is very hairy, and the face, which is very projecting in front, is black in color. It is rendered very tigerish and ugly by the flat nose merging into a wide, thick, projecting upper lip, without any furrow; and the mouth looks like a wide slit, there being no chin on account of the pouting nature of the great lips.

THE SOKO, both as regards its name, description, and habits, we owe to Livingstone; and the stories which he heard of it from the natives, in the strange country to the west of the great lake Tanganyika, must have whiled away many a weary hour during his ill-health and gradual loss of energy.

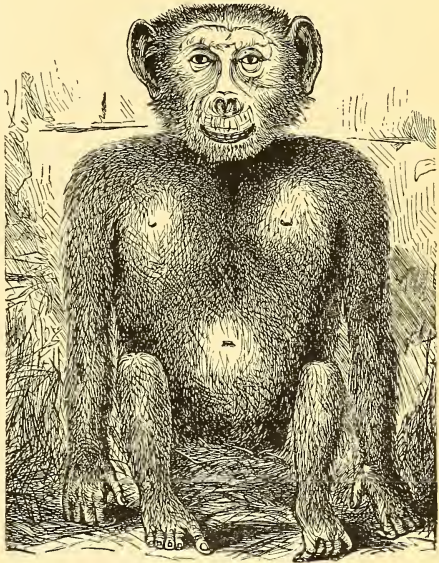
The first notice of it is curious enough, and occurs in his last journals. They were in want of rain, and he writes: "A Soko alive, was believed to be a good charm for rain, so one was caught; and the captor had the ends of two fingers and toes bitten off. The Soko, or Gorilla, always tries to bite off these parts, and has been known to overpower a young man, and leave him without the ends of fingers and toes. I saw the nest of one; it was a poor contrivance—no more architectural skill shown than in the nest of the cushet dove.

"The Soko is represented by some to be extremely knowing, successfully stalking men and women while at their work; kidnapping children, and running up trees with them; he seems to be amused by the sight of the young native in his arms, but comes down when tempted by a bunch of bananas, and as he lifts that, drops the child; the young Soko, in such a case would cling closely to the arm-pit of the elder. One man was cutting out honey from a tree, and naked, when a Soko suddenly appeared and caught him, then let him go; another man was hunting, and missed in his attempt to stab a Soko; it seized the spear, and broke it, then grappled with the man who called to his companions, 'Soko has caught me!' The Soko bit off the ends of his fingers and escaped unharmed. Both men are now alive at Bambarré.

"The Soko is so cunning, and has such sharp eyes that no one can stalk him in front without being seen; hence; when shot it is always in the back, when surrounded by men and nets, he is generally speared in the back, too, otherwise he is not a very formidable beast. He is nothing, as compared in power of damaging

his assailant, to a Leopard or Lion, but is more like a man unarmed, for it does not occur to him to use his canine teeth, which are long and formidable. Numbers of them came down in the forest, within a hundred yards of our camp, and would be unknown but for giving tongue like Foxhounds; this is their nearest approach to speech. A man hoeing, was stalked by a Soko, and seized; he roared out, but the Soko giggled and grinned, and left him as if he had done it in play. A child, caught up by a Soko, is often abused by being pinched, and scratched, and let fall.

"The Soko kills the Leopard occasionally, by seizing both paws and biting them, so as to disable them; he then goes up a tree, groans over his wounds, and sometimes recovers, while the Leopard dies. At other times both Soko and Leopard die. The Lion kills him at once, and sometimes tears his limbs off, but does not eat him. The Soko eats no flesh, small bananas are his dainties, but not maize. His food consists of wild fruits, which abound, and of these one is like large sweet sop, but indifferent in taste. The Soko brings forth at times twins. A very large Soko was seen by Mohamad's hunters, sitting picking his nails; they tried to stalk him, but he vanished. Some Manuema think that their buried dead rise as Sokos, and one was killed with holes in his ears, as if he had been a man. He is very strong, and fears guns, but not spears. He never catches women.



A YOUNG SOKO.

"Sokos collect together, and make a drumming noise, some say with hollow trees, then burst forth into loud yells, which are well imitated by the natives' embryonic music. If a man has no spear, the Soko goes away satisfied; but if wounded, he seizes the wrist, lops off the fingers and spits them out, slaps the cheeks of his victim, and bites without breaking the skin; he draws out a spear (but never uses it), and takes some leaves and stuffs them into his wound to staunch the blood; he does not seek an encounter with an armed man. He sees women

do him no harm, and never molests them; a man without a spear is nearly safe from him. They live in communities of about ten, each having his own female; an intruder from another camp is beaten off with their fists and loud yells. If one tries to seize the female of another, he is caught on the ground, and all unite in boxing and biting the offender. A male often carries a child, especially if they are passing from one patch of forest to another over a grassy space; he then gives it to the mother."

THE CHIMPANZEE comes next in the descending order of the scale of beings, and completes the number of the kinds of these man-shaped Apes of Equatorial Africa. It is this animal, the young of which are celebrated for their gentle fun, romping play, good climbing, and their ability to imitate many human habits—clothes-wearing, tobacco-smoking and tea-drinking especially. It is the Chimpanzee of Chimpanzées, the young of which have such very human-looking faces and most baby-like skulls. Being covered for the most part, and especially on the top and sides of the head, with long black hairs, it is called the Black Chimpanzee.

It was a sight worth seeing to be present in the Monkey House of the Zoological Gardens, in London, when the keeper paid an early morning visit to his attached friend, the Chimpanzee. If he was not quite awake, or lazily inclined, and snugly covered up in his little wooden house, and the keeper called him, a commotion was heard inside, and then a round little figure with a large head came tumbling out, and rushed to the iron wicket. He creeps along at a great rate on all-fours, but the body is half erect, for the fore limbs are long, and the knuckles, or rather the back parts of the second joints of the fingers, are allowed to touch the ground and support the frame in front, whilst the elbows are kept straight. The hind legs being short, move one after the other as in a canter, and it is readily noticed that although the feet touch the ground on their outer edges, they can rest flat on the soles.

There is much joyful recognition, and after he has put his arms around the keeper's neck, he enjoys being tickled and laid on his back in the straw. Making grunts and little laughs, he shows his fine set of teeth, and his fine hazel-colored eyes twinkle with fun. Then he rushes off, tumbling head over heels, scampers over the straw, and with a jump clasps one of the horizontal wooden bars in the cage, and swings himself up and on to it with an ease and grace which many a gymnast might envy. Running along this, and just balancing himself with the assistance of the back of his hand, he nears a rope, and then, after seizing it, swings with arms out at full length, now catching hold of others or of the wire lattice-work with his feet and toe-thumb, or suddenly coming to the ground with a great bounce. This is usually preparatory to coming to the spectators, and he then squats down, folds his arms, and moves his shoulders from side to side in a quick and restless manner. Another scamper brings him to his house on the ground floor, into which he looks, and then taking a lot of biscuits, he gives a jump on to



ORANG-UTAN AND CHIMPANZEES IN THE BERLIN AQUARIUM.

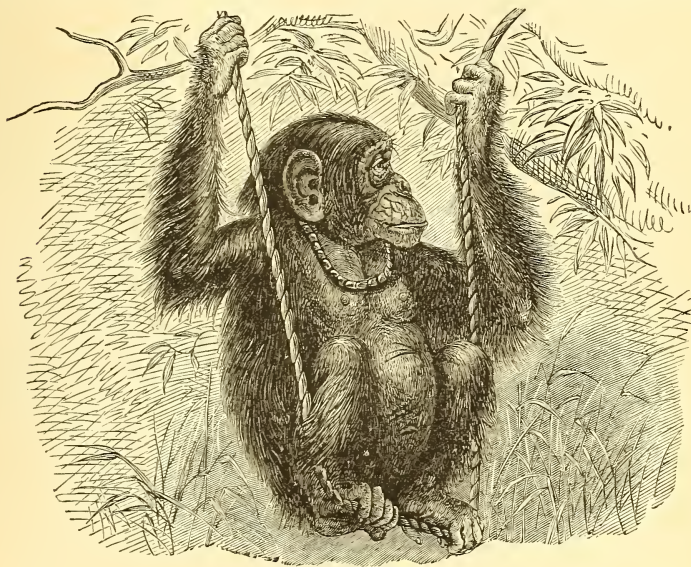
its shelving top, sits down, and begins to eat. He sits upright enough, and puts the biscuit into his mouth, but rather clumsily. He does not take it between the tips of his fingers and the thumb, but between the thumb and the side of the first finger, for the thumb is short. Hence, as the food disappears, he appears to be cramming the knuckle of his first finger into his mouth.

One is struck with the color of the face, which is nearly hairless, for the tint of its skin is a dirty yellow-ochre; but it is relieved by the beautiful white teeth, the hazel eyes, and the long hair which comes down from the top of the head in front of the ear like a lock. The upper lip has no furrow running down from the small and flat nose, but it is very large, and the mouth looks like a slit in the face when both lips are together. He has distinct eyelids; and when he sits and looks forward, the chin reaches below the top of the breast and hides the neck. The palm of the hands is flesh-colored, or darker, and the foot looks very strange, for the hair is long over the ankle and very black, and it ceases suddenly, so that the heel and all the sides and the sole are naked and flesh-tinted. The absence of hair on the face—there being a little straggling beard only—is possibly an ornament, and it is noticed in many monkeys; but its absence from the under part of the hand and foot, of course, is of use, for it gives a greater power of grasp and a finer sense of touch. The front hair comes to a peak over the forehead, and the curve on either side is very graceful; then it covers a broad, low head, which looks very big behind and decidedly over-burdened with two great ears, larger than those of the Gorilla, and which are close neighbors to the high shoulders. Long black hair, with the ears peering through, covers all the back and sides of the head and the wide shoulders and very short neck, and is continued down the back, which shows no sign of a waist, and only becomes smaller just above the thighs.

At first sight there is something very human about the Chimpanzee; it looks like a very old child, and doubtless this is increased by its gentle habits and amiability; and there is every apology to be made for the early geographers and anatomists, who called it the "Pigmie."

One of the first living Chimpanzees which was brought over took some strange dislikes to people. When it was brought on board the ship it would give its hand to be shaken by some, but refused it to others of the sailors with marks of anger, and it speedily became very familiar with the crew, except with a boy, to whom it never became reconciled. When the seamen's mess was brought on deck, it was a constant attendant; it would go round and embrace each person, while it uttered loud yells, and then seated itself to enjoy the repast. If it was pleased at any favorite morsel, or if a piece of sweetmeat was given to it, satisfaction was expressed by a sound like a "hem," in a grave tone; but if it was made angry or vexed, it would bark like a dog or cry like a child, and scratch itself most vehemently. It was active and cheerful in warm latitudes, but it became languid as it left the Torrid Zone, so that a blanket had to be given it.

Bamboo, a Chimpanzee, the subject of the following sketch, by Lieut. Sayers, "was purchased from a Mandingo, at Sierra Leone, who related that he had captured him in the Bullom country some months before, having first shot the mother, on which occasions the young ones never fail to remain by their wounded parents. On becoming mine, he was delivered over to a black boy, my servant, and in a few days became so attached to him as to be exceedingly troublesome, screaming and throwing himself into the most violent passion if he attempted to leave him for a moment. He evinced also a most strange affection for clothes, never



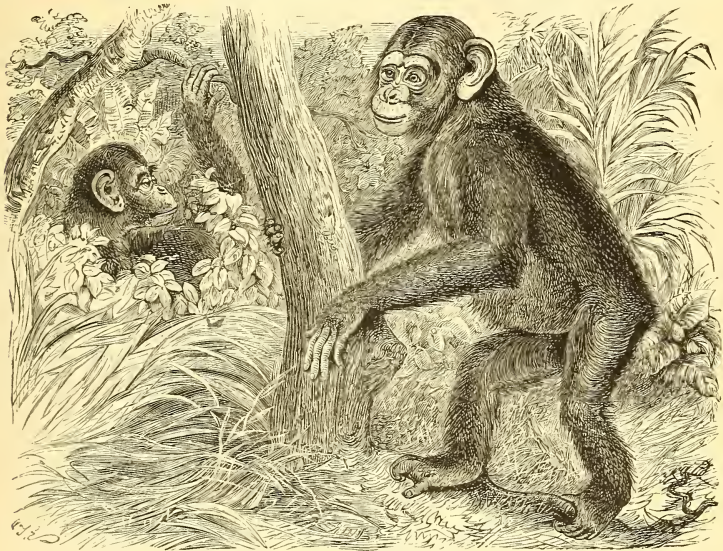
THE CHIMPANZEE.

omitting an opportunity of possessing himself of the first garment he came across, whenever he had the means of entering my apartment. He carried it immediately to the piazza, where invariably he seated himself on it with a self-satisfied grunt; nor would he resign it without a hard fight, and, on being worsted, exhibited every symptom of the greatest anger. Observing this strange fancy, I procured him a piece of cotton cloth, which, much to the amusement of all who saw him, he was never without, carrying it with him wherever he went, nor could any temptation induce him to resign it even for a moment. Totally unacquainted with their mode

of living in the wild state, I adopted the following method of feeding him, which has appeared to succeed admirably: In the morning, at eight o'clock, he received a piece of bread, about the size of a small loaf, steeped in water or milk and water; about two, a couple of bananas or plantains; and before he retired for the night, a banana, orange, or slice of pineapple. The banana appeared to be his favorite fruit; for it he would forsake all other viands, and if not gratified, would exhibit the utmost petulance. On one occasion I deemed it necessary to refuse him one, considering that he had already eaten a sufficiency, upon which he threw himself into the most violent passion, and uttering a piercing cry, knocked his head with such violence against the wall as to throw himself on his back, then ascending a chest which was near, wildly threw his arms into the air and precipitated himself from it. These actions so alarmed me for his safety that I gave up the contest, and on doing so he evinced the greatest satisfaction at his victory, uttering for several minutes the most expressive grunts and cries; in short, he exhibited, on all occasions when his will was opposed, the impatient temper of a spoiled child; but even in the height of passion I never observed any disposition to bite or otherwise ill-treat his keeper or myself.

"Although he would never object to being caressed or nursed by even a stranger, yet I never saw him evince the slightest disposition to make the acquaintance of any other animal. At the time he came into my possession I had two Patas Monkeys, and thinking they might become acquainted, I placed Mr. Bamboo in the same apartment, where he resided for five months, yet I never saw the least desire on his part to become even friendly; on the contrary, he showed evident anger and dislike at their approach. This strange attachment to the human race, and manifest dislike to all others, I have always considered one of the most extraordinary features of this genus. His cunning was also remarkable. On all occasions when he thought he was unobserved, he would not fail to steal everything within his reach, for no other apparent purpose than to gratify a propensity for thieving; did he, however, even think you were looking at him, he would wait his opportunity with the greatest patience before he commenced depredation. On being left by himself in his piazza he would invariably seat himself on the window-sill, which was the highest point he could attain, and commanded a view of the barrack yard as well as the interior of my bedroom; but at sunset he would descend, enter a washing-tub, which he had of his own accord chosen as a sleeping place, and remain there all night; as soon, however, as the sun rose, he would never fail to occupy his favorite position on the window ledge. From this, I should say, that trees are ascended by the Chimpanzee merely for observation or food, and that they live principally on the ground. Bamboo, at the time of purchase, appeared to be about fourteen months old, and from what I could learn from the natives, they do not reach their full growth till between nine and ten years of age; which, if true, brings them extremely near the human species, as the boy or girl of West Africa, at thirteen or fourteen years old, is quite as much a man

or woman as those of nineteen or twenty in our more northern clime. Their height, when full grown, is said to be between four and five feet; indeed, I was credibly informed that a male Chimpanzee, which had been shot in the neighborhood and brought into Free Town, measured four feet five inches in length, and was so heavy as to form a very fair load for two men, who carried him on a pole between them. The natives say that in their wild state their strength is enormous, and that they have seen them snap boughs off the trees with the greatest apparent ease,



THE CHIMPANZEE STANDING.

which the united strength of two men could scarcely bend. The natives also affirmed that they always travel in strong bodies, armed with sticks, which they use with much dexterity. They are exceedingly watchful; and the first one who discovers the approach of a stranger utters a protracted cry, much resembling that of a human being in the greatest distress. The first time I heard it I was much startled; the animal was apparently not more than thirty paces distant, but had it been but five I could not have seen it, from the tangled nature of the jungle, and I certainly conceived that such sounds could only have proceeded from a human being, who hoped to gain assistance by his cries from some terrible and instant

death. The native who was with me laid his hand upon my shoulder, and pointing suspiciously to the bush, said: 'Massa, Baboo live there!' and in a few minutes the wood appeared alive with them, their cries resembling the barking of dogs. My guide informed me that the cry first heard was to inform the troop of my approach, and that they would all immediately leave the trees, or any exalted situation that might expose them to view, and seek the bush; he also showed evident fear, and entreated me not to proceed any further in that direction. The plantations of bananas, pawpaws and plantains, which the natives usually intermix with their rice, constituting the favorite food of the Chimpanzee, accounts for their being so frequent in the neighborhood of rice fields. The difficulty of procuring live specimens of this genus arises principally, I should say, from the superstitions of the natives concerning them, who believe they possess the power of 'witching.'"

A most interesting little male Chimpanzee was obtained from the natives of the Gambia coast some years since, and became famous in London for its great intelligence and human-like conduct. His mother was shot when he was about twelve months old, about 120 miles from the sea; and after being well taken care of he was sent to England on board ship, where he had a free range of the rigging and decks, and where he made himself much liked. A distinguished zoologist, Mr. Broderip, visited him in the Zoological Gardens after he had undergone some tuition, and describes what he saw, as follows:

"I saw him for the first time in the kitchen belonging to the keepers' apartments, dressed in a little Guernsey shirt, or banyan jacket. He was sitting child-like in the lap of a good old woman, to whom he clung whenever she made show of putting him down. His aspect was mild and passive, but that of a little withered old man, and his large eyes, hairless and crimped visage, and man-like ears, surmounted by the black hair of his head, rendered the resemblance very striking, notwithstanding the depressed nose and the projecting mouth. He had already become very fond of his good old nurse, and she had evidently become attached to her nursling, although they had only been acquainted for three or four days, and it was with difficulty that he permitted her to go away to do her work in another part of the building. On her lap he was perfectly at his ease, and it seemed to me that he considered her as occupying the place of his mother. He was constantly reaching up with his hand to the fold of her neckerchief, though when he did so she checked him, saying, 'No, Tommy, you must not pull the pin out.' When not otherwise occupied, he would sit quietly in her lap, pulling his toes about with his fingers, with the same passive air as a human child exhibits when amusing himself in the same manner. I wished to examine his teeth; and when his nurse, in order to make him open his mouth, threw him back on her arm and tickled him just as she would a child, the caricature was complete.

"I offered him my ungloved hand. He took it mildly in his, with a manner equally exempt from forwardness and fear, examined it with his eyes, and perceiving a ring on one of my fingers, submitted that, and that only, to a very cautious

and gentle examination with his teeth, so as not to leave any mark on the ring. I then offered him my other hand with the glove on. This he felt, looked at it, turned it about, and then tried it with his teeth. At length it became necessary for his kind nurse to leave him, and after much remonstrance on his part she put him on the floor. He would not leave her, however, and walked nearly erect by her side, holding by her gown just like a child. At last she got him away by offering him a peeled raw potato, which he ate with great relish, holding it in his right hand. His keeper, who is very attentive to him, then made his appearance, and spoke to him. Tommy evidently made an attempt to speak, gesticulating as he stood erect, protruding his lips, and making a hoarse noise like 'hoo! hoo!' He soon showed a disposition to play with me, jumping on his lower extremities opposite to me like a child, and looking at me with an expression indicating a wish for a game at romps. I confess I complied, and a capital game we had. On another occasion, and when he had become familiar with me, I caused, in the midst of his play, a looking-glass to be brought and held before him. His attention was instantly and strongly arrested; from the utmost activity he became immovably fixed, steadfastly gazing at the mirror with eagerness, and something like wonder depicted in his face. He at length looked up at me, then again gazed at the glass. The tip of my fingers appeared on one side as I held it; he put his hands and then his lips to them, then looked behind the glass, and finally passed his hands behind it, evidently to feel if there were anything substantial there. I presented him with a cocoanut, to the shell of which some bark was still adhering; the tender bud was just beginning to shoot forth—this he immediately bit off and ate. He then stripped off some of the bark with his teeth, moving it by the crust of adhering fibers round his head, darted it down, and repeatedly jumped on it with all his weight. A hole was bored in one of the eyes, and the nut again given to him, and he immediately held it up with the aperture downward, applied his mouth to it, and sucked away at what milk there was with great glee. As I was making notes with a paper and pencil, he came up and looked at me inquisitively, testing the pencil with his teeth when he had it given to him. A trial was made of the little fellow's courage; for when his attention was directed elsewhere, a hamper containing a large snake, called Python, was brought in and placed on a chair near the dresser. The lid was raised, and the basket in which the snake was enveloped was opened, and soon after Tommy came gamboling that way. As he jumped and danced along the dresser toward the basket he was all gaiety and life; suddenly he seemed to be taken aback, stopped, and cautiously advanced toward the basket, peered or rather craned over it, and instantly, with a gesture of horror and aversion and the cry of 'hoo! hoo!' recoiled from the detested object, jumped back as far as he could, and then sprang to his keeper for protection. Tommy does not like confinement, and when he is shut up in his cage, the violence with which he pulls at and shakes the door is very great, and shows considerable strength; but I have never seen him use this exertion against any other part of the

cage, though his keeper has endeavored to induce him to do so, in order to see whether he would make the distinction. When at liberty he is extremely playful; and in his high jinks, I saw him toddle into a corner where a litter of very young pups and their mother were housed, and lay hold of them, till the snarling of the mother and the cries of the keeper made him put the pup down. He then climbed up to the top of the cage where the Marmosets were, and jumped furiously upon it, evidently to astonish the inmates, who huddled together, looking up at the dreadful creature over their heads. Then he went to a window, opened it and looked out. I was afraid that he might make his escape; but the words 'Tommy, No!' pronounced by the keeper in a mild but firm tone, caused him to shut the window and to come away. He is, in truth, a most docile and affectionate animal, and it is impossible not to be taken with the expressive gestures and looks with which he courts your good opinion, and throws himself upon you for protection against annoyance." Whether they grow cross and savage as they get old is not known, for no adults have been kept in captivity, but as this is usual in other monkeys, it is probable that their interesting time of life is that of childhood, and that when the age of fun and tricks has passed there is not much else but brutality left.

These man-shaped Apes, the Gorilla, the Nschiego Mbouvé, the Koola Kamba, the Soko, and the Chimpanzee, form a group of beings which is separated from all others by anatomical differences. Their home is in Equatorial Africa, from the Western Sea to the Great Lakes near the eastern side of the Continent, and none of the kinds composing it have ever been found out of this range. Their bones have not been found in caves or in the state of fossils anywhere, so they must be regarded as essentially African. The group clings to forest and jungle, and its members lead very much the same kind of lives, for they are all vegetarians, liking quietude, and either roaming singly or in pairs, or living in troops. There is no evidence whatever that any of these have ever wandered; and it must be admitted that they have lived where they are now found every since the country has been as it is, as regards its physical geography and peculiar climate. As regards their anatomical distinctness from other beings, they may be separated from man on the one hand, and from the Monkeys on the other. They are linked together as a group by many resemblances in their construction, although there are differences enough to distinguish kind from kind. From man they one and all differ in the shape of the head, the size of the brain case, the nature of the palate, the shape of the jaws, and in the last lower molar teeth and tooth spaces. Their head ridges, the shape and length of their limbs, and the nature of their thumbs and toe-thumbs are very distinctive. The great air pouches, the shape of the chest, the extra ribs, and the shape of the hip-girdle, cause them to differ much from man; and their brain is, as it were, dwarfed and infantile.

THE ORANG-UTAN has a general resemblance to the Chimpanzee, and is a native of Borneo and Sumatra. Its height is about four and a half feet, though it

sometimes exceeds six feet. It is covered with dark brown hair, the skin seen through it having a bluish tint. The face is nearly bare. The body is large and strong, the belly full, and the movement oscillating. The eyes are fringed with lashes; the nose is on a line with the face; the mouth is projecting; the lips thin, capable of great elongation, and endowed with a peculiar mobility; the ears small and resembling those of man. The muzzle grows more acute with age, and the disposition of the animal often becomes fierce and savage at maturity. It is incapable of walking erect, but moves in a hobbling manner by putting the knuckles of its hands to the ground, and drawing its body forward between them. In a state of nature it probably seldom moves along on the ground—its whole configuration showing its fitness for climbing trees and clinging to the branches. In sitting on a flat surface it turns its legs under it; in sitting on a branch of a tree, it rests on its heels, its body pressed against its thighs.

The Orangs generally occupy the marshy districts, covered with dense forests and rank vegetation. They are solitary in their habits, living inactive in the wilds, away from the resorts of man. During the day they move about in the upper branches of the forest; towards evening they descend and find shelter from the cold and wind in the thick foliage of the palms and other similar trees. Sometimes they make a sort of platform of sticks, and cover it with leaves, which becomes their resting place. The old males are especially dreaded by the inhabitants, as each one appropriates a district to himself, and attacks with fury any one who invades it. Their food consists chiefly of vegetables, though they devour eggs and small birds.

Rajah Brooke, whose name will always be associated with Borneo, took great interest in the Orang-utan hunting, principally with a view to decide how many kinds there were; and his first impressions on killing his first large one were excited by the prominent peculiarities just noticed. The first male he killed was seated lazily on a tree, and when the people approached he only took the trouble to hide behind the trunk, peeping first on one side and then on the other, and "dodging," as the Rajah did the same. He was wounded in the wrist, and afterwards was despatched. The Rajah wrote as follows:—"Great was our triumph as we gazed on the huge animal dead at our feet, and proud we were of having shot the first Orang we had seen, and shot him in his native woods, in a Borneo forest hitherto untrodden by European feet. We were struck with the length of his arms, the enormous neck, the expanse of face, which altogether gave the im-



YOUNG ORANG-UTAN.

pression of great height, whereas it was only great power. The hair was long, reddish, and thin; the face remarkably broad and fleshy, and on each side, in the place of a man's whiskers, were the callosities, or rather, fleshy protuberances, which I was so desirous to see, and which were nearly two inches in thickness. The ears were small and well shaped, the nose quite flat, the mouth prominent, the lips thick, the eyes small and roundish, the teeth large and discolored, the face and hands black—these last being very powerful. This animal was four feet one inch in height, and its fore-limb was three feet five inches and three-quarters in length; the width of the face, moreover, being as much as one foot one inch.

"While the fore-limb was so long, the lower limb, from the hip to the heel, only measured one foot nine inches; and hence there is great disproportion between the limbs, the legs and feet appearing dwarfed in comparison."

The Rajah considered the Orangs to be as dull and slothful as one could conceive, and on no occasion, when pursuing them, did they move so fast as to preclude his keeping pace with them easily through a moderately clear forest, and even when obstructions below (such as wading up to the neck) enabled them to get away some distance they were sure to stop and allow the hunters to come up. He never observed any attempt at defiance, and the wood which sometimes rattled down about his ears was broken by their weight, and not thrown down, as some people imagine to be the case.

If pushed to extremity the large male, with crests on its head, could be formidable; and one unfortunate man, who, with a party, was trying to catch a large one alive, lost two of his fingers, besides being severely bitten in the face, whilst the animal finally beat off its pursuers. When the natives wish to catch an adult, they cut down a circle of trees round the one on which he is seated, and then fell that also, close before he can recover himself, and try to bind him. He also notices the little dread the natives have of them, and that they form seats rather than nests in the trees.

A Mr. Wallace had an opportunity of observing the nest, or rather nest-making, which is performed by these animals when severely wounded. "He was called by a Chinaman working in Borneo to shoot a Mias (the native name for the Orang), which, he said, was on a tree close by his house at the coal-mines. Arriving at the place, we had some difficulty in finding the animal, as he had gone off into the jungle, which was very rocky and difficult to traverse. At last we found him up a very high tree, and could see that he was a male of the largest size. As soon as I had fired, he moved higher up the tree, and while he was doing so I fired again; and we then saw that one arm was broken. He had now reached the very highest part of an immense tree, and immediately began breaking off boughs all around, and laying them across and across to make a nest. It was very interesting to see how well he had chosen his place, and how rapidly he stretched out his unwounded arm in every direction, breaking off good sized boughs with the greatest ease, and laying them back across each other, so that in a few minutes he had

formed a compact mass of foliage, which entirely concealed him from our sight. He was evidently going to pass the night here, and would probably get away early next morning, if not wounded too severely. I therefore fired again several times in hopes of making him leave his nest; but, though I felt sure I had hit him, as at each shot he moved a little, he would not go away. At length he raised himself up so that half his body was visible, and then gradually sank down, his head alone remaining on the edge of the nest. I now felt sure he was dead, and tried to per-



A FAMILY OF ORANG-UTANS.

suade the Chinaman and his companion to cut down the tree; but it was a very large one and they had been at work all day so nothing would induce them to attempt it. The next morning, at daybreak, I came to the place, and found that the Mias was evidently dead, as his head was visible in exactly the same position as before."

Mr. Wallace, who described how it forms a nest when wounded, states, "that it uses a similar one to sleep in almost every night. This is placed low down,

however, on a small tree, not more than from twenty to fifty feet from the ground, probably because it is warmer and less exposed to wind than higher up. Each Mias is said to make a fresh one for himself every night; but I should think that is hardly probable, or their remains would be much more abundant; for though I saw several about the coal mines, there must have been many Orangs about every day, and in a year their deserted nests would become very numerous. The Dyaks say that when it is very wet the Mias covers himself over with leaves of Pandanus, or large ferns, which has perhaps led to the story of his making a hut in the trees. The Orang does not leave his bed till the sun has well risen and has dried up the dew upon the leaves. He feeds all through the middle of the day, but seldom returns to the same tree two days running. They do not seem much alarmed at man, as they often stared down upon me for several minutes, and they only moved away slowly to an adjacent tree. After seeing one, I have often had to go half a mile or more to fetch my gun, and in nearly every case have found it on the same tree, or within a hundred yards, when I returned. I never saw two full grown animals together, but both males and females are sometimes accompanied by half grown young ones, while at other times three or four young ones were seen in company. Their food consists almost exclusively of fruit, with occasional leaves, buds and young shoots. They seem to prefer unripe fruits, some of which were very sour, others intensely bitter, particularly the large red fleshy arillus, or rind of one, which seemed an especial favorite. In other cases they eat only the small seed of a large fruit, and they almost always waste and destroy more than they eat, so that there is a continual rain of rejected portions below the tree they are feeding on. The Durion is an especial favorite, and quantities of this delicious fruit are destroyed wherever it grows surrounded by forest, but they will not cross clearings to get at them. It seems wonderful how the animal can tear open this fruit, the outer covering of which is so thick and tough, and closely covered with strong conical spines. It probably bites off a few of these first, and then making a small hole, tears open the fruit with its powerful fingers. The Mias rarely descends to the ground, except when pressed by hunger, it seeks for succulent shoots by the river side; or, in very dry weather, has to search after water, of which it generally finds sufficient in the hollows of leaves. Once only I saw two half-grown Orangs on the ground, in a dry hollow at the foot of the Simunjou Hill. They were playing together, standing erect, and grasping each other by the arms. It may be safely stated, however, that the Orang never walks erect, unless when using its hands to support itself by branches overhead, or when attacked. Representations of its walking with a stick are entirely imaginary. The Dyaks all declare that the Mias is never attacked by any animal in the forest, with two rare exceptions; and the accounts I received of these are so curious, that I give them nearly in the words of my informants, old Dyak chiefs, who had lived all their lives in the places where the animal is most abundant. The first of whom I inquired said: 'No animal is strong enough to hurt the Mias, and the only creature he ever fights with is the

Crocodile. When there is no fruit in the jungle, he goes to seek food on the banks of the river, where there are plenty of young shoots that he likes, and fruits that grow close to the water. Then the Crocodile sometimes tries to seize him, but the Mias gets upon him, and beats him with his hands and feet, and tears him, and kills him.' He added that he had once seen such a fight, and that he believes that the Mias is always the victor. My next informant was the Orang Kaya, or chief of the Balow Dyaks, on the Simunjou River. He said: 'The Mias has no enemies; no animals dare attack it but the Crocodile and the Python. He always kills the Crocodile by main strength, standing upon it, pulling open its jaws, and ripping up its throat. If a Python attacks a Mias, he seizes it with his hands, and then bites it, and soon kills it. The Mias is very strong; there is no animal in the jungle so strong as he.'

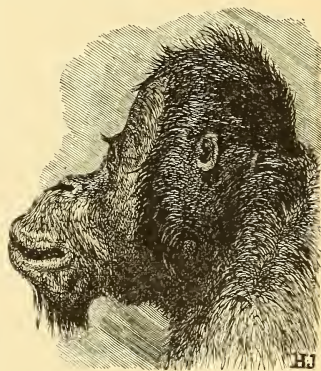
Several young Orang-utans have been taken to Europe and exhibited, to the delight of every one who saw them, but Mr. Wallace was fortunate enough to obtain one in its native haunts, and to observe it in its own climate. After shooting a female Mias, he found a little tiny one, lying face downwards, in the swamp where they were. "It was only about a foot long," writes Mr. Wallace, "and had evidently been hanging to its mother when she first fell. Luckily, it did not appear to have been wounded, and after we had cleaned the mud out of its mouth it began to cry out, and seemed quite strong and active. While carrying it home it got its hands in my beard, and grasped so tightly that I had great difficulty in getting free, for the fingers are habitually bent inwards at the last joint, so as to form complete hooks. At this time it had not a single tooth, but a few days afterward it cut its two lower front teeth. Unfortunately, I had no milk to give it, as neither Malays, Chinese nor Dyaks ever use the article, and I in vain inquired for any female animal that could suckle my little infant. I was therefore obliged to give it rice water from a bottle, with a quill in the cork, which after a few trials it learned to suck very well. This was very meager diet, and the little creature did not thrive well on it, although I added sugar and cocoanut milk occasionally, to make it more nourishing. When I put my finger in its mouth it sucked with great vigor, drawing in its cheeks with all its might in the vain effort to extract some milk, and only after persevering a long time would it give up in disgust, and set up a scream very like that of a baby in similar circumstances. When handled or nursed, it was very quiet and contented, but when laid down by itself would



FRONT FACE OF THE ORANG.

invariably cry ; and for the first few nights was very restless and noisy. I fitted up a little box for a cradle, with a soft mat for it to lie upon, which was changed and washed every day ; and I soon found it necessary to wash the little Mias as well. After I had done so a few times, it came to like the operation, and as soon as it was dirty would begin crying, and not leave off till I took it out and carried it to the spout, when it immediately became quiet, although it would wince a little at the first rush of the cold water, and make ridiculously wry faces while the stream was running over its head. It enjoyed the wiping and rubbing dry amazingly, and when I brushed its hair seemed to be perfectly happy, lying quite still, with its arms and legs stretched out, while I thoroughly brushed the long hair of its back and arms. For the first few days it clung desperately with all four hands to whatever it could lay hold of, and I had to be careful to keep my beard out of its way, as its fingers clutched hold of hair more tenaciously than anything else, and it was impossible to free myself without assistance. When restless, it would struggle about, with its hands up in the air, trying to find something to take hold of, and when it had got a bit of stick or rag in two or three of its hands, seemed quite happy. For want of something else, it would often seize its own feet, and after a time it would constantly cross its arms, and grasp with each hand the long hair that grew just below the opposite shoulder. The great tenacity of its grasp soon diminished, and I was obliged to invent some means to give it exercise and strengthen its limbs. For this purpose I made a short ladder of three or four rounds, on which I put it to hang for a quarter of an hour at a time. At first it seemed much pleased, but it could not get all four hands in a comfortable position, and, after changing about several times, would leave hold of one hand after the other, and drop on the floor. Sometimes when hanging only by two hands, it would loose one, and cross it to the opposite shoulder, grasping its own hair ; and as this seemed much more agreeable than the stick, it would then loose the other and tumble down, when it would cross both, and lie on its back quite contentedly, never seeming to be hurt by its numerous tumbles. Finding it so fond of hair, I endeavored to make an artificial mother, by wrapping up a piece of buffalo skin into a bundle, and suspending it about a foot from the floor. At first this seemed to suit it admirably, as it could sprawl its legs about and always find some hair, which it grasped with the greatest tenacity. I was now in hopes that I had made the little orphan quite happy ; and so it seemed for some time, till it began to remember its lost parent, and try to suck. It would pull itself up close to the skin, and try about everywhere for a likely place ; but as it only succeeded in getting mouthfuls of hair and wool, it would be greatly disgusted, and scream violently, and after two or three attempts, let go altogether. One day it got some wool into its throat, and I thought it would have choked, but after much gasping it recovered, and I was obliged to take the imitation mother to pieces again, and give up this last attempt to exercise the little creature. After the first week I found I could feed it better with a spoon, and give it a little more varied and more

solid food. Well-soaked biscuit, mixed with a little egg and sugar, and sometimes sweet potatoes, were readily eaten; and it was a never-failing amusement to observe the curious changes of countenance by which it would express its approval or dislike of what was given to it. The poor little thing would lick its lips, draw in its cheeks, and turn up its eyes with an expression of the most supreme satisfaction when it had a mouthful particularly to its taste. On the other hand, when its food was not sufficiently sweet or palatable, it would turn the mouthful about with its tongue for a moment, as if trying to extract what flavor there was, and then push it all out between its lips. If the same food was continued, it would set up a scream and kick about violently, exactly like a baby in a passion. After I had had the little Mias about three weeks, I fortunately obtained a young Macaque Monkey (*Macacus cynomolgus*), which, though small, was very active, and could feed itself. I placed it in the same box with the Mias, and they immediately became excellent friends, neither exhibiting the least fear of the other. The little monkey would sit upon the other's stomach, or even on its face, without the least regard to its feelings. While I was feeding the Mias, the monkey would sit by, picking up all that was spilt, and occasionally putting out its hands to intercept the spoon, and as soon as I had finished would pick off what was left sticking to the Mias' lips, and then pull open its mouth to see if any still remained inside, afterward lying down on the poor creature's stomach as on a comfortable cushion. The little helpless Mias would submit to all these insults with the most exemplary patience, only too glad to have something warm near it which it could clasp affectionately in its arms. It sometimes, however, had its revenge; for when the monkey wanted to go away, the Mias would hold on as long as it could by the loose skin of its back, or head, or by its tail, and it was only after many vigorous jumps that the monkey could make its escape. It was curious to observe the different actions of these two animals, which could not have differed much in age. The Mias, like a very young baby, lying on its back quite helpless, rolling lazily from side to side, stretching out all four hands into the air, wishing to grasp something, but hardly able to guide its fingers to any definite object, and when dissatisfied opening wide its almost toothless mouth, and expressing its wants by a most infantine scream; the little monkey, on the other hand, in constant motion, running and jumping about wherever it pleased, examining everything around it, seizing hold of the smallest objects with the greatest precision, balancing itself on



SIDE FACE OF THE ORANG.

the edge of the box, or running up a post, and helping itself to anything eatable that came in its way. There could hardly be a greater contrast; and the baby Mias looked more baby-like by the comparison. When I had had it about a month, it began to exhibit some signs of learning to run alone. When laid upon the floor it would push itself along by its legs, or roll itself over, and thus make an unwieldy progression. When lying in the box it would lift itself up to the edge into almost an erect position, and once or twice succeeded in tumbling out. When left dirty or hungry, or otherwise neglected, it would scream violently till attended to, varied by a kind of coughing or pumping noise, very similar to that which is made by the adult animal. If no one was in the house, or its cries were not attended to, it would be quiet after a little while, but the moment it heard a foot-step would begin again harder than ever. After five weeks it cut its two upper front teeth, but in all this time it had not grown the least bit, remaining, both in size and weight, the same as when I first procured it. This was, no doubt, owing to the want of milk or other equally nourishing food. Rice water, rice and biscuits were but a poor substitute, and the expressed milk of the cocoanut, which I sometimes gave it, did not quite agree with its stomach. To this I imputed an attack of diarrhœa, from which the poor little creature suffered greatly, but a small dose of castor oil operated well, and cured it. A week or two afterward it was again taken ill, and this time more seriously. The symptoms were exactly those of intermittent fever, accompanied by watery swellings on the feet and head. It lost all appetite for its food, and after lingering for a week, a most pitiable object, died, after being in my possession nearly three months. I much regretted the loss of my little pet, which I had at one time looked forward to bringing up to years of maturity, and taking home to England. For several months it had afforded me daily amusement by its curious ways and the inimitably ludicrous expression of its little countenance. Its weight was three pounds nine ounces, its height fourteen inches, and the spread of its arms twenty-three inches. I preserved its skin and skeleton, and in doing so found that, when it fell from the tree, it must have broken an arm and a leg, which had, however, united so rapidly that I only noticed the hard swellings on the limbs where the irregular junction of the bones had taken place."

There is evidently much intelligence in the young Orang, when brought in contact with man, but probably in its native woods it leads a very quiet and almost mechanical life, there being nothing to develop extra instincts, thought, or unusual intelligence.

CHAPTER IV.

MAN-SHAPED MONKEYS.—CONTINUED.

The Orang-utan is not the only man-shaped Ape of the forests and jungles of the great Asiatic Islands, for there are several others to be found there, and which also live on the main land, from Malacca far away to the north in Assam; southward, in the peninsula of Hindostan, and in South China. They are less human-looking than the red Orangs, and they are smaller and more slender, but when they walk for a short distance erect, with the arms above the head and balancing the body, their resemblance to a small and hairy "lord of creation" is considerable. A very light glance distinguishes them from the Orangs; they have straight backs, small heads, large eyes, rather prominent chins, very long fore-arms, and their fingers reach the ankle in some, and the ground in others. Moreover, the Orangs sit upon a surface of hair, and these are furnished with a hard pad-like seat which is bare, and is called a callosity, but they have no tail. They can run. These long armed Apes have a number of names, but as a whole they are called Gibbons. So far as their intelligence, amiability and teachableness are concerned, they are equal to the Orangs, and indeed they seem to adapt themselves to the methods of men more readily. Not only do they become very fond of their keepers, but they recollect them after the lapse of time; and they are constantly let loose by those who keep them in India to wander about the trees in the neighborhood, and they will return to be cared for, and come, when called, to be fed.

Interesting to those who study the intelligence of animals, they are equally so to the common observer, who delights in witnessing their surpassing agility, wonderful leaps, and graceful swings from bough to bough. But to the anatomist they present many complicated problems; for, although evidently not so high in the animal scale as the Orangs and Chimpanzees, they have some things about them which cause them to resemble man more than do these great Apes, and others which cause them to resemble the great army of Monkeys. They are the last of the man-shaped in the classification, and the usual plan is to place them after the Orangs.

They are extremely delicate animals, although their fur is thick and, in some kinds, long. They require a considerable temperature and very pure air; hence, when taken to cold climates they do not live long, dying usually from consumption or from some lung disease.

THE SIAMANG. Sir Stamford Raffles brought the Siamang prominently before the scientific world, and noticed the curious manner in which some of the toes were united, and he considered that this was to enable them to swing rapidly from branch to branch during their ordinary movements in the forest, when any stretching out of the fingers might be dangerous and produce a fall. But in this, as in many others, we owe to Mr. Wallace thanks for a concise description of the habits of the creature.

"A very curious Ape, the Siamang, was rather abundant, but it is much less bold than the common Monkeys, keeping to the virgin forest, and avoiding villages. This species is allied to the little long-armed Apes, but is considerably larger, and differs from them by having the two first fingers of the feet united together, nearly to the end; whence its name. It moves much more slowly, keeping lower down in the trees, and not indulging in such tremendous leaps; but still it is very active, and by means of its immense long arms—five feet six inches across in an adult about three feet high—can swing itself along among the trees at a great rate. I purchased a small one, which had been caught by the natives, and tied up so tightly as to hurt it. It was rather savage at first and tried to bite, but when we had released it, and given it two poles under the verandah to hang upon, securing it by a short cord, running along the pole with a ring, so that it could move easily, it became more contented, and would swing itself about with greater rapidity. It ate almost any kind of fruit and rice, and I was in hopes to have brought it to England, but it died just before I started. It took a dislike to me at first, which I tried to get over by feeding it constantly myself. One day, however, it bit me so sharply while giving it food that I lost patience, and gave it rather a severe beating, which I regretted afterwards, as from that time it disliked me more than ever. It would allow my Malay boys to play with it, and for hours together would swing by its arms from pole to pole, and on to the rafters of the verandah, with so much ease and rapidity that it was a constant source of amusement to us. When I returned to Singapore it attracted great attention, as no one had seen a Siamang before, although it is not uncommon in some parts of the Malay peninsula."

This monkey is celebrated for the pains it takes to wash the faces of its young, a duty which it conscientiously performs in spite of the struggles and screams of its aggrieved offspring.

The Siamang can walk fairly in the erect posture by balancing with the arms, or by placing them over the head, and it has a great power of grasp with its tothumb. The ability to walk head was proved when a tame Siamang used to walk along a cabin table at sea, without disturbing the crockery; and curiously enough this was better done than were some of the ordinary movements of the hand, for drinking out of the palm was a most ineffectual and clumsy effort. The bones of the foot resemble those of man more than do those of the Apes already noticed; but the first and second fingers are united by a fold of skin. They are quiet, inoffensive animals, full of affection for man, and having good memories. Their tem-



GROUP OF SIAMANGS AND GIBBONS.

per is short enough sometimes, especially if there is any disappointment, but they have none of the mischievous tricks or malice of the monkeys. Liking milk occasionally, they still mainly feed on fruit and leaves, and hence the nature of their teeth, the size of their jaws, and the capacity of their brain case may be fairly anticipated.

THE WHITE-HANDED GIBBON is found in great abundance in all the forests skirting the hills, which run from north to south in the country of Tenasserim, southwest of Burmah, and are met with in parties of from eight to twenty in number, composed of individuals of all ages. It is rare to see a solitary one; occasionally, however, an old male will stray apart from the flock, and perch on the summit of some vast tree, whence his howls are heard for miles around. The forests which these animals inhabit resound with their cries from sunrise to about nine in the morning. After nine or ten o'clock they begin to think of eating, and are soon engaged in feeding on fruit, young leaves, buds, shoots and insects, for which they occasionally come to the ground. When approached, if alone, they will sit so close, doubled up in a thick tuft of foliage, or behind the fork of a tree, and so screened as to be safe from the shot of the sportsman. With a companion this manœuvre is of course useless. But even when the creature is forced from its hiding-place it is not easily shot, for it swings from branch to branch with its long arms, shaking the boughs all round, and flinging itself from prodigious heights into the dense under-scrub, and is quickly concealed from view. This long-armed Ape does not walk readily on its hind-legs, and has to stop frequently and prop or urge itself on, having the knuckles on the ground. In sitting it often rests on its elbows, and it likes to lie on its back. They make great use of their hind limbs, and of the hand-foot especially, for they will cling on and swing with their fore-hands, and steal and carry anything which pleases them with their hind ones. In captivity it is generally a gentle, peaceable animal, very timid; but when captured after its young days have passed, it becomes very wild. The adults soon die, and even the young seldom reach maturity when deprived of liberty. They are born generally in the early part of the cold weather, a single one at a time, two being as rare as human twins. The young one clings safely to the mother for about seven months, although she swings and climbs to perfection, and then it shifts for itself. They may be made cross, like most creatures, by being teased, and anger is then shown by a steady look, with the mouth held open, and the lips occasionally drawn back to show the eye teeth, with which they bite severely. But usually it attacks with its long hands, which are at such times held dangling and shaken in a ridiculous manner, like a person who has suddenly burnt his fingers. It drinks in a curious and difficult manner, by scooping the water in its long narrow hand, and thus conveying a very little drop at a time to its mouth.

Usually the young are feeble, dull and querulous in captivity, and sit huddled up together on the ground, seldom or never climbing trees. On the smooth sur-

face of a matted floor they will run along on their feet and slide on their hands at the same time. By being fed solely on plantains, or on milk and rice, they are apt to lose all their fur, presenting in their nude state a most ridiculous appearance. Few recover; but a change of diet, and especially by allowing them to help themselves to insects, enables some to come round, and to resume their natural covering. For the most part they are devoid of those pranks and tricks which are exhibited by the smaller monkeys. The length of a full-grown male was two feet six inches; the fore limb measured two feet one inch, and the hind limb one foot



THE HOOLOOK.

seven and a half inches. The Lar or White-handed Gibbon has a black skin and hair, and there is a white band round the entire face, across the forehead.

THE HOOLOOK. Naturalists have ransacked nearly every part of the globe for interesting animals, and have procured them from very out-of-the-way places. One of these localities was particularly difficult to get at years ago, for it is in the hills, far away to the northeast of Calcutta, on the other side of the great river Brahmapootra, in Assam. Amongst the Garrow and Cossiah hills, where

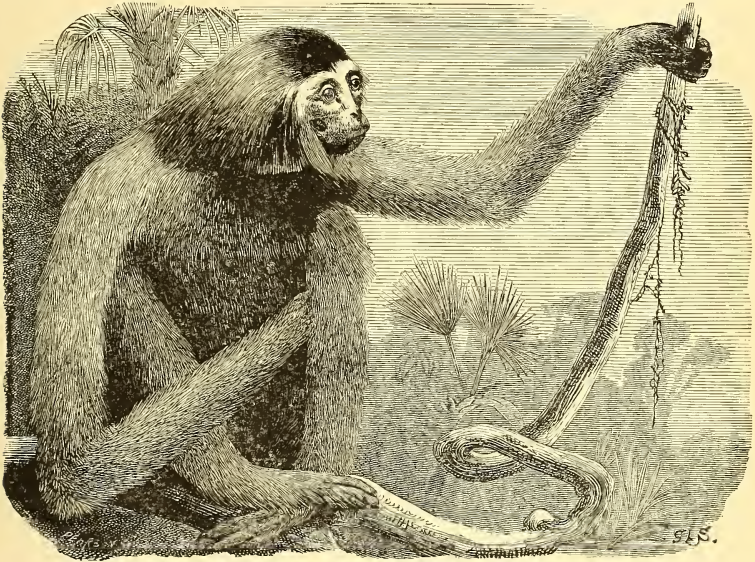
there are wild gorges, and uplands crowded with vast forests, overlooking the wide plains of the river valley, there were many wonderfully active Gibbons. About two feet in length, they were capable of swinging with unerring certainty from branch to branch, many feet apart; and even the females performed these constant and natural movements while their young were hanging to them. They were black in color, with white eyebrows, or, rather, a white band across the forehead. When caught, they soon became tamed, especially when young, and were docile and affectionate. One which was kept by Dr. Burrough was two feet six inches in length, yet the fore limb was only six inches shorter than this, the length of the hand itself being six inches.

So great was the disproportion of the legs and arms, that the first were, including the feet, only nineteen inches long, and the fingers touched the ground readily when he was standing erect. This Hoolook was of a deep black color, and he had the usual simple band of white across the forehead, and black hands and feet. He was caught in the usual haunt of this species, and being well treated, he was easily tamed. He liked the fruit of the peepul-tree better than anything, and bananas; but he took to rice and milk, and enjoyed snapping up a sweet or two, and especially delighted in spiders. Meat he cared little about, and pork and beef he detested, but he liked fish occasionally. After about a month's captivity he took a great fancy to his master, and would come to his call, and sit up to breakfast. He liked to help himself to chicken and egg, and at first was very bad in his manners, dipping his fingers into the coffee and milk, and then sucking them. Afterwards he was taught to hold a cup and to drink from it.

He would walk erect slowly, first on one foot and then on the other, and would put his long arms over his head to balance his body, as it swayed first on one side and then on the other as his pace increased; then he began to run, and at last, grasping a bough, would swing himself forwards first with one hand and then with the other, getting over twenty to thirty paces with the greatest ease and regularity. He was timid, very reluctant to oppose those who teased him, and usually retreated at once. His master used to brush his skin for him when he was out of sorts, and the sensation seems to have been most pleasurable, and he evidently enjoyed the gentle friction very much. Falling ill, he had a dose of calomel and a warm bath, the latter remedy being much more to his taste than the other.

THE WOoyEN APE. A number of apes were found in company on a small island near Camboja, and at first sight they appeared to be of different kinds, although they all had the long arms and the general appearance of the "Long-armed Apes." But a careful examination proved that they belonged to one particular species, the individuals of which differ greatly in their color during different parts of their lives. The young were uniformly dirty white in color, and had on black spots on their chests or heads. The females were white, with the fur of the back brownish white, slightly waved, and there was a large black spot on the

crown and one on the chest. On the other hand the male was black, and the back of the head, body, and legs grayish. The hands were white. The variation in color at different ages and in different sexes in one kind should teach us that something more than mere outside distinctions are requisite for deciding the value of what are called species. The dark cap-like mass of hair on the head gives the name to this Ape. Evidently the animal is a puzzle and a source of the marvelous to the Chinese, for one of their gazetteers gives a mixture of correct information



THE WOOVEN APE.

regarding its natural history, and of what has been drawn from a very vigorous imagination.

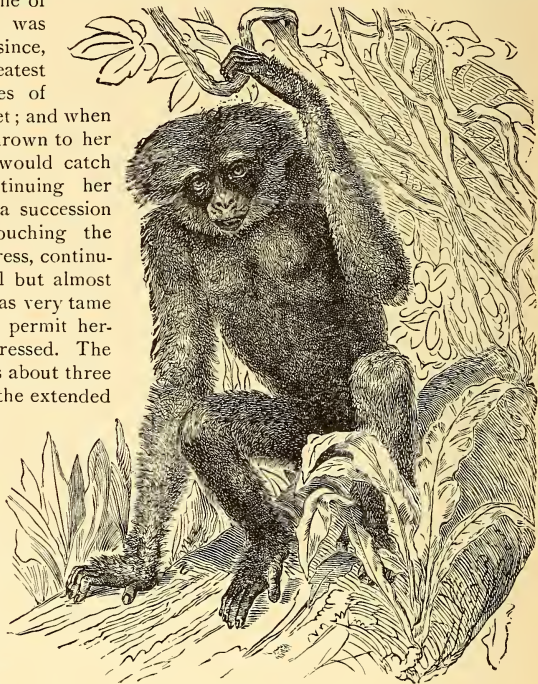
It is described in the following manner, as coming from the district of Hainan; "Yuen—male black, female white, like a Macaque, but larger, with the two fore-arms exceedingly long. Climbs to tree-tops, and runs among them backwards and forwards with great agility. If it falls to the ground it remains their like a log! Its delight is in scaling trees, as it cannot walk on the ground. Those desiring to rear it in confinement should keep it amongst trees, for the exhalations of the earth

affect it with diarrhoea, causing death; a sure remedy for this, however, may be found in a draught made of the syrup of the fried foo-tse."

THE ACILE GIBBON is a native of Sumatra. It derives its name of Agile from the wonderful activity it displays in launching itself through the air from branch to branch. One of these creatures who was exhibited some time since, sprang with the greatest ease through distances of twelve and eighteen feet; and when apples or nuts were thrown to her while in the air, she would catch them without discontinuing her course. She kept up a succession of springs, hardly touching the branches in her progress, continually uttering a musical but almost deafening cry. She was very tame and gentle, and would permit herself to be touched or caressed. The height of the Gibbon is about three feet, and the reach of the extended arms about six feet. The young Gibbon is usually of a paler color than its parent.

In concluding this part of the subject, which relates especially to the man-shaped Apes, some very obvious reflections occur. There is something very interesting as well as instructive and suggestive in the

study of the proportions of the limbs to each other and to the body in the larger Apes, of which the Gorilla is the highest in the scale, and in man. The fingers in man hang down to below the middle of the thigh; in the Gorilla they attain the knee; in the Chimpanzee they reach below the knee; in the Orang they touch the ankle; in the Siamang they reach the sole; and in some Gibbons the whole



THE ACILE GIBBON.

palm may be applied to the ground without the trunk being bent forward beyond its natural position on the legs. It is also found that in man the arm-bone exceeds in length each of the bones of the forearm in a marked manner, and in the Gorilla and Chimpanzee it does so but slightly; the bones are equal in the Orangs, and very unequal in the Gibbons, those of the forearm being the longest. When the length of the arms down to the wrist is compared with that of the body, omitting the legs, there is not much difference between man and the Gorilla, but it increases in the Chimpanzee, Orang and in the Siamang. The lower limbs are short in the Gorilla, and this is characteristic—they offer but a poor support to the huge body—and the resemblance to the symmetrical proportion of the legs to the body in man is scanty indeed. This disproportion is greater in the Chimpanzee and Orangs, in which the lower limbs are pigmies.

CHAPTER V.

THE DOG-SHAPED MONKEYS.

The Apes which have formed the subject of the previous chapter, and which, from their greater or less resemblance to man, have been called the *Anthropomorpha*, have long arms, short legs and no tails. The great length of the fore limb distinguishes them not only from man, but also from all the other *Quadrumana*, and so does the relative shortness of the hind limbs. The length of limb is thus sufficient to afford data for classifying the *Quadrumana* of the Old World in two great groups, of which the *Anthropomorpha* form the first, and the rest of the Monkeys the second. In these the fore limb is invariably the *shortest*, and the hind one the *longest*; so that there is exactly the reverse condition of that observed in the great Apes. With regard to the tail question, it may be stated that, whilst many species have very long tails, others have them of moderate length, and few have none.

The Monkeys of this second group, or the *Cynomorpha*, all of which live in the Old World, have a thin division between the nostrils, whose openings look downwards, or downwards and outwards. They are *Catarrhine Quadrumana*, and many have cheek-pouches, but not all, whilst all have the peculiar pads, more or less brightly colored, which are placed where the animal sits, or on the swelling of the haunch-bone.

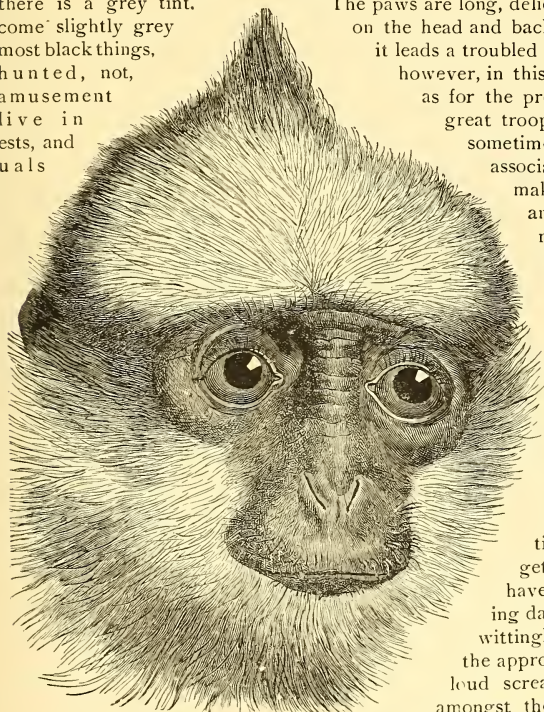
THE BLACK-CRESTED MONKEY, or as it is sometimes called, *the Simpai*, was noticed and described by Sir Stamford Raffles as a native of Sumatra, where it is frequently seen in the neighborhood of Bencoolen. It has a long and slender body, very long hind legs, and the tail end is higher than the shoulders in walking. The forelegs are short, and the tail is very long, and exceeds thirty inches in length, and the head is small and wonderfully straight in the forehead and face.

The colors of this *Simpai* are very different to those of the great Apes already mentioned. Here variety of color replaces the sameness of the tints of the large *Anthropomorpha*. First, there is a long crest of black hair on the top of the head, which passes slightly round the face close. On the cheeks there is a tuft of fawn-colored hairs, which graduate into white. The forehead is of a light fawn-color and the face is naked, slightly wrinkled, and of a blue tint. The under parts of the

body are very white, and on the back and neck the color is bright yellow and red. The palms and soles are black, the thumbs are small, and the callosities are large.

THE NEGRO MONKEY. This is, as the name implies, a black Monkey. It is intensely black, except underneath and at the root of the tail, where there is a grey tint.

It is slightly grey most black things, hunted, not, amusement live in ests, and uals



FACE OF THE BLACK-CRESTED-MONKEY.

The paws are long, delicate and silky, and become on the head and back with old age. Like

it leads a troubled life, being chased and however, in this instance so much for

as for the pretty black fur. They great troops in the Javanese sometimes fifty or more individual associate together. They

make rude nests on trees, and are extremely timid,

making off with great haste if they are disturbed. A long series

of generations have been chased and killed by the natives

of Java, and therefore the present Negro Monkeys are

exceedingly shy, and bolt from the face of

man at once. And yet, although thus

timid and anxious to get out of the way, they

have the reputation of being dangerous, and really un-

wittingly they may be so. On the approach of men they utter

loud screams and scamper off amongst the trees, helter-skelter.

Now in doing this they break dead branches off, and sometimes a large

fruit or nut comes tumbling down some score or two of feet. These are supposed

to be thrown by the Monkeys, but such is not the case. Having this bad character, the "negroes" are cudged with sticks, and killed in numbers very cruelly. Their

pretty fur is much prized, and the chiefs of the country arrange the hunting

parties, treating the Monkeys really as beasts of the field. The skins are prepared by a simple process which the natives have learned from Europeans; and they conduct it with great skill. It affords a fur of a jet-black color, covered with long silky hairs, which is used by the natives and Europeans there in ornamenting riding saddlery and in military decorations.

When young, they are of a brown or reddish tint, and thin grey tints appear preceding the intense black; they then eat buds and shoots and tender leaves, but in adult age they are fruit consumers. When in captivity they are sullen and morose, and they will remain sulky for many months. This the natives know, and therefore they never try to tame them, or to have them in their houses. In their shape they resemble the last Monkey described, and their hind limbs are very long, their haunches being high.

They are rather more than two feet long in the body, and the neck appears short; both shoulders and chest are short and largely made. The tail is as long as the body and head, and is often slightly tufted at the end. A mop of hair surrounds the face, the hairs are long and closely pressed, and quite conceal the forehead. The nose is peculiar, for the bones of it are ridged, as it were, and the skin is drawn tight over the open nostril (nares), so that there is no soft nose. A very considerable space exists between the nostrils and the mouth, and the lips are small and thin.

THE LONG-NOSED MONKEY.

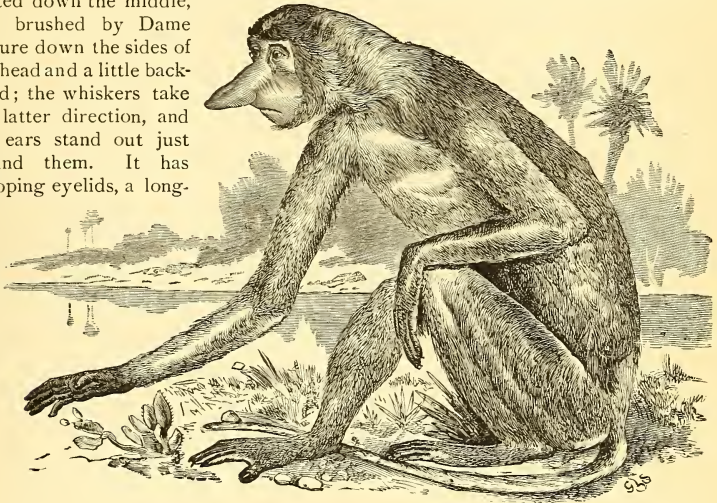
Of all the remarkable oddities of Nature amongst the many shaped Monkeys, the Long-nosed

or Proboscis-carrier stands pre-eminent. In fact, there is nothing in human or ape nature like the face of one particular Long-tailed Monkey from Borneo. Monkeys have flat noses as a rule, some have a ridge and a little fleshy mass in which the nostrils end; others, like the Baboon, have dog-like noses, and the Americans have



THE NEGRO MONKEY.

wide noses, the nostrils opening well at the sides. In man there is the Roman nose, the pug, the straight, the flat, the broken, the long with a large end, and the short with a turn up, but the *Nasalis* Monkey stands alone amongst the Primates with a nose of vast proportions, which projects far in advance of the mouth, and whose nostrils open underneath. It grows with age, and commences as a small "turn up," which is still more fleshy and longer than the nose of any Monkey. The newly-born Nose Monkey is a most extraordinary object, reminding the critical eye of many youths of weak constitution and defective brains. Its hair is wonderfully parted down the middle, and brushed by Dame Nature down the sides of the head and a little backward; the whiskers take the latter direction, and the ears stand out just behind them. It has drooping eyelids, a long-



THE LONG-NOSED MONKEY.

ish upper lip, with just a little sign of coming hair, and then there is the funny nose, the upper part like a boy's, but the end seems to have been pulled out and turned up, so that the nostrils are quite at the tip. The face has a tinge of blue about it, and the animal even when old enough to be sitting on a tree, looks sad and melancholy.

They grow to the size of a large pointer dog, and are powerful animals, assembling in troops, and playing and associating probably with the Orangs. Stuffed specimens of the Proboscis Monkey are usually simply caricatures, and by no means good ones, for they do not give one-half of the curious appearance of the face. In nature, and in drawings taken shortly after death, the first thing that

strikes one is the flat top to the head, and the red hair there, starting from the top of the crown and radiating in all directions, and coming as a very sharp line straight over the eyebrows, and cutting the forehead very short. Then the prodigious nose, stuck out some inches in front of the mouth, is, with the rest of the face, naked, and of a reddish-brown flesh-color. The eyes are wide apart and open, and are of a hazel color. The whiskers clasp the face, as it were, and are brushed back, and join the hair of the neck, whilst the little beard sticks out like a goat's. The mouth is wide and the chin recedes. It is a long-bodied creature, and there is a great bend outward in the back when it squats on its haunches. There is a good-sized chest, there are long arms, still longer legs, and a great tail. The prevailing color of the back and shoulders is the red or dark-red brown of the head hair, whilst the rest of the body is of a lighter tint, the tail and limbs especially. The thumb of the hand is small, and barely reaches as far as the first finger-joint, but the toe-thumb is large, widely set from the foot, and the skin-fold comes far down it, as also does a web between the toes, the third of which is the longest.

The Dyaks call this monkey the Kaha, for this is the sound which they make when in companies in the woods by the sides of the swamps and jungles. There they live a restless life at sunrise and sunset, being quieter in the heat of the day, and crying out at each other. They have fine voices, thanks to their strength, and perhaps to the air sac in their neck, which may render oral sounds more resonant. They are active creatures, and bound from tree to tree, clearing from fifteen to twenty feet with ease.

THE SACRED MONKEYS are marked by cheek-pouches and callosities on their haunches. The form of their body is slender and elongated; the extremities are also of great length, as in the Gibbon, the hind ones, however, being the longest. The tails are much longer in the semnopithecus than in any of the ordinary monkeys. Though slender, these possess a very considerable degree of muscular power, and enter as an important constituent into the motions and progression of the animals. When they are at rest, the tails are allowed to hang down perpendicularly, and, from their great length, which considerably exceeds that of the animal's body, have a very droll effect, which is heightened by the air of imperturbable gravity belonging to the creatures themselves. When they are unemployed this is their general aspect: they exhibit the very picture of sadness and melancholy, and appear as if perfectly regardless of everything that passes around them; but when roused or excited, they are capable of the most surprising exertions, and astonish the spectator by a rapidity, variety, and precision of movements, which could scarcely be anticipated from creatures apparently so apathetic in mind and delicate in body. They are in reality far from meriting the name of *Slow Monkeys*, which some zoologists have given them. Their slowness is exhibited in disposition more than in action, and is an attribute of character rather than of structure. When young they are readily domesticated; but being less petulant, curious, and

restless than the Baboons and some others, they are supposed to exhibit less intelligence; though their mental qualities, as well as their physical structure, closely assimilate them to the real apes.



THE HOONUMAN MONKEY.

THE HOONUMAN MONKEY. This is the most sacred of the sacred Monkeys of the Hindoos, and when full-grown measures four feet and a half in length, and the tail is considerably longer than the body. An ashy-grey tint distinguishes the upper part of the body, and it is darkest on the tail, which is of equal thickness throughout. The rest of the body is of a dingy yellow color, or rusty brown, and

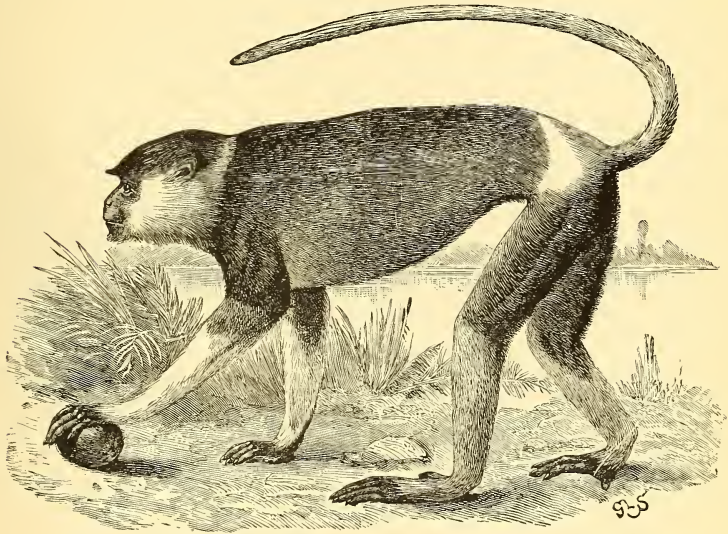
the arms, hands, and feet are dusky black. The long face is blackish; and above the eyebrows is a line of long, stiff, projecting black hairs. A greyish-white beard passes round the face and extends upward, and is thicker in front of the ears, which are long, prominent and black. Finally, this face has a few hairs by way of a beard beneath the chin, which projects.

A long-legged, active creature is the Entellus. It associates in great troops, and they keep up a constant noise and quarrel. Those that abound—thanks to the belief in their semi-divinity by the Hindoos—near towns and plantations are certainly more sharp, clever and impudent than their less fortunate fellows. They watch and steal with impunity and ability, and are amusing when young, but savage and disagreeable when old. The young differ much in shape from the old adults, and their limbs seem very disproportionate at first. They have a staid look about them, and a tranquil eye, and the forehead is broad and high, the muzzle only slightly prominent, and the brain case large. But with age this alters; the tints of the body get darker, the body larger, the muzzle elongates, and the forehead appears to contract, and to be no longer an object of human resemblance. The disposition changes also, for the tame and amusing young learn a number of tricks and are full of fun; but this is succeeded by a look and behavior of distrust and fierceness. It is a native of Bengal, the Himalayan Mountains, Nepal, and Bootan, and is remarkably interwoven with the religion of the countries where it is found, especially among the Hindoos. These people believe that this monkey is a metamorphosed prince, and to kill one is a deadly sin. As might be expected, this treatment has been favorable to the increase of these creatures, and hence they absolutely swarm in many places, and especially in the vicinity of the temples. In some parts they are a complete pest, as they destroy vast quantities of fruit in the gardens and plantations. M. Duvaucel has given an interesting account of the careful watch which the Bengalese kept over him to prevent his killing this sacred animal, holding a high place among the thirty million of Indian gods, and to save himself from dying within the year, which, according to popular belief, is sure to be the fate of one who puts an entellus monkey to death. He was harangued by the Hindoos upon the danger of injuring animals which were no other than princes and heroes under the operation of the metempsychosis. Unmoved by their eloquence, and eager to possess a specimen, he leveled and brought down a "princess!" But the acquisition was dearly bought. The ill-fated creature had a young one on her back, and, though shot through the heart, the mother exhausted her remains of life in throwing it into the branches of a neighboring tree, then fell and expired at the feet of her destroyer. It is but just to add, that he mourned over the deed he had done.

THE DOUC, or *Variiegated Monkey*, is perhaps the most gaily clad of all this group, and in this departs in a most marked manner from the dull sameness of the fur of the Apes already described in the former chapters. Not only is the long

hair very different in color in several parts of the body, but the hairs themselves are variegated, having bands of various tints upon them, differing thus from the whole-colored hairs of the great Apes.

The animal has the usual shape of the Semnopithecus; but the whiskers brushed back, as they appear to be, make the naked and orange-colored face look broad. These whiskers are long, and are of a glossy whiteness, and above they join the hair of the forehead, which is black in front, gradually becoming grizzled grey. This is the tint of the head and of the back of the neck and back. The thighs,



THE DOUC.

fingers and toes are black, the legs and ankles are bright red, forearms, throat, and underneath the legs, the buttocks, and the tail are pure white, and the white throat is surrounded by a more or less complete circle of bright red. They live in the woods of Cochin China, and have been met with not far from the coast. They assemble in troops, but appear to be good tempered and easily frightened, and this appears to be all that is known of their nature.

THE CEYLON WANDEROO. "When observed in their native wilds," writes Sir James Emerson Tennant, "a party of twenty or thirty of these crea-

tures are generally busily engaged in the search for berries and buds. They are seldom to be seen on the ground, and then only when they have descended to recover seeds or fruit that have fallen at the foot of their favorite trees. In their alarm, when disturbed, their leaps are prodigious, but generally speaking their pro-

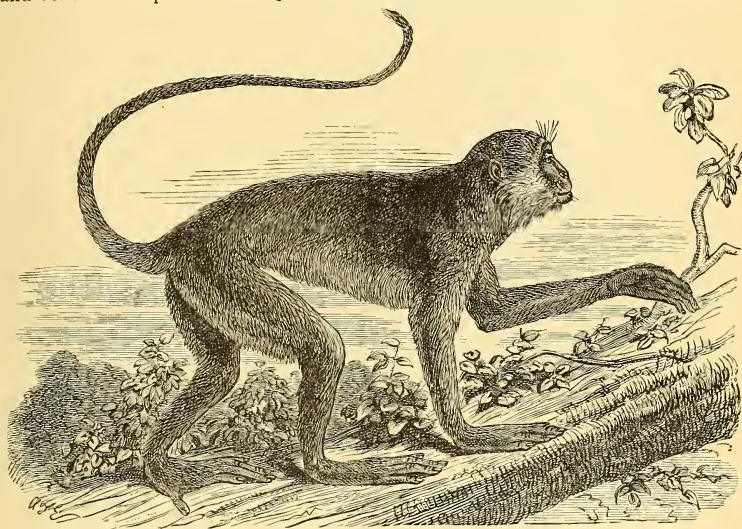


THE WANDEROO.

gress is made not so much by leaping as by swinging from branch to branch, using their powerful arms alternately, and when baffled by distance, flinging themselves obliquely so as to catch the lower boughs of an opposite tree, the momentum acquired by their descent being sufficient to cause a rebound, that sends them again

upward, till they can grasp a higher branch, and thus continue their headlong flight."

This Monkey is very active and intelligent, is not very mischievous, and, indeed, is much less so than the other Monkeys of Ceylon. In captivity it is remarkable for the gravity of its behaviour, and for an air of melancholy in its expression and movements, which is completely in character with its snowy beard and venerable aspect. Its disposition is gentle and confiding; it is in the highest



THE COLOBOS.

degree sensible of kindness, and eager for endearing attentions, uttering a low, plaintive cry when its sympathies are excited. It is particularly cleanly in its habits when domesticated, and spends much of its time in cleaning its fur, and carefully divesting it of the least particle of dust.

The Nestor is about sixteen inches in length (the body and head), and the tail measures twenty inches. The prevailing color is a deep grey, with a slight tinge of brown, becoming paler on the back of the neck and on the tail, where the previous tinge is more marked. The hands and lower part of the limbs are nearly black. Its lips, chin and whiskers are nearly pure white, the tips of the latter, which are brushed backward, being grey. There is a stiff ridge of black hairs

over the eyebrows, and they are about an inch and a half in length. The moderate length of the hairs, the light color and the white of the lower sides of the face, are distinctive.

THE COLOBOS. The kind of Monkeys included in the genus *Colobos* are not very numerous, and they are interesting more on account of their beautiful skins, which form ornaments and articles of commerce in Africa, and for those suggestions which must occur to the mind of every one who thinks a little about natural history, regarding the cause of the absence of such an important structure as the thumb in a group of animals, whose other characters are similar to those of a genus possessing it. Very little is known about their habits in a state of nature.

The thumb is not seen in the least in one kind of *Colobos*, the true *Colobos*; in others it is like a little knob, but in none is it of any use.

The thumb is therefore "rudimentary" in the genus *Colobos*, and why? The animals are tree-climbers and active jumpers; and can run very well on all-fours; in fact, their methods of life and of motion is that of the Monkeys which have well-formed thumbs. The notion of a useless organ is at first repulsive to our ideas of the benevolent scheme of Nature. Mr. Darwin writes: "In reflecting on them every one must be struck with astonishment; for the same reasoning power which tells us plainly that most parts and organs are exquisitely adapted for certain purposes tells us with equal plainness that these rudimentary or atrophied organs are imperfect or useless." Let us take a well-known instance of such a structure: The Calf when born has cutting teeth in its upper jaw hidden in the gum; they are not in sockets, and even if they were, they would be of no use in biting. The Ox has no cutting or incisor teeth in its upper jaw, as every one knows, and the tongue touches a hard and moist gum there. The incisor teeth of the Calf are never cut, but they are gradually absorbed in the gum with age. Now what is their meaning? They are of no use in sucking, or in anything which occurs in the early life of the animal: they are clearly useless and rudimentary or atrophied structures. Take another example: The little Kiwi bird of New Zealand has no wings with which to fly, yet the bones are there in a dwarfed and rudimentary condition; many insects have no wings, or have them so reduced in size that they are of no use in flight, and sometimes the males have them in perfection, and the females have none. In explaining this subject two courses are open, first to beg the question, and to say that the design of the Creator was thus; or to account for it on the principle that the Creator acts by law, and that creatures become modified and altered by inherent power, and by having to obey the force of surrounding circumstances generation after generation.

In the instance of the male and female insect just noticed, the male is active, and has to search for his partner, and the female is a stay-at-home and expects to be courted, and when mated to do nothing more than lay eggs. Her wings would be of doubtful value. We may believe, then that *disuse*, generation after genera-

tion, gradually weakened the wing, and Nature, ever economical in not used organs, did not perpetuate it. Disuse may be therefore considered as the principal cause of the atrophy, rudimentary condition, and of the final deficiency of structures.

THE GUEREZA. There is something very un-monkey-like in the shape of this Abyssinian animal, for it has long white hair, resembling the edge of a cloak, along its sides, and a long tail with a tuft to it. The natives chase it, and are fond of having some of their long hairy skins to cover their shields with. Assembling in little troops the Guereza keeps well up in the tallest trees, in the neighborhood of running water.

They feed on fruit, grain and insects, and are inoffensive and wild. The fur is certainly very prettily arranged, and the black and white truly oppose each other well. The color of the fur of the head and of the greater part of the body is black, but the forehead is white; so are the sides of the face, the throat, and the sides of the neck. There is a mantle-like mop of long hairs starting from the region near the ribs, and



THE GUEREZA.

the lower part of the back, and covering the flanks in a train behind. It is of a white color, and exists in both sexes; nevertheless, it is longest in the females and adults. The tail is white, hairy, and tufted.

THE CUENONS. There are vast numbers of monkeys living in the African forests which resemble, to a certain extent, those described in the last chapter, but which have such important differences in their construction that they are separated from them, and collected in another genus. Being very numerous, extremely impudent, as a rule, and full of grimace and mischief, they soon attracted the attention of the ancients, and the beauty of the fur of some made them all the more prized.

At first sight they resemble the Colobi, inasmuch as they have long bodies, long hind legs, and long tails, but the fore limbs are short in the Guenons, and the tail, which is long or longer than the body, is stout and not slender. Moreover, they have well-made and exceedingly useful cheek-pouches, besides the callosities behind. The face of the Guenons is long, and rounded, and the eyes are somewhat prominent. The hands and feet are well-grown, and the thumbs are long and useful.

Many of the Guenons are often seen in menageries and zoological gardens, or as the more or less unwilling companions of organ grinders; and their trick of crowding everything into their mouth, and allowing it to distend the cheeks, is sure to be noticed. The quantity of nuts which can be stored away is enough for a good meal; and hence these Monkeys are not only good purveyors for themselves, but great robbers of the riches of cultivators. In the wild state they assemble in troops in the forest, for they are essentially tree-dwellers, and make raids on all sides of their favorite home, moving with such rapidity under the shadow of leaves and boughs that they are rarely seen by men. In their own little tract of forest they are very noisy and restless; they chase away in a body all intruding monkeys, and whilst the more aged spend their time in more or less restless movement, in occasional family jars, and in picking the insects from their young and from each other, the juvenile part of the troop are full of play, mischief, and wanton aggression upon the quietude of their elders. A snake may appear, and there is a terrible noise made, and a general rush off out of danger, the little ones clinging to the fur of the mother, and being carried off safely in spite of her bounds and jumps from tree to tree. Or a leopard may make a spring, and not always fruitlessly, and loud is the surrounding howling and grimacing at it. The hatred of snakes is carried into their captivity; and Mr. Darwin having read Brehm's account of the instinctive fear which his monkeys had of serpents, and also of their great curiosity regarding snake-like things and their doings, took a stuffed snake to the monkey-house of the Zoological Gardens. The excitement which was produced, he writes, was one of the most curious spectacles ever beheld. Three species of the *Cercopithecus* were the most alarmed. They darted about their cages, and uttered sharp cries of danger, which were understood by the other monkeys. A few young monkeys and an old Anubis Baboon alone took no notice of the snake. He then placed the stuffed specimen on the ground in one of the larger compartments. After a time all the monkeys collected around it in a large circle, and, staring intently, presented a most ludicrous appearance. They became extremely nervous, so that when a wooden ball with which they were familiar as a plaything was accidentally moved in the straw under which it was partly hidden, they all instantly started away. These monkeys behaved very differently when a fish, a mouse, and some other new objects were placed in the cage; for though at first frightened they soon approached, handled and examined them. He then placed a living snake in a paper bag, with the mouth closed loosely, in one of the

larger compartments. One of the monkeys immediately approached, cautiously opened the bag a little, peeped in, and instantly dashed away. Then he witnessed what Brehm has described, for monkey after monkey, with head raised high, and turned on one side, could not resist taking momentary peeps into the upright bag at the dreadful creature lying at the bottom.

It would appear as if monkeys had some notion of zoological affinities, for those kept by Brehm exhibited a strange though mistaken instinctive dread of innocent lizards and frogs.

Birds of prey attack them, and not always with a successful result; and there is a story of a little Guenon being darted at by an eagle, who swooped down and struck it, but it did not get off, for a rush was made against the bird by several of the active elders, and they not only held it, but nearly plucked off all its feathers, so that when it got away it remembered for ever after the treatment it received. The Guenons are very choleric, and the expression of the face and of the mouth, and the shrill sounds which are emitted when they are angered, would probably be accompanied by extremely bad language were they men; but their rage is soon over, and some mutual tail-pulling and biting are the worst part of it. There is a curious defiant look about the eyes of some, with or without extreme restlessness of them; they seem to be the very embodiment of cunning and sharpness, and this look is really very peculiar to the group. By way of additional force of expression, those which are very fond of fighting with their teeth have the power of drawing back their ears like angry dogs; and this is done by the action of a muscle which springs from the ear-bone behind the ear, and is attached to it behind. There is just a rudiment of this muscle in man. Usually very good tempered when young, like all the *Quadrumana*, they grow cross, savage and uncertain in temper when old; there are some exceptions to this, but, on the other hand, so savage do some of them become, that breaking or removing their great upper canine teeth seems to be the only way of making them behave at all properly. The loss of these fine weapons of offense has a most humiliating effect on the most insolent and petulant of them. Many are very pretty, and are as elaborately colored as the *Douc*, that prince of beautiful *Semnopithec*i; and this leads to their destruction, for every now and then, beside the native desire to have some fine monkey skins, European ladies desire monkey muffs, and many an irascible chatterer out of the woods of Western Africa has its skin paraded by the fashion. Bright red, green, fawn, yellow, and white colors are constantly mixed up with black shades, and every tint of grey is dotted here and there. The hair is longer in some parts than in others, especially about the cheeks and chin; one has a white spot on its nose, another has white moustaches, and a third a white band across the forehead. And these tints, and the disproportion of the long hairs, have served to identify the different kinds.

The Guenons occasionally breed in menageries, and thus opportunities have been afforded of watching their treatment of, and method of educating, their

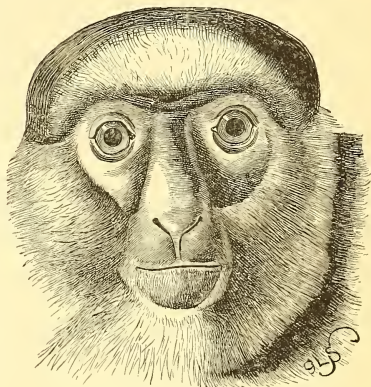
little ones. One in Paris had three baby monkeys, one after the other, and succeeded in rearing one, the others dying. She constantly carried it, holding it close to her, so that its little mouth was always close to the breast; but after awhile, as it became stronger, it clung on by itself, holding on fast with its hands to the mother's fur, and helped itself whenever it thought fit. Then the mother appeared to pay no especial attention to the little one, and jumped and rushed about as if it had not the little burden. The father was anything but paternal, and boldly neglected the education of his child; in fact, he was quite indifferent to the mother as well, and even behaved brutally by seeking to quarrel with her. Once or twice he maltreated her, and pinched the baby, so he was locked up by himself.

This careless treatment doubtless accounts for the rapid independence of the young of the Guenons, who soon retaliate on their fathers and mothers for all the enjoyments they did not have at their hands, by endless teasings and scoldings. But all monkeys are not thus unpaternal and unnatural, and the Baboon is singularly affectionate. At the time that the Grivet—the above mentioned Guenon—was seen in one cage outraging all good feeling, two Chacma Baboons were in another, and the difference in their behaviour was most edifying. In the one cage sat the solitary mother and her offspring, the father having been removed for his bad temper and brutal conduct; and in the other were several male Baboons surrounding two Baboon mothers and their two little ones, caressing the mothers with the most pronounced evidences of tenderness of feeling, taking them in their arms and pressing them to their hearts, and embracing them in a manner quite human. They squabbled about who was to have the pleasure of carrying the Baboon babies, and after having passed them from one to the other, returned each one to its own mother.

THE DIANA MONKEY. The goddess Diana has been honored by being associated with this monkey on account of a crescent-shaped white band of long hair stretching across the forehead (she being goddess of the crescent-shaped moon). It is about eighteen inches long when full grown, and the tail is longer than the body, and the fur is very pretty. The crescent of white hairs has dark edges, and the top of the head is broad and dull grey, spotted with green; the ears are dark and the face also; and the beard and whiskers are white, and the first of these projects like a goat's. The broad and upper chest is white, and this color is continued under the arms, which at their termination are black-grey. The middle of the back is a dark red-brown, and the belly is white with orange tints, and these colors are continued down the inside of the thighs. Very little is known about them in their wild state, and in captivity they show very adverse dispositions; sometimes they are gay and full of fun, and others morose and snappish. We once saw one of them in its cage in the Zoological Gardens pull its mate, a small Sykes' Monkey, from the top to the bottom by a well-directed pull of the tail, and the proceeding reminded one of a very energetic mistress, whose servants

were inattentive, tugging at a bell-rope. The puller was chattering and grimacing at his visitors all the time that the pulled was hanging on to everything that came in its way during its forced descent; and when it came to the bottom it scrambled about and rushed up to its little house again as if it were a frequent and unwilling exercise. The Diana also stole its companion's food, such as a piece of apple, by putting her arms around its neck, and squeezing the morsel against its nose, so that it was obliged to drop it.

Mrs. Bowditch, in describing her voyage home from Western Africa, gives an interesting account of a Diana monkey which was on board. "We made acquaintance," she says, "very suddenly, and, to me, very disagreeably, for I had not till then conquered the foolish aversion with which these animals always inspired me. It was a dead calm, the wheel was lashed, and all, save myself, below—nothing round us but sea and sky, and I had sheltered myself with a book in a corner protected from the equatorial sun. Suddently, and without noise, something leaped upon my shoulders, and the tail which encircled my throat convinced me that Mr. Jack was my assailant. My first impulse was to beat him off, in which case I should probably have received some injury; but fortunately, I sat perfectly still and twisting himself round he brought his face opposite to mine and stared at me. I endeavored to speak kindly to him, upon which he grinned and chattered, seated himself on my knees, and carefully examined my hands. He then tried to pull off my rings, and was proceeding to a bite for this purpose when I gave him some biscuit which happened to lie beside me, and making a bed for him with a handkerchief he settled himself comfortably to sleep, and from that moment we were sworn allies. The amusement afforded to me and others by Jack made him tolerated when his mischievous propensities would otherwise have condemned him to perpetual confinement. He was often banished to an empty hen-coop, but as this made no impression upon him I always tried to prevent it, which he knew so well that when he had done wrong he either hid himself or sought refuge near me. Much more effect was produced by taking him within sight of the panther, who always seemed most willing to devour him. On these occasions I held him by the tail in front of the cage, but long before I reached it, knowing where he was going, he pretended to be dead—his eyes were closed quite fast, and every limb was as



FACE OF THE DIANA MONKEY.

stiff as if there was no life in him. When taken away he would open one eye a little to see whereabouts he might be, but if he caught a glimpse of the cage it was instantly closed, and he became as stiff as before. He clambered into the hammocks, stole the men's knives, tools, handkerchiefs, and even the nightcaps off their heads, all of which went into the sea. When biscuit was toasting between the bars of the caboose, and the dried herbs boiling in the tin mugs, he would take the former out and carry it away, and take out the latter and trail them along the planks; if he burnt his hands he desisted for a day or two; and he often regaled the parrots with the biscuit, biting it in small pieces and feeding them with the utmost gravity. At other times he would knock their cages over, lick up the water thus spilled, eat the lumps of sugar, and pull the birds' tails; and in this manner he killed a beautiful green pigeon belonging to the steward, a specimen of which I never saw in any collection. For this he was flogged and imprisoned for three days; and half an hour after he was let out I met him scampering round the deck with two blue-faced monkeys on his back, which he often carried about in this manner. When he thought fit to ride, he would watch behind a cask on the days the pigs were let loose, dart on to their backs as they passed, dig his nails into them to keep himself on, and the faster they ran and the more they squealed, the happier he seemed to be. His most important misdemeanors, however, were performed to the injury of his fellow monkeys, of whom he was very jealous. The smaller ones were very obsequious to him, and when he called them by a peculiar noise, they came, hanging their heads and looking very submissive, and in one week two were drowned out of sheer malice. I saw him throw the first overboard, and the poor little thing swam after us some time, but the ship was going too fast for even a rope to be effectually thrown out in the hope that he would cling to it. During one of the calms we so often met with, the men had been painting the outside of the ship, and leaving their pots and brushes on the deck, went down to dinner. No one was above but myself, the helmsman and Jack. The latter beckoned and coaxed a black monkey to him; then, seizing him by the neck, took a brushful of white paint, and deliberately covered him with it in every direction. The helmsman and I burst into a laugh, upon which Jack, dropping his victim, flew up the rigging into the maintop, where he stood with his black nose between the bars peeping at what was going on below. The little metamorphosed beast began licking himself, but the steward being summoned, he washed him with turpentine, and no harm was sustained. Many attempts were made to catch the rogue aloft, but he eluded all, and when he was driven down by hunger, he watched his opportunity and sprang from one of the ropes on to my lap, where he knew he would be safe. I fed and interceded for him, so he escaped with only a scolding, which he received with an appearance of shame which in him was rather ludicrous."

THE WHITE-NOSED MONKEY is sometimes called the Vaulting Monkey; and in the Zoological Gardens its wonderful agility is shown by its scampering

up the side, over the top, and down the opposite side of its cage in a kind of continuous somersault. Coming down on all fours with a bang, it does the same thing over and over again to attract attention, and it seems as if it were moving in the inside of a wheel. The dab of white on the nose distinguishes it, and it comes from that paradise of monkeys, the Guinea Coast and the adjoining districts.

THE TALAPOIN. This is a rare animal, and probably comes from the west coast of Africa. It is a pretty little creature and is extremely gentle and intelligent. The skin is green, and the lower part of the body and the under part of the limbs are white. It has large ears, a black nose, and it has a kind of broad brutus on the forehead.

There are some very interesting points about this little thing, which, in nearly all its construction, is like the rest of the Gue-nons, but it has a large brain, a short muzzle, a thick, long partition in its nose, and only three points, or cusps, instead of our, on its last lower hind grinders.

So far as is known, there are no differences between the habits of this little monkey and the others from the west coast of Africa, and therefore its intelligence and deficiencies are sufficiently incomprehensible.

The Green Monkeys live in Senegal, and extend as far south as the River Niger, for it was on the borders of that river that Adanson, a French naturalist, noticed their collecting in great troops. The little monkeys were astonished at his appearance and as they rushed off into the forest they broke off, either purposely or by accident, little branches from the tops of the trees, whose falling relieved the stillness of the woods. He indulged in some very cruel sport at their expense, for although they had been so silent and noiseless in their gambols, he shot one or two without the others being frightened. But when the greater part were more or less wounded, they began to get under cover from the shot, some to swing behind large branches, some coming to the ground, and the majority jumping from the top of one tree to another. Whilst this little scene (*petite manège*) was going on, this scientific brute still continued to fire on them, and finally he killed twenty-three in less than half an hour. This he did in the space of some twenty toises, and yet not one screamed, although they often assembled together, knitting their brows and grinding their teeth, as if they intended to attack him. Broderip, in noticing this, writes, "I wish they had, with all my heart."



WHITE NOSED-MONKEY.

They have, in common with the other Guenons, a fondness for particular parts of their forests, and one band will prevent another from entering its favorite haunts; and this regard for companionship and locality is even seen when they are in captivity. Restless, irritable and irascible, they are ever at play, and fighting among themselves, but they will turn to expel a stranger.

It is said that this monkey has obtained an American home, and that it was introduced with slaves into the Island of St. Kitts. Many escaped into the woods, and have increased considerably in number, so as often to pillage the plantations.

RED-BELLIED MONKEY. When living at the Zoological Gardens, in the Regent's Park, London, Eng., this pretty monkey, with a red chest and belly, and slim tail, was very timid, but it liked to be petted by the keeper, being somewhat distrustful of its more romping companions. It would take food out of his hand, and seemed pleased, and generally played with his fingers, without attempting to bite. The canine teeth were very moderately grown.

This monkey inhabits western Africa, and is at once known by the red belly and chest, the white beard and whiskers, and the black band across the forehead. It has, moreover, a yellow crown.

RED MONKEY. The delicate red ground-color of this monkey readily distinguishes it from its more favored allies. One in the Zoological Gardens is wonderfully human in the expression of its face and beautiful sad-looking large eyes. Its pale lips, eyelids and cheeks, and the broadish, pale forehead, with a slightly ridged nose, add to its appearance of suffering. It has a moustache, a few hairs on its nose, and whiskers, which are very cleanly kept in the proper whisker-line. The hair of the forehead forms a counter-curve, whose peak is just in the centre. Altogether it is a very pretty animal.

Bruce, the African traveller, when in Western Africa, took that trouble which is very rarely done by distinguished travelers in Africa, and observed monkeys in a state of nature—the Red Monkey in particular. It is strange, considering the omnipresence of the monkey element, that one may look over volume after volume of African travels, and very rarely meet with a note or word about them; but such is the case. So our obligation to Bruce is great. He says they descended in troops from the tops of the trees to the extremities of the branches, earnestly noticing, and apparently much amused by, the boats, as they passed along the river. They then began to take courage, and pelt the passengers with pieces of wood, thus provoking a most unequal combat. When fired upon, they uttered the most frightful cries, and although many fell, the survivors seemed by no means willing to relinquish the contest; on the contrary, they redoubled their efforts. Some flung stones at their adversaries, while others collected something very nasty as a missile; all, in short, displayed a determination of spirit which must at all times render them formidable to opponents of weaker powers than themselves.



THE GREEN AND RED MONKEYS.

The last group of the Guenons are often called the Mangabeys, from a mistaken notion that they come from Madagascar. But there are no monkeys in that great island, whose forests are peopled by Lemurs instead.

THE MANCABEY, or White-eyelid Monkey. The general color of this Monkey is a reddish-brown, which becomes decidedly red on the top of the head. There is a white band between the eyes, which is continued to each side of the back of the neck. A second kind has grey slaty-brown tints, without the white spot.

One thing strikes the observer at once, and that is the very affected way in which the monkey sits, with its eyelids half closed; and as the upper ones are dead-white, they look almost like doll's eyelids, and as if they did not belong to it.

They are extremely restless, and are fond of placing themselves in curious attitudes, and so full of antics are they that it has been erroneously imagined that they really have more joints and muscles than the most agile of their allies. They are fond of carrying their tails reversed, so as to be on a line parallel with the top of the back, and their common expression of disgust is to show their teeth by raising the upper lip. It is always droll, frolicsome and good-natured. Sir William Jardine mentions a female in Mr. Wombwell's menagerie that was most lively, and Broderip says: "She performed many of the attitudes of the most experienced harlequins, and was remarkably cleanly and careful not to soil her person. When feeding, she seldom put her head to the food or dish, but lifted and conveyed it to her mouth. She was very fond of bread, milk, and vegetables, and of carrots especially." He gives a figure of her—no easy task, for she was never at rest for one moment, and her celerity was increased when she perceived she was noticed.

The Mangabeys are all African, and all their structural peculiarities are those of the Guenons. They have the web between the fingers carried as far forward as the first joint, and the hair comes close to the knuckles and the beginning of the short thumb. In the foot, the toe-thumb is large, and, as usual, widely separated from the toes, the second and third of which are united by a web, which reaches almost to the last joint near the tips, and the third, fourth, and fifth are united by smaller webs.

THE MACAQUES. This group of monkeys differs much from the lively dwellers amongst the woods and trees, which have been described, and the kinds contained in it are evidently suited for running quickly on all-fours, and more on the ground than amongst the branches. They are not so much like the dog in shape as are the Baboons, which will be described next, but still they are, as it were, between these and the Guenons in their habits and construction. They have longer muzzles than the Guenons, but not so long as the Baboons, and the nostrils open high up and obliquely. Their eyes are overshadowed by a prominent brow-ridge,

which gives an air of cunning not seen in the playful Guenons, and also a look of fierceness and of mistrust; and, in fact, the old ones look anything but amiable. Their limbs are stout and compactly made, and they display great strength and



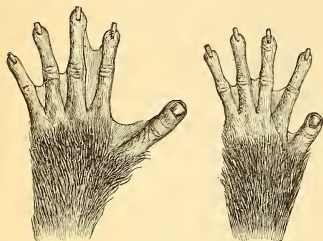
THE RED-BELLIED MONKEY.

width in the shoulders. The hind limbs are, however, longer than the front ones, and the hands and feet are well made, the latter being long and having a large heel. They all have cheek-pouches and callous pads, or callosities, on their seat, and thus resemble the Guenons.

THE BONNET MONKEY. This is a very common monkey in menageries and zoological gardens, and is always an object of attention, as it is amusing, very active, full of tricks and malice, and a great stower away of nuts in its cheek-pouches. It is known amongst the other Macaques by its cap of long hair, radiating from the crown, on which it rests flat, but it is often parted down the middle. It has a long tail, rather a long muzzle, and prominent ridges over the eyes, and the forehead is flat. Its fur is olive-grey, and sometimes greenish or brown in tint, whilst the under surface is ashy-white. It has large and often flesh-colored ears.

The young often have their head of hair parted down the middle, and, as their face and forehead are pale and not hairy, they have a very human appearance.

Very good-tempered when pleased, this Macaque enjoys a bit of mischief, and if it can steal anything from a visitor it is intensely delighted. But when food is offered and then not given, the Bonnet Monkey shows that it considers itself wronged, and scolds and screams in a great rage. It has a great capacity for accepting and stowing away food, and there are often great fights if one intrudes upon the store of another. Very fond of hugging and nursing others, it is equally delighted in searching the bodies of its companions for insect life; but, although thus amiable, it resents unkindness very decidedly and at once. (*See page 133.*)

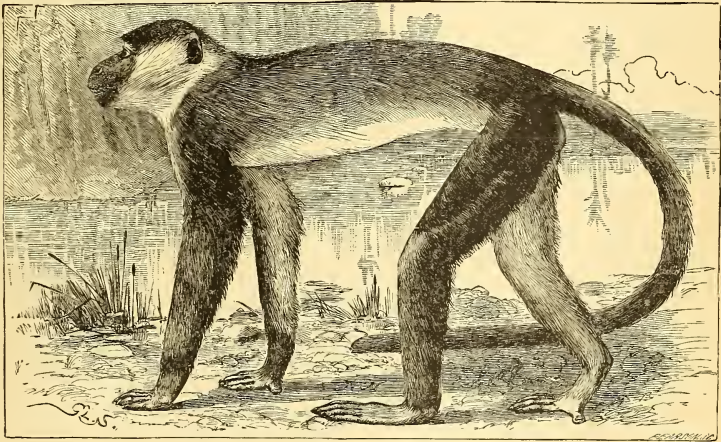


THE FOOT AND HAND OF THE MANGABEY.

THE BHUNDER. This is a monkey with a medium sized tail, which is well known to those Europeans who have lived in out-of-the-way places in British India. It is a strong-looking creature when full-grown, and has powerful shoulders and limbs; the tail is about one-third of the length of the body, which often attains the length of from one foot and a half to two feet. The prevailing color of the hair is olive-green and brown on the back, and the naked face is of a pale flesh-color. There is no ruff of hair around the neck, and the ears are quite visible, and there is a singular looseness or folding of the skin of the throat and belly. The callosities are often very red, and the insides of the legs also.

F. Cuvier observed the early days of one born in France, and noticed that immediately after birth it clung fast to its mother's stomach, holding on with its forehands stuck in her fur, and that it did not quit the breast, even during its sleep, for fifteen days. In the first day of its existence it appeared to distinguish things, and to look at them carefully, and the mother was devoted to it, giving it the tenderest attention of a constant and patient nurse. Not a movement or noise on its part escaped her, and her maternal solicitude was quite astonishing. The weight of the little thing did not interfere with her moving about, and all her

exertions were managed with a view of not incommoding her young charge. She never shook it or struck it accidentally against the edges and corners of her house. At the end of a fortnight the little one began to detach itself, and from the beginning of its moving by itself it showed a great amount of vigor, power, and ability to run and jump, which human children of a year or two might well envy. It held on to the wires of its cage and crawled up and down at will, but the careful mother never took her eyes off it, and followed it wherever it went, and even held out her hands to prevent it tumbling when it became too venturesome. Indeed, she admonished the little one by a gentle touch that it had been away long enough, and must come in. At other times it walked on all-fours over the straw, and often



THE MANGABEY.

let itself drop down from the top of its cage on to the soft bottom. so as to accustom itself to fall on all-fours; then it would jump up the net-work and lay hold and scramble with great precision. After awhile, the mother began to teach the young one not to be so troublesome to her, and to manage without her, but still she took care of it, following it if it was doing anything out of the way and in danger. With strength the agility of the creature increased, and its jumps and bounds were wonderful, and it never miscalculated its distance or made a false step. After six weeks a more substantial nourishment than milk was required, and then a very curious spectacle was seen. The attentive mother would not let the little one have a bit of all the nice things, but drove it away and scolded it, although it was hungry. The old one took possession of the fruit and bread which were for both, and

boxed the little one's ears if it came close and hid up the food. She had hardly any more milk, and the young one was in daily want of food, but the old one did not appear to act from cruelty or gluttony, but wished to train up the youth, like the young Cyrus, to feats of daring and of skill. As hunger pressed, the young one became bold, and stole by art what he could not get otherwise. If he was very adroit, all the better, and he was commended by being allowed to carry off his own. He used to get to the further end of the cage, and, turning his back on his mother would begin to gormandize. But even the maternal solicitude was not wanting, for she often used to go up to him and snatch a nice tidbit out of his jaws. Perhaps this was a mistaken idea, for after awhile a larger quantity of food was placed in the cage, and the little one had its quantity without any stealing.

The Bhunders are sacred in some parts of India, and are left very much to themselves; so they assemble, in troops, and steal from among the natives in a very troublesome manner.

As they are very bold, their habits in the wild state are often observable, their slyness and thieving propensities being most amusing. They gather on the roofs of the low houses in the bazaars, and look out for occasion to steal. One was observed on a roof fronting a sweetmeat shop, and feigning to be asleep; but every now and then he looked wistfully at the luscious prizes below. It was, however, of no use, for sitting beside his stores was the seller, smoking his pipe, and looking decidedly wide awake. This went on for half an hour, when the monkey got up, yawned, and stretched himself artfully, as if he had only just awoke. He began to play with his tail, and even made believe he was tying knots in it, as if he were wholly intent on it; but ever and anon he gave a sharp, sly look over his shoulder at the sweetmeats, but only to see the seller still there smoking away to his heart's content, and ruminating concerning prospective customers and profits. The monkey still had patience, and amused himself with his fleas, and had a good and general scratch; and he was rewarded, for suddenly the confectioner arose from his seat, took his pipe, and turned towards the back door for a fresh supply of tobacco. Instantly the Bhunder was on all-fours, and the sweetmeats were before him and behind their owner. In another moment he had jumped off the roof, cleared the street, and was on the board which was crowded with sugar-plums. He, of course, began to cram as many as possible into his cheek-pouches. But, alas for the spoiler, there were other pilferers there in the shape of hornets; his sudden descent frightened them, and they flew off, but returned on the instant, and to take vengeance. Before he could regain his roof they were all around him, stinging here and stinging there with great zeal and passion. His efforts at getting away from them were frantic, and he scrambled over the rotten roof, displacing the tiles, which came down with a crash; and at last, when he jumped clear of the enraged insects, he came on to a sharp, thorny bush, from which he could not extricate himself. He had to spit all the nice things out of his pouches, and, screaming with pain—for the thorns were more like fish-hooks than anything else,

he sat a picture of misery, barking hoarsely now and then. The fall of the tiles brought out a crowd of natives, and they were speedily joined by the confectioner, full of revenge. But the culprit was a monkey, and, therefore, an object of veneration; so a couple of Hindoos managed to rescue him, and he limped off as well as he could to a neighboring grove.

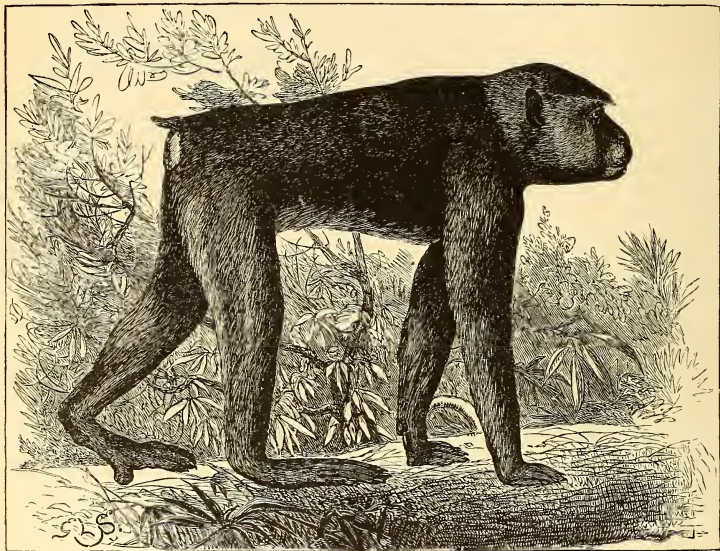
The Hindoos tell many tales of the sagacity of this monkey; and there is one which may be taken as a specimen, although it has been filtered through Mahomedan pages. A fakir had a monkey which he had brought up from birth. He loved it and travelled here and there, taking much care of it. In return the monkey behaved like a watch-dog, and was most faithful and watchful. It amused the fakir by its endless tricks and mimicry. One day, the fakir placed his carpet in a square before the palace of some great shah who had nothing to do, and who looked at the fakir and the monkey with great delight. The fakir had made a pie; there were some pieces of birds' flesh in it, and it was placed on some lighted charcoal to be cooked. The monkey sat watching, and the fakir thought he would like a stroll until dinner was ready, knowing that his faithful follower would look after the cooking. But the shah saw more than the fakir; for, after a while, the smell of the meat came strongly into the monkey's nostrils, and he began to feel hungry. Soon he was very hungry, and then he just lifted up the edge of the crust, and could not refrain from taking a tiny bit—just a little leg. This was so nice that he took a little more, and finally eat all. The crust was left on the grass, and then the sinner suddenly remembered his master. The shah was in ecstasies, wondering what would come next. After due consideration, the monkey remembered that he usually sat on a very beautiful flesh-colored "callosity," and he had noticed that several crows and other birds had been hovering about whilst he consumed his master's dinner. He instantly feigned to be dead, and hiding his head, gave the birds the benefit of the scarlet appearance. One came down instantly with a swoop; but the monkey was too quick, and the bird was seized and strangled in an instant. Rapidly plucking off the feathers, the monkey pulled it to pieces, and put it in the pie, and sat looking happy, contented, and extremely virtuous. The shah was instantly struck with this wonderful display of instinct, and the story goes on to say that he promoted the fakir to an important post under government.

THE MOOR MONKEY. It lives in Borneo, and is about eighteen inches in length. It has a flat nose, with nostrils opening well outwards, and the eyes are hazel, the pupils being very large. The length of the bones of the tail is not enough to carry it beyond the callosities, which are of a roseate hue.

When young the skull is short, and there is no great projection over the eye; but with age the upper part of the face becomes very square, and the eyebrow ridges grow. Now, this gloomy-looking monkey offers some points of interest, for there is another one, called the Booted Monkey, which cannot be distinguished from it when both are young. With age, however, the last-named one becomes

oily black, has a longer tail, and the hair on the head has a bushier appearance. But can these distinctions be accepted as showing a difference in the species? Probably not; and it will be for the student to consider that monkeys may have races and varieties which really pertain but to one species, and yet are separated by the naturalist.

THE WANDEROO. Wanderoo is the English way of spelling and pronouncing the word by which the native inhabitants of Ceylon call all monkeys;



THE MOOR MACAQUE.

and it is certainly misapplied in this instance, for the animal is not truly one of the Cingalese monkeys, although it has been brought into the island. It is a small animal, probably never reaching two feet in length, and the tail may be that of ten or twelve inches; but, from the stories which have been told and invented, one would conceive the Wanderoo to be a giant in wickedness as well as in physical power.

They have slim bodies, which are covered with deep black hair, and there is a longish tail of the same color, ended by a little tuft. Their head looks very large,

because of a mane, or ruff, and beard which surrounds the face, sticking out in a wild kind of way. This mass of long hair is either grey or white in color, and adds to the sly look of the broad face, soft dull eyes, and rather long black muzzle,

A former dignitary of the Roman Catholic Church describes the Wanderoo. He says that this is perfectly black, is clothed with glossy hair, and has a white beard around his head and chin, measuring rather more than a palm in length. To him all the other monkeys show such deep respect, that in his presence they are submissive, and humble themselves as if they were aware of his pre-eminence. The princes and great lords esteem him highly, for that he is, above every other, gifted with gravity, capacity, and a wise appearance. Easily is he taught to perform a variety of ceremonies and courtesies, and all these in so serious and perfect a style as to make it a great wonder that they should so exactly be enacted by an irrational animal. This excellent character does not appear to have been peculiar to all the Wanderoos; for some have been described as savage and disgusting in the extreme, and as most vicious and malignant in captivity. But it is probable that the gentleness of disposition which has been so noticed by those who have kept them kindly was spoiled by teasing and maltreatment.

The showmen call this monkey the "Child of the Sun;" and Broderip suggests that it is the ruff, with the head peeping through, which gives a faint likeness to old Sol over a public-house door: and that probably the dark color of the animal impressed his exhibitors with the great heat he enjoyed in his Indian home.

Certainly they like the sun; and we have often seen a pair at the Zoological Gardens sunning themselves after their breakfast with great delight. They sit on a bar, close to the wires of the cage, and climb four or five feet up it, clinging close to their iron prison, just in the range of a sunbeam. They spread out their black hands, and enjoy the glare, becoming sleepy and disinclined to pay any attention to nuts, cakes, and other temptations. They peer down at you with their expressive eyes, and give an occasional twist to their tail, to pull it close to them, probably after a long experience of the habits of the other monkeys in the cage,



FACE OF THE WANDEROO.

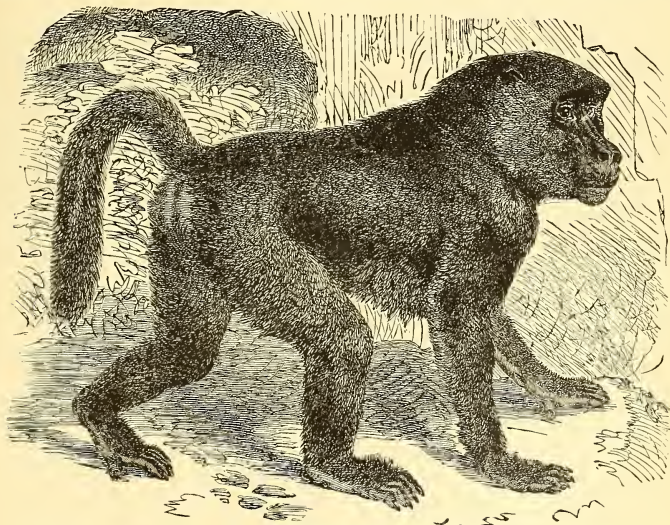
who certainly have not an overwhelming respect for them. It is curious to see them climbing slowly, and without the great exertion and bounds of some of the Guenons, and to notice their marching, head and back downwards, whilst they crawl along the under-side of the roof of their house, looking down every now and then in a cunning sort of manner

Broderip used to watch one, and a right merry fellow was he. "He would run up his pole and throw himself over the cross-bar, so as to swing backwards and forwards as he hung suspended by the chain which held the leathern strap that girt his loins. The expression of his countenance was peculiarly innocent; but he was sly—very sly—and not to be approached with impunity by those who valued their headgear. He would sit demurely on his cross perch, pretending to look another way, or to examine a nut-shell for some remnant of kernel, till a proper victim came within his reach; when down the pole he rushed, and up he was again in the twinkling of an eye, leaving the bare-headed surprised one, minus his hat, at least, which he had the satisfaction of seeing undergoing a variety of transformations, under the plastic hands of the grinning monster, not at all calculated to improve a shape which the taste of a Moore (the hat maker of the day), perhaps, had designed and executed. It was whispered that he once scalped a bishop, who ventured too near, notwithstanding the caution given to his lordship by another dignitary of the church, and that it was some time before he could be made to give up, with much grinning and chattering, the well-powdered wig which he had profanely transferred from that sacred poll to his own. There was a melancholy about this creature. He would climb his pole, ascend to his elevated house-top, and there sit for half an hour together, gazing wistfully at the distant portion of the park—which presented, when viewed from his position, the appearance of a thick wood—every now and then looking down, as if he was contrasting the smooth, sharp-pointed pole, to which they fettered him, with the rugged, living 'columns of the evergreen palaces' of his fathers." The Wanderoo often loses some of his tail in captivity; but it should be, when full-grown, terminated by a tuft, which, in the imagination of some, has been considered quite lion-like. Having large cheek-pouches, this monkey, very un-lion-like in disposition, feeds rather rapidly, and stores much away for future occasions. In doing this, it either carries the food to the mouth with the hand or places its mouth to the object. It moves on all-fours, and has callosities; and these, and the tail, give it a very baboon-like appearance. Nothing is known of their habits in their wild state.

CHAPTER VI.

DOG-SHAPED MONKEYS—CONTINUED.

THE BABOONS are more brute-like than the rest of the monkeys in appearance, and therefore have not that singular resemblance to man which many of the



THE BABOON.

others possess either generally or in their faces. Their dog-shaped head, a long muzzle, and a curious fullness on either side of the long nose, distinguish them at once from any other *Quadrumana*. With one or two exceptions the nostrils are quite at the end of the muzzle, and are separated by a narrow piece of gristle; they rather project beyond the nostril, and can be placed close to the ground as the

baboon runs along to follow or track a scent. Their eyes are close together, and are deeply set, their ears are moderately large, and their neck is rather long, and as their common position is squatting on the hind quarters like a dog, the long muzzle is kept straight out, or occasionally is hung down over the chest. They have a short body, which seems compressed at the sides, and the shoulders are wide, the chest being capacious. As they run very much like dogs, the hind-quarters are strong, and the hind limbs longer than the front ones, and have a decided heel and strong muscles. They trot and canter, but rarely bound or jump over the ground, and they scramble and climb up rocks with the aid of the power of prehension, which is greater even in the hind extremities, the thumb being strong but short. When standing on all-fours, the shoulders are high, and the body slopes slightly to the tail, which is stuck high up, and some have short and others long tails.

They have the cheek-pouches, and the curious callosities on their stern, which sometimes are very large and vividly colored; and their hair is many-colored, being long or short according to the species. The tail is curved upward close to its origin, and then it droops downwards when the baboon is quiet in mind and body; but when excited it sticks out and is flourished about with great vigor. Sometimes ended with a tuft, in some kinds it is not, and in one or two of the great dog-headed there is no tail, or only a miserable rudiment of it. In spite of their brutal looks—for the faces of some are swollen out, or rather the side of the nose, and colored and ridged in a marvelously ugly manner—they are very interesting, on account of their habits, cleverness, sociability amongst themselves, and their courage. Usually very amiable and full of fun when young, they afford much amusement when kept well and treated with kindness. They like to be petted, and will present their backs to be scratched, and may be taught to beg for food, to hold things and to play endless tricks. This "jolly" disposition is seen amongst the wild youngsters, who are ever on the watch for an occurrence of mischief and practical joking, the sedate behavior of their elders affording opportunities for endless mummeries and impudences. What can be more tempting to a young and light-hearted *Cynocephalus* than to disturb the solemn thoughts of the patriarch of the troop? There sits the elder of elders on his haunches, his tail outspread behind, the long nose slightly stuck up, and the fine long mane, lion-like, encircling the throat and covering the shoulders. Perched upon a block of stone, higher than the rest, he is an object of reverential awe to the elders of the band. But often enough some restless little ape, after squatting on a stone and mimicking the Nestor of the tribe, forgets himself, and after much dodging here and there, and running to and fro, ventures to pull that sacred tail as only monkeys pull. All the rage of Thoth is, however, slumbering in that quiet old male. His cares and watchings have triumphed over any gaiety he ever had. Making no allowances for the follies of youth, he pounces without wavering on the offender. Squeals, squeaks, and howls follow the cuffs, pinches, and bites, and the little wretch makes

off to the bosom of his mother, who snarls, grins, and shows her teeth, using language awful in monkeydom, and muttering not loud but deep. The mothers in the immediate neighborhood sympathize and proclaim their indignation with low grunts and much pantomime suggestive of reprisals, but they all know better than to do anything of the sort, as they have experienced the weight of the paternal arm themselves so often.

With age, any amiability of disposition is replaced by ferocity and greedy brutality, and is particularly increased in captivity, as the temper is usually severely tried by the tricks and teasings of the visitors.

THE SACRED BABOON. Like most, if not all, of its fellow baboons, this interesting creature prefers sandy ground to the dense forest land. They very rarely are seen on trees, they avoid woods, and keep mainly in the open country, preferring rocky precipices. On rising one morning Blanford saw a singular spectacle. A large troop of baboons, at least two hundred in number, were hunting for any corn dropped upon the ground in the place where the horses had been picketed. They were the first of the great dog-faced apes which had been seen, although they became familiar enough afterwards. There was no mistaking them, for their likenesses to the engravings of the Sacred Ape on Egyptian monuments was exact. The uncouth looking male is, indeed, a formidable looking animal, something between a lion and a French poodle in appearance, with long hair over his shoulders and foreparts. Their impudence was excessive, and the day before they had come into the commissariat enclosure and commenced pilfering the grain.

The herds vary in number; some cannot include less than 250 to 300 monkeys of all ages. The old males are always most conspicuous animals, all the forepart of their body being covered with long hair. They usually take the lead when the troop is moving, some of them also bringing up the rear; others placing themselves on high rocks or bushes, and keeping a sharp look-out after enemies. A troop collected on a rocky crag presents a most singular appearance. Sometimes large numbers were seen assembled around springs in the evening near Senafè, where the want of water was great. On such occasions, every jutting rock and every little stone more prominent than the rest was occupied by a patriarch of the herd, who sat with the gravity and watchfulness befitting his grizzled hair, waiting patiently until the last of his human rivals had slaked his thirst and that of his cattle. Around, the females were mainly occupied in taking care of the young, the smaller monkeys amusing themselves by gambolling about. Occasionally, if a young monkey became too noisy, or interfered with the repose of one of his seniors, he "caught it" in most unmistakable style, and was dismissed with many cuffs, a wiser if not a better monkey. It feeds on wild fruits, berries, and seeds, and often on the buds of trees and on young shoots. On the highlands troops of them were frequently seen in the fields, engaged in searching for a small tuber, the

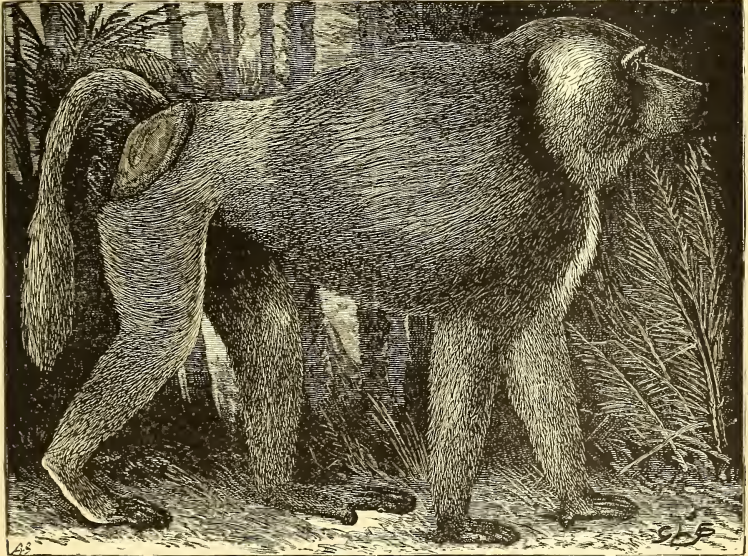
root of the edible *Cyperus*, which was also the resource of the half starved men and women in the country of the Tigre.

Mansfield Parkyns gives some very interesting and explicit statements about the intelligence and discipline of the Baboons. He says: "The monkeys, especially the Cynocephali, who are astonishingly clever fellows, have their chiefs, whom they obey implicitly, and a regular system of tactics in war, pillaging expeditions, robbing cornfields, etc. These monkey forays are managed with the utmost regularity and precaution. A tribe coming down to feed from their village on the mountain (usually a cleft in the face of some cliff) brings with it all its members, male and female, old and young. Some—the elders of the tribe distinguishable by the quantity of mane which covers their shoulders, like a lion's—take the lead, peering cautiously over each precipice before they descend, and climbing to the top of every rock which may afford a better view of the road before them. Others have their posts as scouts on the flanks or rear, and all fulfill their duties with the utmost vigilance, calling out at times, apparently to keep order among the motley pack, which forms the main body, or to give notice of the approach of any real or imagined danger. Their tones of voice on these occasions are so distinctly raised, that a person much accustomed to watch their movements will at length fancy—and perhaps with some truth—that he can understand their signals.

"The main body is composed of females; inexperienced males, and the young of the tribe. Those of the females who have small children carry them on their back. Unlike the dignified march of the leaders, the rabble go along in a most disorderly manner, trotting on and chatting without taking the least heed of anything, apparently confiding in the vigilance of their scouts. Here a few of the youth linger behind to pluck the berries off some tree, but not for long, for the rear-guard coming up forces them to regain their places. Then a matron pauses for a moment to suckle her offspring, and, not to lose time, dresses its hair whilst it is taking its meal. Another younger lady, probably excited by jealousy, or by some sneering look or word, pulls an ugly mouth at her neighbor, and then, uttering a shrill squeal highly expressive of rage, vindictively snatches at her rival's leg or tail with her hand, and gives, her, perhaps, a sharp bite in the hind-quarters. This provokes a retort, and a most unladylike quarrel ensues, till a loud bark of command from one of the chiefs calls them to order. A single cry of alarm makes them all halt and remain on the *qui vive* till another bark in a different tone reassures them, and they then proceed on their march.

"Arrived at the cornfields, the scouts take their position on the eminences all around, while the remainder of the tribe collect provisions, with the utmost expedition, filling their cheek-pouches as full as they can hold, and then tucking the seeds of corn under their armpits. Now, unless, there be a partition of the collected spoil, how do the scouts feed? for I have watched them several times, and never observed them quit for a moment their post of duty till it was time for the tribe to return, or till some indication of danger induced them to take to flight.

They show also the same sagacity in searching for water, discovering at once the places where it is most readily found in the sand, and then digging for it with their hands just as men would, relieving one another in the work, if the quantity of sand to be removed be considerable. Their dwellings are often chosen in clefts of rocks, and are always placed so high that they are inaccessible to most other animals, and sufficiently sheltered from the rain. The leopard is their worst enemy, for being nearly as good a climber as they, he sometimes attacks them, and then there is a



THE SACRED BABOON.

tremendous uproar. I remember one night, when outlying on the frontier, being disturbed in my sleep by the most awful noises I ever heard, at least they appeared as such, exaggerated by my dreams. I started up thinking that it was an attack of negroes, but soon recognized the voices of my Baboon friends from the mountain above. On my return home I related the fact to the natives, who told me that a leopard was probably the cause of all this panic. I am not aware how he succeeds amongst them. The people say that he sometimes manages to steal a young one and make off, but that he seldom ventures to attack a full-grown ape. He would doubtless find such an one an awkward customer; for the ape's great strength and

activity, and the powerful canine teeth with which he is furnished, would render him a formidable enemy, were he from desperation, forced to stand and defend his life. It is most fortunate that their courage is only sufficiently great to induce them to act on the defensive. This indeed they only do against a man when driven to it by fear; otherwise, they generally prefer prudence to valor. Had their combativeness been proportioned to their physical powers, coming as they do in hordes of two or three hundred, it would have been impossible for the natives to go out of the village except in parties, armed, and instead of little boys, regiments of armed men would be required to guard the cornfields."

A traveller, relating his experience with these Baboons, writes as follows:

"The first band I saw was just resting after their morning ramble. I had seen the tall forms of the males from some distance, but had taken them for rocks, as these Apes resemble them when they are still. I was first undeceived by a repeated cry, which sounded like a shrill cry of 'Kuck.' All heads were turned our way, and only the young ones went on with their games. Probably the whole herd would have stopped in this attitude had not we had two dogs with us that we kept to keep off hyenas from the house. These answered the cries of the apes, and we immediately noticed a commotion among the herd. They started off and disappeared. Much to our astonishment, at the next bend of the road, we saw the whole band in a long row clinging on to what seemed a perpendicular rock. This was too much for us, and we determined to have a shot at them. Unfortunately, the rock was too high for a sure aim. Anyhow, we hoped to disturb them. The first shot had a wonderful effect. A tremendous barking and shrieking was the answer. Then the whole band moved on, climbing over the rocks in a most astonishing manner, where it seemed almost impossible to find a footing. We fired about six shots, though it was impossible to be sure of hitting. It was most comical to see the whole band, at every shot, cling on to the rock as if they thought the earth would give way under them. The next turn we found them no longer on high ground, but in a valley, where they were going through to get to the hills beyond. Part of the band had crossed, but most were still behind. Our dogs stopped a minute, and then rushed in among the herd. So soon as they got there all the old males rushed from the rocks, formed a circle round the dogs, and opened their mouths, beat the earth, and looked so fierce that the dogs retreated with all speed. Of course we encouraged them to return to the fight, and in the meanwhile the apes had got across the valley. As the dogs returned to the attack, there were only a few in the valley, and among them a young one of about six months old. As it saw the dogs it cried out, and fled to the rocks, where our dogs brought it to bay, and we flattered ourselves that we should catch it. Proudly and quietly, without troubling himself about us, came an old male back from the other side, walked fearlessly between the dogs, climbed slowly up the rock, and took off the young one in triumph." Their regard for their mutual safety is even seen in captivity, for it has happened that when a baboon, who has been extremely savage,

unbearable and mischievous in his compartment, had to be chained to be punished, the others tried to protect him.

“Many kinds of monkeys,” writes Mr. Darwin, “have a strong taste for tea, coffee, and spirituous liquors; they will also, as I have myself seen, smoke tobacco with pleasure.” The wild baboons of Northeastern Africa are often caught in consequence of their naughty propensity and love of a “drop.” The natives fill some vessels with strong beer, and put them out in places where they look particularly tempting to the thirsty. The baboons, ever on the watch for something new and to steal, see the pitchers and pans, and of course just taste their contents. Feeling happy and enlivened, after awhile they try again, and finally drink long and deeply, becoming in a short time decidedly tipsy and unable to take care of themselves. Drunk and incapable would be the accusation against them by native police. Unfortunately for the tipplers, their punishment is greater than the crime; and not only do they suffer all the miseries of headache, thirst, and bodily depression, but they lose their liberty also, and not for a time only. The natives, knowing that after a few hours they may expect to find the baboons incapable of biting, fighting, or running away, go out and search for their victims, and bring them home and place them in durance vile. The next morning they awake to a sense of their condition. They hold their aching heads with both hands, and look with a most pitiable expression. Brehm saw some of them in this plight, and gives a most amusing description of their grimaces and laughable conduct. A little wine or beer was offered to some who had recovered from their debauch, but they would have nothing to do with it at the time. They turned away with disgust, but they relished the juice of some lemons which was given to them.

Mansfield Parkyns asserts that the cleverness of these baboons depends in some measure upon their power of reason, and not entirely on that instinct with which all animals are endowed, and which serves them only to procure the necessities of life and to defend themselves against their enemies. In proof he relates an anecdote, of which he was an eye-witness: “At Khartoom, the capital of the provinces of Upper Nubia, I saw a man showing a large male and two females of this breed, who performed several clever tricks at his command. I entered into conversation with him as to their sagacity, the mode of teaching them, and various other topics relating to them. Speaking of his male monkey, he said that he was the most dexterous thief imaginable, and that every time he was exhibited he stole dates and other provisions sufficient for his food for the day. In proof of this he begged me to watch him for a few minutes. I did so, and presently the keeper led him to a spot where a date seller was sitting on the ground with his basket beside him. Here his master put him through his evolutions, and although I could perceive that the monkey had an eye to the fruit, yet so completely did he disguise his intentions, that no careless observer would have noticed it. He did not at first appear to care about approaching the basket, but gradually brought himself nearer and nearer, till at last he got quite close to the owner. In the middle of one of his

feats he suddenly started up from the ground on which he was lying stretched out like a corpse, and uttering a cry as if of pain and rage, fixed his eyes full on the face of the date seller, and then, without moving the rest of his body, stole as many dates as he could hold in one of his hind hands. The date man, being stared out of countenance, and his attention diverted by this extraordinary movement, knew nothing about the theft till a by-stander told him of it, and then he joined heartily in the laugh that was raised against him. The monkey having very adroitly popped the fruit into his cheek-pouches, had moved off a few yards, when a boy in the crowd round him pulled him sharply by the tail. Conscience-stricken, he fancied that it had been done in revenge by the date-seller whom he had robbed; and so, passing close by the true offender and behind the legs of two or three others, he fell on the unfortunate fruiterer, and would no doubt have bitten him severely, but for the interference of his master, who came to the rescue."

Darwin tells a laughable anecdote of a baboon, but does not mention the kind. He saw in the Zoological Gardens a baboon who always got in a furious rage when his keeper took out a letter or book and read it aloud to him; and his rage was so violent that, as Mr. Darwin witnessed, on one occasion he bit his own leg till the blood flowed.

THE PIC-TAILED BABOON, or *Chacma*, has a fine black tail, which is rather more than half the length of the body, and it has a tuft of long black hair at its tip. It is carried like that of the other long-tailed baboons, being curved upward at first, and then falling down straight. Nearly all the fur of the body is a uniform dark brown, almost black, mixed throughout with a dark green shade. It is long and shaggy, particularly on the neck and shoulders of the males. If a solitary hair be pulled out, it will be found to be very curiously ornamented. It has a root, like all hairs, springing from a little pimple under the scarf-skin, and its color is at first of a light grey color. Then it is marked with wide rings of color, which are perfectly distinct, and they are alternately black and dark green, but sometimes they are intermixed with a few of a lighter or yellowish shade. The face and ears are naked, as are also the palms and soles, and there are small whiskers, grey in color and brushed backward. Naked as are the face, ears, and hands, the skin is of a very dark violet-blue color, with a pale ring surrounding each eye. Strange to say, the upper eyelids are white.

Although the young *Chacmas* are playful enough, and are full of nonsense and fun in captivity, they, like all their kindred baboons, become surly, ferocious, and unsafe as they grow old and have their bodies perfectly developed to the perfection of baboonism. That is to say, when the face, jaws, and teeth become as large as they ever will be, and the body becomes as short and muscular as possible. They then scowl at the visitor, and grind and show their great teeth at the slightest provocation, grumbling and growling also, and in fact, to quote the words of a very precise naturalist, "The fierceness and brutality of their character and man-

ners correspond with the expression of their physiognomy." Nevertheless, they are amenable to soft influences. In spite of their savage and untamable disposition, they are influenced by that most potent of all attractions. They are, in the language of the writer just quoted, "agitated by the passions of love or jealousy."



THE PIG-TAILED BABOON.

In captivity they are thrown into the greatest agitation at the appearance of young females." Not females of the baboon tribe, but those who, under all circumstances, are now called ladies. "It is a common practice," continues the writer, "among itinerant showmen, to excite the natural jealousy of these baboons by

caressing or offering to kiss the young females who resort to their exhibitions, and the sight never fails to excite in these animals a degree of rage bordering on irenzy. On one occasion, a large baboon of this species escaped from his place of confinement in the Jardin des Plantes in Paris, and far from showing any disposition to return to his cage, severely wounded two or three of his keepers who attempted to recapture him. After many ineffectual attempts to induce him to return quietly, they at length hit upon a plan which was successful. There was a small grated window at the back part of the den, at which one of the keepers appeared, in company with the daughter of the superintendent, whom he appeared to kiss and caress within view of the animal. No sooner did the baboon witness this familiarity than he flew into the cage with the greatest fury, and endeavored to unfasten the grating of the window which separated him from the object of his jealousy. Whilst employed in this vain attempt, the keepers took the opportunity of fastening the door, and securing him once more in his place of confinement. Nor is this a solitary instance of the influence which women can exert over the passions of these savage animals. It is said that, generally intractable and incorrigible whilst under the management of men, it usually happens that baboons are most effectually tamed and led to even more than ordinary obedience in the hands of women, whose attentions they often repay with gratitude and affection."

All the Chacmas, however, are not furiously jealous, or fighters, or kidnapers of women, for many have excellent memories of kindnesses, and do not fail to express their gratitude. Thus Sir Andrew Smith was recognized by a baboon at the Cape of Good Hope, with much evidence of satisfaction, after he had been absent for nine months. The females are often very tender and affectionate. One of them, an old female, adopted a little Rhesus Monkey, and took all sorts of care of it; but when a young Drill and Mandrill were placed in the cage she seemed to perceive that those monkeys, though distinct species, were her nearer relations, for she at once rejected the Rhesus, and adopted both of them. The young Rhesus was greatly discontented at being thus rejected, and it would, like a naughty child, annoy and attack the young Drill and Mandrill whenever it could do so safely, this conduct exciting great indignation in the old baboon. Another female baboon had so capacious a heart that she not only adopted young monkeys of other species, but stole young dogs and cats, which she continually carried about. Her kindness, however, did not go so far as to share her food with her adopted offspring. An adopted kitten scratched this affectionate and selfish old thing, who certainly had a fine intellect, for she was much astonished at being scratched, and immediately examined the kitten's feet, and without more ado bit off the claws!

Le Vaillant in his African travels was accompanied by a monkey, which was probably one of these Chacmas. It lived on very good terms with cocks and hens, thus disproving the antipathy which tradition has handed down as existing between these very different creatures. He was amused at the one and stole the eggs of the

other. In fact, he not only tasted the eggs of his own accord, but was made to taste all sorts of fowls and nuts for the benefit of the travelers, who feared being poisoned. If this creature, which was called "Kees," refused them, they were left untouched by those who had a very sensible opinion of his instinct. Besides being taster he was watch-dog. "By his cries," writes the traveler, "and other expressions of fear, we were always informed of the approach of an enemy before my dogs could discover it. They were so accustomed to his voice that they slept in perfect security, and never went the rounds, on which account I was very angry, fearing that I should no longer find that indispensable assistance which I had a right to expect if any disorder or fatal accident should deprive me of my faithful guardians. However, when he had once given the alarm, they all stopped to watch the signal, and on the least motion of his eyes, or the shaking of his head, I have seen them all rush forward, and run far away in the quarter to which they observed his looks directed. I often carried him along with me in my hunting excursions, during which he would amuse himself climbing up the trees in order to search for game, of which he was remarkably fond. Sometimes he discovered honey in the crevices of rocks, or in hollow trees, but when he found nothing, when fatigue and exercise had whetted his appetite, and when he began to be seriously oppressed with hunger, a scene took place which appeared to me exceedingly comic. When he could not find game or honey, he searched for roots, and ate them with relish, especially one of a particular species, which, unfortunately for me, I found excellent and very refreshing, and which I wanted greatly to partake of. But Kees was very cunning. When he found any of this root, if I was not near him to claim my part, he made great haste to devour it, having his eyes directed all the time towards me. By the distance I had to go before I could approach him he judged of the time that he had to eat it alone, and I indeed arrived too late. Sometimes, however, when he was deceived in his calculation, and when I came upon him sooner than he expected, he instantly endeavored to conceal the morsels from me; but by means of a blow well applied I compelled him to restore the theft; and in my turn becoming master of the envied prey, he was obliged to receive laws from the offended party. Kees entertained no rancor or hatred, and I easily made him comprehend how detestable was that base selfishness of which he had set me an example. To tear up these roots Kees employed an ingenious method, which afforded me much amusement. He laid hold of the tuft of leaves with his teeth, and pressing his four paws firmly against the earth, and drawing his head backwards, the root generally followed. When this method did not succeed, he seized the tuft as before, as close to the earth as he could, then throwing his heels over his head, the root always yielded to the jerk he gave it. In our marches, when he found himself tired, he got upon the back of one of my dogs, which had the complaisance to carry him for whole hours together. One only, which was larger and stronger than the rest, ought to have served him for this purpose; but the cunning animal well knew how to avoid this drudgery. The moment he perceived Kees on his

shoulders, he remained motionless and suffered the caravan to pass on, without ever stirring from the spot. The timorous Kees still persisted; but as soon as he began to lose sight of us he was obliged to dismount, and both he and the dog ran with all their might to overtake us. For fear of being surprised, the dog dexterously suffered him to get before him, and watched him with great attention. In short, he had acquired an ascendancy over my whole pack, for which he was perhaps indebted to the superiority of his instinct; for among animals, as among men, address often gets the better of strength. While at his meals Kees could not endure guests; if any of the dogs approached too near him at that time, he gave them a hearty blow, which these poltroons never returned, but scampered away as fast as they could. It appeared to me extremely singular, and I could not account for it, that next to the serpent, the animal which he most dreaded was one of his own species; whether it was that he was sensible that his being tamed had deprived him of a great part of his faculties, and that fear had got possession of his senses, or that he was jealous and dreaded a rivalry in my friendship. Sometimes he heard others of the same species making a noise in the mountains; and notwithstanding his terror, he thought proper, I know not for what reason, to reply to them. When they heard his voice they approached; but as soon as he perceived any of them he fled with horrible cries; and running between our legs, implored the protection of everybody, while his limbs quivered through fear. We found it no easy matter to calm him; but he gradually resumed after some time his natural tranquility. He was very much addicted to thieving, a fault common to almost all domestic animals; but in Kees it became a talent, the ingenious efforts of which I admired, and notwithstanding all the correction bestowed on him by my people, who took the matter seriously, he was never amended. He knew perfectly well how to untie the ropes of a basket to take provisions from it; and, above all, milk, of which he was remarkably fond; more than once he has made me go without any. I often beat him pretty severely myself; but when he escaped from me he did not appear at my tent till towards night." "Milk in baskets!" why truly the term "basket," as applied to a vessel for holding milk, appears to require some explanation; but it was really carried in baskets woven by the Yonaquas, of reeds so delicate and so close in texture that they might be employed in carrying water or any liquid. The abstraction of the milk may be considered as a kind of set-off against the appropriation of Kees' favorite root by his master.

THE COMMON BABOON. They are very common in the half wild and tame condition; and as they often have to take care of themselves in the midst of a very restless and half-starving set of men, their senses become sharpened, and their intelligence becomes exalted in a most curious manner. But nothing is known of them in the wild state.

They are large animals, and their hair is of a uniform yellowish-brown color, slightly shaded with sandy or light red tints. The whiskers are of a light fawn-

color, and the face, ears, and hands are naked and black; the upper eyelids are white and naked, and the tail is about one-half the length of the body, but it has no tuft.

Buffon had one that was full grown, and it was as savage as well could be. It



THE COMMON BABOON.

exhibited all the ferocity of disposition and intractability of nature common to the rest of its kind when full grown. "It was not," says he, "altogether hideous, and yet it excited horror. It appeared to be continually in a state of savage ferocity, grinding its teeth, perpetually restless, agitated by unprovoked fury. It was

obliged to be shut up in an iron cage, of which it shook the bars so powerfully with its hands as to inspire the spectators with apprehension. It was a stoutly-built animal, whose nervous limbs and compressed form indicated great force and agility; and although the length and thickness of its shaggy coat made it appear to be much larger than it was in reality, it was nevertheless so strong and active that it might have readily resisted the attacks of several unarmed men.

Although ferocious in old age, they are amusing, tractable, teachable, and even affectionate when young; they know and like their master, are orderly when with him, can be taught all sorts of tricks, and they even like the young of other animals as pets. There are, of course, all sorts of stories told about them, some of which are true, for they were told by reliable naturalists from the results of their own experience, but the majority have too much of the wonderful in them, and are clearly the result of Eastern imaginations. A distinguished naturalist and traveler took much pains with some baboons, and learned much of their habits and curious tricks, and his first pupil was amusing enough. Of course baboons differ like higher animals in their temper and lightness of disposition; some are grumpy and stupid, and others are as friendly and frolicsome as a genially-disposed dog. One of these last came into his hands, and was, for a baboon, quite amiable looking, full of vivacity, and possessed of a vast amount of animal spirits and talent for the mischievous. He had a place set apart for him near one of the gates of the establishment in Egypt, where he acted as a sort of watch-dog. This duty he performed to perfection, and no one dared to attempt to enter without his leave. To those whom he knew he was polite, but to all others he was quite the reverse. Walking backward and forward in great ire when disturbed by anybody unknown to him, he finally stood stiffly on three of his legs, and hammered away at the floor with the knuckles of the other, just as a man raps a table when in a pet. His eyes glared, and he gave tongue in a fierce growling bark.

Sometimes he would put on a most enticing look, and seem most kindly disposed, seeking as it were the friendly notice of people; then out would come his hand for something nice to be given him, and if refused all his good looks departed, and he behaved more like a devil than a watch-dog, rushing at his enemy and endeavoring to bite and scratch. He was on good terms with all the animals of the neighborhood, but took a great dislike to some ostriches which wandered about, and often came close to him, not apparently that they were necessarily unbeloved by apes, but because they did him some very evil services most unintentionally. He liked to get on a wall under a quantity of straw, which protected him from the sun, and there he dozed away. Now the ostrich has a very bad habit of trying to swallow or peck at everything; nothing comes amiss so that it can be swallowed; and they one and all are constantly poking here and poking there for most curious tid-bits. This was the case with the ostriches in the baboon's neighborhood, and it now and then happened that as they were on the search for a novelty they noticed his fine stout tail hanging from

the top of the wall. Of course the first ostrich which was near gave it a good peck with his strong beak, and doubtless a good pull also. This was a most uncalled-for liberty, and not only woke up the sleeper, and hurt him, but also offended his dignity. He awoke full of rage, and before the ostrich could give a second peck at the grisly morsel, the furious baboon rushed from under the straw, seized his enemy by the neck, and cuffed his head most soundly. He hated ostriches ever after. The same baboon was taken on board a boat with the travellers, and exhibited a great fear of the water. After a while he got a little accustomed to it, and gradually was tempted to touch it. He used to go the whole length of his cord, which kept him safe and sound, and, clinging on, would just let one of his feet touch the glistening surface, and drag through the water. This trick he used to do when he was thirsty, for he sucked the water from off his foot.

He was very fond of young animals, and took upon himself the occupation of nurse, whether the mothers liked it, or the little ones cared for it or not. Thus once going through the streets of a town seated on the baggage wagon, the baboon was tied fast by a good long cord, which gave him much liberty. He saw by the side of the road a dog with a litter of puppies, and immediately darted off, caught up one of them, and was returning before the mother had recovered from the shock produced by his audacity. She rushed after him as he retreated with the little puppy clasped to his bosom with one of his arms, and so vigorously did she pursue that the baboon was placed in difficulty, and had to exercise all of his resources to get out of her way with his charge. The wagon was on the move, and the rope was at its fullest length, when he suddenly took hold of it with his spare hand, and running himself clear, and alighting on his hind legs, met the attack of the furious dog most bravely. So stoutly did he persist, that the natives rather took his part, and he retained the little dog. Afterward his master took it from him, and restored it, to his great disgust; and indeed, he was extremely offended, and was sulky and out of temper for long afterward. Doubtless, if some intelligent men, who were accustomed to treat animals properly, would undertake the education of baboons, they would be successful to a considerable degree; and there is no reason why they should not be as useful to man as the dog. But they are teased and worried into a premature and senile savageness when in captivity.

One of the plans of teaching a baboon to like his master is to keep him constantly in the house where he is; the master feeds him, and is kind and never teasing to him, giving him, however, friendly scratches on the back, and having romps with him. Then, when he will answer to some name or call, and has become familiarized with all around, some one comes in with a whip and begins to talk loudly, and to order the baboon out of the place. The creature is frightened, and is rather disposed to resist; whereupon the master makes his appearance, and pretends to take his part by opposing the intruder with violent gestures and threats, and making much of the poor brute. This has usually an excellent effect, and produces satisfactory results, the baboon clinging henceforth to his friend. They are

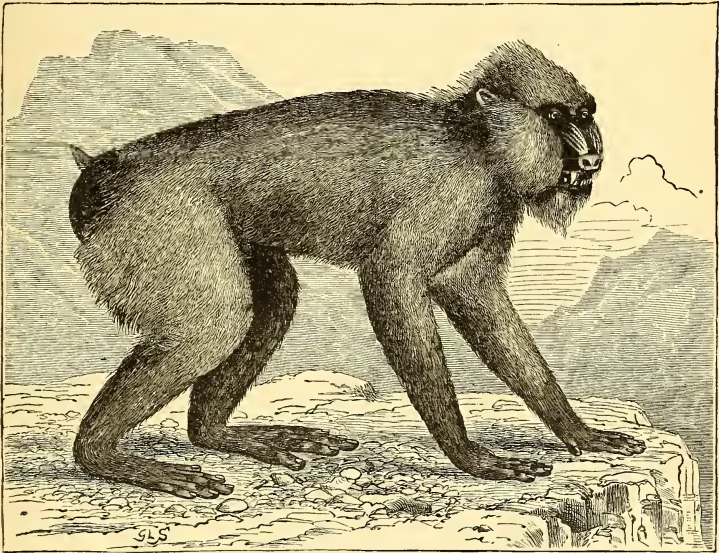
taught to help their masters in conjuring and juggling, and they do some tricks wonderfully well.

THE MANDRILL. This large baboon is the principal one with a very short stump of a tail, and may be distinguished from all others, with and without long tails, by the enormous swellings of its cheeks on either side of its nose, and their odd coloring. In general shape it resembles the rest of the genus, but perhaps its head and chest may be more bulky, and its limbs shorter and stouter than the other, when it has attained its full growth. A full-grown male measures five feet when standing upright, and the color of the hair is a light olive-brown above and silvery-grey beneath, and the chin is decorated with a small pointed yellow beard. It has a "brutus" in the form of a great tuft of hair on the top of the head, Nature having brushed up the hair off the temples and forehead upward, in a peak-shaped ridge on the crown, giving a triangular appearance to the whole. The ears are naked and pointed near their tips, and their color is bluish-black. The muzzle and the lips are large, and as it were, swollen and projecting, and the former is not only long, but is surrounded above with an elevated rim or border, and cut short or truncated like that of a hog. But the most extraordinary features of this ugliest of faces are the projections on either side of the nose. These are formed by swellings of the cheek-bones along the base of the great canine teeth, and the skin covering them is ribbed and has ridges which are alternately light blue, scarlet, and deep purple in color, contrasting strangely with the other tints of the hair. To add to the strange look, the eyes are deeply sunken, and their color, a deep hazel, contrasts with a streak of vermilion, which reaches down either side of the nose to the lip, and extends upward in the neighborhood of the brows, which are large and "beetled." A forehead would clearly be out of place in such a brute, and therefore it recedes rapidly above the eyes, and is lost in the great tuft of hair.

The canine teeth are immense, and when the animal is enraged they and the others are shown, their beautiful white color contrasting with the strange medley of tints around them. On the body the hair is very bristly, but the hands and feet are naked, and as if to add to the many peculiarities of the Mandrill, they are small in relation to the vigorous looking limbs and short chest.

There is no doubt that the Mandrill is extremely brutal in its adult age, and that the males are ferocious and disgusting, there being no particular choice as regards ugliness and oddity of decoration between their faces and sterns, whose callosities are vast. But the young are not so, and probably the quieter tints of the female are associated with a gentler disposition. Both the young and the females have shorter muzzles than the adult males, and they have neither the great cheek-swelling nor the coloring of the face; in fact, it is only when the great eye teeth are being cut by the males, as evidences of its age and powers, that the irregular decoration begins to be noticed.

The question of the coloring and ornamentation of monkeys will again be noticed in the summary at the close of the description of the *Quadrumana*, and it is therefore only necessary to remark that the most grotesque-looking and ferocious Mandrill is especially beautiful in the eyes of his partner, who, with humble colors and softened looks, admires her fractious spouse. His colors glow with love and flame under the influence of passion, and probably no more curious-looking piece of living polychrome was ever seen than "Jerry," at the Surrey Zoological Gar-



THE MANDRILL.

dens, where he got in a rage after drinking gin and water. "Jerry" was old and had gained all his ornaments, but had lost his levity, fur, and amiability. Broderip writes about him: "He liked the good things of Mandrill life, but would not put up with its troubles. He was a glutton, and ferocious in the extreme. Most kindly he would receive your nuts, and at the same time, if possible, would scratch or pinch your fingers, and then snarl and grunt in senseless anger. He would sit in a little arm-chair, and would wrap himself up in a blanket, knowing what was coming, the bribe being either a cup of tea, which he took, as people used to say, 'quite like any Christian,' or, what was nicer in his eyes, a glass of weak grog and

a pipe. If he was disturbed in his enjoyment he was not pleasant, and if a shower of nuts came in upon his feast, especially if it occurred after the gin and water, he came out in his true colors. Cramming the nuts into his mouth, and stowing them away rapidly in his cheek-pouches, thus giving an unusual size to his jaws, he



THE BLACK BABOON.

would howl and march about, snarling and grunting. His little eyes glared, his nose and cheeks became swollen, and their colors most vivid.

He was under the control of the keeper, who had, however, to take care that he was not bitten unawares, for "Jerry" was deceitful and treacherous in the

extreme. It is said that he once dined in the presence of royalty, and that he was one of the many higher animals who were invited to dine by George the Fourth at Windsor when His Majesty required novel amusements and unusual excitement. Doubtless he behaved himself, and contributed as much, and probably more, than any guest, to the royal enjoyment, and he appears to have enjoyed his hashed venison himself. There was no mistake about his enjoying his pipe, for he smoked as slowly and sedately as the gravest of his visitors.

There is a small baboon which is very interesting to the student of the distribution of animals over the surface of the globe, and to geologists. It is jet-black in color, there being hardly a trace of dark brown in its long hair, and hence it has been called the Black Baboon.

THE BLACK BABOON. When full grown it is about two feet in length, and the tail measures about an inch. Its face and neck are not covered, but all the rest of the body, the head, and the limbs, have a long black fur, and the hair of the top of the head runs up into a tall, long half-curl. The face is long and very melancholy-looking, and the cheeks are smaller, but colored black on either side of the nose. But the nose does not extend, like that of a dog, quite to the end of the muzzle, for the creature has a decided upper lip, and the division or septum of the nostrils is long and rather broad, so that these openings look downward and outward. The seat has a scarlet tint, and the tail is a mere knob.

Nothing is known about the wild habits of the Black Baboon, but it appears to be a wood ape, and it certainly has not the impudence or the bold, aggravating courage of the African Baboon in confinement. They are frequently brought over to Europe, and may be watched in most zoological gardens. They are capital climbers, but they like to remain a great deal on the ground, sitting upright on their haunches in a very sedate manner. Associating very well with other monkeys, they appear rather affectionate in disposition than otherwise, and may be seen looking very quiet and stately whilst some more agile companion rubs his face and lips against theirs, apparently to their gratification. The distinction between the Black Baboon and the African kinds is slight, and they all belong to the same genus, and therefore must have had a common parent in remote times. But the black one lives far away in the Asiatic islands, surrounded by animals different from those which live in Africa, many of which, nevertheless, have a curious African look about them.

CHAPTER VII.

THE MONKEYS OF THE NEW WORLD.

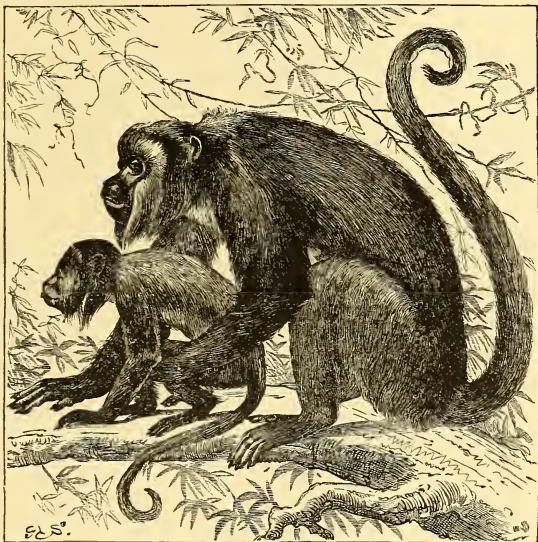
Not one of the numerous kinds of monkeys which have been noticed in the former chapters has ever been found in the New World—that is to say, on the American Continent. The converse is also true, for not one of those which are about to be noticed, and which inhabit the tropical parts of South and Central America, has been seen in any other part of the world.

The two groups are not only distinct as regards their geographical distribution, but they are also different in many very important points of their construction and habits. It is evident that, although it may be said that the resemblances between the Baboons, Macaques, and Troglodytes, for instance, indicate some kind of relationship, and suggest a community of origin, there is nothing of the sort to be traced between any Old and New World monkeys. They seem to have started from different sources.

All the monkeys of the New World have the partition between the nostrils broad, and it separates them widely: they open, as it were, sideways, and the whole of the lower part of the nose is flat. This peculiarity has given the name to the group, and has been explained, and it is accompanied by some others. Thus, with one exception, the numerous genera of the New World monkeys have the hind limbs the longest, and they are wont to go on all-fours, the erect posture being only occasionally adopted by the Spider Monkeys. Their thumbs differ less from the other fingers than do those of the Old World monkeys, and the toe-thumb is large and movable; no cheek-pouches or callosities are seen in any of them. It is usual to say that the American monkeys are known by their prehensile tails, but this is only true in part, for whilst some have this member wonderfully developed and useful, others have it incapable of holding on, whilst a few have barely a tail at all. The teeth are more numerous than in the apes and monkeys of the Old World, in one set of New World genera; and they are of the same number in another. There are other differences which are of interest to the scientist, but which need not be stated here.

THE HOWLERS. Although articulate speech is denied to the monkey world, many have very extraordinary voices, the capacity for making a noise being

great in them. Thus, the Gorilla has a tremendous voice, and the Gibbons are especially noisy, one of them having been noticed (page 77) to be able to emit something like a series of musical notes. But they are all silent in comparison with the noisiest of all monkeys—the South American Howlers. The females of this group can make a moderate amount of disturbance, but the males surpass every animal in their prolonged and sustained yelling. Their howlings, commencing often suddenly at the close of day or in the middle of the night, amongst the



YELLOW-TAILED HOWLER AND YOUNG.

strange stillness of the great virgin forests, appall the traveller on his first visit. "Nothing," says Waterton, speaking of the Red Howler, "can sound more dreadful than its nocturnal howlings. While lying in your hammock in those gloomy and unmeasurable wilds you hear him howling at intervals from eleven o'clock at night till daybreak. You would suppose that half of the wild beasts of the forest were collecting for the work of carnage. Now it is the tremendous roar of the Jaguar as he springs on his prey; now it changes to his deep-toned growlings as he is pressed on all sides by superior force; and now you hear his last dying moan beneath a mortal wound. An old writer (Margrave) wrote in his Natural History

of Brazil, in 1648, that all the howlers assembled in the morning and evening in the woods, and that one takes his place on a tree high up, and motions to his companions to sit down and listen, and then, after having seen them all seated, commences his discourse, pitched at so high a key that at a distance one would imagine that all the congregation were joining in. But this is not the case; only one orator is allowed to speak at a time, and all the rest wait politely, but not very patiently. When he has had enough howling he motions to the whole, who burst out into a fine chorus for some time. Then, by order, they all cease, and the first recommences, and after having been listened to with due attention the whole depart. What the noise must be sometimes, if they all join in, may be gleaned from the fact that Humboldt saw the trees crammed with them, and believed that more than 2,000 may be found in a square league.

These Howlers are the largest of the monkeys of the New World, some being nearly three feet in length, without counting the long prehensile tail; they have movable thumbs on their hands, a hairless space underneath the tip of the wonderful tail, and the howling apparatus in the throat.

They have rather tall heads, with beard and large lower jaws, which, with a thickness about the throat, give the appearance of an unusual swelling being there. Some have long and others short fur, but generally there is much of it about the head (where it is brushed forward) and neck. Black and red are favorite colors, and the young of both sexes differ often in their tints from the adults, and so do the males from the female. One kind in particular is decidedly colored.

THE YELLOW-TAILED HOWLER. The last half of the tail of this species is of a brilliant golden-fawn color, and this tint is on the upper parts of the body nearly up to the shoulders; the rest of the tail is light maroon, and what remains of the body is dark maroon, there being a violent tint in the limbs.

Besides its colors this kind presents some points of interest. They live in companies, and when they pass from one tree to another they all play at follow-my-leader exactly. They watch the movements of those who precede them, jump in the same manner, and at the same place, and even place their feet and hands on the same spots on the boughs. They are found in Columbia and New Grenada, and in Brazil on the confines of Paraguay.

The limbs of all are long, and whilst there is a good toe-thumb to the foot, the very best of the hand-thumbs is not equal to those of the monkeys of the Old World. The nails on the fingers and toes are compressed from side to side, as it were, and begin to look like claws.

Ogilby, an admirable observer, noticed years ago that two Howlers did not use their hands so as to take things between the thumb and forefinger, and he ascertained that this thumb was so much on a line with the other fingers that it was not opposable in the ordinary sense of the word, and that it was more like an extra finger than a thumb. This, he noticed, was not the case with the Howlers alone,

but that it peculiarised the monkeys of the New World. The examination of their skeletons shows that the bones of the thumb are on the same plane or level as the fingers, and the whole is brought close to the fingers, as our great toe is to the other toes. Nevertheless this thumb can move to and from the fingers.

But if the forehead so greatly resembles a paw, compensation is made to the animal by the gift of the prehensile tail, which is very muscular, and the under surface is without hair near the end, so that the sensitive surface can touch and feel



HEAD OF THE BLACK HOWLER.

objects. They can feel, therefore, around them, as they move along and lay hold of branches and hanging creepers without looking for them. The delicate sense of feeling depends on the nervous supply; and the power of clasping and holding on upon the bending or flexor muscles. A bony framework supports all these structures, and runs from the last bone of the sacrum to the tip, and consists of many separate vertebral bones placed in a long series. The first few bones which join on to the sacrum, and form the root of the tail, resemble the back-bone pieces, or vertebræ, to a certain extent. Each has a body, and also processes for jointing with the one before and behind, and a spine also. Besides these, there are two curious projections on the lower part of each body, which are called chevron

bones, and are V-shaped, and their use is to allow the blood-vessels and nerves to pass along between them without being pressed upon. Towards the end of the tail the vertebræ become long and stout, and are united behind and in front, forming a broad bone, and without the joints, and the chevron bones are reduced to little rounded pieces of bone. Everything tends in this tail to ready, rapid, and forcible motion, and so perfect an organ is it that when one of these Howlers is shot it always hangs to the tree by its tail, even if quite dead, and does not fall down until some hours afterwards, when the strong flexor muscles have relaxed.

THE BLACK HOWLER. These monkeys are called the Monos by the natives of Guatemala, and certainly deserve some other name than Howlers. Howling is a moderate noise in comparison with the loud, widely-heard yell which they can produce. The effect of these noises when produced by four or five animals, trying their voices one against the other in the quiet forest, is most remarkable and unpleasant. Salvin thus writes: "The wonderful cry whence *Mycetes* gets its trivial name of Howling Monkey is certainly most striking, and I have sometimes endeavored to ascertain how far this cry may be heard. It has taken me an hour or more to thread the forest undergrowth from the time the cry first struck my ear to where, guided by the cry above, I stood under the tree where the animals were. It would certainly not be over-estimating the distance to say two miles. When the sound came over the Lake of Yzabel unhindered by trees, a league would be more like the distance at which the Monos' cry could be heard." The Monos are abundant throughout the forests of the eastern part of Guatemala, but are unknown in the forest-clad regions which stretch toward the Pacific Ocean.

THE CAPARRO. Humboldt, in one of his geographical excursions among the great streams which feed the Orinoco, went far up toward their sources. Going once into an Indian cabin in those remote regions he saw a large monkey, of a kind which he had never seen before. He named it, after the words of the natives, "The Caparro."

Humboldt's new monkey had a prehensile tail, which was longer than the body, and underneath, close to the tip, there was a naked and sensitive spot of some length. It had a round and large head, a naked black face, but no beard. There were, however, smellers or long hairs around the mouth. It had long limbs and a shortish body, whose fur is long and sable grey in color. A good temper and a quiet disposition appeared to characterize this monkey, and the natives said it was found in troops, and that it often stood upon its hind legs. The Caparro is about two feet two inches in length without the tail.

THE SPIDER MONKEYS—THE THUMBLESS MONKEYS OF AMERICA.

Many early travelers recorded that during their wanderings by the sides of the rivers of the northern part of South America, and in the Isthmus of Panama,

small troops of dark-colored monkeys could be seen rushing along among the trees, swinging under the branches, and feeding upon berries. Sometimes they would stop on the lower branches of the trees and look at the intruders; but usually they scampered off, swinging with their front limbs and clasping with the hinder, having their stout and long tail ready for emergencies. Their length of limb, slender bodies, long hair, and their long tail, by which they suspend themselves, and their extremely variable movements, soon gave them the name of



THE CAPARRO.

Spider Monkeys among those interested in their habits, although, of course, the natives had some names of their own for them.

Humboldt saw them in the great virgin forests of Brazil, hanging in curious clusters, clasping each other by means of their limbs and tails, and all being suspended by the tail of one strong fellow. He was, as everybody must be, greatly impressed with their clever use of their tails, for he observed them being used as a fifth member, and with all the dexterity of hands. The natives will have it that they fish with their tails, but this is of course untrue, and they do not carry anything to their mouths with them. They are wonderful swingers and claspers, and

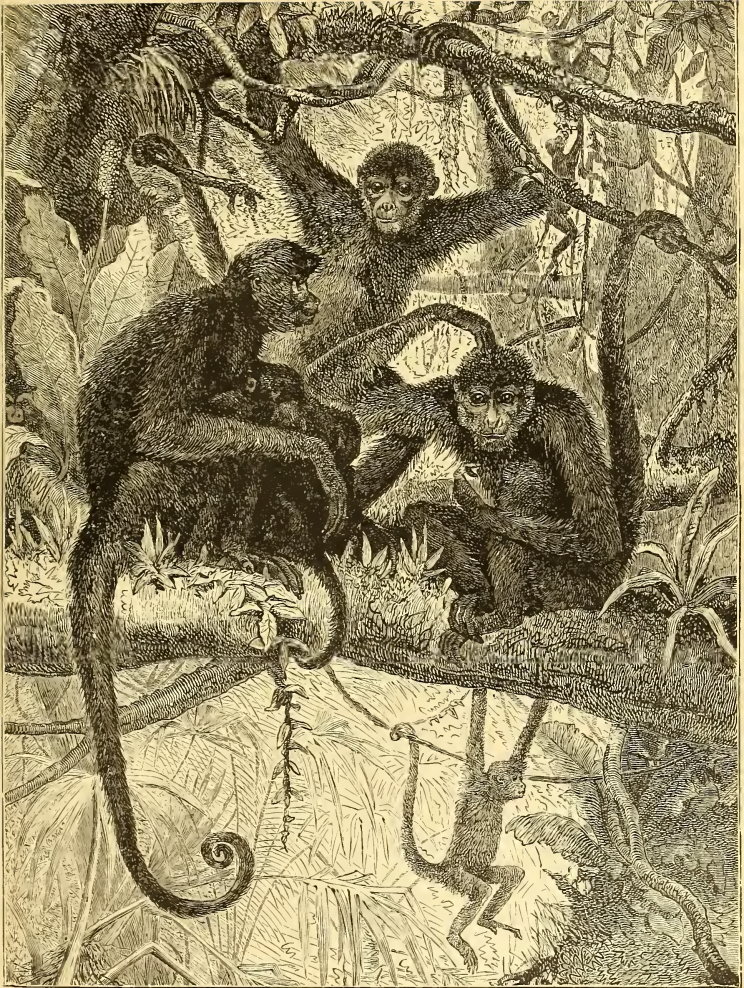
they are exquisitely sensitive at the tip, and for some inches underneath it, and they are stout where they join the body, exceedingly muscular, and in some kinds there are long hairs on them, especially near the end.

These monkeys have small heads, long necks, and exceedingly long arms and legs; some are covered with a soft fur, and in others it is harsh, and the hairs are long and rigid; and all have the thumbs of the hands either absent or just visible as slight projections. The feet are long and have well-shaped toe-thumbs. Their head is round and the muzzle only projects slightly, so that there is something human in their appearance, especially when their large eyes are open; and the hair in some kinds is brushed forward on the cheeks and brows so as to resemble whiskers and front hair. There is something in their shape without the tail, which reminds one of the Gibbons, those long-armed apes of the East, and the forehands resemble those of the Colodi of Africa; but the Spider Monkeys have not the power of jumping possessed by these, and their hind legs, useful as they are when amidst the great trailing orchids and the climbers of the American tropics, are feeble members when on the ground. Then the monkey walks on the outside edge of the feet, and on the inside edge of the hand, with its tail feeling here and there for anything to catch hold of. Often they are very sedate and slow in their movements, and they indulge in a series of climbings from from bough to bough, swinging from one to the other, and holding on now and then and assisting in the movement with the tail. They are as gentle in their manners as those just mentioned, and are full of play with each other.

As the activity of the Spider Monkey is marvelous, as they swing on and catch hold of boughs with great skill and energy, and as they display much intelligence, their brains ought to be well developed. Doubtless there is a great deal of movement in these long-limbed creatures which takes place like the walking of man, *i. e.*, without direct thought, for we move our leg muscles, and all those which assist them in the act of walking, without a constant direction of the will. Just as man's walking is said to be done automatically, so much of the swinging and progression of the Ateles is produced without direct exertion of the will. But it is evident that the Spider Monkey judges his distance, and very often considers whether such and such a bough will bear his weight, and uses exactly sufficient muscular exertion for what he requires.

Moreover, there is a graceful co-ordination or mutual action of the muscles of the limbs, body and tail to a common end in most of its movements which are evidently done by will. The movements of the tail are perfectly wonderful, and, indeed, so perfectly does it hold on, although the animal cannot see what this long slender organ is doing, that most children think there is an eye at the end of it.

THE COAITA. This is the monkey of which an extraordinary story is told by Acosta. It belonged to the Governor of Carthagena, and was regularly sent to the tavern for wine. They who sent him put an empty pot in one hand, and the



GROUP OF SPIDER MONKEYS.

money into the other, whereupon he went "spidering," as Broderip terms it, to the tavern, where they could by no means get his money from him till they had filled his pot with wine. As the ganymede of the Governor came back with his charge, certain idle children would occasionally meet him in the street and cast stones at him, whereupon he would put down his pot and cast stones at them till he had assured his way; then would he return to carry home the pot. And what is more, although he was a good bibbler of wine, yet would he never touch it till leave was

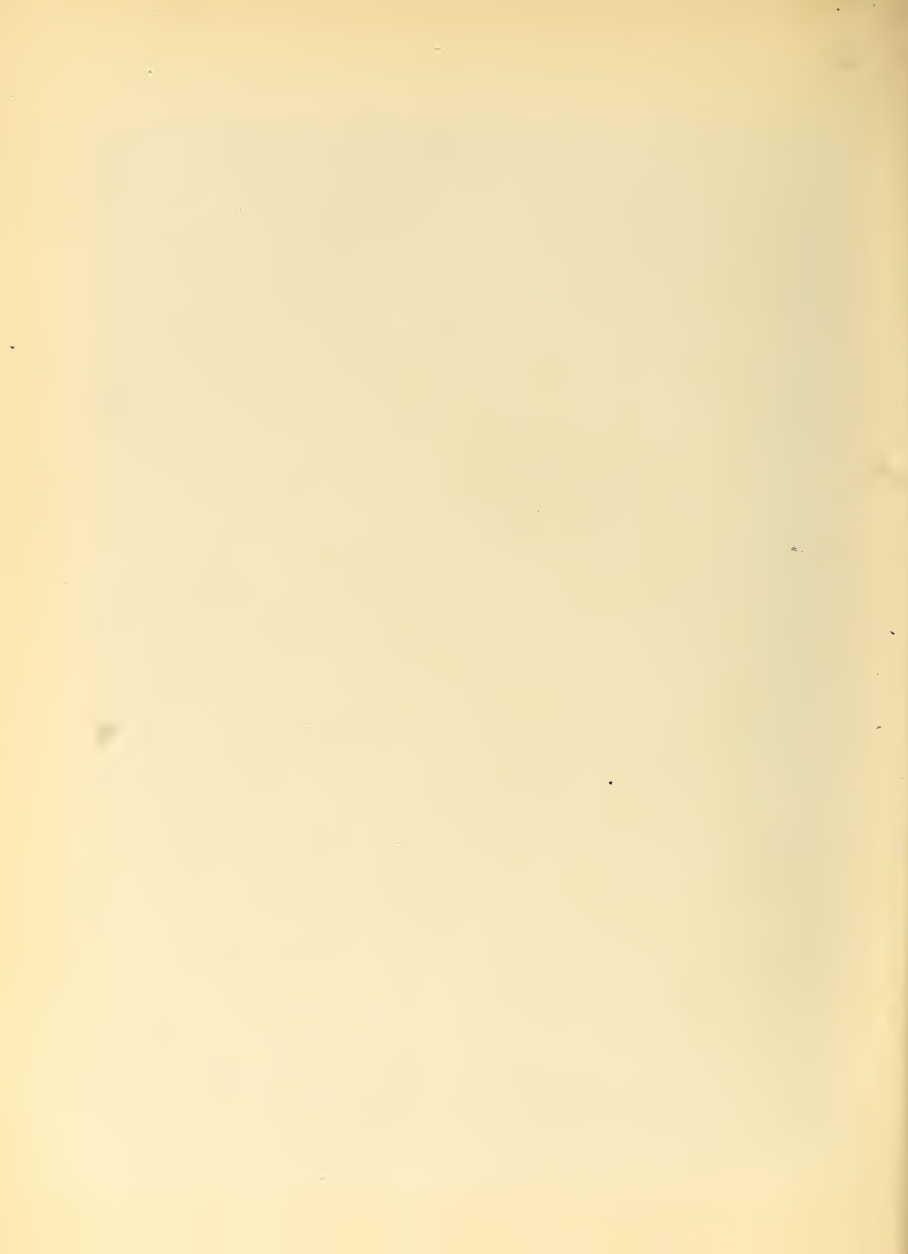


THE COAITA.

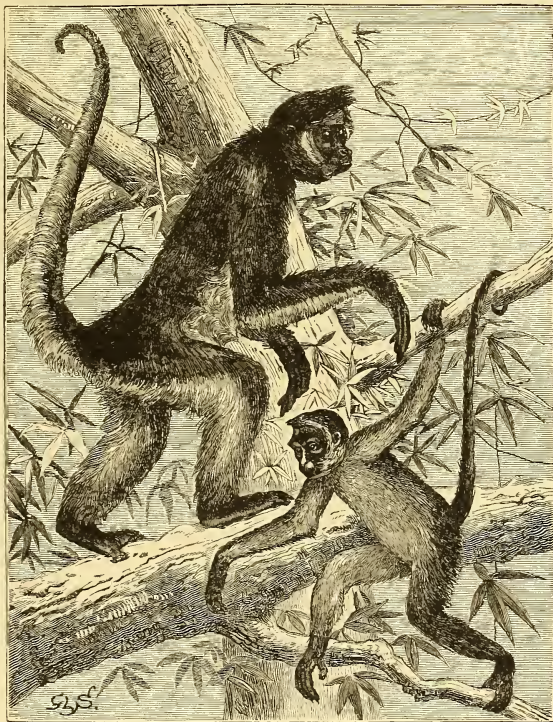
given to him. It is about as true as the account of the habits of the genus given by a distinguished French author. - He says that they live in greater or smaller troops in the forests; their food consists of insects, and they also eat little fishes, mollusks (shellfish), and other animal substances. When they are a little way from the coast they sometimes come down to the beach by the seaside and collect such things as oysters, and they get at the inside by breaking the shells between stones. Most of the species live far away from such luxuries, and one and all are vegetarians, as a rule, and eat an insect or suck an egg or two as the exception.



The Parmoset.



The Coaita is an intelligent animal, and shows much curiosity when anything new is seen in its vicinity. All the agility of the genus is to be witnessed in its climbing and swinging from tree to tree; and it has no thumbs. They live in Surinam and in the Brazils.

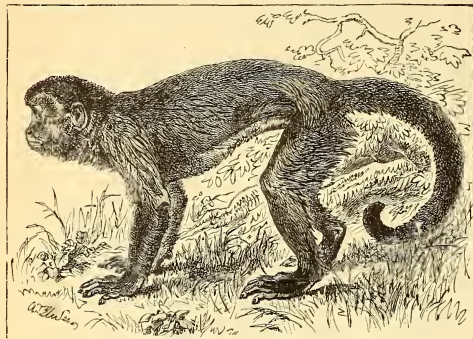


THE BLACK AND VARIEGATED SPIDER MONKEYS.

THE VARIEGATED SPIDER-MONKEY. These monkeys appear to go in small parties, passing through the forests at a rapid pace, feeding off different kinds of berries. The berries which Mr. Bartlett found in their stomachs resembled a gooseberry with a large stone inside. Owing to their great length of limb

and tail, and to their muscular vigor, these Spider Monkeys travel far and wide. Bartlett endeavored to hunt them, but was prevented by the fever and ague of the climate, and the fears of the Indians. Going into the mountains up the Marañon River, he heard from the Indians of the presence of a long-armed Ape—called in their language *Maciosuppeh*—at the distance of three days' journey. He engaged three Indians, started by way of a forest footpath that had been opened by a Catholic priest, to the town of Moyahamba, as part of his penitence. He writes:—"At the end of three days I reached the highest point of the mountains; here we came across a number of the monkeys in question—about eight or nine. I shot the male that is now in the British Museum, and my Indians brought down another with a poison-dart. Having obtained two of them I was satisfied that I had found a new species. While, however, I was busily engaged preparing the

first specimen, my Indians had quietly placed the other on the fire; and, to my great horror and disgust, they had singed the hair off, and thus spoiled the specimen. Of course I was obliged to keep the peace, for they had not tasted meat for some days, and the monkey proved a very dainty dish."



THE BROWN CAPUCHIN.

THE BROWN CAPUCHIN. In this species the hairs of the head are brushed back, but it appears that with age some hairs are

erected at the sides of the head above the ears into two horns, so as to give it the name of the horned Monkey.

THE WEEPER CAPUCHIN, or *Cai*. This is known by the black top to its head, and it is small, and brown in color elsewhere, the face and throat being greyish-yellow.

Brehm gives the following notes about their habits:—"This monkey is common from Bahia to Columbia, and it chooses woody country where there is no under-wood. The greater part of its life is spent on trees, and it only leaves them to drink, or to visit a field of maize. In the day he wanders from tree to tree, looking for food; in the night sleeps on the branches of some tree. Generally one sees him in small families of six or ten, of whom the most part are females. It is difficult to observe the animal, because he is so timid and shy. Rengger asserts that

he is seldom to be seen. Once he noticed a pleasant whistling noise, and he saw an old male looking timidly around on the highest tree tops, and then approach. About twelve or thirteen others followed him, of both sexes, and three females carried a little one partly on the back, partly under one arm. Suddenly one of these animals saw an orange-tree with ripe fruit, gave a cry, and sprang up the tree. In a few seconds the whole company were assembled there, and were engaged in picking and eating the ripe fruit. Some began immediately to eat,

others sprang, loaded with a couple of fruit, to a neighboring tree, whose stronger branches provided them with a table. They sat themselves down on a branch, encircled it with their tails, then took an orange between their hind legs, and tried with these to loosen the peel at the top with the fingers. If they did not succeed immediately, they flung the fruit, grumbling and snarling, several times against a tree, by which the rind was broken. Not one tried to peel the orange with their teeth, probably because they were aware of its bitter taste. As soon, however, as a small opening was made, they quickly pulled a piece off, eagerly licked up the juice, and not only what was on the fruit, but also what was on their hands and arms, and then ate the pulp. The tree was soon bare, and then the stronger ones tried to rob the weaker, both making the most peculiar grimaces, gnashed with their teeth, tore each other's hairs, and pulled each other roughly about.



THE CAL.

Others carefully searched the dead branches, lifted up the dry bark, and ate the insects lying under neath. When they were satisfied, they laid themselves along a branch, in the same manner as the Howlers, to sleep. The young ones, however, began to play, and thereby showed themselves to be very agile. They swung themselves by their tails, or climbed up them as if by a rope. The mothers had great trouble with their young, who wished for the luscious fruit. At first they gently pushed their young aside, but afterwards showed their impatience by grunting; then they seized the disobedient child by the head, and threw it roughly on its back. As

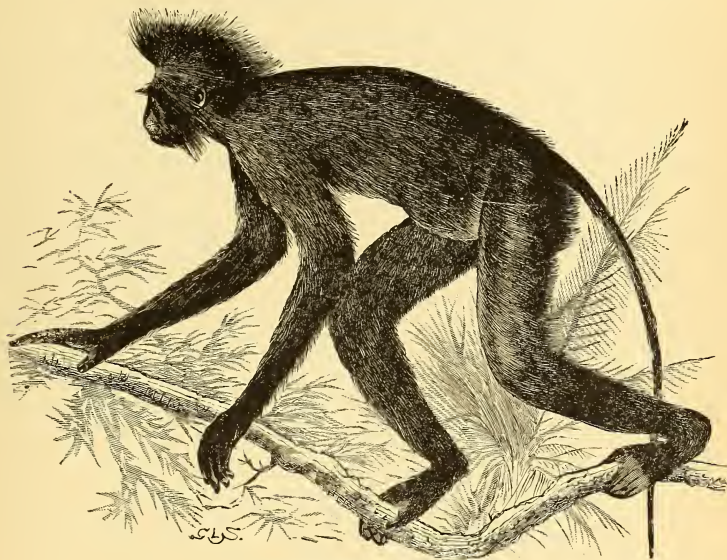
soon, however, as they were satisfied, they gently drew the young ones forward, and laid them at their breasts. The mother's love shows itself by the great care with which every old one handles her young, through laying them on the breast, by watching them, by searching their fur, and by the attacks on others who come near. The motions of the young one were neither light nor graceful, but awkward and ungainly. Another time Rengger came upon a family who were about to make an attack upon a maize-field. They climbed softly down from a tree, looked carefully around, broke two or three heads of fruit off, and returned as quickly as possible to the wood, there to devour their booty. As Rengger showed himself the whole troop fled, with shrill cries, through the tree-tops. Every one, however, took at least a head of fruit away with him. Rengger now shot one of these, and saw a female fall with her young one through the branches. He thought he should be able to catch her soon, but, though dying, she caught herself by her tail, and kept him waiting for quite a quarter of an hour. The young one had not left its mother, but rather clung faster to her, though showing signs of fear. After she was dead, and it was taken away, the little thing called in plaintive tones to its mother, and crept near to her as soon as it was let loose. After some hours, however, the coldness of the body seemed to frighten the young one, and it willingly stayed in its captor's breast pocket. Our informant says that in the family of the Cai, the number of females exceeds the number of males. In January the female gives birth to a young one, and keeps it at her breast for the first week, but later on carries it on her back. The mother never leaves her young, not even when she is wounded. Rengger, however, observed that a female, whose arm had been broken by a bullet, tore her young one from her breast, and set it on a branch; but this most likely was to shield the young one from danger rather than to relieve herself of its weight.

"The young Cai is often caught, and tamed. When older they cannot bear restraint; they become mopish, refuse their food, never grow tame, and die in a few weeks. The young one, on the other hand, soon forgets its freedom, becomes attached to people, and partakes, as do many other monkeys, of their food and drink. They walk on their hind legs for three or four steps, but they are trained to walk upright by tying the hands behind the back. At first they fall frequently, and must therefore be held by a cord from behind. When sleeping they curl themselves up, and cover the face with the arms and tail. They sleep in the night, and when it is very hot, in the middle of the day. At other times they are in constant motion.

"Rengger's Cai knew his master in the darkest night, as soon as he had felt his usual clothing. The cry of the Cai changes according to its emotions. One generally hears a whistling sound, which seems to proceed from weariness. If he demands anything he groans; wonder or embarrassment he shows by a half whistling tone; when angry he cries in a deep, rough tone—'Hu! hu!' When in fear he shrieks; when pleased he chuckles. By these cries the leader of a troop shares

his feelings with the others. These they show also, not only by noises and motions, but also by a kind of laughing and crying. The former is the drawing back of the corners of the mouth; but he utters no sound. When crying his eyes fill with tears, which, however, never flow down his cheek. The Cai is very sensitive to cold and damp, and must be kept from them if he is wanted to keep well. This is easy, as he gladly rolls himself up in a blanket. They live about fifteen years.

"The intelligence of the Cai is worthy of notice. He learns in the first few



BONNET MONKEY. (See page 94.)

days of his captivity to know his master and his keepers, and looks to them for food, warmth, protection, and help; trusts them fully, is pleased when his keeper plays with him, lets himself be teased by him, and after not having seen him for some time shows the greatest pleasure on his reappearance. He also soon forgets his freedom, and becomes almost wholly a domestic animal. An old male which Rengger had got loose once from his cord, and ran away into the wood, but returned again in two or three days, sought out his keeper, and allowed himself to be tied up. Those who are not badly treated show great fidelity, especially to the blacks, whom they like always better than the whites. The Cai is not only fond of

men, but also of animals, and it is no uncommon thing in Paraguay to bring him up with a young dog, who serves as a horse for him.

"The animal is very sensible, and does not give in to the will of man. One can keep him from doing anything, but cannot force him to do it. On the contrary, he tries to make others bend to his will, and also men, sometimes by caresses, sometimes by threats. Weaker animals must follow his will. This does great harm to his learning. He will only learn those things which he can make use of, such as opening boxes, looking through his master's pockets, etc. As he grows older he gains experience, and knows how to use it. If one gives him an egg for the first time, he breaks it so clumsily that he loses half the contents, but the second time he only breaks the top, and lets no more be lost. He is not often taken in twice by anybody. He soon learns to know the expression of the face and the tone of the voice.

"The Cai is also very prone to stealing eatables. If caught in the act he cries out with fear before he is touched, but if he is not caught then he pretends to be perfectly innocent, and looks as if nothing had happened. Small articles he hides, when disturbed, in his mouth, and eats them at his leisure. His covetousness is great. What he once gets is not so easily taken away, at the most, by his master, when he likes him very much. His covetousness is made use of to capture him. The negroes clean out a pumpkin through a small hole, and then slip pieces of sugar, etc., inside. They see this, and thrust their arm in, and while so engaged will rather be caught than relinquish their spoil. Besides these qualities, they show curiosity and destructiveness to a great extent.

"They are fond of teasing, and pull the tails of dogs and cats, snatch the feathers out of hens and ducks, and even tease horses which are tied up close to them; they also pull their bridles, and are all the more pleased the more worried or frightened the animal becomes.

"Only the Indians made use of the skin, and therefore hunt the Cai down with bow and arrow. The whites prize him most highly in captivity."

Some of these little monkeys really appear to reason, and are very clever, Rengger states that when he first gave eggs to his monkeys they smashed them, and thus lost much of their contents; afterward they gently hit one end against some hard body, and picked off the bits of shell with their fingers. After cutting themselves only once with a sharp tool they would not touch it again, or would handle it with the greatest care. Lumps of sugar were often given them wrapped up in paper, and Rengger sometimes put a live wasp in the paper, so that in hastily unfolding it they got stung. After this had happened once they always first held the packet to their ears, to detect any movement within. This breaking of the egg in a proper manner is as interesting as two well-known facts, one of which may be observed by anybody in the habits of American and other monkeys. Sometimes a little monkey has a nut given him, and he is not strong enough to crack it. He will look up into your eyes with a meaning glimmer of his eyes, and

hand you the nut again. Crack it for him, and he receives it as a matter of course. Formerly one of the large monkeys in the Zoological Gardens had weak teeth, and he used to break open the nuts with a stone and Mr. Darwin was assured by the keepers that this animal, after using the stone, hid it in the straw, and would



THE SQUIRREL MONKEY.

not let any other monkey touch it. Rengger taught one to open palm nuts by breaking them with a stone, and so satisfied was it with its performance, that it soon began to experiment on other kinds of nuts, and then it began upon boxes. It also crushed off with blows of a stone the soft rind of a fruit that had a disagreeable

flavor, in order to get at the luscious food within. The same author saw a Capuchin monkey taking great and affectionate care of its infant. The flies were teasing it, and the mother drove them away as sedulously as possible. When in its native woods the Capuchin utters at least six distinct sounds when it is excited, and these seem to produce corresponding feelings in the monkeys which are listening.

THE SQUIRREL MONKEY. Buffon was a great admirer of this long-tailed, very human-headed little monkey, and remarked that they will always be admired more than any other of their American brethren, on account of their littleness, the gentleness of their movements, their brilliant color, their large and striking eyes, and their little round faces. He noticed that although the tail was long it was not stout and muscular, as is the case in those which are prehensile; and he observed that they were fond of curling it around objects, and even around their own or their mate's bodies. Their grey olive body fur contrasts with their bright red arms and legs, whilst the muzzle is blackish, and these colors, on an active little creature whose body is about ten inches long, and whose tail is not quite fourteen, look very pretty.

Humboldt often had the opportunity of watching them, and was much impressed with their affectionate disposition, and says that they readily wept if they were spoken to in a sad manner. When they are spoken to for some time they will listen with great attention, and then will place their little hands to the speaker's lips. The attempt suggests the great trouble to catch the words as they come out of the mouth. They knew objects when they saw them in pictures, and even when they were not colored, and when they represented their usual food, such as fruit and insects, they endeavored to catch hold of them. They entertained a great desire to catch spiders, and caught them with great skill, either with their hands or mouths. They feel any sudden change in the temperature of their native woods very soon, and when there is a fall of some degrees in the thermometer, they collect in little troops, and huddle together for the sake of their mutual warmth. There is a vast deal of squabbling and fighting to see who shall get in the middle, and not be left out in the cold, and great is the whistling and squeaking. Unfortunately for the noisy creatures, the Indian hunters take advantage of their assembling in this manner, for when they hear the cries they shoot their arrows in the direction of the monkeys, and often hit the chilly little group. It is said that when young they have a slight smell of musk. The Squirrel Monkeys have a small face, and the brain case behind it is moderately arched above, and sticks out behind very decidedly. This is because the head is placed on the spine differently to the monkeys already described. As a whole the head is very human-like, especially when it is young; but the forehead-bone is triangular, and projects upward and backward between the side bones of the head, and the chin is round and prominent. The forehead is narrow, and the muzzle is more protruding, however, than in man.

THE DOUROCOULI. This night-loving monkey has short hair, and a cylindrical tail, and looks like one of the Lemurs. It has rufous hands and feet, the ear-conchas are large and prominent, and almost hairless. It inhabits Nicaragua. Another species is quite nocturnal in its habits, coming out after dark only in search of food, in the Peruvian valleys.



THE RED-FOOTED DOUROCOULI

THE MONK. This monkey is introduced here with a view of explaining the general characteristics of the brain of the group.

The brain of one of these monkeys weighed 460 grains, or the one-eighteenth part of an entire but emaciated body. The general form is a regular arch, and the cerebellum is covered by the brain proper. Its general form is like some of the Cebi, and is less pointed than that of the Old World apes in front; and is less elongated and depressed than those of the lowest monkeys of the New World, such as the Marmosets and Tamarins, for instance.

THE COUXIO. This Saki has a beard under its chin, and the fur is generally of a brown-black in the male, and brown in the female. It has a fine, fiery

tail, and a very human aspect. The name is by no means satisfactory, especially as, by a curious mistake, the young ones have been called "Israelites."

THE BLACK-HEADED SAKI. This, like the last, must be enumerated among the more remarkable monkeys of the New World, from all of which it is to be immediately distinguished by the extreme shortness of the tail, a structure which would seem to make it the representative of the baboons of the Old Conti-



THE MONK.

ment. It is, in fact, the only one hitherto discovered in America whose tail does not exceed three inches in length. It is altogether a small species, that described by Humboldt measuring little more than one foot five inches from the head to the feet. In its adult state, however, it is described as reaching the length of another foot. Its disposition is inactive, phlegmatic, but very docile. It eats with avidity all sorts of fruits—sweet or sour. These it will seize by stretching out both hands at once, bending the back and body at the same time in a forward attitude. The physiognomy has a much more human expression than that of the generality of

monkeys, particularly in the face, which is naked and black. Its profile is not much unlike the Ethiopian. The head is oval, but flattened on the sides. On the eyelids, mouth and chin there are a few stiff hairs, but the chin has no beard. The ears are large, and like those of the human subject, are naked. The fur is long, shining, and of a uniform yellowish-brown color over the whole of the body. The fingers are much lengthened, the nails rather flat; and the tail, notwithstanding its shortness, is thick and, almost naked toward its extremity. Broderip com-



THE COUXIO.

pares its face to one of the old withered negroes, who, by great respectability of conduct, have gained their freedom. Another variety is the White-headed Saki.

Humboldt was much impressed with the resemblance of some of these monkeys in the face to man. One of them, the Capuchin of the Orinoco, is certainly strangely human in its appearance. The eyes have, according to Broderip, a mingled expression of melancholy and fierceness. There is a long, thick beard, and as this conceals the retreating chin, the face and forehead are much upon a line. Strong, active, and fierce, he is tamed with the greatest difficulty, and when angered he raises himself on his hind extremities, grinds his teeth in wrath, and leaps

around his antagonist with threatening gestures. "If any malicious person wishes to see this Homunculus," writes that entertaining author, "in a most devouring rage, let him wet the Capuchin's beard, and he will find that such an act is an unforgivable sin." It is so anxious not to wet this fine ornament to its face, that instead of putting the mouth to the stream when it desires to drink, it lifts the

water in the hollow of its hand, inclines its head on its shoulder, and, carrying the draught to its mouth, drinks slowly, and with deliberation. This Saki is called the Hand-drinking monkey. Its length, including the bushy tail, is about two feet nine inches. It is of a brownish-red color, and the hair of the forehead is directed forward. The body hair is long, and the beard, which arises below the ears, is brown, inclining to black, and it covers the upper part of the breast. The back is red, the eyes are sunken, and the nails are, with the exception of those of the thumbs, more like claws. They are very solitary, and often are found without their mates.



THE SPIDER MONKEY.

THE COMMON MARMOSET.

These little, gentle, pretty creatures usually so readily tamed, are made great pets of, and attract much attention in all collections of animals, and one kind has been often brought from the tropical woods of the Brazils and kept in confinement, so that its habits during captivity have been watched from birth until death in adult age. Many

years since F. Cuvier had some of the common marmosets born while under his care, and he watched them and their parents well. The young ones had their eyes open on coming into the world, and their skins were covered with very smooth hair of a deep grey color, but which was scarcely perceptible on the tail. They instantly crept into their mother's nice warm fur, and clung on with their

little hands and feet, and they attracted the intense admiration and curiosity of the father and mother, who were in the same cage. The father was even more affectionate than the mother, and assisted most assiduously in the nursing department. The favorite position of the young ones was upon the back and bosom of the mother, and when she was tired of nursing she would come up to her mate with a shrill cry, which, Broderip writes, said as plainly as any one could speak, "Here, do take the children!" He immediately stretched forth his hands, and placed the



THE COMMON MARMOSETS.

little ones on his back, or under his body, where they held on whilst he carried them about, and amused them. At last they used to get hungry, and whined for their mother, who took them, and after having nursed them returned them to their "papa." In fact, the father did all the hard work, and the mother merely fed them. In this instance this domestic happiness was cut short, for the mother was weakly; no wet-nurse was to be had, and the little ones sank and died. In their native state they lead an arboreal life, and assemble in groups of six or seven, climbing up the tallest trees, and jumping from bough to bough, showing the greatest activity, like and greater than that of squirrels. So rapidly do they move

from branch to branch, and from tree to tree, that the eye fails to follow them readily. They are recognized at once by their long tuft of whitish hair, which sticks out from the side of the head, and almost hides the ears. The size of the whole animal is about that of a small squirrel, and the tail is very long, bushy, and prettily marked with alternate rings of ash-color and of black fur. The head is small, the eyes are gentle looking, and the nose is flat, the face being black. The fur of the body is darkish brown, with different shades of color for each hair, which



DEVILLE'S MIDAS.

is dusky at its root, reddish in the middle, and grey at the tip. There are very different stories told regarding their intelligence and affection. Some naturalists assert that they are incapable of affection towards man, even to the hand that feeds them. Swainson says, "It mistrusts all, and treats as indifferently those whom one would think it well knew and those who are strangers; neither does it show much intelligence, although it is attentive, and suspicious of everything that is passing. When under the influence of fear it strives to conceal itself, uttering a short but piercing cry; at other times it hisses."

MIDAS ARGENTATUM. Bates is the authority for the following short notice of this pretty monkey:—"The little Tamarin is one of the rarest of the American Monkeys. I have not heard of its being found anywhere except near Cameta. I once saw three individuals together running along a branch in a cacao grove near Cameta. They looked like white kittens. I saw afterwards a pet animal of this species, and heard that there were many so kept, and that they were esteemed as choice treasures. The one I saw was full-grown, but it measured only seven inches in length of body. It was covered with long white silky hairs, the tail was blackish, and the flesh nearly naked and flesh-colored. It was a most timid and sensitive little thing. The woman who owned it carried it constantly in her bosom, and no money would induce her to part with her pet. She called it 'Mico.' It fed from her mouth, and allowed her to fondle it freely, but the nervous little creature would not permit strangers to touch it. If any one attempted to do so it shrank back, the whole body trembling with fear, and its teeth chattered, whilst it uttered its tremulous frightened tones. The expression of its features was like that of its more robust brother the *Ursulus*; the eyes, which were black, were full of curiosity and mistrust, and it always kept them fixed on the person who attempted to advance towards it."

DEVILLE'S MIDAS. This pretty monkey is plentiful everywhere on the Peruvian Amazons, but is extremely delicate in constitution. It will not bear the least cold, and it is kept with great difficulty. The Indian women make great pets of them, and put them into the long hair on their heads. They are thus kept warm and are not without interesting occupation. Having become tame they frequently hop out of their odd home and feed, or having captured a spider or two, scamper back and hide under the luxuriant crop of their owners, who are generally unwilling to part with them.

CHAPTER VIII.

THE LEMUROIDA.

The forests of Madagascar, of Western and Eastern Africa, and of some of the Asiatic Islands, are the homes of several kinds of animals which are not unlike the monkeys in some respects, but which differ from them in their habits of life, and, to a certain extent, in their anatomy. Most of them are in the habit of hiding up all the day, and of moving with great vivacity at dusk and during the night-time. Their gliding, noiseless motion amidst the dense foliage of the tropical woods during the dark hours, and their restless activity in searching for their food during the short twilight, were considered to resemble the fitful apparitions of sprites, spectres, and hobgoblins, and hence Linnæus gave them the name of Lemurs, taking the term from the Latin (*lemures*), "ghosts." The name has been adopted popularly, so as to include all the kinds which, with some structural resemblance to the monkeys, are for the most part nocturnal in their habits, and it really appears to represent the notions which the excessively timid and superstitious natives of the Eastern Islands have of the malevolent influence of some of these active and very small creatures, whose large eyes glare and shine in the dark woods as they rush to and fro before the extreme darkness of the night commences. The Lemurs using the popular term in its wide significance, can be distinguished from the monkeys and other animals at a glance. They are known by hairy "hands" at the end of the arms and legs, large furry tails, slim furry bodies, long ears, great staring eyes, and a muzzle like that of a small fox. At night-time, when the baboons, Macaques, Guenons, and American monkeys are at rest and asleep, the Lemurs are awake, and rushing and jumping here and there in their limited space; but during the day-time, when the monkey world is most giddy, with one or two exceptions, the others are quiet, and if poked out into daylight look dazed and stupid, and are only too glad to get into darkness again. The exceptions to these habits are not numerous. The night-loving monkey of South America comes out to look about at the same time as its neighbor, the night-loving Lemur; and the common, or Ring-tailed Lemur, is always ready to receive food, or to be noticed in broad daylight, as it goes to bed with monkeydom in general. The Lemuroida live in very out-of-the-way places, and the majority are in Madagascar, which is an island very little visited by Europeans, and where some naturalists have studied them and

their habits under great difficulties. Marvellous stories, of course, abound amongst the natives regarding their tricks and habits, and the sober truth has been very difficult to distinguish from error, especially as the night is the scene of their gaiety. Nevertheless, during the last few years much knowledge has come to hand about these interesting creatures, and it has been rendered all the more important by the labors of the comparative anatomists, who have dissected many kinds of them, and described their results.

Mr. Bartlett describes one as follows: "The other night I took an opportunity



GARNETT'S GALAGO.

of letting one of these interesting creatures—Garnett's Galago—have its liberty in my room, and I assure you I was well repaid by his performance. Judge my utter astonishment to see him on the floor, jumping about *upright* like a kangaroo, only with much greater speed and intelligence. The little one sprung from the ground onto the legs of tables, arms of chairs, and indeed onto any piece of furniture in the room; in fact, he was more like a sprite than the best pantomimist I ever saw. What surprised me most was his entire want of fear of dogs and cats. These he boldly met and jumped on at once, and in the most playful manner

hugged and tumbled about with them, rolling over and over, hanging on their tails, licking them on the head and face. I must add, however, that now and again he gave them a sharp bite, and then bounded off, full of fun at the noise they made in consequence of the sly nip he had inflicted. This active trickery he never appeared to tire of; and I was myself so pleased on witnessing the droll antics of



THE DIADEM INDRIS AND THE WOOLLY INDRIS.

the creature that the night passed and it was near daybreak before I put a stop to his frolics by catching and consigning him to his cage. In bounding about on the level ground, his jumps, on the hind legs only, are very astonishing, at least several feet at a spring, and with a rapidity that requires the utmost attention to follow. From the back of a chair he sprang, with the greatest ease, onto the table, four feet distance. He was delighted with a little wooden ball, which he rolled about

and played with for a considerable time, carrying it in one hand while he hopped and skipped about in high glee. He eats fruits, sweetmeats, bread, and any kind of animal substance, killing everything he can pounce upon and overpower. This strong and active little brute thus eats his prey at once, as I had proof in an unfortunate sparrow which he unmercifully devoured head first."



THE MONGOOSE LEMUR, OR WOOLLY MACACO.

THE DIADEM INDRIS. This is a fine species, with a white furry ruff, or crown, on the forehead and around the face, and it has a long muzzle and body, and a thick, long tail. It greatly resembles the White Indris, with the exception of its characteristic head ornament, and leads the same kind of life in another part

of the island of Madagascar. So little is known about the Diadem Indris that it is only necessary to notice one point in its anatomy, which refers to its habits. It evidently assumes the semi-erect posture very frequently when climbing, and a great part of the weight of the body is felt by the foot, and its great clasping toe-thumb. The examination of the foot proves that it is one, and not a hand, for bone for bone it may be compared with the human foot, and that of the Apes. The great toe is wide apart from the others, and in that it resembles the thumb of a hand; but all the other bones of the ankle or tarsus are in the same relative position as they occupy in us. The Diadem Indris is found in the forests of the central parts of Madagascar, and appears to keep apart from other kinds and to roam about the dense woods in bands.

THE WOOLLY LEMUR. This is one of the long-tailed Indris, and is remarkable for having long hind limbs, a long furry tail, a very short muzzle, and a round head. These woolly Indris are not frequently caught, or indeed seen at all, for they hide during the daytime, and sleep curled up amongst the thick shade of the foliage, or in some comfortable nest in the hollow of a tree. At night-time they wake up, and eat and play amongst the trees on which their food grows. They are said to be stupid animals, but probably as they have never had their intelligence tested except when half asleep, they may be quite as intelligent as the other Lemuroids, and this opinion is strengthened by the fact that the brain is large in proportion to the size of the body; larger indeed in proportion than the brain of any of the others.

The animals are small in size, and a dried skin measures rather more than a foot and a half in length, from the muzzle to the root of the tail, and this latter appendage is thirteen inches long. The head is broad over the eyes, which are wide apart, and the muzzle barely projects, and the whole of the face is covered with short hairs of a reddish-brown tint. There is a distinct band of whitish fur placed across the top of the forehead, which has fur before and behind it of a darker color than the rest of the hair of the body. This band is curved, and forms a point which projects forward in the middle line of the forehead. The fur on the back and flanks of the body is of a dark grey color close to the skin, but on its surface the color is brown, more or less rusty. This is the tint on the extremities, the grey color underlying. On the backs of the thighs there are white patches, and at those spots there is no deep-seated grey tint. The cylindrical tail is reddish-brown, like the hands and feet. The ears are short and rounded, and are generally hairy, but not tufted, and they are hidden in the fur of the head. The nostrils are separated by a narrow septum. The feet are short and broad, and the claw of the toe is long and cylindrical.

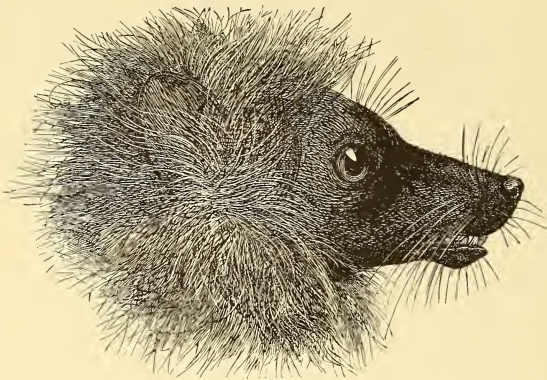
THE RING-TAILED LEMUR. This title refers to the pretty cat-like Lemur with chinchilla-grey tints, and a banded tail of black and grey rings, which is so commonly to be seen at the Zoological Gardens.



RING-TAILED LEMURS.

When in captivity the Ring-tailed Lemur soon becomes attached to its keeper, and they show some powers of memory. A quartermaster of the French frigate *Dupleix*, who had one on board, was recognized by it when surrounded by all the crew. This little creature liked to play with the cabin-boys and the dogs, and took charge of, and protected, a little monkey belonging to one of the sailors. The monkey was fondled and nursed, and cleaned with great attention by its active little friend; but corresponding kindness was not shown to the ship's fowls, whose tails it pulled unmercifully.

THE MONGOOSE LEMUR. The great naturalist Buffon had a lemur sent to him as a present, which he kept as a pet for many years. At first it ran



HEAD OF THE BLACK LEMUR.

about the house, and was tame and full of fun, roaming here and there, and settling down before the fire like a common cat. It was very good-natured, and became a great favorite; but with age came ill-temper, and it became cross and vicious; moreover, it was always making disturbances, so it had to be chained up. Having some ingenuity and perseverance, it managed to slip its chain now and then, and to escape. It made its way directly into the street, and used to visit the confectioner's shop, where it very quietly and systematically roamed in search of sweets, devouring all it could lay its hands on. If it could not get sweets it would take fruit, and was quite heedless regarding the price or the rarity of its desired treats. When it was known that it had escaped, if the shop people had not already told Buffon, every one knew where it was to be caught, and a great trouble the catch-

ing was, for it got into corners, showed fight, and bit, and resisted being touched very decidedly. The cold, however, was its great enemy, and it always suffered much from it, and finally died from its effects.

THE BLACK LEMUR. This lemur has a mate with white whiskers and a white patch on the lower part of the back, whilst its own color is uniformly black. It inhabits the northwest part of Madagascar. M. Pollen noticed one of the white-whiskered yellowish-red colored females with a little black young one on its shoulders, and when the mother was shot, it fell with her, so tightly had it grasped her wool. They live in companies, and like the very tops of the tallest trees of the forest for their home; they are usually seen in the evening, when they make a great deal of noise with their concert of grunts and cries, and they jump from bough to bough quite as quickly as a bird flies. They have a trick of falling down suddenly, when pursued, into the underwood, and when the hunter searches for them they will be seen rushing off to a distant tree. When reared in captivity they are docile and affectionate. They like to sit on their keeper's shoulder, and will eat nearly everything that is offered to them. Fruit they prefer, but they will crack a bird's skull and eat the brain. In some districts of Madagascar these lemurs are not allowed to be killed or to be kept either dead or alive, on account of some superstitious ideas of the natives. One of the most remarkable peculiarities of this lemur is the marked padded nature of the hand.



THE RUFFED LEMUR.

THE RUFFED LEMUR. Ellis, while journeying through one of the Madagascar forests, noticed, one bright, clear and bracing morning, a peculiar shouting

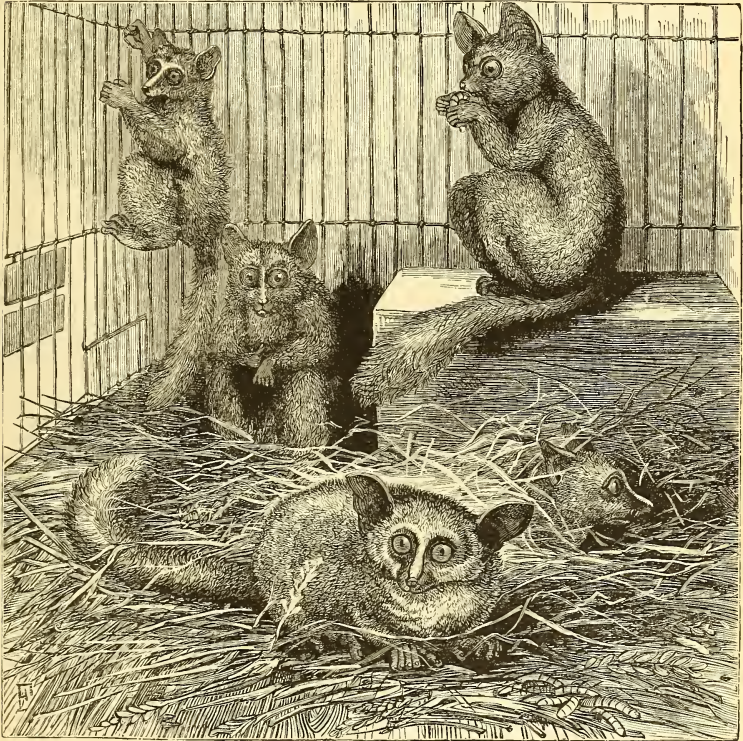
or hallooing, apparently at no very great distance. It was, he wrote, "not like any sound I had heard before, but resembled that of men or boys calling to each other more than anything else. At first I thought it was a number of people driving cattle out of the forest into the road. Still I heard no crashing amongst the underwood, and saw no signs of bullocks. Then I imagined it must be a number of bird-catchers, or squirrel-catchers. But on inquiring of my companions they said the noise proceeded from the Black-and-white Lemurs, of which there were great numbers in the forests. I had repeatedly seen lemurs of more than one species in the market at Tamative, and numbers among the people of the place. There were two or three of the large ruffed lemurs in a house near my own dwelling and they seemed to be quite domesticated. Though covered with thick, almost woolly, hair, they appeared to be ill at ease in wet or cold weather, but to luxuriate in the warm sunshine. I often noticed two or three of them together on a fine morning after rain; raised upon their hind legs, on the outside of the house, leaning back against the wall with the forelegs spread out, evidently enjoying the warmth of the sun which was shining upon them. They are often kept tame by the natives for a long time, and numbers are sold to the masters of ships and others visiting the port.

THE CALACOS are most interesting, lively creatures, and they have wonderful ears, which are long, large, and elliptical, and can be furled up if the animals become frightened. Moreover, they have a long heel-bone, and the tail, often bushy, either equals or is longer than the trunk.

THE SENEGAL CALAGO. This is interesting from being the earliest known species of true Galago, and also as apparently having the widest range of geographical distribution. Its habits in no way differ from the other Galagos, though it is asserted that when pressed by hunger it feeds on the gum-arabic, plentiful in the acacia trees of its native forests. Its eagerness in the capture of insect prey is well attested. It pursues beetles, sphinges, and moths with great ardor, even while they are on the wing, making prodigious bounds at them, and often leaping right upward to seize them. Should it by chance miss its object and accidentally fall from the branch to the ground it re-ascends with the rapidity of flight to renew the hunt. In captivity it freely eats chopped meat, eggs, and milk. Although good tempered in confinement, it nevertheless is vivacious and petulant. At night it is always on the move, and if the occasion arises, darts off to the woods without a moment's delay. The Moors say its flesh is good eating.

THE MAHOLI CALAGO is one of the most charming and interesting little creatures imaginable. The general coloring of the upper parts is a yellowish or brownish-grey, with slightly darker brindling on the back, a broad nose-streak, cheeks and throat white, and a tinge of yellow intermixed with the white of the

belly and inside of the limbs. The great tender-looking eyes are of a deep topaz yellow; the ears, flesh tint inside and downy white outside, are very big, and sometimes are rapidly folded together like those of Garnett's Galago, giving the



THE MAHOLI GALAGO AND THE SENEGAL GALAGO.

creature great variety of expression. The head is somewhat globular, with a short, high, almost pointed nose. The delicate woolly fur of the body lengthens and darkens on the tail, most so toward its end. Smith observes that they spring from branch to branch, and tree to tree, with extraordinary facility, and always

seize with one of their fore-feet the branch upon which they intend to rest. In their manners they manifest considerable resemblance to monkeys, particularly in their propensity to the practice of ridiculous grimaces and gesticulations. It spends the day time in the nests which it forms for itself in the forks of branches, or in the cavities of decayed trees; and in these nests the females also produce and rear their young, of which there are generally two at a birth. Dr. Kirk found it common among the wooded hills in East Africa. He says, singly and in pairs they

came about the camp-fires at night, and in the dim light resembled a bat in movements, by crossing from side to side, at single leaps, distances of six feet. A pair which lived a few years ago in the Zoological Gardens were a most interestingly tender couple. The day saw them nestled lovingly in their little box, and as night wore on they would peep out and cautiously and by stealth venture into their more spacious cage. Creeping down the branch, which served as a ladder, so noiselessly that not a movement could be heard, they would suddenly spring hither and thither, not like ordinary quadrupeds, but in a manner only to be compared with the leap and dart of a Tree Frog. Approaching a dish of meal-worms laid out for them, they would snap them up with their forepaws so quickly that the eye could not follow the motion; this rapidity of action equalled the Chameleon's tongue, whose protrusion and withdrawal baffles the eye, the fly gone being the main fact the observer is cognizant of. They seemed heartily to enjoy the Mealworms, these being dainties in comparison with their



MONTEIRO'S GALAGO.

ordinary food, which was sopped bread, rice and milk, and fruit.

MONTEIRO'S GALAGO. This handsome animal comes from both East and West Africa south of the Equator, and is about as large as a cat, with a great bushy tail some three or four inches longer than the body. This appendage it carries aloft very majestically, or swerves it to and fro as a kind of rudder in climbing, occasionally sweeping it along the back and belly, or curling it around the body after the manner of the lemurs. Being nocturnal in its habits, the eyes,

which are large, and with great, wide, dark pupils and a brown-red iris, have a glassy, glimmering appearance in daylight, but look like balls of fire at night. The ears are a remarkable feature; about a third shorter than the head, they stand out like great, flattish, elliptical-mouthed trumpets, ever changing position and shape, and catching all sounds, and they are nearly bare within and slightly hairy outside. It is of a light chinchilla-grey all over, save the tail and the throat, which are nearly white. The nose is black and bare, and the feet are deep brown. The entire length of the animal is twenty-eight inches, whereof the tail is sixteen.

THE ANGWANTIBO.

Our knowledge of this curious African species, which comes from West Africa and Old Calabar, truly a "three-fingered Jack," is due to the Rev. A. Robb, when missionary at Old Calabar. The limbs are slender, the hind ones a trifle larger and stronger than the others; both feet and hands conform to those of the Potto, with, however, a still greater reduction of the index finger. He observes that the hands and feet are divided, as it were, into two opposing portions, which he likens to the grasp of such climbing birds as the parrots. This peculiarity,



THE ANGWANTIBO.

along with the multiple blood-vessel division of the extremities, he thinks indicative of long-enduring muscular action, stealthy step, and adaptation for gripping twigs of trees, rather than for the purpose of capturing a prey.

THE SLOW LORIS. "This animal is tolerably common, but, from being strictly nocturnal in its habits, is seldom seen. It inhabits the densest forests, and never by choice leaves the trees. Its movements are slow, but it climbs readily, and grasps with great tenacity. If placed on the ground it can proceed, when frightened, in a wavering kind of trot, the limbs bent at right angles, like a muti-

lated spider. It sleeps rolled up in a ball, its head and hands buried between its thighs, and wakes up at the dusk of evening to commence its nocturnal rambles. The female bears but one young at a time. In confinement they are at first savage, bite severely, and in spite of general slow movements, can do so pretty quickly, uttering a rough grunt or growl. They, however, get quiet, if not absolutely docile, in time, and are kept without difficulty, requiring no other diet than plantains, or any other kind of fruit. They become content to remain in the smallest box, where another animal would soon pine and perish for want of exercise. When for a time confined they readily abandon their nocturnal habits, eat during the day and rest at night. They will thus remain contentedly on an old punkah hung in a lumber room for many days;

but, unless thoroughly reclaimed, they will often seize an opportunity during night to escape, never travelling far, however, and generally turning up in some thicket or bamboo-clump, or other quiet corner in the grounds. They greedily devour all sorts of insects, and also birds eggs."



SLOW LORIS.

On one occasion Captain Tickell watched an individual crawling along the floor to seize a cockroach. When it had approached within ten or twelve inches, it drew its hind feet gradually forwards until almost under its chest; it then cautiously and slowly raised itself up into a standing position, balancing itself awkwardly with its uplifted arms, and then, to his astonishment, flung itself, not upon the insect, which was off "like an arrow from a Tartar's bow," but on the spot which it had, half a second before, tenanted. This

is its manner, however, of catching such of its living food as will wait long enough. Grubs, caterpillars, and the slower beetles are seized in one or both hands, and slowly carried to its mouth, and there solemnly munched up; the *Nycticebus* looking all the time, with its delicate small muzzle and its protuberant eyes, like one of those apologetic pigmy lapdogs ladies love to carry. It is almost wholly silent, but when roused to take food, now and then it utters a feeble tone, like the crackling of some substance in the fire. When angry, and about to bite, it gives forth a tolerably loud growl or grunt. When he is turned out of his quarters in daytime, he reminds one of a very young, awkward puppy without a tail. But his eyes, however, are enormous and owl-like, and seem to start protuberantly forwards with an unmeaning stare. When his wits return, and the scare ceases, he softly turns on his heel, and with a very slow, measured pace—hand-over-hand, as sailors term it—makes for his box. There is a cool, sedate manner about his whole proceedings which may either be taken for wisdom or stupidity. During the night, when hungry cravings send him forth on his own account, his

eyes light up, and he seems more alive to his interests, though seldom increasing the activity of his movements. On a table he waddles like a sailor newly ashore, but with a rope or bough to grasp, by foot or hand, there ensues a grip like a vise, and a steady mode of ascent putting him betimes out of reach or danger.

THE SLENDER LORIS. The meager figure and long lank limbs of this creature give it a droll, half-starved look, its skin-tight robes and silent melancholy lending oddity, but not gracefulness, to its charms. If seen during the day, and



THE SLENDER LORIS, SHOWING ITS ATTITUDES AND HABITS.

made to walk on a flat surface, what between its blinking, peeping eyes and awkward gait, a feeling of pity devoid of admiration is apt to arise. But watched at night, when it is clambering among branches, its character changes to that of a more lithe and nimbler animal, whose great staring eyes and gliding progress most surely indicate a nature less apathetic than a more hasty conclusion would warrant. Its uncommonly long body, devoid of a tail, is rendered more striking on account of limb-length, and the color is usually of an unequal sooty-grey, the back mingled with much rusty-tinted or tawny hairs.

The Slender Loris is very common in the lower country of the south and east of Ceylon. Dr. Templeton, who had several of them, observes "that after a few months' confinement they soon begin to pine and die. One was particularly noticed. If the room was perfectly quiet about dusk, it ventured about, crawling along the rails of the chairs with a very gentle movement. There was an interval of nearly



THE MALMAG.

a minute in the closing of its hands on the parts of the furniture which it grasped in succession, while moving its head from side to side with much grave deliberation. But when a spider or other insect came within its reach, its clutch at it was quick as lightning, and with an equal rapidity it was conveyed to the mouth. It seemed particularly anxious to avoid having its hind extremities touched. When approached, it retiringly slunk along the stick placed slantingly in the corner for its use, or along the back of the chair, with the usual deliberate movement. Its

great goggle eyes would be fixed immovably on your face or hands if held towards it, and with every expression of fear. Its mouth appears small, and so little distensible that one cannot imagine it capable of biting anything except of very small size. The natives, nevertheless, assert that it destroys peacocks in the jungle, seizing them by the neck, which it clutches with such tenacity that the bird soon



THE AYE-AYE.

falls exhausted to the ground off its perch, or in its sudden flight, attempting to escape its persecutor. Having devoured the brain, the Loris leaves the rest of the body untouched."

THE MALMAG. This is a small, active creature, which appears to excite great terror in the minds of the natives of the East Indian Archipelago, from its

curious-shaped face, and sudden appearance at dusk. So impressed are the inhabitants of some portions of Java with its malevolent influence, that if they see one of them on a tree near their rice-grounds, they will leave them uncultivated.

About the size of a small, common squirrel, this tiny cause of fright has a round head, like that of a Marmoset, a pointed muzzle, large ears and staring eyes. Its grinning mouth gives a queer and comical look to the face. Its body is about six inches in length. The limbs are long, especially the hind pair, and the tail—about nine inches long—is slender, and furnished with a brush of long hair at the end. The color of the body is fawn-brown as a rule, and the bare parts are of a flesh tint, and the forehead, face, and nose are reddish, and there is a black eye-streak. The name is derived from the fact of the "tarsus," or ankle-bones, being remarkably developed, the heel-bones being very long.

THE AYE-AYE. This is one of the most remarkable animals in the world, both on account of its peculiar squirrel shape and lemur-like construction, as well as on account of its habits. The animal was first kept and described by the traveller Sonnerat; who obtained a male and female from the west coast of Madagascar. He kept them on board ship and fed them on boiled rice for two months, when they died, and he used to remark that they used a finger of each hand to eat with, after the fashion of the Chinese, who use chopsticks. Having shown them to some of the natives of the east coast of the island, they were surprised, and denied that these curious-looking creatures belonged to their part of the country; moreover, they ejaculated "Aye-aye" on seeing them, and thus gave the familiar name to the breed. They are rare animals, and live a solitary life, or are found in pairs, but they never associate in bands of several individuals. They are essentially nocturnal in their habits, for they sleep all the day long in the thick bunches of leaves of the bamboos in the most impenetrable part of the forests, and they are therefore rarely seen, and are only met with quite by accident. The Aye-Aye feeds on the pith of the bamboos, and on sugar-canes, but it also loves beetles and their grubs as a change of food. During the dark nights it awakens the echoes of the forest with a kind of plaintive grunting, and jumps from bough to bough, examining the bark of old trees most carefully in order to find its favorite insect-food.

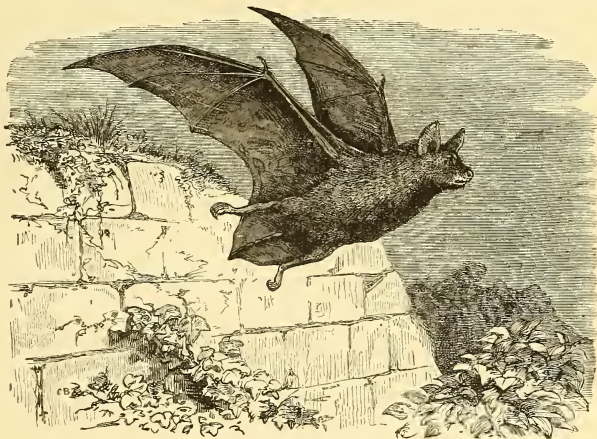
The Aye-Aye is about three feet in length, including the long tail, and there is a half fox, half lemur look about it, with a little of the squirrel. The hind feet at first sight are like those of a monkey, as are also the limbs; but the hands are not in keeping with the rest, for the fingers are of all kinds of lengths, and the middle one looks as if it were atrophied and wasted. The Aye-Aye, according to the discovery of M. Soumagne, honorary consul of France in Madagascar, constructs true nests in trees, which resemble enormous ball-shaped "birds'-nests." They are composed of the rolled-up leaves of the so-called "Traveller's Tree," and are lined with small twigs and dry leaves. The opening of the nest is narrow, and is placed on one side, and it is lodged in the fork of the branches of a large tree.

CHAPTER IX.

ORDER II.—CHIROPTERA, OR WING-HANDED ANIMALS.

THE BAT.

One of those ancient fables ascribed to Æsop, which were the delight of our younger days, contains a description of a battle between the birds and the beasts.



MARSH BAT. (*One-half natural size.*)

The grounds of the quarrel we do not remember, and indeed the moral of the fable was tacked onto the conduct of the Bat. Availing himself of his combination of fur and wings, that astute animal hovered over the field of battle, and took his place on one side or the other, according to the direction in which the tide of success appeared to be turning, with the purpose, of course, of claiming in any case to be on the side of the victors. But this finesse was unsuccessful; the traitor was

scouted by both parties, and has ever since been compelled to make his appearance in public only at night. Passing over the ingenious explanation thus afforded of the nocturnal habits of the bats, this fable reflects pretty clearly the state of uncertainty in which the ancients were as to their precise nature. The union of a mouse-like body with long wings was a great puzzle to people who had no sound principles of natural history classifications to go upon; and even among the naturalists of antiquity there was much doubt as to the true position to be assigned to animals so singularly endowed. Aristotle seems to have thought they were birds with wings of skin; and Pliny describes them as the only birds which bring forth their young alive and suckle them. Among the Jews it is perfectly clear that the Bat was reckoned a bird; it is distinctly included among the unclean fowls. The obfuscation displayed by ancient writers with respect to the Bat is well shown in the following passage, in which Scaliger summarizes their opinions:—"It is indeed," he says, "an animal of marvelous structure; biped, quadruped; walking, but not with feet; flying, but not with feathers; seeing without light, in the light, blind; it uses light beyond the light, but wants light in the light; a bird with teeth, without a beak, with teats, with milk, bearing its young even when flying." Can it be wondered at that such a creature should be a puzzle?

Nevertheless, some ancient writers seemed to have entertained clearer notions on the subject, such as Macrobius, who maintained that as the Bat walked like a quadruped it ought to be classed with quadrupeds. Throughout the Middle Ages, however, the general opinion even of professed naturalists was that bats were birds; and we find this notion prevailing down to the time of Aldrovandus, in the latter part of the sixteenth century, and of Jonston, whose gigantic compilation was published in 1657. It is a question whether this notion that bats are birds has even yet been entirely dispelled in the popular mind, and no doubt many people still regard them as birds, because they can fly, just as whales and seals are considered fishes, because they can swim, and centipedes and scorpions reptiles, because they crawl. John Ray, the father of modern zoology, writing in 1683, was the first to refer the bats to their true position among the Mammalia (animals which suckle their young), and in this course he was followed by Linnæus, who actually placed these puzzles of former naturalists in his highest order of Mammals, the Primates, along with man and the apes. The position assigned to them by Linnæus in the series of animals they have virtually retained in nearly all systems to the present day. By all modern zoologists the bats have been regarded as a distinct order of the Mammalia, characterized especially by their possession of the power of flight, and the consequent modification of the structure of their fore-limbs, which is indicated in the name given to the group (Chiroptera—hand-wings). They are, in fact, the only true flying mammals, and, indeed, the only truly flying Vertebrates except birds, for the so-called flying squirrels, flying lemurs, and flying opossums are only furnished with a broad fold of skin on each side of the body, which, when expanded by the spreading of the limbs, acts as a sort of parachute to sustain them

for a time in the air. This is also the case with flying dragons, although in them the membrane is stiffened by means of a portion of the ribs; and even in the flying fishes, in which the organs of aerial locomotion are formed by the fore-limbs, these merely sustain the fish in the air for a time by the increased surface they give it, but do not serve as real wings, like those of bats and birds.

The organs of the senses are well developed. The ears are almost always of considerable size, sometimes very large and membranous, and in most cases there



THE COLLARED BAT.

is in front of the cavity a sort of lobe of variable form, called the earlet, or tragus, representing the little rounded lobe which, in the human ear, projects from behind the cheek over the opening. The nostrils are either simple slits or apertures at the end of the muzzle, or surrounded by leaf-like organs, often of the most extraordinary forms; in fact, this tendency of the skin in bats to run out into membranous expansions is one of their most remarkable characteristics, and, from their mode of life, this great development of the skin system would seem to be almost essential to their existence.

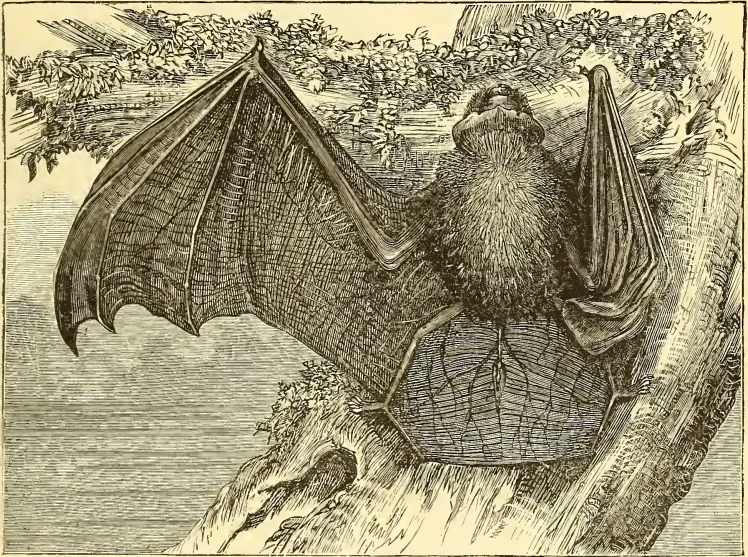
The old proverbial expression, "As blind as a bat," is certainly not founded on a due appreciation of facts, for bats are by no means blind; on the contrary, they are furnished with very efficient eyes, although, in most cases, these are little bead-like organs, very unlike the eyes usually seen in animals whose activity is nocturnal or crepuscular. But it would appear that the office of the eyes in guiding these animals is, at all events, supplemented by some other means. Towards the end of the last century, the Abbé Spallanzani made some exceedingly interesting, although



LONG-EARED BATS IN FLIGHT.

certainly very cruel experiments on various species of bats. He blinded these animals, sometimes by burning the eyes with a red-hot wire, sometimes by removing the organs altogether, and even filling up the orbits with wax, and then allowed them to fly. In spite of the mutilation, the unfortunate little creatures continued quite lively, and flew about as well as those which still retained their eyes; they did not strike against the walls of the room, or the objects in it, avoided a stick held up before them, and showed a greater desire to keep out of the way of cat or the hand of a man than to escape contact with inanimate objects. One of these blinded bats was set free in a long underground passage, which turned at right

angles about its middle. It flew through the two branches of this passage, and turned, without approaching the side-walls. During its flight it detected a small cavity in the roof at a distance of eighteen inches, and immediately changed its course in order to conceal itself in this retreat. In a garden a sort of cage was prepared, with nets, and from its top sixteen strings were allowed to hang down. Two bats were introduced into this enclosure, one blinded, the other with its eyes perfect. Both flew about freely, never touching the strings with more than the



BLAINVILLE'S BAT.

tips of the wings. Finally, the blind bat discovered that the meshes of the enclosing net were large enough to get through, and made its escape; and, after flying about for a time, made its way rapidly and directly to the only roof in the neighborhood, in which it disappeared. In a room containing numerous branches of trees, or in which silk threads, stretched by small weights, were suspended from the ceiling, the bats, though blinded, avoided all these obstacles; and when, after tiring themselves with their aerial evolutions, they settled on some object for the sake of rest, they would immediately arise again on an attempt being made to

seize them with the hand. From these experiments it was perfectly clear that in threading the galleries of caverns and other narrow and pitch-dark places to which bats commonly resort for their diurnal repose, these animals were guided by some other sense than that of sight, and the worthy abbé set himself to ascertain what this sense might be. He commenced operations by covering the body of one of his blind bats with varnish, and found that this had no effect in rendering its movements uncertain. He then stopped up the ears with wax, and finally with melted sealing-wax, and still the bats obstinately persisted in avoiding obstacles placed in their way. Consequently they did not *hear* their way in the dark. Their remained the senses of smell and taste. To test the former the nostrils were stuffed up, but the only effect of this operation was to bring the creature speedily to the ground, owing to difficulty of breathing. Little fragments of sponge impregnated with musk, camphor or storax were fastened in front of the nostrils, and then the bats flew about as freely as ever, and showed the same power of avoiding contact with objects in their path. The removal of the tongue, as might be expected, produced no result.

The food of the great majority of bats consists of insects, which they capture on the wing. The members of one great family, however, and some species of another, feed upon fruits; whilst a few find at least a part of their nourishment in the blood of other animals. They generally fly in the twilight of the evening and morning, retiring to obscure places during the day, although some species will occasionally come out of their concealment by daylight.

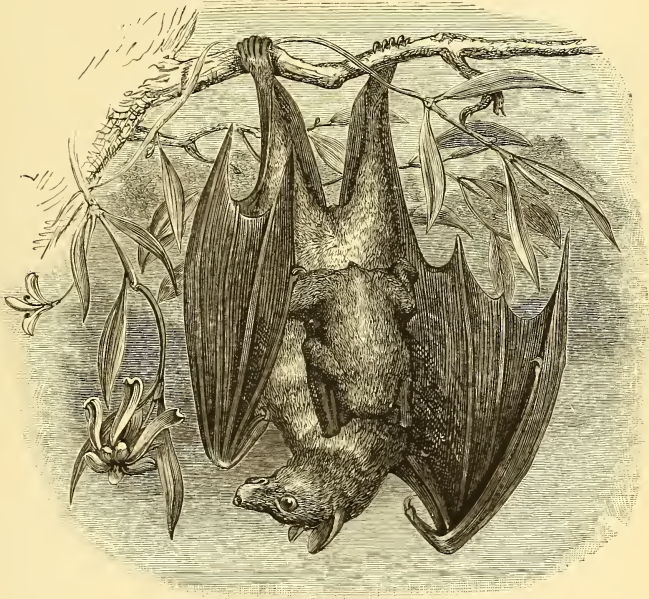
In temperate and cold climates they pass the winter in a torpid state suspended by their hind claws in their ordinary places of daily retreat, where they are often to be found in immense numbers.

The greater number of species of bats which have been described from various parts of the world, but especially from tropical and sub-tropical regions, display two very strongly-marked types of structure, associated in general with very different habits and modes of life. Some are exclusively confined to a fruit diet, or only consume animal food as an exceptional dainty; while the others almost as exclusively find their nourishment in the swarms of insects which everywhere people the air. Of the latter, however, some few feed upon fruits, and others are said to diversify their insect fare by occasionally sucking the blood of other animals, and even of man himself.

THE FRUIT-EATING BATS, on account of the comparatively large size of most of the species, are characterized by having the face elongated and dog-like—whence the name of flying foxes is often applied to them by European residents in the countries where they occur.

“A favorite resort of these bats is the lofty india-rubber trees, which on one side overhang the Botanic Gardens of Paradenia, in the vicinity of Kandy. Thither for some years past they have congregated, chiefly in the autumn, taking

their departure when the figs of the *Ficus elastica* are consumed. Here they hang in such prodigious numbers, that frequently large branches give way beneath their accumulated weight. Every forenoon, between the hours of 9 and 11, they take to wing, apparently for exercise, and possibly to sun their wings and fur, and dry them after the dews of the early morning. On these occasions their numbers are quite surprising, flying in clouds as thick as bees or midges. After



COLLARED FRUIT BAT WITH YOUNG.

these recreations they hurry back to their favorite trees, chattering and screaming like monkeys, and always wrangling and contending angrily for the most shady and comfortable places in which to hang for the rest of the day, protected from the sun. The branches they resort to soon become almost divested of leaves, these being stripped off by the action of the bats attaching and detaching themselves by means of their hooked feet. At sunset they fly off to their feeding grounds, probably at a considerable distance, as it requires a large area to furnish sufficient food for such multitudes.

"In all its movements and attitudes, the action of the *Pteropus* (the scientific name for the bats of this genus) is highly interesting. If placed upon the ground, it is almost helpless, none of its limbs being calculated for progressive motion; it drags itself along by means of the hook attached to each of its extended thumbs, pushing at the same time with those of its hind feet. Its natural position is exclusively pensive; it moves laterally from branch to branch with great ease, by using each foot alternately, and climbs, when necessary, by means of its claws.

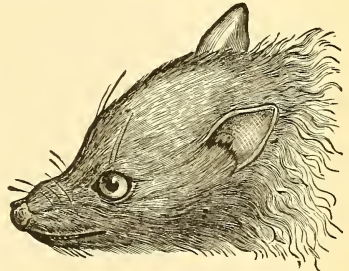
"When at rest or asleep, the disposition of the limbs is most curious. At such times it suspends itself by one foot only, bringing the other close to its side, and thus it is enabled to wrap itself in the ample folds of its wings, which must envelop it like a mantle, leaving its upturned head uncovered. Its fur is thus protected from damp and rain, and to some extent its body is sheltered from the sun.

"As it collects its food by means of its mouth, either when on the wing or when suspended within reach of it, the Flying Fox is always more or less liable to have the spoil wrested from it by its intrusive companions, before it can make good its way to some secure retreat in which to devour it unmolested. In such conflicts they bite viciously, tear each other with their hooks, and scream incessantly, till, taking to flight, the persecuted one reaches some place of safety, when he hangs by one foot, and grasping the fruit he has secured in the claws and opposable thumb of the other, he hastily reduces it to lumps, with which he stuffs his cheek-pouches till they become distended like those of a monkey. Thus suspended in safety, he commences to chew and suck the pieces, rejecting the refuse with his tongue."

THE INDIAN FLYING FOX. Southern Asia and its dependent islands may be regarded as the metropolis of the Fruit Bats. Here the species are most plentiful, and most numerously represented by individuals; it is here also that the largest species occur. One of the best known is the Indian Flying Fox. "From the arrival of the first comer, until the sun is high above the horizon, a scene of incessant wrangling and contention is enacted among them, as each endeavors to secure a higher and better place, or to eject a neighbor from too close vicinage. In these struggles the bats hang themselves along the branches, scrambling about hand over hand with some speed, biting each other severely, striking out with the long claw of the thumb, shrieking and cackling without intermission. Each new arrival is compelled to fly several times round the tree, being threatened from all points; and when he eventually hooks on, he has to go through a series of combats, and be probably ejected two or three times, before he makes good his tenure." No doubt these squabbles are rendered more violent by the disgracefully dissipated habits in which the bats indulge during their nocturnal expeditions, for, according to Mr. Francis Day and other observers, "they often pass the night drinking the toddy from the chatties in the cocoanut trees, which results either in

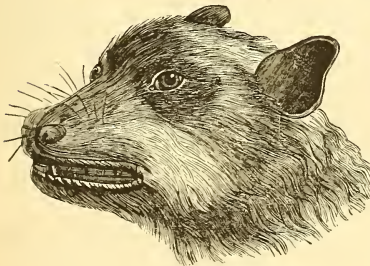
their returning home in the early morning in a state of extreme and riotous intoxication, or in being found the next day at the foot of the trees sleeping off the effects of their midnight debauch."

THE MANED BATS. It will be unnecessary to do more than refer to a few of the numerous species inhabiting the islands of the Eastern seas, as their habits in all cases are almost exactly alike, and it would be useless to attempt the bare description of a number of closely allied species. The Philippine Islands have a rather remarkable species, the Maned Friut Bat, the head of which is shown in our illustration. Japan possesses a smaller form, about eight inches long, and which is characterized by the woolly nature of its fur. Those islands of the Eastern Archipelægo from Celebes to New Guinea and the Solomon Islands, which, according to Mr. Wallace, belong to the great Australian region, are abundantly supplied with fruit-eating bats, such as the Grey Fruit Bat, a small species which inhabits Timor and Amboyna. The small islands scattered over the ocean to the east also possess their peculiar species.



HEAD OF GREY FRUIT BAT. (*Natural size.*)

THE HAMMER-HEADED BAT.

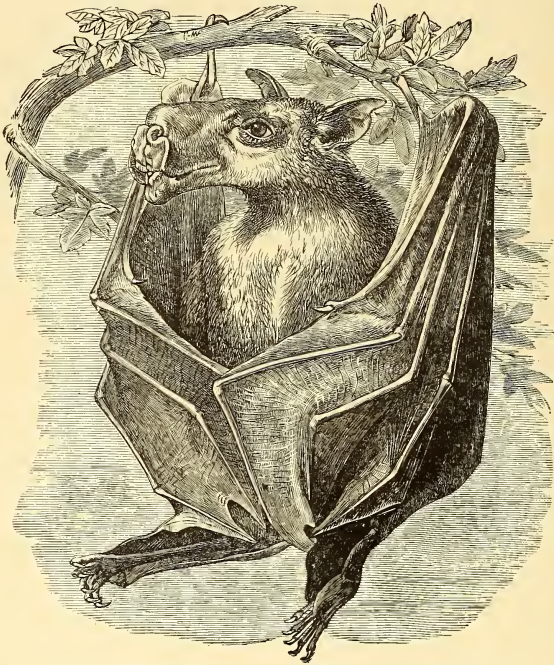


HEAD OF THE MANED FRUIT BAT.
(*Natural size.*)

A species presenting so grotesque an appearance that it might almost have served as the original of one of Cal-
lot's demons (see next page), was discovered some years ago in Western Africa, by M. Du Chaillu, and described by Dr. Allen, of Philadelphia. It differs from all other Pteropine bats in the extraordinary size and shape of the head, which has a hammer-like appearance, owing to the muzzle being enormously developed and cut off abruptly in front, and the whole of this part of the animal is garnished with curious fleshy lobes, which give it a

most singular aspect. The length of the head and body is about twelve inches, and the expanse of the wings twenty-eight inches. Of its habits nothing appears to be known.

THE INSECTIVOROUS BATS. The second sub-order of bats—which includes a much larger number of species, displaying a far greater variety of characters than those which have hitherto occupied our attention—has received the name of *Insectivora*, from the general nature of the diet of the animals composing it. A considerable number of insectivorous bats of different families have

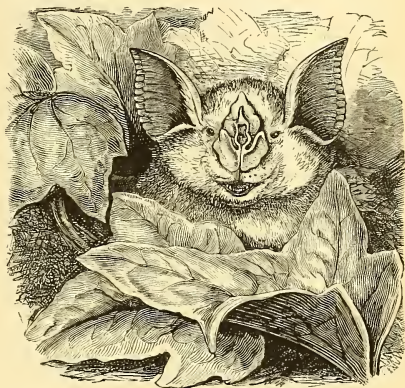


THE HAMMER-HEADED BAT. (*Three-fourths natural size.*)

their noses furnished with curious leaf-like appendages, often of most complicated construction, and these organs probably assist materially in the exercise of that delicate sense of touch which supplements or takes the place of the power of vision in guiding the bats in their obscure abodes.

THE GREATER HORSESHOE BAT. Although most of the Horseshoe Bats inhabit warm countries, several species are found in more temperate regions.

One of these is the Greater Horseshoe Bat, which occurs, although not very abundantly, in various parts of the south of England. He is a puffy and rather pousy-looking little fellow, with a head which appears full large for his body. The length of his head and body is about two and a half inches, and that of his tail, which is entirely enclosed in the interfemoral membrane, about an inch and one-third. His wings have an expanse of thirteen or fourteen inches. The fur on the upper surface is reddish-grey, and on the lower surface very pale grey; the membranes are of a dingy brown color, and the ears and nasal appendages pale brown. The ears are large, broad at their attachment to the head, pointed and turned outwards at the apex. The Greater Horseshoe Bat lives chiefly in deserted quarries, old buildings, and natural caverns, and is said to frequent the darkest and most inaccessible parts of such excavations. In such retreats it passes the winter in a torpid state, coming forth in the spring to prey upon the insects which constitute its sole nourishment.



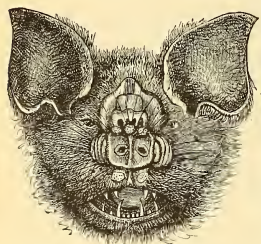
HEAD OF THE GREATER HORSESHOE BAT.

THE LESSER HORSESHOE BAT. The Lesser Horseshoe Bat, the second British species of this genus, was formerly regarded only as a small variety of the preceding, and was first distinguished by Colonel Montague, who also first detected its occurrence in that country. It is about half an inch shorter than the Greater Horseshoe Bat, and its expanse of wing is about nine inches. In general aspect it resembles the larger species. The fur is equally soft and full, and of the same colors, except that the upper surface is a little browner, and the lower parts rather more tinged with yellow. In its habits this kind seems to agree with the Greater Horseshoe Bat.

HEAD OF LESSER HORSESHOE
BAT.

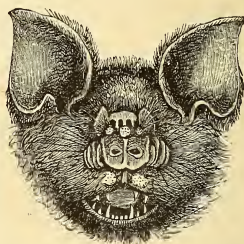
THE DIADEM BAT, which is found among the mountains of Northern India, extends its range as far north as Amoy in China. The character of the nose-leaf in this species will be seen from the annexed figures, which show strikingly the great complexity of this curious apparatus. Behind the nose-leaf is the aper-

ture of a peculiar sac situated in the forehead, which is characteristic of many species of the genus, and which can be turned out like the finger of a glove at the pleasure of the animal, and the surface of which secretes a waxy substance. Its centre bears a tuft of straight hairs, the tips of which project from the orifice when the sac is drawn in. The Diadem Bat is rather a large species, the head and



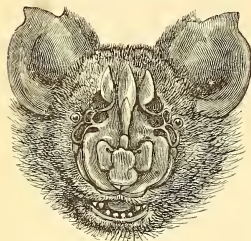
HEAD OF THE MALE DIADEM BAT, ENLARGED.

body measuring from three and a half to four inches in length, and the expanse of the wings being about two feet. Its general color is light brown, darker on the upper surface, where the hairs are ringed with three colors—pale sepia at the base, then grey, then dark sepia, with the extreme tips a little paler.



HEAD OF THE FEMALE DIADEM BAT, ENLARGED.

In captivity, according to Captain Hutton, the large ears of this animal are kept in a constant, rapid, tremulous motion, and the creature emits a low purring sound, which is exchanged for a sharp squeak when it is alarmed or irritated. When it is suspended in a resting attitude the tail and interfemoral membrane are turned up, not in front, as usual in bats, but behind, upon the lower part of the back. In this species and its allies Captain Hutton further noticed that when they



HEAD OF THE PERSIAN TRIDENT BAT, ENLARGED.

are disturbed "the whole of the facial crests are kept in a state of constant agitation; and as the animal hangs suspended by the feet, the head and muzzle are stretched forth and turned about in every direction, as if for the purpose of sniffing out the presence of danger, and ascertaining the cause of the disturbance.

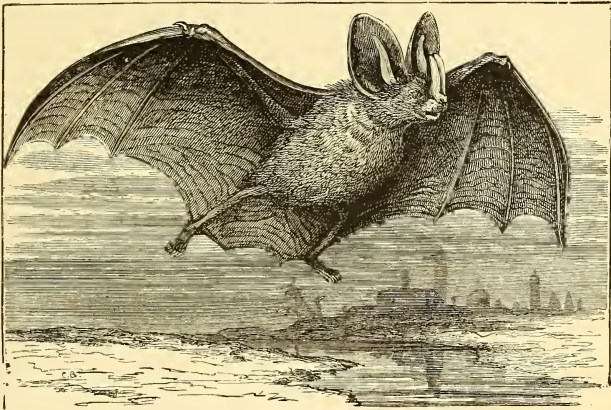


HEAD OF THE CORDATE LEAF BAT.

THE PERSIAN TRIDENT BAT. Under this name Mr. Dobson describes a very remarkable species of this family in which the nasal appendages seem to attain the extreme of complexity. The ears also are of a very peculiar construction.

This is a small species, about two and a quarter inches long, and of a pale buff color, specimens of which were obtained at Shiraz, in Persia, at an elevation of 4,750 feet above the sea. Its nearest ally, curiously enough, is to be found, according to Mr. Dobson, in the Australian Orange Bat.

THE LYRE BAT. This extraordinary little creature, which measures only about three and a half inches in length, and is of a slaty blue color, paler beneath, has its ears considerably longer than its head, and united for nearly half the length of their inner margin, and the earlets (*tragi*) very long, divided at the end into two parts, one of which, the posterior, is pointed, and a good deal longer than the



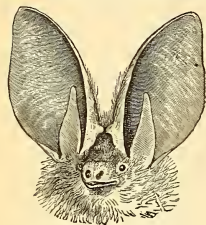
THE AFRICAN MEGADERM. (*One-third natural size.*)

other, which is rounded off at the end. The ears are, in fact, about half the length of the head and body.

The great size of the ears and nasal appendages in these bats have led Europeans in India to give them the name of Vampires, as they agree in these particulars with the true Vampire Bats of South America. The account given by Mr. Blyth is so interesting that, although rather long, we may give it entire :

"Chancing one evening," he says, "to observe a rather large bat enter an outhouse from which there was no other egress than by its doorway, I was fortunate in being able to procure a light, and thus to proceed to the capture of the animal. Upon finding itself pursued, it took three or four turns round the apartment, when down dropped what at the moment I believed to be its young, and which I deposited in my handkerchief. After a somewhat tedious chase, I then secured the object of

my pursuit, which proved to be a fine female of *Megaderma lyra*. I then looked to the other bat which I had picked up, and, to my considerable surprise, found it to be a small *Vespertilio*, which is exceedingly abundant, not only here, but apparently throughout India. The individual now referred to was feeble from loss of blood, which it was evident the *Megaderma* had been sucking from a large and still bleeding wound under and behind the ear; and the very obviously suctorial form of the mouth of the Vampire was of itself sufficient to hint the strong probability of such being the case. During the very short time that elapsed before I entered the outhouse, it did not appear that the depredator had once alighted; and I am satisfied that it sucked the it on the wing, and that it was seeking a quiet nook where vital fluid from its victim as it flew, having probably seized



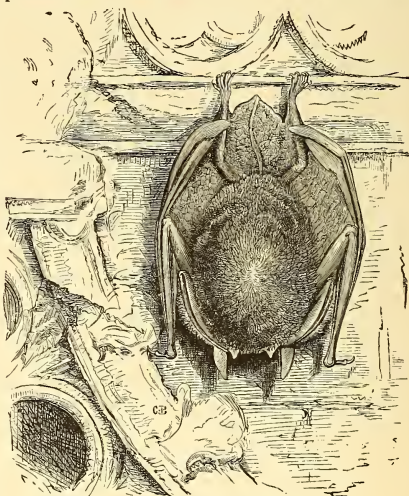
HEAD OF LONG-EARED BAT.

it might devour the body at its leisure. I kept both animals separate till next morning, when, procuring a convenient cage, I first put in the *Megaderma*; and after observing it for some time, I placed the other bat with it. No sooner was the latter perceived than the other fastened upon it with the ferocity of a tiger, again seizing it behind the ear, and made several efforts to fly off with it; but finding it must needs stay within the precincts of its cage, it soon hung by the hind legs to the wires of its prison, and after sucking its victim till no more blood was left, commenced devouring it, and soon left nothing but the head and some portions of the limbs."

The other Oriental species, the Cordate Leaf Bat, very nearly resembles the preceding, both in color and general characteristics.

THE AFRICAN MEGADERM.

The best known African species is an inhabitant of the west coast of that continent, where it is found in Senegal and Guinea. In this bat

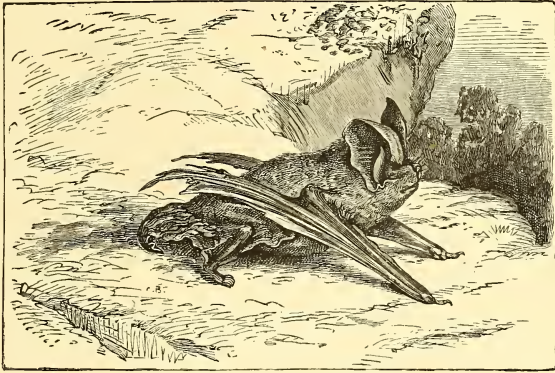


LONG-EARED BAT SLEEPING.

the ears and nasal appendage attain even a greater development than in *Megaderma lyra*; the earlet is very long, especially the posterior division of it; the ears are

united by their inner margin for about half their length; and the fur is of an ashy color, with a faint yellowish tinge.

THE LONG-EARED BAT. This common British species is known by the large size of the ears, which are united by their inner margins over the middle of the crown of the head. Hence this group, the *Plecoti* of authors, may be regarded as naturally forming a sort of stepping stone from the Megaderms, with their extravagant dermal developments, to the more commonplace "Vespertiliones." In the Long-eared Bat this character is very striking, the ears being nearly seven-eighths as long as the head and body. The fur in the Long-eared Bat is long, thick, and soft; the hairs are blackish at the base, tipped above with brown,



BARBASTELLE WALKING.

with a reddish or greyish tinge, which appears to vary with the age of the individuals, and beneath with pale, brownish-grey. All the membranes are dusky, usually with a reddish or brownish tinge. The head and body in this species measures about one and five-sixths inches in length, and the tail is about one-sixth of an inch shorter. Its expanse of wing is ten inches.

"At all hours," says Mr. Bell, "through the dead of the night, and in the darkest nights, in the open fields or elsewhere, we have heard the shrill chatter of the Long-eared Bat over our heads, its voice, once known, being easily recognized from that of any other species." When sleeping, the long delicate ears are not generally left exposed, but are folded down under the wings, where they are carefully tucked away. This is commonly the case when the bat has settled down for its day's sleep, and always occurs during hibernation. When the ears are thus disposed of, the earlets or tragi still project from the head, giving the little creature

the appearance of possessing only a pair of short pointed ears (see figure). In captivity the Long-eared bat soon becomes very tame and familiar. These bats will fly about the room, play with each other, and may soon be induced to feed from the hand.

THE BARBASTELLE. This curious little bat measures about two inches in length of body, and its tail is about a quarter of an inch shorter. The expanse of its wings is ten inches. The cheeks are covered with black hair, which forms a sort of moustache. The ears are irregular in form, their tips being slightly truncated, and their outer margins sweeping in so as to form a notch, from which five or six folds run half way across the ear. The eyes are almost concealed by the black hairs on the cheeks. The fur is long and soft, and of a brownish-black color, with whitish tips, which are longer on the hairs of the lower surface. The membranes are dusky black.

In its habits the Barbastelle seems to be rather solitary; both in its places of repose and in its evening flights it is generally seen alone. It sometimes takes up its abode in caverns, but almost any kind of retreat will suit it. Thus it may be found in the crevices of walls and trees, in the roofs of sheds, behind shutters, and in fact in almost any situation that offers it a chance of concealment. Its flight is peculiar, being a lazy, desultory sort of flutter, performed as if with no particular object; and according to Mr. Bell it is in the habit of approaching evening promenaders "so closely that the flutter of its wings may be heard, and even the cool air thrown by their movement felt upon the cheek."



HEAD OF NOCTULE.

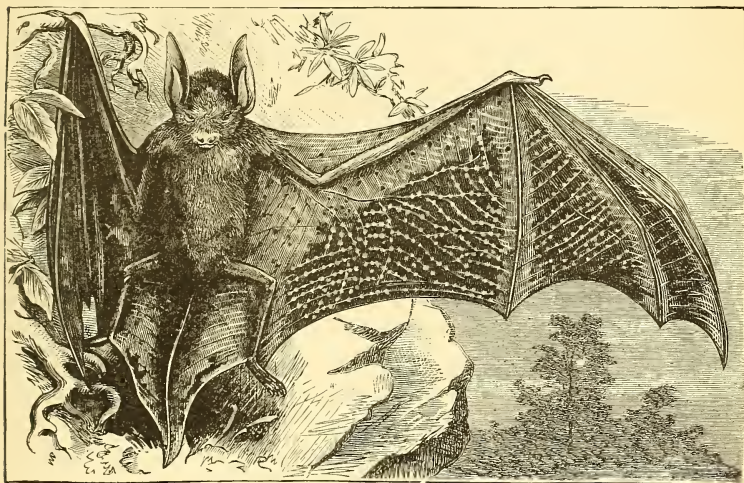
that the flutter of its wings may be heard, and even the cool air thrown by their movement felt upon the cheek."

THE NOCTULE. The Great Bat, or Noctule, is another well-known British species, although far from being so abundant as the preceding. Its head and body measures about three inches in length, and its wings are about fourteen inches in expanse. Its fur is of a reddish-brown color, nearly uniform throughout.

The Noctule seems to prefer for its resting place the hollows of old trees, and generally to avoid buildings, although instances of its taking up its abode in or about the latter are not wanting. It is gregarious in its habits, considerable numbers often retiring together to the same hiding place.

WELWITSCH'S BAT. This curious bat is especially remarkable for the brightness and variegation of its colors. The general tint of the fur is brown, the hairs being black at the base, with brown tips, which are longer and paler on the hairs of the lower surface, rendering the fur of that part paler than that of the

back. The head also is pale, and the muzzle shows an orange tint, as do the ears, which are longer than the head, and rather acute, with a long pointed tragus, reaching nearly half-way up the ear. But the most striking peculiarity of the species consists in the coloring of the wings, which are yellowish-brown, dotted with black near the body, and beyond this chiefly blackish-brown, with numerous yellow dots arranged more or less regularly in curved lines, while a broad band of brownish-orange, bearing a few black dots, follows the course of the fore-arm, and gives origin at the wrist to three other bands of the same color, one running down the margin of the wing and enclosing the first and second fingers, the other two

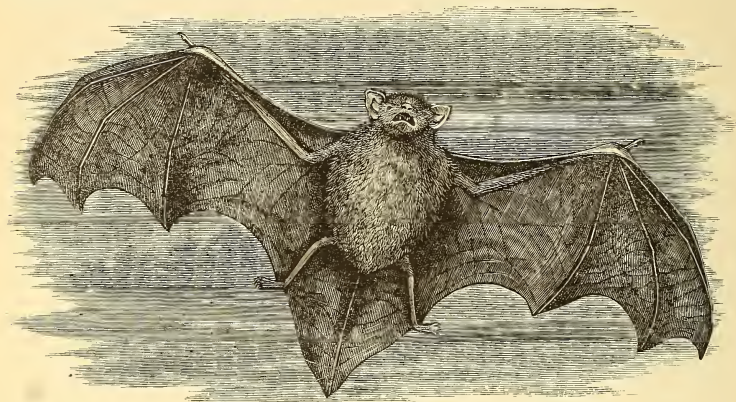


WELWITSCH'S BAT. (*Half natural size.*)

following the course of the third and fourth fingers, and thus breaking the dark ground color of the wing into three triangular patches. The arms and legs in Welwitsch's Bat are yellow, but the feet are black. The length of the head and body is about three inches.

THE NEW ZEALAND BAT. Two species of bats have been ascertained to inhabit New Zealand, and both present characters which isolate them systematically, just as much as their distant insular habitation does absolutely. The present species was discovered by J. R. Forster, the naturalist who accompanied Captain Cook, and described by him. It has short rounded ears; there are

cutaneous lobes at the angles of the mouth, and three true molars on each side in both jaws. The upper incisors are in pairs, the inner ones much larger than the outer, and are separated from the canines; the pre-molars are small and pointed, and the molars of the ordinary form in the allied genera. The tragus is short, rather broad, and rounded at the tip. The wing-membranes spring from the base of the toes; the interfemoral membrane is large, and contains the long tail, of which the tip only projects; and the heel-spurs are long, extending one-third of the distance between the heel and the tip of the tail.

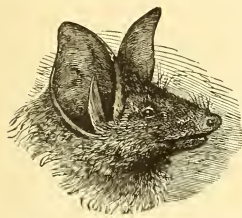


NEW ZEALAND BAT. (*Half natural size.*)

THE MOUSE-COLORED BAT. The Common Bat of the continent of Europe is a large species more than three inches and a half in length. Its fur is of a pale reddish-brown color above and greyish-white beneath, but with the bases of all the hairs black. In many parts of Europe, however, this species is exceedingly abundant, and lives by hundreds together, chiefly in church-towers and other similar localities, issuing forth in the evening to prey upon the insects which fly at that time. Moths are said to be its favorite victims, and the harder parts of these insects, with portions of the wings, are found unaltered in the bat's excrements. Notwithstanding their social habits, these bats are exceedingly quarrelsome; they fight vigorously with their sharp teeth and the claws of their thumbs, often tearing each other severely, and even breaking the slender bones in the wings of their adversaries.

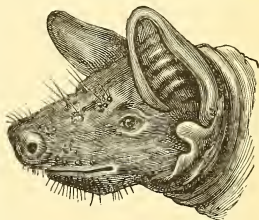
THE COLLARED BAT. The Bats described certainly cannot boast of any great attractiveness in their aspect, but they must yield the palm of ugliness to a

curious species described by Dr. Horsfield. It is a clumsy, heavy-looking animal, of considerable size for a bat, measuring more than five inches in length from the tip of the nose to the root of the tail. Its body is entirely covered with a thick



HEAD OF MOUSE-COLORED
BAT.

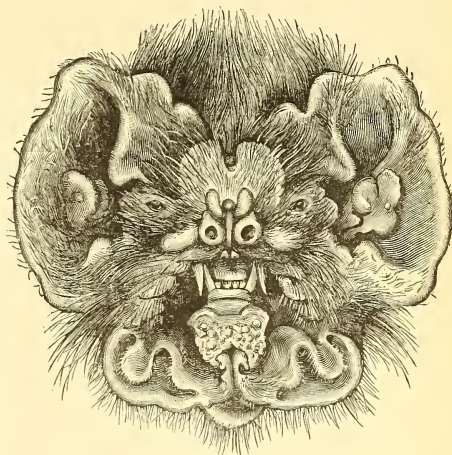
black skin, which is absolutely naked on the back, and only has a few short hairs upon the sides of the body, the interfemoral membrane, and the lower surface. The face and lips also have a few fine long hairs, and a curious collar of brown hairs runs round the neck. To add to the charms of the



HEAD OF COLLARED BAT.
See page 163.

creature, the skin is thrown into thick folds in various parts of the body, the legs are thick, and terminated by clumsy feet, in which the first toe is very large, bristling with long hairs on the outside, and widely separated from the others, so as to acquire very much the character of a posterior thumb.

This hideous bat was discovered in the peninsula of Malacca, and has since been found in Java, Sumatra, and Borneo. It does not appear to be abundant in its native countries, and its apparent rarity is doubtless increased by its selecting for its residence the wildest and most solitary districts in the heart of the great forests. During the day it usually retreats to the hollow trunks of trees, but sometimes takes its repose in holes in the ground or in clefts of the rocks, coming out soon after sundown, when it is seen flying heavily about the borders of the woods, or even high up above the forest in the plains.

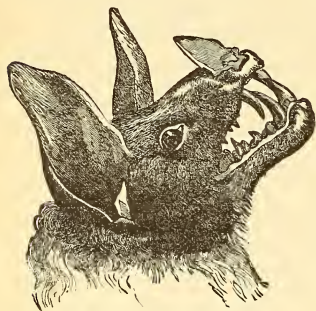


HEAD OF BLAINVILLE'S BAT. (*See page 165.*)

Another curious but by no means agreeable peculiarity of this species remains to be noticed. Across the base of the neck, immediately in front of the breast,

there is a great pouch, which receives an oily secretion from a large gland. This secretion possesses an odor so strong as to be still perceptible after the animal has been preserved in spirits for several years; and Dr. Salomon Muller states that his artist, when engaged in making a drawing from a living specimen, was affected with a headache and nausea so violently that he had much difficulty in completing his task. It appears that the fetid fluid gets diffused over the hairs bordering the throat-pouch, and thus readily passes off into the air, and may thus serve to enable these creatures to find each other in the dark retreats which they frequent.

BLAINEVILLE'S BAT. A most grotesque species of bat, the position of which has been a subject of some discussion, was described many years ago (in 1821) by the late Dr. Leach. As regards the development of the cutaneous system about the face, this species is without exception the most extraordinary species of the whole order (see figure). The length of the head and body in this species is about two and two-thirds inches, and that of the tail from one inch to one and one-sixth inch, according to the sex, being longer in the male. The fur of the upper side is of a rich umber-brown, and that of the lower surface brownish-grey, the difference being caused by the brown tips of the hairs above, which are wanting on those of the under side. The hairs on the inner margin of the ear are shiny brown. The membranes are dark brown. This species is an inhabitant of South America and of the West Indies, but it does not seem to be very abundant. Nothing



HEAD OF VAMPIRE BAT.

has been recorded as to its habits, but it is probably a strictly nocturnal bat.

THE VAMPIRE, which was one of the earliest known species of these American bats, and is also the largest of all, is by no means an amiable-looking animal. The fur, which is long and soft, is usually chestnut-brown above and pale beneath. The length of the head and body in this bat is about five and a half inches. This bat has always been regarded as one of the most noxious of the blood-suckers of its family, and, in fact, it owes its name of Vampire to the belief in its sanguinary nature. But Mr. Bates, who certainly had good opportunities of observing it, acquits the Vampire of this charge. In describing his residence at Ega, on the Upper Amazon, he says: "The Vampire was here by far the most abundant of the family of Leaf-nosed Bats. It is the largest of all the South American species, measuring twenty-eight inches in expanse of wing. Nothing in animal physiognomy can be more hideous than the countenance of this creature

when viewed from the front; the large leathery ears standing out from the sides and top of the head, the erect spear-shaped appendage on the tip of the nose, the grin and the glistening black eye, all combining to make up a figure that reminds one of some mocking imp of fable. No wonder that imaginative people have inferred diabolical instincts on the part of so ugly an animal. The Vampire, however, is the most harmless of all bats, and its inoffensive character is well known to residents on the banks of the Amazons. The church at Ega was the headquarters of both kinds. I used to see them, as I sat at my door during the short evening twilight, trooping forth by scores from a large open window at the back of the altar, twittering cheerfully as they sped off to the borders of the forest. They sometimes enter houses. The first time I saw one in my chamber, wheeling heavily round and round, I mistook it for a pigeon, thinking that a tame one had escaped from the premises of one of my neighbors. The natives say they devour ripe cajus and guavas on trees in the gardens; but, on comparing the seeds taken from their stomachs with those of all cultivated trees at Ega, I found they were unlike any of them; it is therefore probable that they generally resort to the forest to feed, coming to the village in the morning to sleep, because they find it more secure from animals of prey than their nocturnal abodes in the woods."



CHAPTER X.

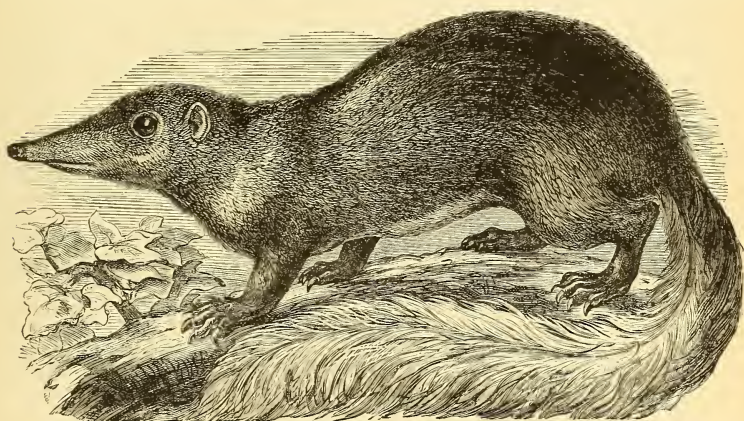
ORDER III.—INSECTIVORA, OR INSECT-EATING ANIMALS.

In the grand economy of nature small things play sometimes very considerable parts; and the innumerable hosts of insects, making up by their numbers for their individual insignificance, are of very great importance in a great variety of fashions. One of their most striking functions is undoubtedly the checking of vegetable growth. They attack plants in all parts—in the roots, the stem, the branches, the leaves, and the flowers and fruit—in this way, while merely obeying their own appetites, imposing a constant check upon the increase of vegetation; and being for the most part specially confined to particular plants or groups of plants, they assist materially in preserving the balance of power in the vegetable world. At the same time, it must be borne in mind that there is the same tendency in insects, as in any other group of organisms, to inordinate increase. The checkers thus need a check in their turn, and the number of other creatures whose business it seems to be to keep down the undue multiplication of insects is exceedingly great.

We have seen that among the Mammalia, the bats for the most part have this duty imposed upon them. They attack the winged armies of perfect insects in the air, and must cut off an enormous number of potential parents of plant-eating larvæ. But there are a great many insects which seldom or never rise into the air, and the larvæ of those which are aerial in their perfect state are of necessity confined to the ground or the vegetation growing on it; these are not without their Mammalian enemies. Many Mammals of the carnivorous and marsupial orders feed wholly or partially upon insects; but there is one order of which most of the species are exclusively, or almost exclusively, confined to a diet of terrestrial insects, worms, and such "small deer," and which has consequently received the name of Insectivora, or "the insect-eaters." On trees, on the ground, and even beneath its surface, and in the water, these animals chase insects and their larvæ; and if they diversify their diet with worms and other invertebrates, or by attacking and devouring frogs, fishes, and small birds and Mammalia, or even in some cases feed chiefly upon such articles, or on fruit, the predominating taste for insects among the members of the order may justify the name. The Insectivora are in many respects related to the bats, and in some cases show a sort of affinity to the

lower *Quadrumana*. In appearance many of them show analogy to different families of Rodents, or gnawing Mammals, the shrews especially being exceedingly mouse-like in their aspect; but, as might be expected from the difference in the habits, and especially in the diet of the animals, the simple inspection of the teeth is always sufficient to distinguish the members of these two orders.

THE TANA. In the Tana the arrangement of the hair on the tail in two rows, something after the fashion of the barbs of a feather on the shaft, which is more or less recognizable throughout this genus, is especially remarkable; and, as the hair is very long, the tail is rendered particularly bushy. The animal is one



TANA—GOLDEN-TAILED VARIETY. (*Half natural size.*)

of the larger species, the body measuring from eight to nine inches in length, and its color is rather variable, although usually exhibiting various shades of reddish-brown, becoming darker or blackish on the hind part of the back, where, more over, the greater part of the hairs are of uniform tint and not grizzled. The color of the tail appears to be especially liable to vary. In the ordinary form of the species the tail is black above, with the basal half of each hair rusty brown, and dark brown below; in another variety the tail is brownish-red above, and bright rusty-red below; whilst in the beautiful form from which our illustration is taken the whole organ is of a reddish golden-yellow color. This is Dr. Gunther's variety, *chrysur* (golden tail). The Tana is an inhabitant of the forests of Sumatra and Borneo. According to Sir Stamford Raffles, the animal is known to the country



LOW'S PTILO CERQUE.

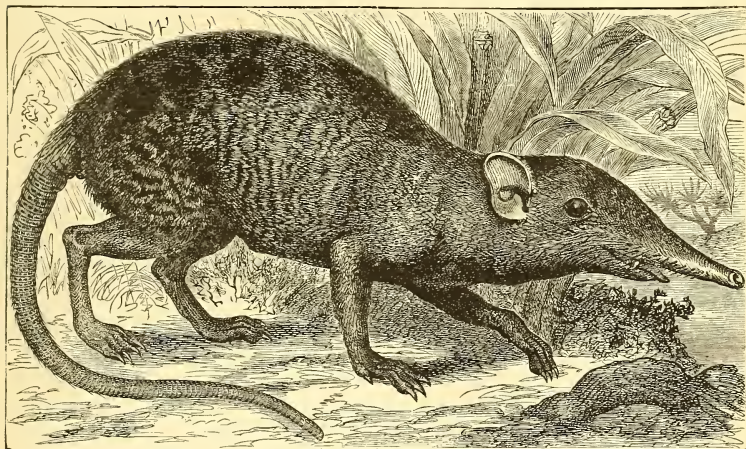
people of Sumatra, and he was informed that it was always found on or near the ground.

LOW'S PTILO CERQUE is a very elegant little creature. The specimen originally described by Dr. Gray in 1848 was captured by Mr. Low in Rajah Brooke's house in Borneo. The most distinctive character of the animal is to be found in its tail, which is an exceedingly peculiar organ. The tail itself is long and slender, and has the basal portion hairy; then a long piece naked, covered with ring of broad, square scales, among which there are only a few short scattered hairs; and, finally, about a third of its length is furnished with long hairs arranged on the two sides of the tail, so as to present the appearance of the two wings of a dart or arrow.

The Ptilocerque, which is an inhabitant of Borneo and Sarawak, is between five and six inches long, with a tail rather longer than the body. Its general color is blackish-brown above, minutely grizzled by the yellowish tips of the hairs; the lower parts and the cheeks are yellowish, and there is a black streak on each side of the face, inclosing

the eyes. The tail is black, with the long hairs of the tip white, except a few toward the base. The habits of the animal are probably the same as those of the Tupaia.

THE RYNCHOCYON, which is a very rare animal in collections, appears from the description and figure of Professor Peters to be a queer-looking beast. It measures about eight inches in length, exclusive of the tail, which is rather long, tapering, and rat-like, being covered with a ringed skin, and furnished with only a few scattered hairs. The muzzle is produced into a very long, movable snout.



THE RYNCHOCYON. (*Half natural size.*)

The fur is of a rusty-brown color, with a blackish tinge about the ears and the back of the head, and some light reddish spots on the hind part of the back.

This animal lives in holes in the ground, from which it issues at night in search of the insects on which it feeds, and is chiefly interesting to the zoologist for the structural characteristics it presents.

THE EUROPEAN HEDGEHOG. These animals are confined to the Old World, in nearly all parts of which some of the species are to be found. They feed chiefly upon insects and other small animals; most of them have the power of rolling themselves up into a ball, when the prickles with which the back is armed constitute a most formidable defensive armor; and in cold countries they pass the winter in a state of torpidity.

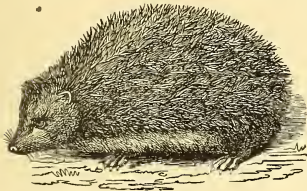
The Common English Hedgehog may serve as the type of this family ; all the species of which, with only a single exception, present a very close resemblance to each other, both in appearance and habits. All the hedgehogs, in fact, are small animals of robust form, with very short tails, and the greater part of the hairs of the upper surface converted into sharp spines. The hedgehog inhabits the whole of Europe except Scandinavia and the north of Russia. It may be met with in almost all situations, in forests, woods, fields, gardens, and orchards, where it takes up its abode in thickets, in hedge-bottoms, and even in holes in walls. In such situations it passes its days in sleep, for it is, strictly speaking, a nocturnal animal, although on rare occasions it may be seen abroad in the daytime. In similar situations it passes the whole winter in a profound slumber, forming a nest for itself of moss or leaves, sometimes under the smaller growth of woods and gardens, sometimes in a hedge-bank, in the hollows and among the bare roots of trees, and in holes among rocks or in walls. The nest most commonly consists in whole or in part of withered leaves, which appear to be useful in keeping out the wet, and as the innermost leaves are impaled upon the animal's spines, it retains a thin coat of leaves when turned out of its winter nest.

As the spring advances, the hedgehog rouses itself from its long sleep, and proceeds to make up for the enforced abstinence from food which it has undergone for so many weeks. It comes forth in the evening, and runs about pretty quickly, but with a curious shuffling gait, in search of the insects and other small animals which constitute its usual prey. Insects, and particularly beetles, appear to form the greater part of its diet, and its teeth are admirably adapted for pounding up the hard skins of these creatures. In consequence of their predilection for insect food, great numbers of hedgehogs are brought to London, and other great towns, to be kept in houses for the purpose of destroying the cockroaches, which are such disagreeable inmates in most kitchens. In the pursuit of these insects the hedgehog shows much activity, and Mr. Bell says that he has "seen a hedgehog, in a London kitchen, push its way beneath a piece of carpet in all directions, and heard it at intervals crushing up the cockroaches which it met with. In a short time it freed the place of these pests."

The hedgehog does not, however, confine itself exclusively to the consumption of invertebrate prey ; frogs and toads, mice, and even snakes, are not exempt from its attacks. It kills the viper by crushing its head, and proceeds to devour it from that end, without showing any signs of being injured by the poison of the snake. This curious immunity is said to extend also to other poisons, some of which are at least doubtful ; but it seems certain that the hedgehog will devour the ordinary blister beetles without inconvenience, although a very small dose of them would destroy much larger animals.

From the narrow point of view of usefulness to man, we may up to this point have a very favorable opinion of the hedgehog, but he has some other peculiarities which may perhaps be regarded as drawbacks. One of these is his attacking young

game, and another his fondness for eggs. The general testimony of sportsmen and gamekeepers is to the effect that no young and small animals will come amiss to the hedgehog. There is also no doubt that the hedgehog will feed on the eggs of



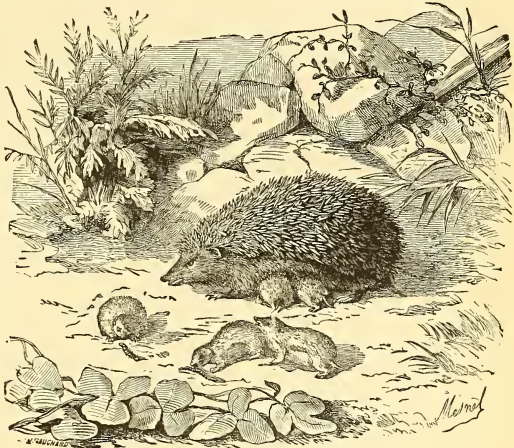
THE HEDGEHOG.

birds wherever it finds them; and it is even stated that it will make its way into a fowl house, turn the hen off her eggs, and devour the latter.

When disturbed in its excursions the hedgehog has the habit of rolling itself up into a ball, with the head and legs tucked carefully away under the belly, and the whole exposed surface completely enclosed by the spiny skin of the back. This is effected by the contraction of a most complicated system of cutaneous

muscles, the most important of which, called the *orbicularis panniculi*, forming a broad band encircling the body, draws together the edges of the spiny part of the skin towards the center of the ventral side of the body, thus forming a sort of prickly bag within which the whole body and limbs of the animal are inclosed.

When thus arranged, by the action of the cutaneous muscles, the whole of the spines of the upper surface are strongly and firmly erected, making a fence which suffices to protect the hedgehog from the attacks of nearly all his enemies. Scarcely any dogs can be found with pluck enough to make a successful attack upon a rolled-up hedgehog, although it is said that some dogs and foxes have a trick by which to get at him, founded on the fact that a jet of water poured into the small aperture within

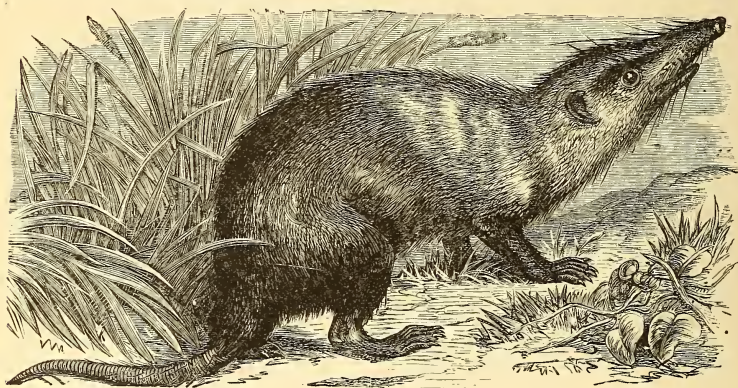


HEDGEHOG AND YOUNG.

which the head of the animal is concealed will cause him to unroll himself at once. The same power of contraction serves the hedgehog in good stead in protecting him from other perils. If he finds himself falling down a

precipice or from the top of a wall, or down a very steep slope, he immediately makes himself into a ball, and in this form will fall from very considerable heights (eighteen or twenty feet) without receiving the least injury; indeed, hedgehogs have been observed more than once voluntarily to throw themselves down considerable distances, contracting in this fashion. On reaching the bottom they simply opened themselves, and walked off none the worse for the fall.

In captivity, if kindly treated, the hedgehog soon becomes familiar. He takes readily to almost any diet, and, he will even partake of intoxicating liquors, which, curiously enough, seem to have the effect of making him quite tame, after passing through a period of inebriety, during which his gestures and proceedings have a most ludicrous resemblance to those of a drunken man.



THE BULAU.

THE BULAU, as Professor Gervais says, is "a hedgehog with the body, and especially the head, more elongated than in those already described, with flexible hairs, and furnished with a tail which is nearly naked, and as long as the body. On the back a few stiff bristles are mingled with the softer hairs, as if to give a sort of indication of the animal's relationship to the hedgehogs; but it has no power of rolling itself up into a ball."

The Bulau has a long, round, tapering, scaly tail, almost like that of a rat, but with a greater number of scattered stiff hairs among the scales. Its head is long, and its muzzle produced into a short proboscis. Its legs are rather short, and its feet are furnished with five toes, each armed with a curved and pointed claw. The general color of the body and limbs is black or greyish-black, with the head and neck pale or whitish, and with a black streak over each eye; the tail is blackish at

the base, whitish at the tip. The length of the Bulau is about twenty-six inches, of which the tail occupies twelve. Besides Sumatra, this curious animal, which may be regarded as a connecting link between the hedgehogs and the shrews, has been met with in the peninsula of Malacca, and in Borneo, and the neighboring island of Sarawak. The specimens from Sarawak and the mainland of Borneo opposite Labuan are said by Dr. Gunther to be all white, with only a portion of the longest



THE TANREC.

and strongest hairs on the body black. Of the habits of the Bulau nothing appeared to be recorded.

THE TANREC. The Tanrec, or Tangué, which is the best known species of the family, is entirely destitute of tail. It has a long pointed muzzle, small ears and short legs; the five-toed feet are armed with strong claws, and the body is not capable of being contracted into a ball. The animals of this family usually have the back more or less armed with fine spines or bristles among the softer hair, the legs short, the feet five-toed, plantigrade, and the tail very short or altogether wanting, except in one anomalous genus.

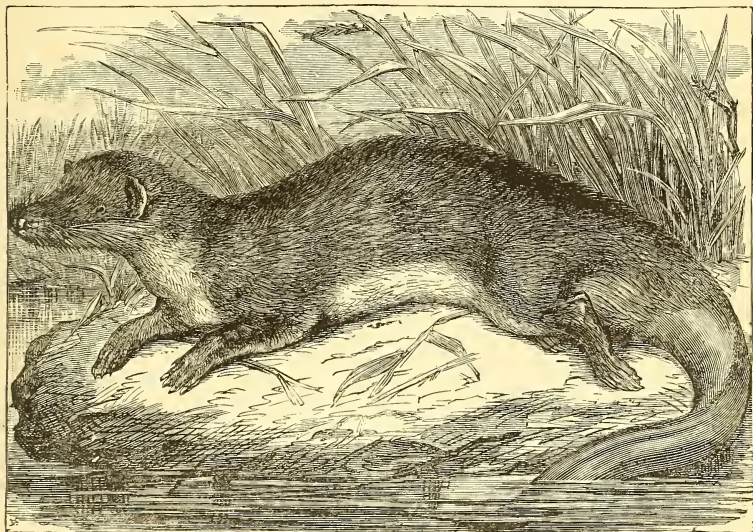
The Tanrec measures about fifteen or sixteen inches in length, of which nearly one-third is made up by the elongated head. Its body is covered with a mixture of bristles, hairs, and more or less flexible spines, the latter being especially strong about the nape and sides of the neck, where they measure about one-fifth of an inch in length, and form a sort of crest or collar. The spines are longer and more flexible on the body, where they are mixed with bristles, which prevail especially on the back, and these measure sometimes as much as two inches long. The belly and limbs are clothed with short hair. All these dermal appendages are yellowish, with the middle brown, giving the animal a general tawny color, which is paler or yellowish on the limbs. The face is brownish, and the long whiskers which spring from each side of the muzzle are of a dark brown color. This is the general coloration of the species, which, however, varies occasionally. The young are said to be brown with yellow longitudinal streaks, which disappear with age.

This animal occurs abundantly in Madagascar. It passes one-half of the year in a state of torpidity, and this not in the hot season, as has been supposed, but in the colder part of the year. About May or June the Tanrecs dig themselves holes, in which they sleep until December, with their heads comfortably tucked away between the hind legs. Their burrows are generally betrayed by the presence of a small heap of earth or moss thrown up at the entrance, and as the animals are at this time very fat, and regarded as great delicacies by the natives of Madagascar and the Creoles of Reunion, they are then pursued with great avidity. Their flesh is said by some people to be preferable to sucking-pig; but others complain that it has a musky flavor. In Madagascar the inhabitants hunt the Tanrecs with dogs trained expressly for the purpose. The Tanrecs live chiefly in the mountains, in places covered with mosses, fern, and bushes. Their food consists principally of earthworms, which they rout out by means of their feet and pointed snouts, using the latter after the fashion of a pig. Insects also form a part of their diet; and, like the hedgehogs, they are said to feed upon certain fruits and roots. In captivity they will eat raw meat, and are also said to be fond of bananas. Their habits are nocturnal; they sleep nearly all the day, and come forth in full activity only at night.

THE ACOUTA. Forty-seven years ago (in 1833) Professor Brandt, of St. Petersburg, described a singular animal from St. Domingo, which was particularly interesting, both as being the only known representative of the Insectivorous Mammalia in the tropical regions of America, and also on account of its own extraordinary character. It was an animal of about the size of a small rabbit, the head and body measuring about a foot in length, but the muzzle was drawn out into a sort of trunk or proboscis, at the sides of which, near the tip, the nostrils were situated; the body terminated behind in a naked, rat-like tail, rather more than eight inches in length; whilst the feet, which were decidedly plantigrade, and each furnished with five toes, had the latter armed with curved, compressed claws of

formidable dimensions, especially on the fore feet. The dentition clearly showed the animal to be insectivorous, but its characters were so peculiar that Brandt seems to have regarded it as a sort of intermediate form between the Shrews and the Marsupial Opossums.

The eyes are small, and the ears of moderate size, and rounded; the body is covered with rather stiff hairs, which, however, leave the hind part, from the root of the tail downward, almost naked; the tail is long, tapering, and ringed, with a



THE WEST AFRICAN RIVER SHREW. (*Half natural size.*)

few scattered, very short hairs; the legs are of moderate length, and the feet, all of which have five toes, are nearly naked, or covered only with short hair.

The Agouta has the face, head, and upper parts brown, becoming blackish behind and on the thighs; the sides of the head and neck lighter brown, with a mixture of red and grey; the belly and feet tawny brown: the breast bright rust color; and the tail greyish toward the base, and white toward the tip.

Of the habits of this animal, long supposed to be the only species of its genus, nothing is recorded; but its teeth very clearly indicate a carnivorous or insectivorous diet, and its habits, in all probability, resemble those of the following species:

THE RIVER SHREW. This little beast, that has given rise to so much discussion among zoologists, and received so many names, is only a little larger than the common stoat, measuring about nine inches in length, exclusive of the powerful tail, which is of about the same length. In its appearance it very much reminds one of a miniature otter, from which, however, it differs considerably in the form of the head, which terminates in a broad flattened muzzle, having its sides furnished with a most luxuriant crop of stiff bristle-like whiskers. The hair of the upper part of the body and limbs is brown and soft, although rather coarse, and that of the lower surface yellowish; and the coat consists of two kinds of hairs, namely, an inner coat of very fine short silky hairs, through which longer hairs of a very peculiar structure project. These long hairs are very thin at the bulb, and increase very gradually in thickness for about one-third of their length, when they suddenly contract a little, and then expand into a flat lance-shaped blade, which terminates in a very fine point. This coarser fur covers the whole body, the thick root of the tail, and the upper part of the limbs; the rest of the tail, the under side of the muzzle, and the upper surface of the feet are clothed with short, close hairs. The ears are of moderate size, the eyes very small, and the toes on all the feet five in number, armed with small sharp claws, and without webs, but the second and third toes on the hind feet are united as far as the end of the first phalanx.

The most remarkable peculiarity of the animal is its tail, which presents a most unusual development for an Insectivorous Mammal. Professor Allman says: "It is so thick at its base that the trunk seems uninterruptedly continued into it; but it soon becomes laterally compressed, and then grows gradually thinner and narrower toward the tip. * * * Its lower edge is rounded, and its upper is continued into a membranous crest about one-eighth of an inch in height, and clothed with the same short, stiff, appressed hairs as the rest of the tail.

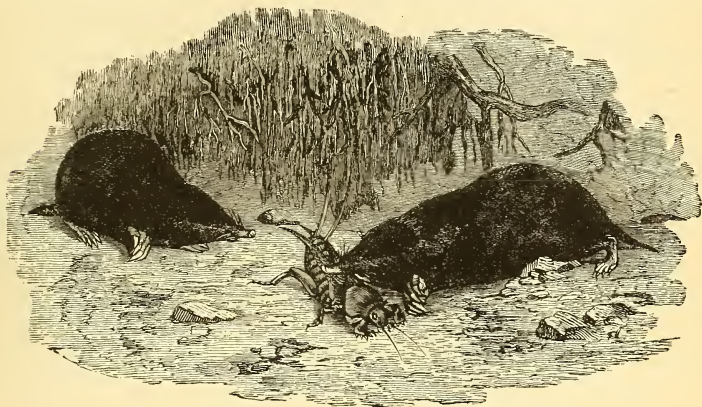
This great development of the tail might of itself convince us that this organ is of great service to its owner, and such, from the account of the habits of the animal given by its discoverer, is evidently the case. M. Du Chaillu says: "This extraordinary animal is found in the mountains of the interior, or in the hilly country explored by me north and south of the equator. It is found along the water-courses of limpid and clear streams, where fish are abundant. It hides under rocks along these streams, lying in wait for fish. It swims through the water with a rapidity which astonished me; before the fish has time to move it is caught. The animal returns to land with its prey almost as rapidly as it started from its place of concealment. The great motive power of the animal in the water seems to be in its tail."

THE COMMON MOLE OF EUROPE, is, as its name implies, found everywhere in that continent, and is the type of the genus.

The body of the mole is a cylinder terminating in a cone; there is no neck, and the nose is a boring instrument. The eyes are nearly imperceptible. The

sense of hearing is very acute; there is no external ear, but the internal ear is highly developed. Its powers of smell, too, are excellent. The tail is very short, the coat black, thick, and silky. Their food is chiefly insects and earth-worms, and the dead bodies of small mammals or birds. The mole is essentially carnivorous; it does not experience a mere sense of hunger like other animals, but a craving of the most powerful description—a kind of frenzy.

Each mole has its own encampment, frequently entirely separate from those of his fellows, but sometimes the animals evince a rather more sociable disposition, and condescend to make use of a common passage. But in his encampment, each mole always has his own dwelling, which has been, not inappropriately, styled his



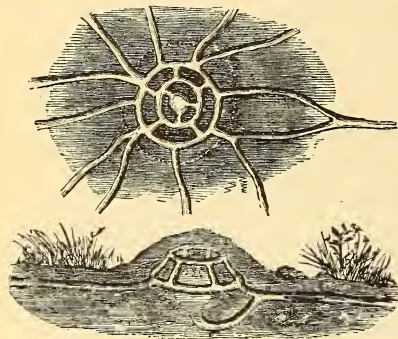
THE COMMON MOLE.

fortress, and this certainly displays great ingenuity and skill in its design and construction. It is formed under a hillock of earth, in a situation which affords some protection to the little domicile. Its roof is a firm dome, the earth composing it being pressed into a solid mass by the mole while excavating the internal passages and chambers. Beneath this there are two circular galleries, one above the other, the lower one considerably larger than the upper, with which it communicates by five nearly equi-distant passages, running slantingly upward. Within the lower circular gallery is situated the actual dwelling-place or chamber, to which access is obtained by three passages descending from the upper gallery, so that when within his house the mole has to go both up and down stairs to reach his bedroom. But the chamber has another issue by a passage which at first descends for a short distance, and then rises again to lead into the high road running to and from the

fortress, which is always single; and, on the other hand, the lower and larger gallery gives off about nine other passages, which either terminate at a short distance from the fortress, or, after making a detour, return into the high road. So cautious is the mole, that the apertures of these passages are said seldom to be made opposite to those which lead from the lower to the upper circular gallery.

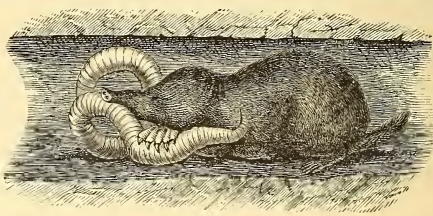
With these arrangements it must be confessed that the mole has provided admirably for being "not at home" to unwelcome visitors.

The same caution that prompts the mole to the formation of so complicated a castle leads him to take equal care in the construction of the road leading into it. This usually runs in a direct line from one end of the animal's camping ground to the other, and forms a highway by which he can go quickly about his business. It is large enough to enable him to pass through it easily, but in making it he is careful not to throw out the earth as he does in his ordinary runs,



MOLE'S FORTRESS.

and the whole passage appears to be chiefly formed by compression of the earth by the little engineer. By his constant passing to and fro, its walls become singularly smooth and compact. Occasionally a mole will form two or more high roads leading from his fortress, probably when supplies fall short and it is necessary to open up new ground; and sometimes several moles share the same highway, perhaps in localities where worms and grubs are peculiarly fat and abundant. But in the latter case, as there is not room in the little tunnel for one mole to pass another, if two of them meet by accident one of them must give way or retire into a side alley, otherwise a violent combat ensues, when the weaker is ruthlessly killed and devoured.



MOLE FEEDING.

The road varies in its depth from the surface according to the nature of the soil.

THE STAR-NOSED MOLE. Besides the Old World form to which we have just referred, there are a few American species of this family, which differ



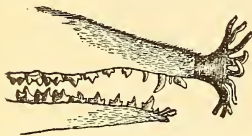
THE WATER SHREW.
195

rather more decidedly from the ordinary moles. Perhaps the most remarkable of them is the Star-nosed Mole, an inhabitant of our own country and Canada, extending from South Carolina to Hudson's Bay, and stretching right across the continent, from ocean to ocean.

The most striking characteristic of this animal, which constitutes the genus *Condylura*, is the presence at the extremity of its elongated nose of a sort of fringe of about twenty long fleshy processes, forming a regular star, having the nostrils towards its centre.

This curious little animal, which measures about five inches in length, and has a tail about three inches long, is of a brownish-black color, a little paler beneath, but appearing in certain lights perfectly black throughout. The naked, or nearly naked parts, such as the nose, with its singular appendages, and the feet, are generally of a flesh-color, the tips of the fringes and of the claws being, in fact, quite rosy. The tail is well covered with hair.

The Star-nosed Mole, like the other members of its family, lives beneath the surface of the ground, where it is able to burrow rapidly in soft earth. It prefers the vicinity of brooks and swampy places. The galleries do not run so near the surface as those of the Common Shrew Mole. The nest is composed of dried grass, and placed in an excavation made under some protective object, such as a stump or the root of a tree. The young show scarcely any trace of the nasal appendages. The precise use of these curious organs in the adult does not seem to be ascertained; probably they aid as sensory organs in the discovery of the worms and larvæ of insects on which the creature feeds.



SIDE VIEW OF SNOOT OF STAR-NOSED MOLE.



FRONT VIEW OF SNOOT OF STAR-NOSED MOLE.

THE COMMON SHREW MOLE. The Shrew Mole, which is often called simply the mole, is another very widely-distributed species in North America, throughout the whole eastern part of which it is found abundantly. Like the other species of its genus, which inhabit the territories farther west, the Common Shrew Mole has an elongated, slender snout, which is cut off obliquely at the end, so that the nostrils, which are situated in this sloping surface, are turned forwards and upwards, and are not visible from below.

THE WATER SHREW is one of the prettiest of European Mammals. Its movements, especially in the water, are very agile; and although, from its swimming by alternate strokes of its hind feet, its course is of a somewhat wriggling character, the peculiar mode in which it flattens its body so as to show a narrow white border on each side, and the silvery lustre of the coat of air-bubbles which

adheres to its back, give it a very elegant appearance when thus engaged. It is found chiefly about the rivulets of mountainous and hilly countries, generally showing a preference for those quieter parts where the water flows smoothly over a sandy bottom, but it will also make its way through more broken water, in shallow parts full of stones. Clear water seems to be the great desideratum, and if this can be secured the Water Shrew will put up with a lake or pond. It is not, however, absolutely confined to the water-side, but will at times wander about the fields, sheltering itself under haycocks, and other heaps of dried plants, and even making its way into houses, barns, and outbuildings.

Besides this small prey, the Water Shrew is said to attack almost any small animal that comes in its way—frogs, fishes, and even small birds and quadrupeds are described among its victims. It is also said to feed on the spawn of fishes, and will even destroy large fish, such as Carp, by eating out their eyes and brains.

It measures about three inches and one-third in length, and has a tail rather more than two inches long, is generally nearly black on the upper surface and white beneath, the colors being usually separated by a distinct line of demarcation. The hairs fringing the feet and the lower surface of the tail are white.

CHAPTER XI.

ORDER IV.—CARNIVORA.

The Carnivora, or flesh-eating Mammals, are divided into great groups, or sub-orders, living on land and the other in the water. The first is the group of the *Fissipedia*, or "split-feet," so called from the fact that the feet are divided into well-marked toes; the second is the group of the *Pinnipedia*, or "fin-feet" (Seals, etc.), so called from the fact that the toes are bound together by skin, forming fins or flippers rather than feet.

THE LAND CARNIVORA.

This group, which comprises all the great "beasts of prey," is one of the most compact, as well as one of the most interesting among the Mammalia. So many of the animals contained in it have become "familiar in our mouths as household words," bearing as they do an important part in fable, in travel, and even in history; so many of them are of such wonderful beauty, so many of such terrible ferocity, that no one can fail to be interested in them, even apart from the fact likely to influence us more in their favor than any other—that the two home pets which of all others are the commonest and the most interesting belong to the group.

No one who has had a dog friend, no one who has watched the wonderful instance of maternal love afforded by a cat with her kittens, no one who loves riding across the country after a fox, no lady with a taste for handsome furs, no boy who has read of lion and tiger hunts, and has longed to emulate the doughty deeds of the hunter, can fail to be interested in an assemblage which furnishes animals at once so useful, so beautiful, and so destructive.

It must not be supposed from the name of this group that all its members are exclusively flesh-eaters—and, indeed, it will be hardly necessary to warn the reader against falling into this mistake, as there are few people who have never given a dog a biscuit, or a bear a bun. Still, both the dog and several kinds of bears prefer flesh-meat when they can get it; but there are some bears which live almost exclusively on fruit, and are therefore in strictness not carnivorous at all. The name must, however, be taken as a sort of general title for a certain set of animals which have certain characters in common, and which differ from all other animals in particular ways.



KING OF THE FOREST.

Comparatively few of the flesh-eaters are of direct use to man, at any rate while alive, yet one member of the group—the dog—is the most useful of all domestic quadrupeds, though derived from one of the most savage of all—the wolf. The ferret, the cheetah and the cat are also more or less domesticated; but they come far below the dog in amiable qualities, and in value to man. Below their value in service comes the use of their most beautiful skins; and still lower down the scent, derivable from a few species.

Most of the Carnivora may be looked upon as man's natural enemies, for he has no chance of making headway unless he can keep "the beast of the field" from "increasing upon him." Amongst primeval men, the tribes who made the best weapons to keep off these, the destroyers of their families, were certain to succeed best in the struggle for existence, so that the act of sharpening a flint-stone to repel the attack of some wild beast may be said to have prepared the way for civilization, for flint knives led to bronze hatchets, bronze hatchets to axes and hammers of iron, and when once iron-working was understood and appreciated, civilization went on with gigantic strides.

The Carnivora are found all over the world, from the equator to the poles; in most parts of the globe they are abundant, the great exception being the Australian region of zoological geography, namely, the immense island of Australia, which can only boast of a dog, doubtfully native, and New Zealand and the adjacent Polynesian Islands, which are quite devoid of members of the group, the native dog of New Zealand having probably been recently introduced.

There is considerable range of size among the various members of the group, the lion and tiger being the largest, the weasel and suricate the smallest. As to their habits, the Carnivora are much varied; leaving out as we do for the present the fin-footed seals, sea bears, and walruses, we yet have the semi-aquatic otter and *Enhydra*, or sea otter, both at home in the watery element, and most expert swimmers and divers; but for the most part of the flesh-eaters are inhabitants of the copse, the jungle, and the forest. Many are nimble climbers, some are arboreal in their habits, living entirely in trees, and most crepuscular, that is, hunt their prey after dusk.

As to their diet, we mentioned above that they are by no means all flesh-eaters; in fact there is every gradation from those which live exclusively on animal food, such as the lion, tiger, etc., to the purely herbivorous kinds of bear. Some again, such as the cat family, seem to prefer flesh-meat, others, such as the otter, adopt a Lenten diet, and feed on fish or eggs. This matter, however, is, of course, largely determined by the habitat of the animal, those whose habitation is inland being compelled to devour land animals, while those living by the sea or by river-banks usually take to fish either occasionally or as a regular thing.

Turning to the structure of the group, one of the first things that strikes us is the looseness of their skin, which, instead of being stretched on the body as tightly as a drum parchment, as it is in grass-eaters—for instance, the ox or hippopotamus



THE LION AND HIS PREY.

—is quite “baggy,” having between it and the flesh of the beast a layer of the loosest possible fibres. It is for this reason that the skin of any but a *very* fat dog can be pinched up so readily, while of a Herbivore it may be said you can hardly get up enough of him between your fingers and thumb to pinch him anywhere. In consequence of this the operation of skinning a lion or bear is a comparatively easy one. After the first cut the beast may be *pulled* out of his skin, almost without further use of the knife; while with an antelope or an ox the skin has to be *cut* away carefully and laboriously from the underlying flesh.

The use of this loose skin will be very evident to any one who will take the trouble to watch the great cats playing together at the Zoological Gardens. They are continually scratching one another, but the loose skin is dragged round by the claws which, in consequence, can get no hold, and do no harm; with a tight skin, on the other hand, the slightest scratch of such a claw as a tiger's would cause a serious wound. The looseness of the skin is very evident in the puma and jaguar, in which it hangs in a fold along the middle of the belly, like a great dewlap.

The way in which the eyes of the Carnivora are set in their head indicates their habits of life. They look straight forward, and are expressive, in the nobler kinds, of the energy and cruelty of their owner's disposition. As in many of the Lemurs, the eye possesses what is called a *tapetum*, a sort of reflecting mirror in the bottom of the eye, which redoubles, as it were, the faint rays of evening, evidently a very important thing for these, mostly nocturnal, animals.

The sense of hearing is as perfect as that of sight; not, perhaps, in the higher, musical sense of the word, but for catching the faintest and feeblest undulations of the air. The mole is supposed to be most sharp of hearing; but it is a question whether he is quicker of hearing than his cruel neighbor the rabbit-killing weasel. Any one who has watched a cat sitting demurely by a mouse-hole, or a terrier on the look-out for a rat, will give the carnivores credit for the most acute sense of sound. Anatomy corroborates what simple observation suggests, and the internal as well as external organs of hearing in the Carnivora are most exquisitely perfect.

Many members of the group live in families, that is, a male and female with their young form a little *coterie* by themselves, and associate very little with other families. Very few live in great societies or herds, after the manner of the grass-eating animals, such as oxen, antelopes, or wild horses, but an exception to this is afforded by the wild dogs of Constantinople, which roam the streets in great numbers, and by wolves, which invariably hunt in packs.

The dogs and wolves, besides being gregarious, resemble the Herbivora in another and far less amiable characteristic, that is, they do not choose a mate for life or even for a season, but let their affections run wild and practice the most unmitigated polygamy and polyandry. Many of the larger cats, on the contrary—the lion, for instance—choose a mate, to whom they are wonderfully faithful.

The young are always born in a comparatively helpless condition, not able to run about at once like a new-born calf or foal; they are generally blind for some

time after birth, and are entirely dependent on the mother for food and warmth. The higher Carnivora are most kind parents, and to the best of their ability, *educate* their young. All writers bear witness to the painstaking way in which the parent lion or tiger trains up its young and practices them for their trade of slaughter. Sometimes both parents, sometimes only one, go out with their offspring, and by example and precept show them the safest places to hide, the proper moment to spring, the best place to seize the victim, and so on. And the future tyrants are very apt, they thoroughly enjoy their schooling, and make the best possible use of their opportunities; so much so that the young of the great cats are far more dreaded than the old ones, as they not only kill to satisfy hunger, but commit wholesale slaughter, simply for practice and to keep their paws in.

We suppose that nine persons out of ten, if asked to give three common examples of land Carnivores, would, almost without hesitation, name the cat, the dog, and the bear. The most accomplished naturalist would be unable to give a better answer to this question, as those three well-known animals are types of the three primary sections into which the whole sub-order is divided, and which may, in fact, be termed respectively the groups of the cats, dogs, and bears. It must be borne in mind, however, that the words are here used in the broadest and most general sense, for the group of "cats" includes not only the animals properly so-called, but also the Civets, Ichneumons, hyenas, whilst amongst "bears" are grouped raccoons, otters, badgers, weasels, and many others.

THE CAT FAMILY.

This is the chief of the families of Carnivora, containing as it does all the great beasts of prey. Its members are the most perfectly constructed of animals for a life of rapine; their weapons—teeth and claws—attain the utmost degree of perfection, and their elegant form, silent movements, and often beautiful coloring make them in every respect the culminating forms of the flesh-eating group, and one of the chief of the upper branches of the great Mammalian tree.

The *Felidae* are found over almost the whole world, and wherever they are found they are feared, for such a compact assemblage of bloodthirsty tyrants and ruthless destroyers has no parallel in the whole animal kingdom.

Every part of these animals is so altered and specialized from the usual type, of Mammalian structure as to assist in the best possible way the capturing, killing, and devouring of living prey. Looking merely at the outside, we are struck with the lithe, agile form, the small head, the total absence of anything like a "pot-belly," the well-proportioned limbs, the usually close fur, the stealthy, silent movements, and the eager, restless glance; all characters suited to an animal to which powers of quiet rapid movement through jungle or long grass, of quick observation, and of great strength and agility, are of the utmost importance.

THE LION. The "King of Beasts" must, of course, be placed at the head of our list of beasts of prey, for although he is excelled in size and ferocity by the tiger, in elegance of form by the leopard and jaguar, and in beauty of coloring by most of the great cats, yet it would be useless, even if it were advisable, to depose him from the throne he has, by the universal consent of mankind, so long occupied. And, truly, who would wish to uncrown him? He is anything but an amiable beast—cruel and cowardly, greedy, treacherous, noisy, self-asserting, never forgetful of the "divine right of kings" to prey upon their subjects.

The lion is entirely confined to the Old World, where it ranges through Africa, from Barbary to Cape Colony, and extends into the southwest corner of Asia, where its range just overlaps that of the tiger. Except in this "debatable land" the two monarchs keep clear of one another, the lion keeping court over Africa and Southwest Asia, and the tiger ruling in Southern and Eastern Asia, the most important pretender in either kingdom being the leopard.

When an animal has a wide geographical distribution it is almost always found that it exhibits, in different parts of its range, more or less well-marked varieties, distinguished from one another by evident though usually unimportant characters. This is the case with the lion, of which six varieties are usually distinguished, three being found in Africa and three in Asia. These varieties, or races, are as follows:

1. The lion of Barbary is of a deep yellowish-brown color, and the mane is more developed than in any other variety, forming long tresses which cover the neck and shoulders, and are continued along the belly and the inside of the legs. This variety extends over the whole of Africa north of the Sahara.

2. The lion of Senegal is found in the western part of Africa, south of the Sahara. Its fur is of a lighter color than that of the Barbary Lion, and the mane is less thick, and hardly at all developed over the breast and inside of the legs.

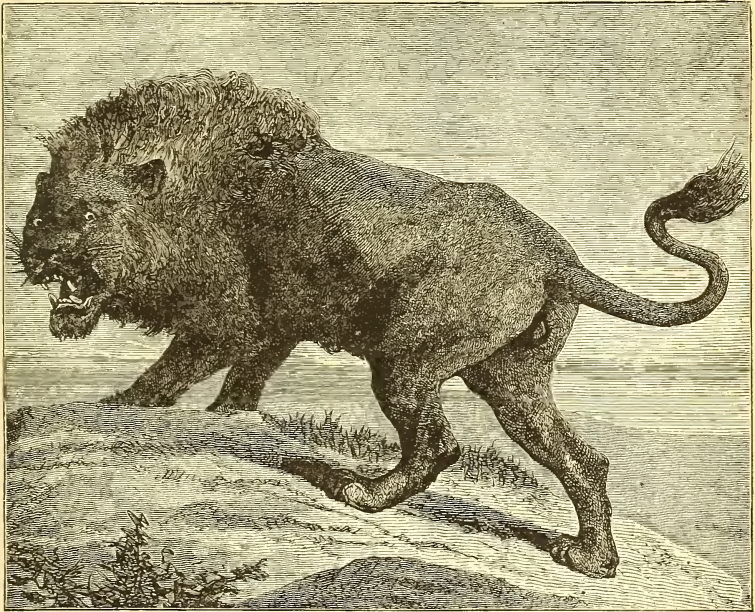
2. The lion of the Cape ranges over the whole of South Africa, and is said to be found under two lesser varieties, one yellowish in color, and the other brown; the latter is considered to be the most formidable. The mane is darker than in either of the foregoing kinds.

4. The Bengal Lion, as well as the other Asiatic varieties, is smaller than the kinds found in Africa. The mane is large, and the form less graceful than in the Cape or Barbary Lion.

5. The Persian or Arabian Lion.—This is a paler variety found in Western Asia.

6. The lion of Guzerat, or so-called "maneless lion," is usually stated to be the best marked variety of all, as its mane, though by no means absent, as the name of the variety would lead us to suppose, is very much less than in any other kind; the body also is bulkier, and the legs shorter. Some writers, however, deny altogether the distinctness of the variety, and consider that the mistake of considering

the Guzerat Lion as such, has arisen from the fact of young specimens having been described. The real size of the lion is much less than would be supposed before measurement; and he is very inferior in size to many kinds of the herbivorous animals, such as horses, oxen and buffaloes, and even the larger antelopes, such as the eland.



LION OF BARBARY.

It is curious to see what wonderfully different impressions are produced on different writers by the appearance of the lion in his native haunts. For instance, Captain Harris says, "Those who have seen the monarch of the forest in crippling captivity only, immured in a cage barely double his own length, with his sinews relaxed by confinement, have seen but the shadow of that animal which 'clears the desert with his rolling eye.'"

On the other hand, Livingstone speaks in the most disrespectful, not to say contemptuous way, of the animal's vaunted majesty of bearing: "When a lion is

met in the daytime, a circumstance by no means unfrequent to travelers in these parts, if pre-conceived notions do not lead them to expect something very 'noble' or 'majestic,' they will see merely an animal somewhat larger than the biggest dog they ever saw, and partaking very strongly of the canine features. The face is not much like the usual drawings of a lion, the nose being prolonged like a dog's; not exactly such as our painters make it, though they might learn better at the Zoological Gardens; their ideas of majesty being usually shown by making their lion's faces like old women in nightcaps. When encountered in the daytime, the lion stands a second or two gazing, then turns slowly round, and walks as slowly away for a dozen paces, looking over his shoulder; then begins to trot, and, when he thinks himself out of sight, bounds off like a greyhound."

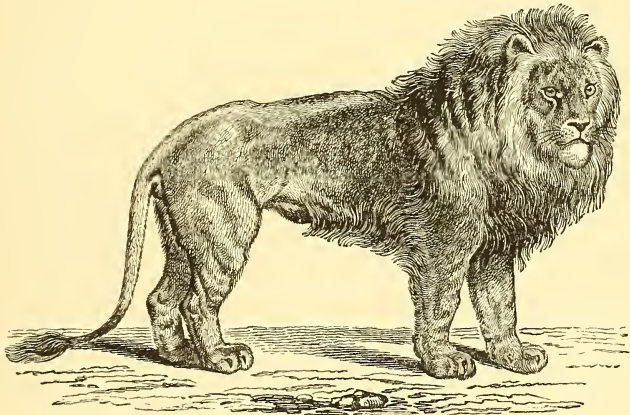
The concluding sentence of this passage shows that Livingstone considers not only the lion's beauty to have been over-rated, but his courage also. The following extract quite bears out this opinion:

"On riding briskly along early one morning, I observed, as I thought, a solitary zebra a few hundred yards in advance. I instantly alighted, and leaving 'Spring' (his horse) to take care of himself, I made toward the quarry, gun in hand, under cover of a few small trees. Having proceeded for some distance, I peeped cautiously from behind a bush, when I found, to my astonishment, that the animal which I had taken for a zebra was nothing less than a noble lion. He was quietly gazing at me. I must confess I felt a little startled at the unexpected apparition; but, recovering quickly from my surprise, I advanced to meet him. He, however, did not think fit to wait till I was within proper range, but turned tail and fled toward the Swakess. Hoping to be able to come to close quarters with him, I followed at the top of my speed, and was rapidly gaining ground on the brute, when suddenly, with two or three immense bounds, he cleared an open space, and was the next moment hidden from view among the thick reeds that here lined the banks of the river. Having no dogs with me, all my efforts to dislodge him from his stronghold proved unavailing. Whilst still lingering about the place, I came upon the carcass of a gnu, on which a troop of lions had, apparently, been feasting not many minutes previously. Undoubtedly my somewhat dastardly friend had been one of the party."

After such rude shocks as these to our faith in the African monarch's courage, it is positively refreshing to come across instances where the lion has shown himself capable of very great boldness, such, for instance, as the following:

"We were waked up suddenly by hearing one of the oxen bellowing and the dogs barking. It was moderately dark, and I seized Clifton's double rifle, and rushed out, not knowing where, when I saw the driver perched on the top of a temporary hut, made of grass, about six feet high, roaring lustily for a doppel (cap). I scrambled up just as the poor ox ceased his cries, and heard the lions growling and roaring on the top of him, not more than fourteen yards from where we were, but it was too dark to see them. I fired, however, in the direction of the

sound, and just above the body of the ox, which I could distinguish tolerably well, as it was a black one. Diza (the driver) followed my example; and as the lions did not take the least notice, I fired my second barrel, and was just proceeding to load my own gun, which Jack had brought me, when I was aware, for a single instant only, that the lion was coming; and the same moment I was knocked half a dozen somersaults backward off the hut, the brute striking me in the chest with his head. I gathered myself up in a second, and made a dash at a fence just behind me, and scrambled through it, gun in hand, but the muzzle was choked with dirt. I then made for the wagon, and got on the box, where I found all the Kaffirs, who could not get inside, sticking like monkeys, and Diza perched on the top. How



THE LION OF SENEGAL.

he got there seemed to me a miracle, as he was alongside me when the brute charged. A minute or two afterwards one of them marched off a goat, one of five that were tethered by the foot to the hut that we had so speedily evacuated.

“Diza, thinking he had a chance, fired from the top of the wagon, and the recoil knocked him backwards onto the tent, which broke his fall. It was a most ludicrous sight altogether. After that we were utterly defeated, and the brutes were allowed to eat their meal unmolested, which they continued to do for some time, growling fiercely all the while. The Kaffirs said there were five in all. I fired once again, but without effect; and we all sat shivering with cold without any clothes on till near daybreak, when our enemies beat a retreat, and I was not sorry to turn in again between the blankets. I was just beginning to get warm again

when I was aroused by a double shot, and rushed out on hearing that the driver and after rider had shot the lion. We went to the spot, and found a fine lioness dead, with a bullet through the ribs from the after-rider; a good shot, as she was at least 150 yards off. Another had entered the neck just behind the head, and travelled all along the spine nearly to the root of the tail. I claimed the shot, and forthwith proceeded to skin her. I cut out the ball; it proved to be my shot out of Clifton's rifle. This accounted for her ferocious onslaught. The after-rider was rather chopfallen at having to give her up to the rightful owner.

"Diza got a claw in his thigh, and the gun which he had in his hand was frightfully scratched on the stock: rather sharp practice. A strong-nerved old Kaffir woman lay in the hut the whole time, without a door or anything whatever between her and the lions, and kept as still as a mouse all the while."

Again:—"The enemy disdainfully surveyed us for several minutes, daring us to approach with an air of conscious power and pride, which well beseemed his grizzled form. As the rifle balls struck the ground nearer and nearer at each discharge, his wrath, as indicated by his glistening eyes, increased roar, and impatient switching of the tail, was clearly getting the mastery over his prudence. Presently a shot broke his leg. Down he came upon the other three with reckless impetuosity, his tail straight out and whirling on its axis, his mane bristling on end, and his eyeballs flashing rage and vengeance. Unable, however, to overtake our horses, he shortly retreated under a heavy fire, limping and discomfited, to his stronghold. Again we bombarded him, and again exasperated he rushed into the plain with headlong fury, the blood now streaming from his open jaws, and dyeing his mane with crimson. It was a gallant charge, but it was to be his last. A well-directed shot arresting him in full career, he pitched with violence upon his skull, and throwing a complete somersault, subsided amid a cloud of dust."

The lion has some excuse for occasionally developing a strong running away propensity. His pace when going at full speed is wonderfully rapid, considering the length of his legs. As the following extract shows, he is able to outrun a first-rate horse, so that the animals on which he usually feeds would, if he choose to pursue them, have simply no chance whatever against him. As we shall see, however, the lion seldom pursues his prey, preferring to lie in ambush and to spring upon a passing herd. This consideration makes the following experience rather remarkable. The lion probably pursued Mr. Baldwin not to satisfy appetite, but for revenge.

"Now for an adventure with a lion, which I have reserved for the last. On Friday the old Masara captain paid me a visit. He had seen a lion in the path, and left a lot of Masaras to watch him. I had been working hard all day in the hot sun with an adze, making a dissel-boom for the wagon, and was tired, lame and shaky in the arms, and did not feel at all up to the mark for rifle-shooting; but I ordered 'Ferns' to be saddled, who was also not at all fresh, having had a tremendous burst in the morning across a flat after a lean Eland cow. Just after, I

caught sight of about twenty-five Masaras sitting down, all armed to the teeth with shields and assegais. My attention was attracted to a Kaffir skull, which struck me as a bad omen, and the thought entered my head that it might be my fate to lay mine to bleach there. I did not, however, suffer this thought to unnerve me, but proceeded, and found that the lion had decamped. The Masaras followed his spoor about a couple of miles, when he broke cover. I did not see him at first, but gave chase in the direction in which the Masaras pointed, saw him, and followed for about 1,000 yards, as he had a long start, when he stood in a nasty thorn thicket. I dismounted at about sixty or seventy yards, and shot at him. I could only see his outline, and that very indistinctly, and he dropped so instantaneously, that I thought I had shot him dead. I remounted and reloaded, and took a short circle, and stood up in my stirrup to catch a sight of him. His eyes glared so savagely, and he lay crouched in so natural a position, with his ears alone erect, the points black as night, that I saw in a moment I had missed him. I was then about eighty yards from him, and was weighing the chances of getting a shot at him from behind an immense ant-heap, about fifty yards nearer. I had just put the horse in motion with that intention when on he came with a tremendous roar, and 'Ferns' whipped round like a top, away at full speed. My horse is a fast one, and has run down the Gemsbok, one of the fleetest antelopes, but the way the lion ran him in was terrific. In an instant I was at my best pace, leaning forward, rowels deep into my horse's flanks, looking back over my left shoulder over a hard, flat, excellent galloping ground. On came the lion, two strides to my one. I never saw anything like it, and never want to do so again. To turn in the saddle and shoot darted across my mind when he was within three strides of me, but on second thought I gave a violent jerk on the near rein, and a savage dig at the same time with the off-heel, armed with a desperate rowel, just in the nick of time, as the old manikin bounded by me, grazing my right shoulder with his, and all but unhorsing me, but I managed to right myself by clinging to the near stirrup-leather. He immediately slackened his speed. As soon as I could pull up, which was not all at once, as 'Ferns' had his mettle up, I jumped off, and made a very pretty and praiseworthy shot, considering the fierce ordeal I had just passed (though I say it, who ought not), breaking his hind leg at 150 yards off, just at the edge of the thicket. Fearful of losing him, as the Masaras were still flying for bare life over the velt, with their shields over their heads, and I knew nothing would prevail on them to take the spoor again, I was in the saddle, and chasing him like mad in an instant, His broken leg gave me great confidence, though he went hard on three legs; and I jumped off forty yards behind him, and gave him the second barrel—a good shot just above the root of the tail, breaking his spine, when he lay under a bush roaring furiously, and I gave him two in the chest before he cried 'Enough!' He was an old manikin, fat and furious, having only four huge yellow blunt fangs left."

Not only has the lion advantage of great courage—at least, except when coming in contact with those he feels to be his masters—and of great swiftness, but his

strength is prodigious. He will fell an ox or an antelope with a single blow of his paw, break his neck with one crunch of his cruel teeth, and bound off with it to his lair as easily as if he were only carrying a rabbit. With a calf in his mouth he has been known to leap a wall nine feet high. Not an animal of the forest, save the rhinoceros, can hope to escape from such terrible perfections as these. Any quarry the lion may choose—ox, antelope or zebra—is bound to succumb.

There is another characteristic about the beast which is a valuable accessory weapon. We mean the terrible roar—that deafening thunder voice, at sound of which the leopard and hyena hold their breath in awe, and the doomed flocks tremble and flee. With man even the noise, when heard for the first, produces an indescribable feeling, and a firm conviction that all his courage will be needed to meet such a fearful opponent. Sometimes, however, the lion seems to exercise his voice for fun, or for practice, rather than for striking terror into his hearers.

The lion is a solitary animal, hunting alone, except from the commencement of the breeding season, when his wife goes with him, up to the time when the babies are beginning to know how to take care of themselves. Until they have arrived at moths of discretion, "the lion tears in pieces enough for his whelps and strangles for his lionesses, and fills his holes with prey and his dens with ravine."

The lion's den is made by scraping away the surface of the earth in some secluded spot, where the beast remains as long as game is plentiful, and there is no one to disturb him. When he has used up one hunting-ground, he departs for "fresh fields and pastures new."

He hunts entirely by night, at which time it is not safe for any one, in a lion neighborhood, to stir without firearms, for the lion, with the laziness which distinguishes him, will always prefer man-meat caught at once, to antelope or zebra-meat, for which he will have the trouble of looking. In the day time he spends most of the time in sleeping off his bloody carouse, and, until nightfall, is always very unwilling to be disturbed, and unless molested hardly at all dangerous, except in the breeding season. This seems curious, as, from the ferocity of the animal when attacked, or when he is catering for himself by night, it savors of the marvelous to talk of such a savage being harmless under any circumstances. But there can be no doubt about the fact; he seems to object to expose his actions not only to the light of day, but also to that of the moon. For this, we have the testimony of a man whose loss Englishmen have not yet ceased to deplore; a man who, by universal consent, is *facile princeps* in the rank of African explorers:

"By day there is not, as a rule, the smallest danger of lions which are not molested attacking man, nor even on a clear moonlight night, except they possess a breeding affection. This makes them brave almost any danger. And, if a man happens to cross to the windward of them, both lion and lioness will rush at him, in the manner of a bitch with whelps. This does not often happen, as I only became aware of two or three instances of it. In one case a man, passing when



LIONS ROARING.

the wind blew from him to the animals, was bitten before he could climb a tree. And, occasionally, a man on horseback has been caught by the leg under the same circumstances. So general, however, is the sense of security, on moon-

light nights, that we seldom tied up our oxen, but let them lie loose by the wagons. While, on a dark, rainy night, if a lion is in the neighborhood, he is almost sure to venture to kill an ox."

The following passage shows how unusual it is for a lion to do any damage by day; so uncommon that the natives consider a supernatural cause necessary to account for so remarkable an occurrence:

"The Bakàtla of the village Mabatsa were much troubled by lions, which leaped into the cattle-pens by night, and destroyed their cows. They even attacked the herds in open day. This was so unusual an occurrence that the people believed that they were bewitched; 'given,' as they said, 'into the power of the lions by a neighboring tribe.' They went once to attack the animals, but, being rather a cowardly people compared to Bechuanas in general, on such occasions they returned without killing any."

The darker and stormier the night is the better the lions like it, and the more persistent will be their attacks. "The new moon brought, if possible, a more abundant supply of rain than usual; nor did the lions fail to take advantage of the nocturnal tempest, having twice endeavored to effect an entrance into the cattle-fold. It continued, until nine o'clock the next morning, to pour with such violence that we were unable to open the canvas curtains of the wagon. Peeping out, however, to ascertain if there was any prospect of its clearing up, we perceived three lions squatted within a hundred yards, in open plain, attentively watching the oxen. Our rifles were hastily seized, but the dampness of the atmosphere prevented their exploding. One after another, too, the Hottentots sprang out of the pack-wagons, and snapped their guns at the unwelcome intruders, as they trotted sulkily away, and took up their position on a stony eminence at no great distance. Fresh caps and priming were applied, and a broadside was followed by the instantaneous demise of the largest, whose cranium was perforated by two bullets at the same instant. Swinging their tails over their backs, the survivors took warning by the fate of their companion, and dashed into the thicket with a roar."

When a lion is fortunate enough to live in the neighborhood of villages, he naturally prefers the least troublesome course of selecting his supper from the flocks and herds of the inhabitants. It is said that in Algeria, some twenty years ago, each lion in the course of his life, cost the Arabs upward of \$40,000.00, as he destroys every year cattle, horses, camels, etc., to the value of \$1,200.00, and the average duration of a lion's life may be taken at thirty-five years. Thus, Jules Gérard, the celebrated lion killer, remarks that in one district the Arab who paid five francs a year to the State, paid fifty to the lion!

If there are no farms or villages handy, the lion has to content himself with the more troublesome course of catching wild prey. To this end he lies in ambush in some convenient spot, and waits patiently or impatiently until a herd of antelopes or zebras passes by, when he leaps upon one of the number, roaring terribly. He usually strikes the animal down at once, by the immense weight of his body, the



LIONESS AND YOUNG.

terrible blow of his paw, and the fearful grip of his teeth in the neck of his victim. If he misses his aim he never pursues the flying herd, but returns dejectedly to his lair and waits for another opportunity.

The lion is said sometimes to develop the taste for "man-eating," which makes the tiger so terrible. This, however, is comparatively rare, except in old animals; but, whether he eats men by choice or not, his depredations are fearfully extensive, especially when he has had a good deal of experience, knows exactly when to attack a place, and has lost wholly or in part the fear of man, which usually distinguishes him. Here is an account of the termination of the career of one of these heroes, a perfect Dick Turpin among lions, so great had become his skill in "lifting":

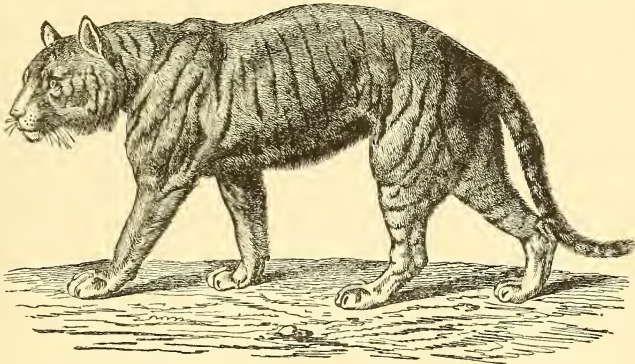
"We had not been many days at that place when a magnificent lion suddenly appeared one night in the midst of a village. A small dog that had incautiously approached the beast paid the penalty of its life for its daring. The next day a grand chase was got up, but the lion, being on his guard, managed to elude his pursuers. The second day, however, he was killed by Messrs. Galton and Bam; and, on cutting him up, the poor dog was found, still undigested, in his stomach, bitten into five pieces. The natives highly rejoiced at the successful termination of the hunt; for this animal had proved himself to be one of the most daring and destructive ever known, having in a short time, killed upward of fifty oxen, cows, and horses. When he had previously been chased he had always escaped unscathed and every successive attack made upon him only served to increase his ferocity."

The lion enjoys the honorable distinction of being, unlike most carnivora, strictly faithful to his spouse, although report says that she is by no means so virtuous, but only cleaves to her mate until a stronger and handsomer one turns up. Let us hope this is a base calumny. At the breeding season each lioness is usually followed by a number of lions, who try all means in their power to gain her affections, and fight the most terrible battles with one another. In these fights the mane is of great use, for its length and thickness prevents the combatants taking a firm grip of one another's neck. Thus, the lion with the finest mane has the best chance of succeeding in life in two ways. The lioness is more likely to take a fancy to him than to a less favored suitor, for most of the lower animals, as well as ourselves, appreciate personal adornment very strongly; and he has also the best possible protection in the tournament in which he is obliged to take part, fighting against all comers.

When the battle is over, and the "queen of love and beauty" has bestowed the prize—herself—on the victor, the happy pair live together until the young are able to take care of themselves. The male often hunts for his mate, and allows her to take as much as she wants of the prey before satisfying his own hunger. He cares for her in the same way all the time she is suckling, and for the litter from the time when they are weaned till they are able to hunt for themselves.

The lioness produces from two to six at a litter. The cubs are delightful little creatures, about as big as a moderate-sized cat, blind at first, with pretty, innocent faces, and delightfully playful ways. The mother is devoted to them. When the cubs are about eight to twelve months old they begin hunting for themselves, by attacking smaller animals, such as sheep and goats, under their parents' direction. The period between the ages of one and two years is the worst part of the lion's existence, as far as the inhabitants of the district are concerned, for they "kill not only to support themselves, but also in order to learn how to kill."

At the age of three the young lion's education is complete; he leaves his father's house, and begins to think of getting a house and a wife for himself, and then in her company he "roars after his prey and seeks his meat from God" for the



THE TIGER.

rest of his career. He is not full-grown until the age of eight, when he may be considered as quite adult; and for many years to come revels in the consciousness of unconquerable strength and power, and oppresses all inferior creatures to his heart's content.

THE TIGER. As the lion is king of beasts in Central Africa, so the tiger reigns supreme in a large portion of Southern Asia, where it is the most dreaded foe of the native, and the noblest game of the English sportsman. Its great size, its wonderful activity and strength, its glorious coloring, make it, in many respects, the most striking of all the great Carnivora. The marvelous symmetry of its form, making it almost as much a "line of beauty in perpetual motion" as the greyhound; the flame-like bands of orange-yellow, with interspersed black shadows, winding over its lithe sides and terrible countenance, as well as the ferocity of its

disposition, and its seeming uselessness but for the work of destruction, have been the theme of one of the wierdest, most wonderful melodies of the artist-poet Blake. The color of a full grown tiger in good health is exceedingly beautiful. The ground is of a rufous or tawny-yellow, shaded into white on the ventral surface. This is varied with vertical black stripes, or elongated ovals or brindlings. On the face and on the back of the ears the white markings are peculiarly well defined, and present an appearance as remarkable as beautiful. The depth of shade of the ground color, and the intensity of the black markings, vary according to the age and condition of the animal. In old tigers the ground becomes more tawny, of a lighter shade, and the black markings better defined. The young are more dusky in the ground coloring than the middle-aged or old tigers. The depth of color is also affected by locality and climate. Those found in forests are of a deeper shade than tigers found in more open localities. It is said that in more northern latitudes they are of a lighter color, almost white. The circular white patches on the back of the ears, and the white and black about the face, are very conspicuous in the tiger, rushing through the grass or jungle when disturbed. Brilliant as is the general color, it is remarkable how well it harmonizes with the grass or bush among which he prowls, and for which, indeed, until his charge, and the short deep growls or barkings which accompany it, reveal his presence, he may be mistaken. The tigress differs from the tiger; the head, as well as the whole body, is smaller and narrower. The neck is lighter, and is devoid of any crest, which, though very much smaller than the voluminous mane of the lion, undoubtedly exists in large and old males. The tigress is lither, more active, and when accompanied by her offspring, far more savage and bloodthirsty than the male; she will then attack, even when unprovoked; and in defense of her young, of which she is proverbially fond, is as courageous as she is vicious. Most of the accidents that have befallen sportsmen and others who have encountered these animals have been due to tigresses. I have seen a tigress, accompanied by her young, charge, unprovoked, a line of elephants, and inflict severe injuries before she was dispatched. The only well authenticated case in which a sportsman was taken out of a houdah was one in which a tigress, in one bound, reached the sportsman, her hind feet resting on the elephant's head, the fore feet on the rail of the houdah. The occupant, who had mortally wounded her as she sprang, was seized, and, after a short struggle, dragged or thrown to the ground. The tigress then received another bullet, and died where she fell; the sportsman, severely wounded, was carried into camp, and slowly recovered.

"It is generally admitted that the tiger attains the greatest size in India, and there can be no doubt that he is really the largest of the existing *Felidae*. The size of the tiger varies; some individuals attain great bulk and weight, though they are shorter than others which are of a slighter and more elongated form. The statements as to the lengths they attain are conflicting, and often exaggerated; errors are apt to arise from measurements taken from the skin after it is stretched,



THE ROYAL TIGER. (*One-fifteenth natural size.*)

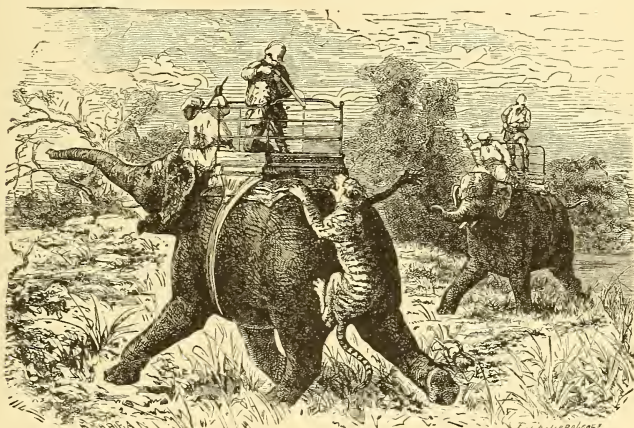
when it may be ten or twelve inches longer than before removal from the body. The tiger should be measured from the nose along the spine to the tip of the tail as he lies dead on the spot where he fell before the skin is removed. One that is ten feet by this measurement is large, and the full-grown male does not often exceed this, though no doubt larger individuals (males) are occasionally seen, and I have been informed by Indian sportsmen of reliability that they have seen and killed tigers over twelve feet in length. The full-grown male Indian tiger, therefore, may be said to be from nine to twelve feet, or twelve feet two inches, the tigress from eight to ten, or perhaps, in very rare instances, eleven feet in length, the height being from three to three and a half, or, very rarely, four feet at the shoulder.

"In disposition the tiger differs but little from the other wild *Felidae*. Although possessed of such immense strength and ferocity, he often shows himself a very coward. Like most animals he scarcely ever attacks an armed man unless provoked, that is, unless he (or she) be a confirmed 'man-eater,' although often seizing upon women and children. He shares with our domestic cat a love of cruelty for its own sake. It is sometimes an interesting sight to witness the demeanor of a tiger toward his terrified prey. When not raging with hunger, he appears to derive the same pleasure from playing with his victim as a cat in tormenting a mouse. He gambols around the buffalo as if enjoying his alarm; and when the affrighted animal, in mad despair, feebly attempts to butt at his remorseless foe, the tiger bounds lightly over his head, and recommences his gambols at the other side. At last, as if he had succeeded in creating an appetite for dinner, he crushes the skull of his victim with one blow of his powerful fore-paw, and soon commences his bloody meal."

Another point in which the tiger resembles the cat is the devotion of the female to her offspring, and the remarkably lively and skittish disposition of the "kittens," of which from two to five are usually produced at a birth. She is a most affectionate and attached mother, and generally guards and trains her young with the most watchful solicitude. They remain with her until nearly full grown, or about the second year, when they are able to cater for themselves. Whilst they remain with her she is peculiarly vicious and aggressive, defending them with the greatest courage and energy, and when robbed of them is terrible in her rage; she has nevertheless been known to desert them when pressed, and even to eat them when starved.

As soon as they begin to require other food than her milk she kills for them, and teaches them to do so for themselves by practicing on small animals, such as deer, and young calves and pigs. At these times she is wanton and extravagant in her cruelty, killing apparently for the gratification of her ferocious and blood-thirsty nature, and perhaps, to excite and instruct the young ones, and it is not until they are thoroughly capable of providing their own food that she separates from them.

The young tigers are far more destructive than the old. They will kill three or four cows at a time, whilst the elder and more experienced rarely kill more than one, and this at intervals of from three or four days to a week. For this purpose the tiger will leave its retreat in the dense jungle, proceed to the neighborhood of a village, and during the night will steal toward the herds and strike down a bullock, drag it into a secluded place, and then remain near the "murrie," or kill, for several days, until it has eaten it, when it will proceed in search of a further supply. When it has once found good hunting ground in the vicinity of a village, it continues its ravages, destroying one or two cows or buffaloes a week. It is very fond of the ordinary domestic cattle which, in the plains of India, are gen-



TIGER HUNTING.

erally weak, half-starved, under-sized creatures. One of these is easily struck down and carried or dragged off. The smaller buffaloes are also easily disposed of, but the buffalo bulls, and especially the wild ones, are formidable antagonists, and have often been known to beat the tiger off, and even to wound them seriously with their horns.

Some notion of the fearful damages committed by tigers in India will be gained from the following extract: "Cattle killed in my district are numberless. As regards human beings, one tiger in 1867-8-9, killed, respectively, twenty-seven, thirty-four, forty-seven people. I have known it attack a party and kill four or five at a time. Once it killed a father, mother and three children; and the week before it was shot it killed seven people. It wandered over a tract of twenty

miles, never remaining in the same spot two consecutive days, and at last was destroyed by a bullet from a spring gun, when returning to feed at the body of one of its victims—a woman."

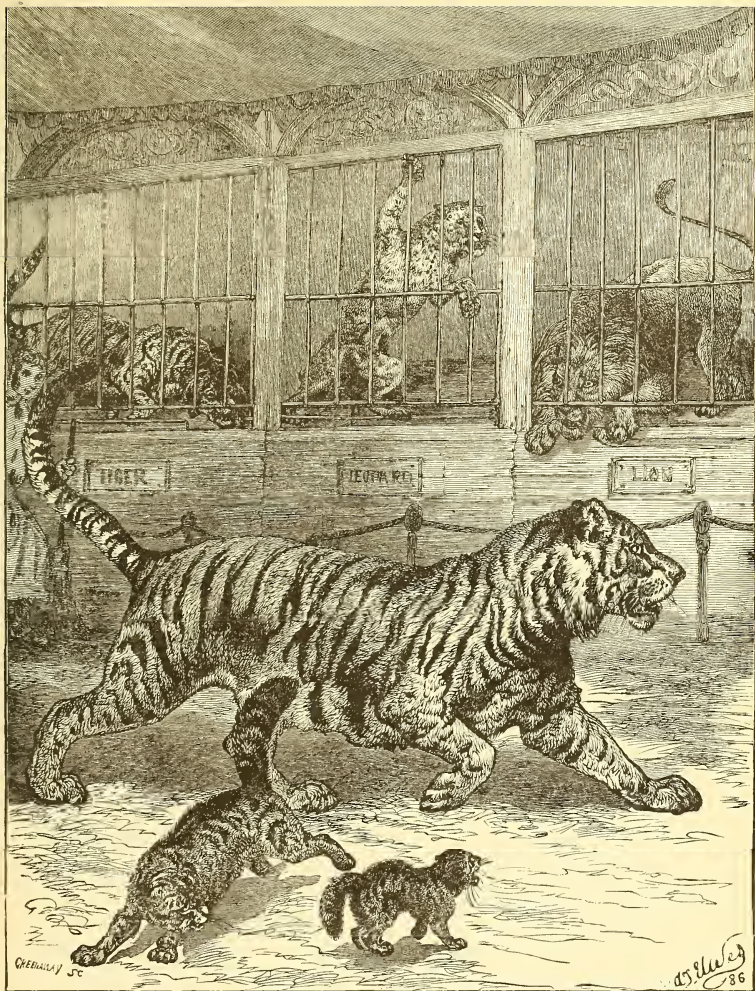
As might naturally be expected, an enemy so dreadful is sure to have supernatural power ascribed to it by the credulous natives, whose property is destroyed, and whose lives are endangered by the ravages of this terrible beast. People in the state of civilization of the ordinary Indian villages are sure to think there is something more than natural in an animal capable of such wholesale destruction, so wantonly cruel, of such fearful strength and such terrible beauty.

Of course tiger-hunting is, *par excellence*, the "royal sport of India;" the game calling forth more courage and address from the sportsman than any other, and the "spice of danger" so necessary to the true sportsman being at its maximum. Usually, a hunt is made up of a considerable number of sportsmen, accompanied by a crowd of beaters. The elephant upon which each hunter rides is provided with a houdah of light wood and basket work, and consisting of two compartments, a front one in which the sportsman himself sits, and a hinder one occupied by his servant, who is in readiness with spare guns. The driver or mahout, sits on a cushion on the elephant's neck, armed with a pointed iron rod, or *gujbag*, to every touch of which the docile animal answers.

On arriving at a portion of the jungle where tigers are known to exist, the sportsmen hold themselves in readiness with loaded rifles, while the beaters, on foot, encircle the jungle, and endeavor, with shouts and gesticulations, to drive the game from their lurking place to the destruction which awaits them. As soon as a tiger appears every piece is leveled at him, and, in many cases, he is dispatched at once; but often he is either entirely missed, or only slightly wounded, and then he at once makes for the nearest elephant, and often succeeds in making elephant, or mahout, or even sportsman, feel his cruel teeth and claws, before the *coup de grace* is given. A tiger is at no time the easiest thing to kill; like its humble kinsman, the cat, it has "nine lives" to part with, and these lives are much more tenacious than in the case of poor puss. A tiger, holding on with tooth and claw to a writhing elephant, in such a position that a misdirected shot may kill man or elephant instead of tiger, is an extremely awkward beast indeed to deal with, and is often enabled to sell his life very dearly. When the day's sport is over, the tigers are either carried into camp on pad elephants, or skinned where they lie; the natives possessing themselves of the flesh, and everything else of which they can lay hold.

The foregoing is the legitimate method of keeping down the tiger race, but many others are employed. "They are snared in pitfalls and traps, shot by spring guns and arrows, occasionally poisoned, and it is said that bird-lime has been used in their destruction."

The perils of tiger-hunting are great and varied. In the following instance related by Sir Joseph Fayrer a large comic element was introduced, although the

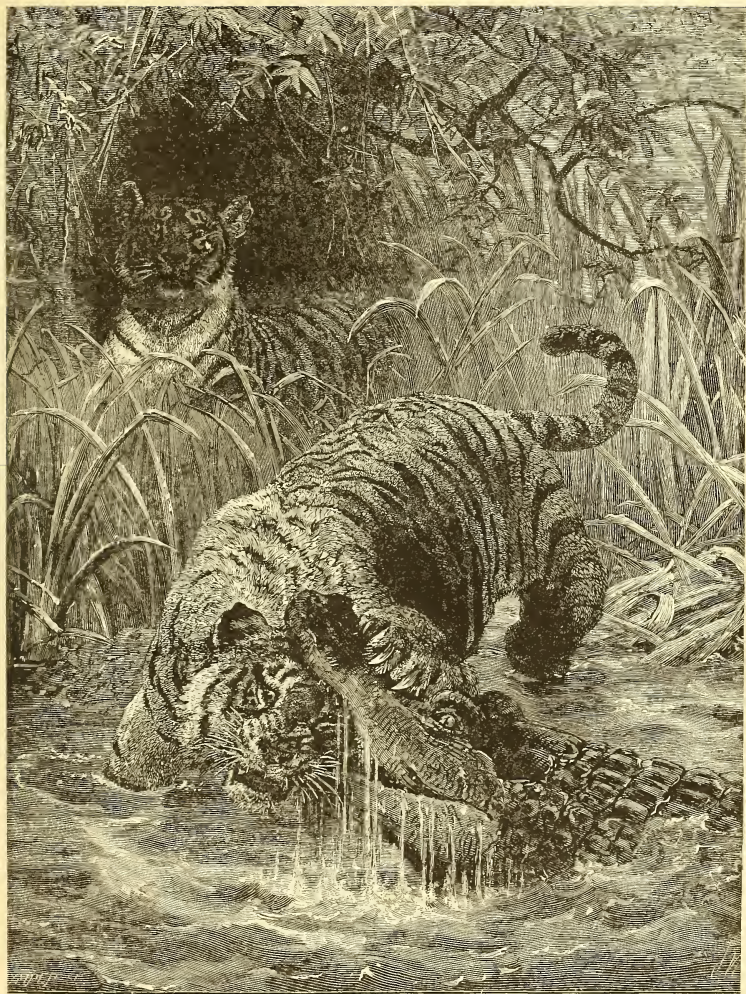


THE TIGER ESCAPED.
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fun is probably more striking to us to read of than it was to the hunter and his mahout, who took part in it:

"A rather curious tiger-hunt, in which the tiger seemed to think that he should have his share of the sport as well as the 'shikarie,' occurred some short time ago in the Dhoon. A gentleman, well known in Dehra, an enthusiastic though rather inexperienced sportsman, they say, went out about a month ago, into the Eastern Dhoon, for a day or two's shooting. Arrived on the ground, he was seated in his houdah on the elephant, looking out anxiously for game of some sort, when the mahout suddenly cried, 'Shér, Sahib; burra, Shér!' for a tiger had made his appearance unexpectedly close to the elephant. The gentleman hurriedly fired, and planted a ball from his rifle, not in the tiger's shoulder, but in his abdomen. This mistake must have been due to surprise at the tiger's sudden advent on the scene, and the consequently hurried shot; otherwise such a want of knowledge of anatomy as was evinced in seeking a vital spot in the abdomen would be unpardonable. The consequences of the mistake were serious; for the tiger, resenting the sudden disturbance in the region where the remains of his last kill were peacefully reposing, charged the elephant, and, by a spring, succeeded in planting his fore paws on her head, while his hind legs clawed and scratched vigorously for a footing on her trunk.

"Imagine the feelings of the mahout, with a tiger within six inches of his nose! the elephant trumpeting, shaking, and rolling with rage and pain, till he was barely able to maintain his seat on her neck at all; and the occupant of the houdah, too, tumbled from top to bottom, and from side to side of it, as if he were a solitary pill in a pillbox too large for him. Of course, in this predicament, he was utterly unable to use his rifle to rid the elephant of the unwelcome head-dress she was, perforce, wearing. The attempt to fire, in all that shaking, would probably have resulted in his blowing out the mahout's brains instead of the tiger's, or in his shooting himself. Meanwhile, the mahout, with the courage of despair, slipped out of the *gaddela*, or cushion, on which he sat, and rolling it round his left arm, and taking the iron *gujbag* in his right, assailed the tiger manfully about the ears. But, being thick-headed, he did not seem to mind the *gujbag* at all; for, after taking a bite at the elephant's forehead, he calmly continued his struggles for a footing on the reluctant and ever-dodging trunk, heedless of the rain of blows on his thick skull, and no doubt, promising himself to square accounts presently by swallowing the mahout, *gujbag*, and all. But the elephant was beginning to see that she couldn't shake the tiger off, so she tried another plan; and, making an extempore battering-ram of herself, with the tiger as a buffer, she charged straight at a sal-tree, thinking to make a tiger pancake on the spot. But the sal-tree, alas! was a small one, and gave way under the shock, and away went tree, tiger, and elephant into an old and half filled-up *obi*, or elephant pit, which happened to be conveniently placed to receive them just on the other side of the fallen tree. The tiger and the mahout were both knocked off by the shock and fall; but the latter, luckily



TIGER AND CROCODILE FIGHTING.

for himself, fell out of the pit, the former into it, under the elephant. The elephant now had her share of the sport, and gave the tiger such a kicking while he lay under her, making a kind of shuttlecock of him between her fore and hind legs, that the breath must have been almost kicked out of him; then deeming she had done enough for honor and glory, and that she couldn't eat the tiger if she did kill him, she commenced climbing out of the pit, whose crumbled and sloping sides luckily made the scramble out practicable. The mahout, who had by this time picked himself and his scattered wits up, rushed round and caught her by the ear just as she reached the level, and was preparing for a bolt, and scrambling rapidly up to his perch on her neck, succeeded in stopping her and turning her face to the foe once more. The elephant being now under command, our sportsman at length resumed his proper share in the proceedings, and the tiger, being still at the bottom of the pit, breathless, if not senseless, from the kicking he had undergone, by a well-directed shot put him finally *hors de combat*, and had the satisfaction of carrying him into the station in triumph, where his skin is preserved as a witness of this strange tiger-hunt. The elephant, though it got one nasty bite, and was badly scratched about the trunk and forelegs, is now none the worse for its single combat with the monarch of the Indian forests."

Mr. Thompson recounts a tale of a planter, who, returning home after a carouse, a little too much under the influence of Scotch whisky, was sorely bested by a tiger: "It was rather dark, and verging on the small hours of morning when MacNab, mounting on his trusty steed, set his face toward home. Feeling at peace with all men, and even with the beasts of prey, he cantered along a road bordered with mangroves, admiring the fitful gleams of the fire-flies that were lighting their midnight lamps among the trees. But soon the road became darker, and Donald, the pony, pricked his ears uneasily as he turned into a jungle-path which led toward the stream. Donald snuffed the air, and soon redoubled his pace, with ears set close back, nostrils dilated, and bristling mane. Onward he sped, and at last the angry growl of a tiger in full chase behind roused MacNab to the full peril of his position, and chilled his blood with the thought that his pursuer was fast gaining ground, and that at any moment he might feel the clutch of his hungry and relentless claws. Here was a dilemma, the cold creek before him, and the hot breath of the tiger in the rear. A moment or two were gained by tossing his hat behind him, and then Donald crossed the stream at a bound. The tiger lost his scent, and Mr. MacNab reached home in safety, by what he delighted to describe as a miraculous escape."

To us, who "live at home at ease," life would seem to be hardly bearable in a place where one is liable, any day, to meet with such an adventure as this—with every chance, too, of a less pleasant termination. But it is astonishing how indifferent to the presence of wild beasts the inhabitants of these countries become. Even Europeans soon acquire the same fearlessness, or, rather, apathy. Of this Mr. Thompson gives a striking illustration: "In these sparse settlements of



Tigers at Home.

Malays and Chinese, Roman Catholic missionaries are at work. I once fell in with one of these priests, shod with straw sandals, and walking alone toward Bukit, to visit a sick convert who had a clearing upon the mountain side. His path lay through a region infested with wild animals; and when I inquired if he had no dread of tigers, he pointed to his Chinese umbrella, his only weapon, and assured me that with a similar instrument a friend of his had driven off the attack of a tiger not very far from where we stood. But the nervous shock which followed that triumph had cost the courageous missionary his life."

THE LEOPARD. The leopard, or panther, is undoubtedly the third in importance and interest of the great cats. From a historical point of view it is more interesting than the tiger, and would naturally come immediately after the lion, but its size, ferocity and beauty are so very inferior to the tiger's that it must needs yield to the glorious Bengalee. In the matter of beauty alone it is eclipsed by the jaguar, but the fact of its having been known from very ancient times, must decide us, in the absence of any important characters, anatomical or otherwise, to give it the precedence of its very nearly related American cousin.

The characters of the hide are so characteristic that they must be given in some detail, especially as the spots must be distinguished from those of the jaguar, the great spotted cat of the New World. The skin is described as follows: "On an orange-yellow ground, passing below into white, are spots of deep or brownish-black, sometimes distinct, sometimes composed of two, three, or even four points disposed in a circle, and surrounding a space, always somewhat darker than the ground color, and shading into it below. On the medio-dorsal line, in the hind part of the body, the spots are so arranged as to produce three or even four regular parallel bands. On the side of the body, also, bands are found, but they are indefinite in number, and irregularly disposed. On the head and legs, the circular spots pass by degrees into mere points. The belly is strewn with great double points, irregularly disposed, and on the legs the points, also double, unite and form bands. The tail is covered over the greater part of its length with annular spots. On the hinder part of the ears is a clear spot."

It must not be supposed, however, that all leopards have exactly the kind of marking here described, for it varies according to habitat, age, sex and season. Still the skin markings are definite enough to enable one to tell the true leopard, either from the hunting leopard (cheetah), the jaguar, or the clouded tiger, the only animals with which there is any possibility of confounding it.

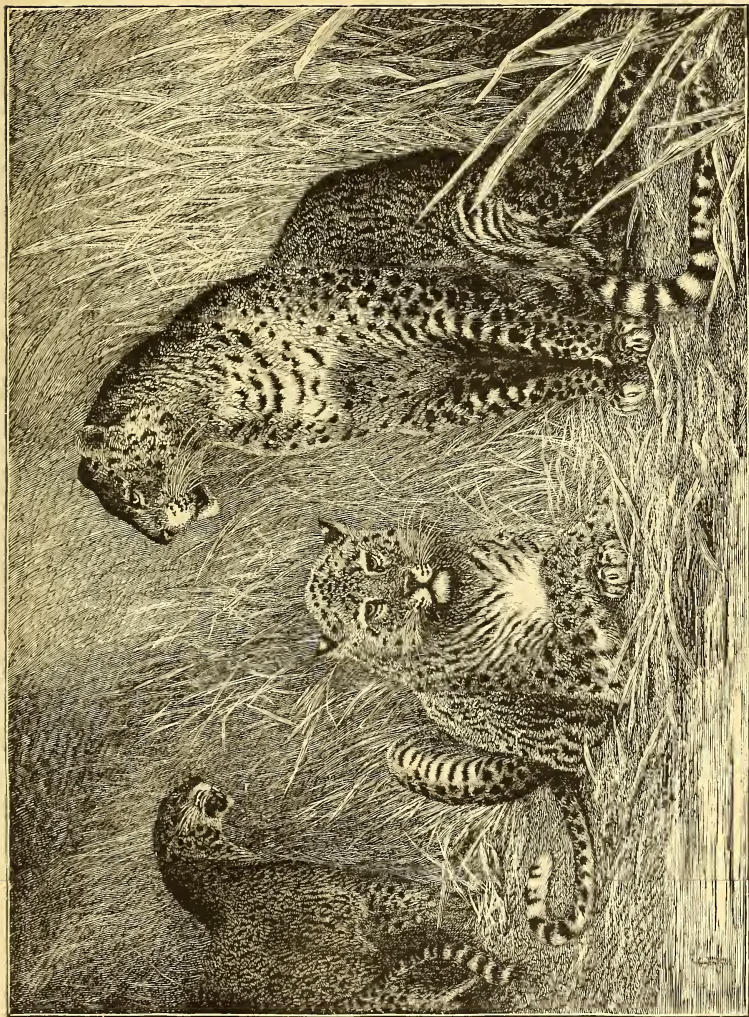
In size the leopard is decidedly inferior to either the lion or tiger; being not more than some seven feet six inches from snout to tip of tail, and two feet seven inches high at the shoulder. The tail itself is about three feet eight inches long. The female is somewhat smaller than the male, to which the above measurements apply. The whiskers are strong and white, and the eyes yellow. The headquarters of the leopard are the African continent, where its range is almost co-

extensive with the lion's, as it occurs from Algeria in the north to Cape Colony in the south.

Leopards frequent the vicinity of pasture-lands in quest of the deer and other peaceful animals which resort to them; and the villagers often complain of the destruction of their cattle by these formidable marauders.

The Singhalese hunt them for the sake of their extremely beautiful skins, but prefer taking them in traps and pitfalls, and occasionally in spring cages formed of poles driven firmly into the ground, within which a kid is generally fastened as a bait, the door being held open by a sapling bent down by the united force of several men, and so arranged to act as a spring, to which a noose is ingeniously attached, formed of plaited deer's hide. The cries of the kid attract the leopard, which, being tempted to enter, is inclosed by the liberation of the spring, and grasped firmly round the body by the noose.

As a rule, the leopard seems to be far more cowardly than the lion or tiger. Jules Gérard, the lion-killer, holds the beast in the greatest contempt for its pusillanimity. Still it often shows a good deal of pluck, chiefly, however, when in want of food. As to this matter, the actual experience of those who have observed the animal in its native land will convey a truer idea than any "summing up" of its good and bad points. "One night I was suddenly awoke by a furious barking of our dogs, accompanied by cries of distress. Suspecting that some beast of prey had seized upon one of them, I leaped, undressed, out of my bed, and gun in hand, hurried to the spot whence the cries proceeded. The night was pitchy dark, however, and I could distinguish nothing; yet, in the hope of frightening the intruder away, I shouted at the top of my voice. In a few moments a torch was lighted, and we then discovered the marks of a leopard, and also large patches of blood. On counting the dogs, I found that 'Summer,' the best and fleetest of our kennel, was missing. As it was in vain that I called and searched for him, I concluded that the tiger (leopard) had carried him away; and, as nothing further could be done that night, I again retired to rest; but the fate of the poor animal continued to haunt me, and drove sleep away. I had seated myself on the front chest of the wagon, when suddenly the melancholy cries were repeated, and on rushing to the spot, I discovered 'Summer' stretched at full length in the middle of a bush. Though the poor creature had several deep wounds about his throat and chest, he at once recognized me, and, wagging his tail, looked wistfully in my face. The sight sickened me as I carried him into the house, where, in time, however, he recovered. The very next day 'Summer' was revenged in a very unexpected manner. Some of the servants had gone into the bed of the river to chase away a jackal, when they suddenly encountered a leopard in the act of springing at our goats, which were grazing, unconscious of danger, on the river's bank. On finding himself discovered, he immediately took refuge in a tree, when he was at once attacked by the men. It was, however, not until he had received upward of sixteen wounds—some of which were inflicted by poisoned



LEOPARDS AT HOME.

arrows—that life became extinct. I arrived at the scene of conflict only to see him die. During the whole affair, the men had stationed themselves at the foot of the tree, to the branches of which the leopard was pertinaciously clinging, and, having expended all their ammunition, one of them proposed, and the suggestion was taken into serious consideration, that they should pull him down by the tail."

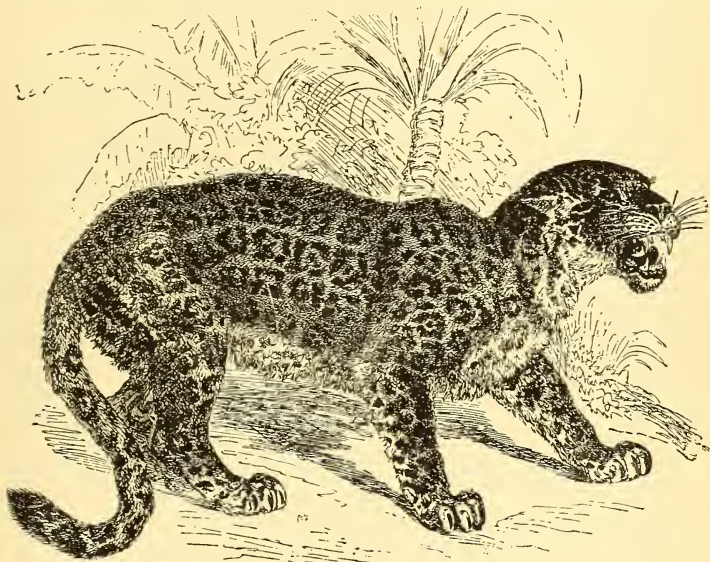
THE JAGUAR. The jaguar takes the place of the leopard in America, and is the most formidable of the beasts of prey. It extends across the whole of the central part of the continent; its northern limit being the southwest boundary of the United States.

It is a slightly larger animal than the leopard, fierce and sulky in expression, but more elegant in form, and far handsomer as to its skin. The spots are arranged in larger and more definite groups, each group consisting of a ring of well-defined black spots, inclosing a space of a somewhat darker tawny than the ground color, in which lesser spots often occur.

The jaguar is perhaps the fiercest looking of all the great cats, having an extremely ferocious expression and a horrid habit of showing its great fangs. The jaguar is found in North and South America, extending from the southern regions of the United States, through Mexico, Central America, and Brazil, as far south as Paraguay. Of its habits, occurrence, etc., the following interesting account is given by Mr. Darwin:

The wooded banks of the great rivers appear to be the favorite haunts of the jaguar; but south of the Plata, I was told that they frequented the reeds bordering lakes. Wherever they are, they seem to require water. Their common prey is the Capybara, so that it is generally said, where Capybaras are numerous there is little danger from the jaguar. Falconer states that near the southern side of the mouth of the Plata there are many jaguars, and that they chiefly live on fish. This account I have repeated. On the Parana they have killed many wood-cutters, and have even entered vessels at night. There is a man now living in the Bijada, who, coming up from below when it was dark, was seized on the deck; he escaped, however, with the loss of the use of one arm. When the floods drive these animals from the islands, they are most dangerous. I was told that, a few years since, a very large one found its way into a church at Santa Fé; two padres entering one after the other were killed, and a third, who came to see what was the matter, escaped with difficulty. The beast was destroyed by being shot from a corner of the building, which was unroofed. They commit also at these times great ravages among horses and cattle. It is said that they kill their prey by breaking their necks. If driven from the carcass, they seldom return to it. The Gauchos say that the jaguar, when wandering about at night, is much tormented by the foxes yelping as they follow him. This is a curious coincidence with the fact which is generally affirmed of the jackals accompanying, in a similarly officious manner, the East Indian tiger. The jaguar is a noisy animal, roaring much by night, and

especially before bad weather. One day, when hunting on the banks of the Uruguay, I was shown certain trees to which these animals constantly recur for the purpose, as it is said, of sharpening their claws. I saw three well-known trees; in front, the bark was worn smooth as if by the breast of the animal, and on each side there were deep scratches, or rather grooves, extending in an oblique line, nearly a yard in length. The scars were of different ages. A common method of ascertaining if a jaguar is in the neighborhood is to examine these trees. I



THE JAGUAR.

imagine this habit of the jaguar is exactly similar to one which may any day be seen in the common cat, as with outstretched legs and exerted claws it scrapes the leg of a chair; and I have heard of young fruit trees in an orchard in England having been thus much injured. Some such habit must also be common to the Puma, for on the bare hard soil of Patagonia I have frequently seen scores so deep that no other animal could have made them. The object of this practice is, I believe, to tear off the ragged points of their claws, and not, as the Gauchos think, to sharpen them. The jaguar is killed, without much difficulty, by the aid of dogs baying and driving him up a tree, where he is dispatched with bullets."

It has been stated that great contests take place between the jaguars and the alligators which frequent the rivers of the regions in which the great cat lives. It is said that the jaguar is fully a match for the alligator on land, while in the water the reptile has usually the best of it. The tale must, however, be taken with much allowance. A very curious fact is mentioned by Brehm, namely, that the jaguar always attacks negroes and Indians in preference to whites, and that a white man, obliged to sleep in the open air in a dangerous locality, always feels perfectly safe if accompanied by natives. It is thought that this is probably due to the strong odor which characterizes the skin of the negro and other dark races. As tending to confirm this extraordinary statement, we may mention an anecdote told by Professor P. Martin Duncan, F. R. S., of the behavior of the great *Felida* at the Zoological Gardens in London, Eng., toward colored people. Every one must have noticed the calm, supercilious way in which those grand creatures regard the visitors to their abode, seeming to regard them as beings of an inferior race come to pay rightful homage to strength and beauty; except at feeding-time, they seem hardly to give a thought to the admiring crowd in their house of reception, but pace regularly up and down their dens, or sit with paws thrust out between the bars, stolidly gazing. A short time ago, however, when the Prince of Wales' Indian animals were exhibited at the Gardens, a little black boy, one of the attendants attached to the collection, often passed through the lion-house; and when he did so, every cat in the place started to its feet, and rushed to the bars of its cage with great demonstrations of anger and ferocity. They evidently felt that here, at least, was one of the black, two-legged animals on which their fathers and grandfathers had fed from time immemorial, and that now was their time to strike for a pleasant change of diet, after the monotony of beef bones, ignominiously cut up and parceled out to them.

THE PUMA. The Puma, or "South American Lion," is the second great American Carnivore. It occurs far more widely spread in the Continent than the jaguar, ranging from the cold regions of the Straits of Magellan up to 50° or 60° north latitude. In appearance it is not unlike a small lioness, having a tint somewhat similar to the characteristic tawny color of the monarch of Africa, but darker, greyer, and less rich; the mane, too, is absent. Its head is proportionally, as well as absolutely, much smaller than that of the lion; its face is rounder, and it is altogether a much smaller beast: its average size being about thirty-nine or forty inches from the snout to the root of the thick, strong tail, the latter again being some twenty-five or twenty-six inches long, and the height about the same. Indistinct spots occur, as in the lion, on the belly and the inside of the legs. The hind-quarters are very large, and are kept higher than the shoulders in walking. The skin beneath the belly is remarkably loose and pendulous.

Unlike the jaguar, the puma avoids water, although well able to swim when necessary. It is as much at home in trees as on solid ground, and is a terror to

the Capuchin and other monkeys which abound in the forests of South America. It is, however, a far more cowardly animal than the jaguar, and is not feared by the natives to anything like the same degree. Mr. Darwin, who has had ample opportunity of observing its habits, writes thus of it in his "Naturalist's Voyage":

"This animal has a wide geographical range, being found from the equatorial forests, throughout the deserts of Patagonia, as far south as the damp and cold latitudes (53° to 54°) of Tierra del Fuego. I have seen its footsteps in the Cordillera of Central Chili, at an elevation of at least 10,000 feet. In La Plata the Puma preys chiefly on deer, ostriches, bizcacha, and other quadrupeds. It there rarely attacks cattle or horses, and most rarely men. In Chili, however, it destroys other quadrupeds. I heard, likewise, of two men and a woman who had been thus killed. It is asserted that the puma always kills its prey by springing on the shoulders, and then drawing back the head with one of its paws until the vertebræ break. I have seen, in Patagonia, the skeletons of Guanacos, with their necks thus dislocated.

"The Puma, after eating its fill, covers the carcass with many large bushes, and lies down to watch it. This habit is often the cause of its being discovered; for the condors, wheeling in the air, every now and then descend to partake of the feast; and being angrily driven away, rise all together on the wing. The Chileno Guaso then knows there is a lion (puma) watching his prey; the word is given, and men and dogs hurry



THE OUNCE.

to the chase. Sir F. Head says that a Gaucho in the Pampas, upon merely seeing some condors wheeling in the air, cried, 'A lion!' I could never myself meet with any one who pretended to such powers of discrimination. It is asserted that if a puma has once been betrayed by thus watching a carcass, and has then been hunted, it never resumes this habit, but that having gorged itself, it wanders far away. The puma is easily killed. In an open country it is first entangled with the bolas, then lazoed, and dragged along the ground till rendered insensible. At Tandul (south of the Plata), I was told that within three months one hundred were thus destroyed. In Chili they are generally driven up bushes or trees, and are then either shot or baited to death by dogs. The dogs employed in this chase belong to a particular breed, called 'Leoneros.' They are weak, slight animals, like long-legged terriers, but are born with a peculiar instinct for this sport. The puma is described as being very crafty. When pursued it often returns on its former track, and then suddenly making a spring on one side, waits there till the dogs have passed by. It is a very silent animal, uttering no cry

even when wounded, and only rarely during the breeding season." In captivity the puma, at any rate when caught young, is a tolerably docile animal, and, like the domestic cat, is fond of playing with inanimate objects. They do not, however, appear to be always perfectly amiable; the female may often be seen swearing at her lord in a most reprehensible manner.

THE OUNCE. The Ounce, or "Snow Leopard," as it is commonly called by sportsmen in the hills, is found throughout the Himalayas at a great elevation, never very much below the snows, at ranges varying with the season from 9,000 to 18,000 feet. It is said to be more common on the Tibetan side of the Himalayas; it is found also throughout the highland region of Central Asia, and extends as far west as Smyrna.

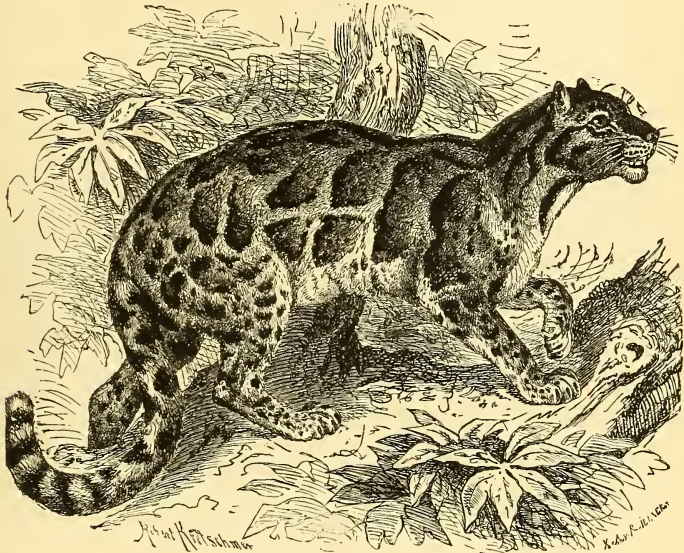
It is about the same size as the leopard (four feet four inches long, including the tail), which it also resembles in habits; in fact, it may be looked upon as a leopard specially adapted for a cold climate. The ground color of the skin is pale yellowish grey, turning beneath to dingy yellowish-white. It is spotted in much the same way as the leopard, though not so distinctly. "The fur throughout is very dense, and it has a well-marked, though short mane. The face is short and broad, and the forehead much more elevated than in any other cat."

The ounce is said to frequent rocky ground, and to kill the wild sheep as well as domestic sheep, goats and dogs; but it has never been known to attack a man.

THE CLOUDED TIGER. This animal, which is about intermediate in size between the great cats, such as the lion, tiger, or leopard, and the lesser kinds, such as the Ocelot, Eyra, or Tiger-Cats, is, as far as the markings of the skin are concerned, one of the most beautiful animals in the whole family. The ground-color of the skin is not so fine as that of the tiger, being a light buff instead of a rich orange-tawny, but the large, irregular, cloud-like patches of black are far more exquisite than the parallel bands of the tiger; and indeed, the only animal which in any way approaches it in the beauty of its markings is the Ocelot, and from this the Clouded Tiger certainly bears the palm. Its form is not particularly graceful, as its legs are short in comparison with the length of its body, and its snout, though longer than that of most cats, is blunt and somewhat awkward. One of the chief beauties of this creature, however, is its magnificent tail, which is fully four-fifths the length of the body (the latter being some forty inches long), and handsomely ringed with black. The skull is much elongated, especially its facial portion, and bears a strong resemblance to that of the extinct *Felis smilodon*. The pupil is oblong and erect, not round, as in all the preceding species.

The Clouded Tiger, or *Rimau Dahan*, is found in Siam, Assam, Borneo, Java, Sumatra, and the Malayan Peninsula. It was first introduced into England by Sir Stamford Raffles, who brought two specimens, of which he gives the following interesting account:

“Both specimens above mentioned, while in a state of confinement, were remarkable for good temper and playfulness; no domestic kitten could be more so. They were always courting intercourse with persons passing by, and in the expression of their countenance, which was always open and smiling, showed the greatest delight when noticed, throwing themselves on their backs, and delighting in being tickled and rubbed. On board the ship there was a small Musi Dog, who used to play round the cage and with the animal, and it was amusing to observe

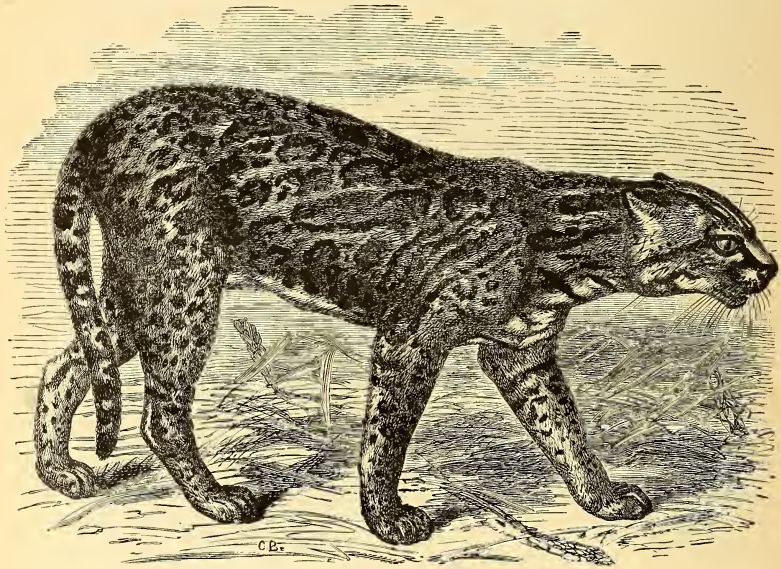


THE CLOUDED TIGER.

the playfulness and tenderness with which the latter came in contact with his inferior-sized companion. When fed with a fowl that had died he seized the prey, and after sucking the blood and tearing it a little, he amused himself for hours in throwing it about and jumping after it in the manner that a cat plays with a mouse before it is quite dead. He never seemed to look on man or children as prey, but as companions, and the natives assert that when wild they live principally on poultry, birds, and the smaller kind of deer. They are not found in numbers, and may be considered rather a rare animal, even in the southern part of Sumatra. Both specimens were procured from the interior of Bencoolen, on the banks of the Ben-

coolen River. They are generally found in the vicinity of villages, and are not dreaded by the natives, except as far as they may destroy their poultry. The natives assert that they sleep and often lay wait for their prey on trees; and from this circumstance they derive the name of *Dahan*, which signifies the fork formed by the branch of a tree, across which they are said to rest, and occasionally stretch themselves.

“Both specimens constantly amused themselves in frequently jumping and



THE OCELOT. (*About one-sixth natural size.*)

clinging to the top of their cage, and throwing a somersault, or twisting themselves round in the manner of a squirrel when confined, the tail being extended and showing to great advantage when so expanded.”

THE OCELOT. This extremely beautiful cat is, like the Jaguar and the Ounce, an American animal, where it is found throughout the central part of the continent, from Mexico and Texas on the north, to the northern boundaries of Brazil on the south. Its musical name was coined by Buffon as an abbreviation of its native Mexican appellation, *Tlalocelotl*.

The grey or tawny skin is marked by broadly sweeping rows of longitudinally elongated spots of large size, each consisting of a black rim inclosing an area somewhat darker than the general ground tint. The head is also beautifully striped, and the tail ringed with black. Altogether, the ocelot is, in the matter of markings, second only to the Clouded Tiger. It is about four feet long from the snout to the tip of the tail, and its legs are rather short for its size.

“It is a very voracious animal, but at the same time timid. It rarely attacks men. It is afraid of dogs, and when pursued it makes off to the woods and climbs



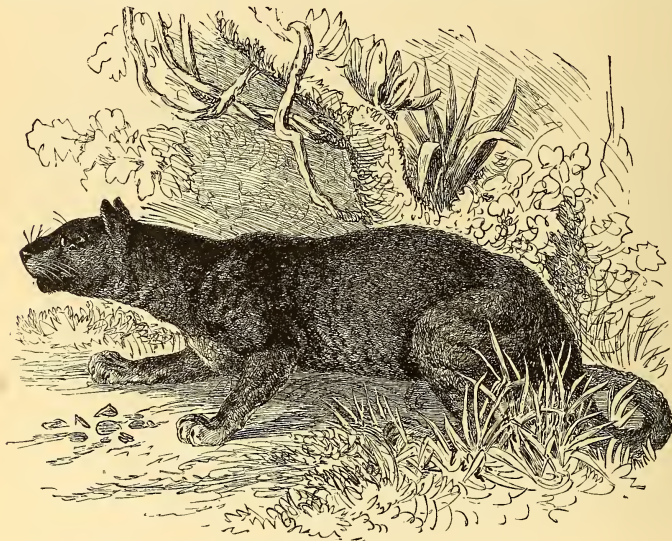
THE MARBLED TIGER-CAT. (*One-seventh natural size.*)

a tree. There it remains, and even takes up its abode to sleep and look out for game and cattle, upon which it darts as soon as they are within range. It prefers the blood to the flesh, and, in consequence, destroys a vast number of animals, for instead of devouring them it only quenches its thirst by sucking their blood.”

Notwithstanding its cowardice, the ocelot is a very savage animal. Buffon mentions a pair of young ones in captivity, which, at the age of three months, were sufficiently strong and cruel to kill and devour a female dog which had been given them as a nurse. He further adds the curious fact, that the male always

kept the female in wonderful subjection, so much so that she was afraid even to attempt to eat until he was completely satisfied.

THE MARBLED TIGER-CAT. "This prettily-marked wild cat has been found in the Sikkim Himalayas, in the hilly regions of Assam, Burmah, and Malayana, extending into the islands of Java, at all events." The head and body together are from eighteen and a half to twenty-three inches long, the tail fourteen to fifteen and a half inches. The ground-color of its hide is of a dingy



THE JAGUARONDI. (*One-seventh natural size.*)

tawny, "occasionally yellowish-grey, the body with numerous elongated wavy black spots, somewhat clouded or marbled." The tail is spotted and tipped with black, and the belly is yellowish-white.

THE JAGUARONDI. This is a curious long-bodied, short-legged animal, with a body almost as lithe and lissom as a weasel's. Like the puma, its head is small and well-shaped, and its tail long; but it is a much smaller animal, not exceeding three feet in length, including the tail. Its color is a dark grey-brown, "each hair being greyish-black, very dark at the root, and entirely black between the root

and the point, which is of a dark grey hue. This diversity of color causes the Jaguarondi to appear darker or lighter, according to circumstances," that is, according to whether, being in a placid condition, his hair is lying smooth and flat on the body, or whether, being excited, he erects it.

The Jaguarondi lives in the thick forests of Brazil, Paraguay and Guiana, where it always prefers the most impenetrable thickets, and is never seen in the open country. It lives upon birds and small mammals, having a special fondness

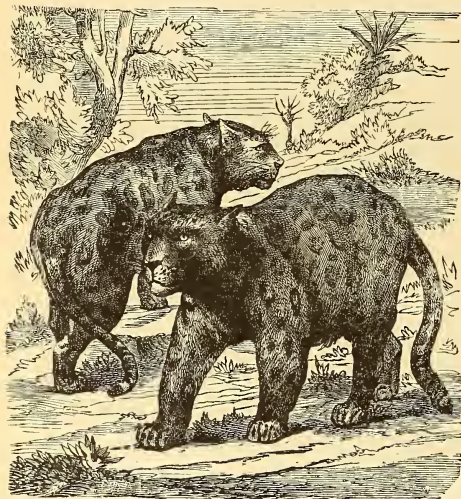


THE EYRA. (*About one-sixth natural size.*)

for fowls, which no amount of training will ever diminish. Even when a domesticated Jaguarondi is chained up in a yard, it will "try a thousand shifts" to entice the fowls into its neighborhood, and will then suddenly leap on and devour them.

THE EYRA. This is by far the most beautiful of all the smaller one-colored cats. The beauty of its rich chestnut hide, and the extreme elegance of its form, quite incline one to assign to it the palm for beauty, even in presence of such splendidly-marked forms as the ocelot. It is a most delightful animal, and is

slightly smaller than an ordinary cat, and much less in height, owing to the shortness of its legs, in comparison with which the body is of great length; so that one at first sight instinctively compares it with a weasel, to which, however, it has really no relationship whatever. Its neck is long, its head small, and curiously flattened from above downward, almost like an otter's, and its tail long and well shaped. Its movements are almost snake-like, so continuously does it twist and turn its long, lithe body. In its sanguinary habits



THE SERVAL.

and mode of life it does not differ in any important respect from the Jaguarondi, with which it also agrees in its geographical distribution. It is, however, a much rarer animal.

Mr. Bartlett states that he has kept the Eyra in his house, and that it made a most charming pet. Brehm also mentions two domesticated individuals which were on very good terms with the cats and dogs in the house, and were particularly friendly with a monkey, who did them the kind office of catching their fleas.

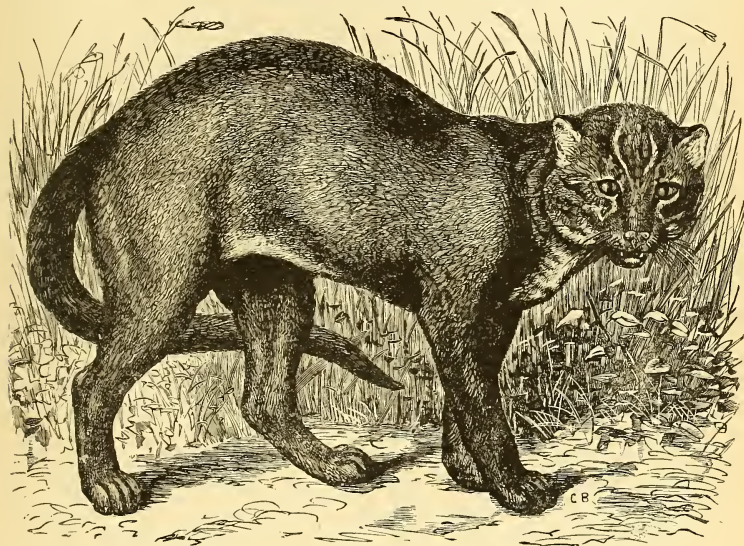
THE SERVAL. The Serval, or African tiger-cat, is found over the greater part of Africa, being specially abundant in the south, but extending also as far north as Algeria.

It especially frequents the extensive grassy plains or steppes where it lives upon antelope and other game.

Its legs are proportionally much longer and the tail much shorter than those of most of the true cats, in which respect it approaches the lynxes. It is distinguished from these, however, by the absence of hair on the ears. The body is about forty inches in length, the tail about sixteen inches. This, it will be seen, by a comparison with the dimensions given of the preceding kinds, shows a much smaller proportion between the tail and the body than in most of the true cats, but the appendage is never as short as in a lynx. The ground color of the skin is tawny, lighter or darker according to circumstances, and spotted with black. The spots on the flank are all elongated longitudinally, and along the back, run

into distinct bands which are continued on to the forehead. This running together of spots into longitudinal stripes is very common in the cat tribe. The tail is regularly ringed with black. The fur, although coarse, is decidedly handsome, and is a good deal used.

THE BAY CAT. This animal is found on the Gold Coast of Africa, as well as in Nepaul, Sumatra, and Borneo. It is of a deep bay-red color above, becoming paler below; there are a few indistinct dark spots on the hind legs, and the head is



THE BAY CAT. (*About one-sixth natural size.*)

splendidly ornamented with stripes of black, white, and orange, offering a striking contrast to the uniform tint of the body, and reminding one strongly of the tiger. The head and body measure about thirty-one inches, the tail nineteen inches.

Unfortunately nothing is known of the habits of this cat, so that we can only assume that it has the same savage nature and untamable disposition as the members of its family most nearly allied to it.

THE EUROPEAN WILD-CAT has for a long time been regarded as the original form of our household pussy, and this view has still some defenders. But

some very striking differences, not to be explained by domestication, exist; one very apparent one is the different shape of the tail. In the domestic cat this appendage is long, slender and tapering; in the wild-cat it is shorter, truncated at the end, and bushy. The wild-cat is one-third larger and much stronger than the domestic cat. The hair is stronger, the whiskers more ample, and the teeth stouter and sharper. The color of the creature is pretty uniform, the ground tint of the fur being yellowish or sandy-grey, marked with streaks like the tiger at right angles to the spine. A dark row of spots runs along the back; the tail has numerous black rings and a black tip.

At night the wild-cat sallies out on his foray, and any one who has observed the sly, stealthy, silent way in which the common cat hunts birds, can form a good notion of its actions, and judge how it climbs into the nests of the birds, pounces on the hare on its form or the rabbit sporting near its burrow. But it attacks even



WILD CAT HUNTING.

young fawns, and kills them, leaping on their back and biting the veins of the neck; while it is most destructive to doves and hen-roosts, where it kills many more than it can eat. When driven to extremity or wounded the wild-cat is a dangerous foe for dog or man. A German forester tracked one into a hollow tree, and struck the trunk to start it out again. While he was hammering away the cat appeared; before he could raise his gun it was on his back, tore off his thick leathern cap with its claws, and

bit through his neckerchief. His cries brought his son to his assistance, but the cat held on to its victim till its head was broken in. In spite of every care the forester died in great agony. An English sportsman who attacked a wild cat in Scotland, writes: "As soon as I was within six or seven feet of the place, she sprang straight at my face, over the dogs' heads. Had I not struck her in mid-air as she leaped at me, I should probably have got some severe wound. As it was, she fell with her back half broken among the dogs, who, with my assistance, dispatched her."

THE DOMESTIC CAT. This animal is, next to the dog, the flesh-eater which possesses for us the greatest personal interest, as it is, with the exception of the dog, almost the only quadruped regularly admitted into the society of man, eating from his hand, drinking from his cup, and being to him, if not a firm friend, like its canine relative, at least a comfortable, contented companion, adding greatly by its look of calm repose and its contented purr to the cosiness of the fireside.

The origin of the domestic cat is so far distant that it is quite uncertain from what wild species it was derived. Wherever the cat is found as a domesticated animal it is held in great esteem. This feeling was carried to its greatest extent by the ancient Egyptians, whose devotion to their pets was such, that, according to Herodotus, when a fire broke out, they cared for nothing but the safety of their



WILD CAT.

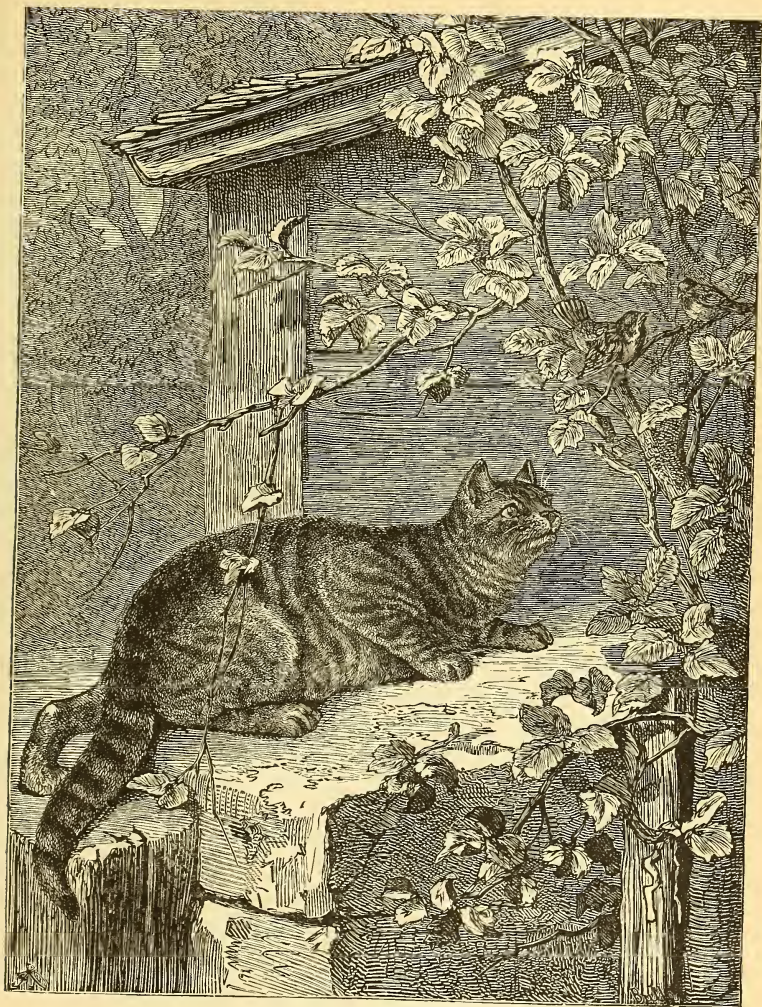
cats, and were terribly afflicted if one of them fell a victim to the flames. On the death of a cat, the inhabitants of the house shaved off their eyebrows, and the deceased animal was embalmed, and buried with great solemnity in a sacred spot. Many cat mummies have been found in the Egyptian tombs, and some are to be seen in the British Museum, together with similarly preserved specimens of human beings, and of sacred calves. Some individuals were wrapped separately in ample

bandages covered with inscriptions; others of a less degree of sanctity were preserved in numbers with a single wrapping for several. Their movements and their cries were consulted as oracles, and the murder, or even the accidental felicide of one of them, was punished by death.

With regard to the color of cats, a very curious circumstance has been observed, namely, that white cats with blue eyes are nearly always deaf! The only rational explanation of this remarkable phenomenon is that the absence of color in the skin is usually accompanied by a similar absence of pigment elsewhere, and it has been shown that the presence of a peculiar black pigment is very essential to the proper action of the sense organs. To bear out this view it may be stated that *Albinos*—that is, abnormally colorless animals—are usually deficient in taste, smell, and sight. The eye also varies much in color, being blue, yellow, or green. The pupil, or small black aperture in the center of the colored portion, is extremely sensitive, dilating greatly in the dark, and contracting to a mere line when the light is strong. Every one must have noticed the instantaneous change in the whole demeanor of a cat when it catches sight of a strange dog. This and other characteristic attitudes are well described by Mr. Darwin.

“When this animal is threatened by a dog it arches its back in a surprising manner, erects its hair, opens its mouth and spits.” This well-known attitude “is expressive of terror combined with anger. Anger alone is not often seen, but may be observed when two cats are fighting together; and I have seen it well exhibited by a savage cat while plagued by a boy. The attitude is almost exactly the same as that of a tiger disturbed, and growling over its food, which every one must have beheld in menageries. The animal assumes a crouching position, with the body extended; and the whole tail, or the tip alone, is lashed or curled from side to side. The hair is not in the least erect. Thus far, the attitude and movements are nearly the same as when the animal is prepared to spring on its prey, and when, no doubt, it feels savage. But when preparing to fight, there is this difference, that the ears are closely pressed backward; the mouth is partially opened, showing the teeth; the fore feet are occasionally struck out with protruded claws, and the animal occasionally utters a fierce growl. Let us now look at a cat in a directly opposite frame of mind, while feeling affectionate and caressing her master, and mark how opposite is her attitude in every respect. She now stands upright with her back slightly arched, which makes the hair appear rather rough, but it does not bristle. Her tail, instead of being extended and lashed from side to side, is held quite stiff and perpendicularly upward; her ears are erect and pointed; her mouth is closed, and she rubs against her master with a purr instead of a growl. Let it further be observed how widely different is the whole bearing of an affectionate cat from that of a dog, when with his body crouching and flexuous, his tail lowered and wagging, and ears depressed, he caresses his master.

“We can understand why the attitude assumed by a cat when preparing to fight with another cat, or in any way greatly irritated, is so widely different from



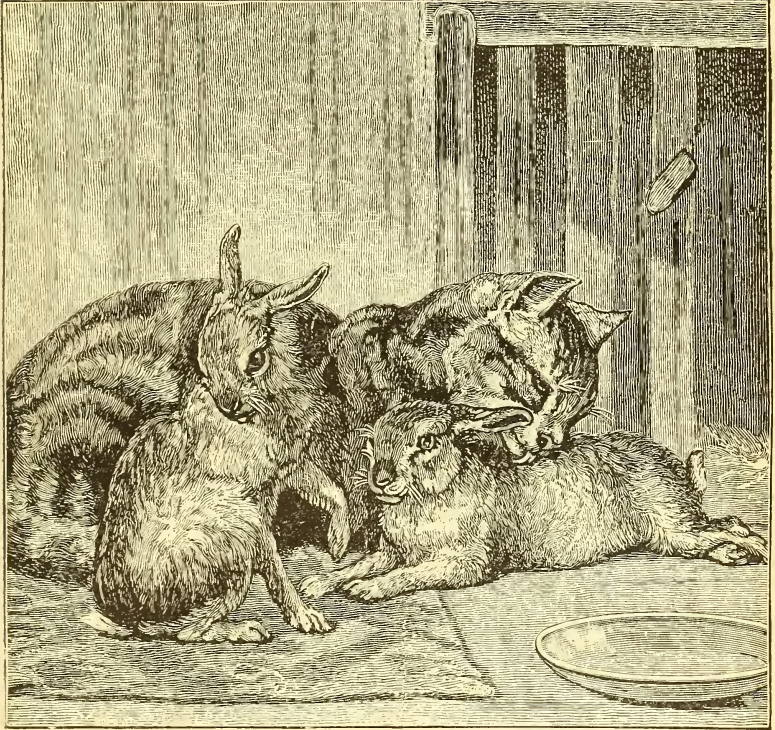
CRUEL PUSSY.

that of a dog approaching another with hostile intentions; for the cat uses her fore feet for striking, and this renders a crouching position convenient or necessary. She is also much more accustomed than a dog to lie concealed and suddenly spring on her prey. No cause can be assigned with certainty for the tail being lashed or curled from side to side. This habit is common to many other animals, for instance, to the puma, when prepared to spring; but it is not common to dogs or to foxes."

Under ordinary circumstances, when neither attacking a foe nor caressing a friend, the cat is the very image of lazy content. As she sits by the fire, softly purring, and occasionally licking her paws and rubbing them over her face, she seems an embodiment of repose. But notwithstanding its usual indolence, the cat, like all its congeners, is capable of very violent action upon occasions. This is especially the case with kittens, who are perhaps, the most delightful of all young animals; the most elegant, the most active, the most restless, the most overboiling with life and spirits. Who has not watched a kitten play? No matter what its toy may be; it is content with anything movable—a ball, a piece of string, a lady's dress, the fallen leaves in the garden—anything and everything she will play with, and as she plays, "grace is in all her steps," every movement of her head, every pat of her velvet paw, every whisk of her little tail, is elegance itself. Even in the old cat this wonderful power of executing the most rapid movements with almost the quickness of thought is rather in abeyance than actually absent; she can still run, leap to many times her own height, climb a tree or a vertical wall by means of her sharp claws, and perform other marvelous gymnastic feats impossible to anything else but a squirrel or a monkey.

The sense which of all others is most deficient in the cat is that of smell. In this she differs most markedly from the dog. It is said that a piece of meat may be placed in close proximity to a cat, but that, if it is kept covered up, she will fail to distinguish it. This want is, however, partly compensated for by an extremely delicate sense of touch, which is possessed, to a remarkable extent, by the whiskers, or vibrissæ, as well as by the general surface of the skin. These bristles, as we have already mentioned in speaking of the tiger, are possessed to a greater or less extent by all cats, and are simply greatly developed hairs, having enormously swollen roots, covered with a layer of muscular fibers, with which delicate nerves are connected. By means of these latter, the slightest touch on the extremity of the whiskers is instantly transmitted to the brain. These organs are of the greatest possible value to the cat in its nocturnal campaigns. When it is deprived of the guidance afforded by light it makes its way by the sense of touch, the fine whiskers touching against every object the cat passes, and thus acting in precisely the same manner as a blind man's stick, though with infinitely greater sensibility. Imagine a blind man with not one stick, but a couple of dozen, of exquisite fineness, and these not held in the hand, but embedded in his skin, so that his nerves come into direct contact with them instead of having a layer of skin between, and some

notion may be formed of the way in which a cat uses its whiskers. But the cat in its night walks has a further advantage over the blind man, namely, that except on the very darkest nights, it is not entirely deprived of the power of sight, for the pupil is so constructed that in the dark it can be dilated,



THE FOSTER MOTHER.

so as to catch every available ray of light, and, moreover, the *tapetum*, or brilliant lining of the eyeball, reflects and magnifies the straggling beams, and so enables the cat, if not actually to "see in the dark," at least to distinguish objects in an amount of light so small as to be inappreciable to our duller vision.

Like most of the Carnivora, the cat is a tender and affectionate mother; the care with which she trains her young ones, her anxiety for their comfort, her industry in washing them, are too well known to require remark. So fond is she of her offspring that she will entirely alter usual habits to regain lost ones. Mr. Hugh Miller tells us of a cat whose kittens were taken from her and given to a miller living at a distance of fully two miles, quite beyond the usual walk of a home-loving puss. The mother, however, although she had never been to the place before, and could by no possibility have known where her kittens were taken, made two successive journeys to the mill, each time bringing back in triumph to the rectory one of her dear ones.

So strong is the maternal instinct in the cat that she will, if deprived of her own offspring, bestow her affections on animals of a totally different species, or creatures even, which, under ordinary circumstances, she would look upon as her natural and lawful prey. The following is a remarkable instance of this overpowering mother-love:

"My friend had a little helpless Leveret brought to him, which the servants fed with milk in a spoon, and about the same time his cat had kittens, which were dispatched and buried. The hare was soon lost, and was supposed to be gone the way of most foundlings, to be killed by some dog or cat. However, in about a fortnight, as the master was sitting in his garden in the dusk of evening, he observed his cat, with tail erect, trotting toward him, and calling, with little short, inward notes of complacency, such as they use toward their kittens, and something gamboling after, which proved to be the Leveret that the cat had supported with her milk, and continued to support with great affection."

Why so cruel and sanguinary a beast as a cat should be affected with any tenderness toward an animal which is its natural prey, is not so easy to determine. This incident is no bad solution of that strange circumstance which grave historians, as well as the poets, assert of exposed children being sometimes nurtured by wild beasts that probably had lost their young. For it is not one whit more marvelous that Romulus and Remus, in their infant state, should be nursed by a she-wolf, than that a poor little suckling Leveret should be fostered and cherished by a bloody Grimalkin.

White, in his "Observations," has another similar anecdote: "A boy has taken three little young squirrels in their nest, or eyry, as it is called in these parts. These small creatures he put under the care of a cat who had lately lost her kittens, and finds that she nurses and suckles them with the same assiduity and affection as if they were her own offspring. This circumstance corroborates my suspicion that the mention of exposed and deserted children being nurtured by female beasts of prey who had lost their young, may not be so improbable an incident as many have supposed; and, therefore, may be a justification of those authors who have gravely mentioned what some have deemed to be a wild and improbable story. So many people went to see the little squirrels suckled by a

cat, that the foster-mother became jealous of her charge, and in pain for their safety, and therefore hid them over the ceiling, where one died. This circumstance shows her affection for these foundlings, and that she supposed the squirrels to be her own young." A similar story is told of a cat that nursed and cared for two young rabbits given to her charge.

Equally remarkable as an instance of the transference of maternal affection is the tale of the cat whose kittens were replaced by two out of the five pups belonging to a spaniel. The cat brought up her foster children so well, that they were able to run about long before the three left under the charge of their own natural mother. Before long they were removed, and the cat was inconsolable, until, one day, coming across the spaniel and her pups, she concluded that the latter were her own lost darlings, and in her eagerness to get them engaged in two successive fights with the spaniel, in each of which she was victorious, and after each of which she carried away a pup to her own premises, thus getting again, as she thought, her own two children, and the spaniel being obliged to content herself with one.

This last anecdote is also remarkable because of the wonderful instinctive antipathy existing between dogs and cats, an antipathy which is one of the most curious instances of inherited instinct, for a young kitten, who has never seen a dog in its life will, on being approached by one, put up its back, and swear and spit with all the force of feline Billingsgate. It is only after living in the same house with a dog for some time that a cat will become reconciled to him, but when she once gets to tolerate his presence, the two often become very good friends.

Instances are not wanting in which cats have formed friendships with birds—creatures which, as a rule, they look upon as their natural prey. One example of an affection of this sort is extremely curious. A cat and a canary had acquired a great fondness for one another. The canary used to perch on the cat's back and play all sorts of pranks with it. One day their master saw, with horror, the feline Damon rush upon his passerine Pythias and seize it in his mouth. He naturally thought that at last nature had triumphed over grace, but on looking round saw that another cat had entered the room, to whose tender mercies the bird-lover would by no means trust his little friend.



ANGORA CAT.

The domestic cat is found wherever civilized man exists. The best-marked variety of the species is the beautiful Angora Cat, which is larger than the ordinary cat, and covered with long fine hair, usually snow-white. The Manx Cat, native only in the Isle of Man, is distinguished by the very remarkable character of being tailless, or, at least, that appendage is quite rudimentary. In other respects it does not differ from the ordinary varieties. The Persian Cat is a very fine variety often seen in English drawing-rooms; its hair is long, though nothing like so long as that of the Angora. It is a remarkably lazy beast, and far less interesting than the ordinary kind.

Except as fur-bearing animals, cats are made no direct use of, save as mouse and rat-catchers. In this capacity they are quite invaluable, for the destructive little rodents increase and multiply to such an extent, that if it was not for some such check as that afforded by the presence of a good mouser, many places would be much overrun, and the inhabitants put to much inconvenience.



EUROPEAN LYNX.

THE COMMON EUROPEAN LYNX is found chiefly in Norway, Sweden, Russia, and Northern Asia, and in the mountainous districts of Central Europe. In other parts of the Continent it is nearly or quite extinct.

The animal attains a much greater size than any of the ordinary wild cats, being as much as forty or fifty inches long, from the tip of its snout to the root of its tail. It is also readily distinguished from the cat proper from the shortness of its tail, which does not exceed six to nine inches, or about one-fifth the length of the body, and by the length of its legs, which gives it a decidedly un-cat-like look, and brings its height at the shoulder up to twenty-five inches. Another distinguishing feature is to be found in the long-pointed ears, each with a tuft of long stiff hair on its tip; and still another is the length of the fur on the cheeks, whereby a pair of capital whiskers of almost Dundreary length is produced. These, it must be understood, are quite distinct from the true "whiskers," or tactile vibrissæ, with which the upper lip of the lynx, like that of all *Felidae*, is provided. The tufted ears and bearded cheeks, together with the fierce brightness of the eye, give the lynx an altogether peculiar and somewhat weird expression; and a well-drawn picture of one is quite the thing to send a nervous child to bed comfortably predisposed to nightmare.

When we have added that the pads of the feet are overgrown with hair, we have mentioned all the obvious differences between a lynx and a true cat. The skin is of a reddish-grey color, more or less spotted with red or dark grey; but the

variations in marking are very great in different individuals, and in the same individual at different ages. The fur, also, is longer in winter than in summer.

The lynx is undoubtedly the most dangerous and destructive beast of prey now left in Europe; at any rate, a single lynx will do more damage than an individual of any other wild species. The Russian wolves may be, on the whole, worse enemies, but they hunt in packs, and are only dangerous in numbers, a single wolf being a sorry coward, while a lynx is a truly redoubtable antagonist, as the following excellent account of his habits will show :



THE CANADIAN LYNX. (*One-seventh natural size.*)

“ While he succeeds in finding food in the forests and gorges of the high mountains, he does not attempt to shift his quarters, but lives alone with his mate, and betrays his presence by horrible howlings, audible at a great distance. He only quits his chosen solitude at the last extremity, and mounts on a branch, where he crouches at full length among the foliage, which half hides without incommoding him. With eye and ear on the watch, he remains whole days motionless, with eyes half closed, and in a state of apparent sleep, which is only the more dangerous, for then he is most completely cognizant of all that is passing round him.

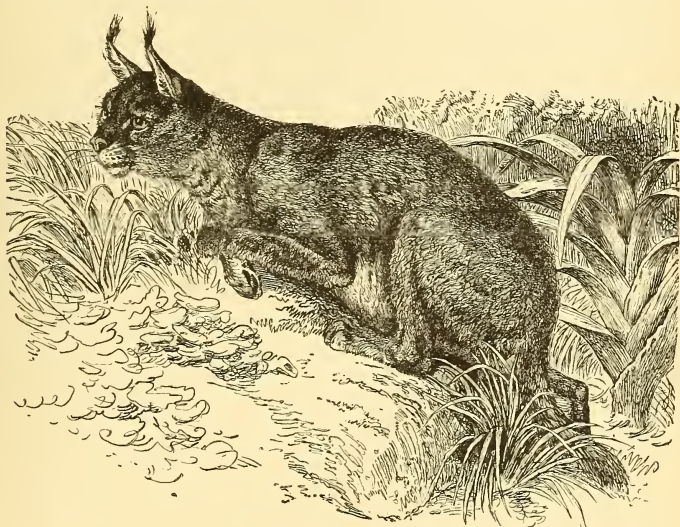
The lynx lives by stratagem. Like all cats, he has not a particularly fine sense of smell, and his pace is not sufficiently rapid to allow him to pursue his prey. His patience, and the skill with which he creeps noiselessly, bring him close up to his victim. More patient than the fox, he is less cunning; less hardy than the wolf, he leaps better, and can resist famine longer. He is not so strong as the bear, but keeps a better look-out, and has sharper sight. His strength resides chiefly in his feet, jaws, and neck. He prefers to make his hunting as easy as possible, and only chooses his victim when food abounds. Every animal he can reach with one of his bounds, which rarely miss their aim, is lost and devoured; if he misses, he allows the animal to escape, and returns to crouch in his post of observation, without showing his disappointment. He is not voracious, but he loves warm blood, and this passion makes him imprudent. * * * If he comes upon a flock of goats or sheep, he approaches, dragging his belly along the ground, like a snake, then raises himself with a bound, falls on the back of his victim, breaks its neck or cuts its carotid with its teeth, and kills it instantaneously. Then he licks the blood which flows from the wound, rips open the belly, devours the entrails, gnaws off a part of the head, neck, and shoulder, and leaves the rest. So bloodthirsty is his nature, that a single individual has been known to destroy forty sheep in a few weeks. Fortunately for the inhabitants, this plague is now nearly extinct in Central Europe."

The lynx, when caught young, is said to be quite tameable, but the domesticated animal is liable to die of over-fatness. Its flesh is eaten in Siberia, and even in Switzerland, but as usual with its tribe, the skin is the part on which the greatest value is set.

THE CANADIAN LYNX is the largest of the American lynxes, and sometimes attains the length of four feet, including the tail. It is one of the most important fur-bearing animals of the Continent; the hair is longer and thicker than in the European lynxes, the beard and ear-tufts are more developed, and each hair is of two colors. A brownish silver-grey is the prevailing hue, marked on the flanks very indistinctly with spots; in some specimens the fur takes a slight chestnut tinge. The ears are edged with white. But it is probable that considerable changes of the coat take place according to the season of the year.

When running at speed it presents a singular appearance, as it progresses by a series of bounds, with the back arched and all the feet coming to the ground nearly at the same time. It is a good swimmer, being able to cross the water for a distance of two miles or more. Powerful though it be, it is easily killed by a blow on the back, a slight stick being sufficient weapon wherewith to destroy the animal. The flesh of the Peeshoo is eaten by the natives, and is said, though devoid of flavor, to be agreeably tender. It is not so prolific as the generality of the feline tribe, as the number of its young seldom exceeds two, and it only breeds once in the year. The range of this animal is far south as the Great Lakes and

eastward to the Rocky Mountains, but it is not uncommon in Northern New York. It frequents wooded regions, and in its manner of life differs in no respect from the other lynxes. Some authors describe it as a timid animal, easy to destroy, but Audubon calls it a strong, bold creature, which can take good care of its hide. Audubon writes: "The Canada lynx is more retired in its habits than our common wild-cat, keeping far from the habitations of settlers. Its fine, long fur enables it to withstand the cold of our northern latitudes. When alarmed, it leaps or bounds rapidly in a straight direction, and if hard pressed, takes to the trees,



THE CARACAL. (*One-seventh natural size.*)

which it climbs by the aid of its powerful fore legs and claws. It swims well, and will cross the arm of a lake two miles wide." He adds: "The stories told of the great cunning of this species in throwing mosses from the trees in order to entice the deer to feed on them, and then dropping on their backs, may be omitted as requiring no refutation." He evidently discredits the common belief to which we have referred above that this lynx "is easily destroyed by a blow on the back with a slender stick."

The food of the Canada lynx consists of grouse and other birds, hares, rabbits, squirrels, the Arctic fox, and the lemming. It is said to pounce on the wild goose

at its breeding places, and Audubon heard with skepticism an account of its having killed a deer, but confirms the statement that it kills young fawns.

THE CARACAL. This is the handsomest of the lynxes, both on account of its elegant shape, and of its fine color, which is a uniform reddish-brown or light chestnut, unspotted or very sparsely spotted in the adult, but showing distinct spots in the young. It is found in India, Persia, Arabia, and Thibet, and also throughout Africa. Its length varies from twenty-six to thirty inches, the tail measures nine or ten, and the height sixteen or eighteen inches. The ears are fully three inches long, "black externally, white within, with a long dark ear-tuft."

Unlike the other lynxes, the Caracal is made use of as a hunting animal, being occasionally trained to stalk the peafowl, hares, kites, crows, cranes, etc. It is, however, a most savage animal in captivity. If the American Lynx, who is unfortunate enough to live in the same cage with him, dares to come "betwixt the wind and his nobility," or even if he, in the course of his peregrinations, should by chance get sufficiently near his companion as to be annoyed with the sight of so vulgar a beast, he immediately arches his back, lays back his ears, uncovers his great canines, and swears in the most fearful manner, until the other unlucky animal is quite cowed, and looks as meek as its feline nature will allow it, evidently deprecating the anger of my lord, and although not conscious of having done wrong, quite ready to promise faithfully never to do it again.

THE CHEETAH is about four feet and a half long from tip of snout to root of tail. The latter appendage is two feet and a half in length, and the height of the animal at the shoulder two feet and a half to two and three-quarters. The hide is of a bright reddish fawn color, and covered with numerous black spots, which are single, and not arrayed in rosettes, as in the leopard, jaguar, ocelot, etc. The appearance in the face is very characteristic, owing to a black stripe which passes down the cheek in a sort of curve, from the corner of the eye to the angle of the mouth. The tail has black spots and a black tip. The body is slender and small in the loins like a greyhound.

The cheetah is a half-domesticated animal; we say half-domesticated, because, although it is used regularly in hunting, yet it is never properly tamed, and always has to be, as it were, *gulled* into doing its work. The following account of the manner in which it is used in Indian sport is given by Mr. Jerdon:

"On a hunting party," says Buchanan Hamilton, "the cheetah is carried on a cart, hooded, and when the game is raised the hood is taken off. The cheetah then leaps down, sometimes on the opposite side to its prey, and pursues the antelope. If the latter is near the cart, the cheetah springs forward with a surpassing velocity, perhaps exceeding that which any other quadruped possesses. This great velocity is not unlike the sudden spring by which the tiger seizes its prey, but it is often continued for three or four hundred yards. If within this distance the cheetah

does not seize its prey, he stops, but apparently more from anger or disappointment than from fatigue, for his attitude is fierce, and he has been known immediately afterward to pursue with equal rapidity another antelope that happened to be passing. If the game is at too great a distance when the cheetah's eyes are uncovered, he generally gallups after it, until it approaches so near that he can seize it by a rapid spring. This gallop is as quick as the course of a well mounted horseman. Sometimes, but rarely, the cheetah endeavors to approach the game by stealth, and goes round a hill or rock until he can come upon it by surprise. This account of the manner of hunting was collected from the conversation of Sir Arthur Wellesley, who while commanding officer at Seringapatam, kept five cheetahs that formerly belonged to Tippoo Sultan.' Mr. Vigne writes thus: 'The hunting with cheetahs has often been described, but it requires strong epithets to give an idea of the creature's speed. When slipped from the cart, he first walks toward the antelope with his tail straightened, and slightly raised, the hackle on his shoulder erect, his head depressed, and his eyes intently fixed upon the poor animal, who does not yet perceive him. As the antelope moves, he does the same, first trotting, then cantering after him; and when the prey starts off, the cheetah makes a rush, to which (at least I thought so) the speed of a race-horse was, for the moment, much inferior. The cheetahs that bound or spring upon their prey are not much esteemed, as they are too cunning. The good ones fairly run it down. When we consider that no English greyhound ever yet, I believe, fairly ran into a doe antelope, which is faster than the buck, some idea may be formed of the strides and velocity of an animal who usually closes with her immediately, but fortunately cannot draw a second breath, and consequently, unless he strike the animal down at once, is obliged instantly to stop and give up the chase. He then walks about for three or four minutes in a towering passion, after which he again submits to be helped on the cart. He always singles out the biggest buck from the herd, and holds him by the throat until he is disabled, keeping one paw over the horns to prevent injury to himself. The doe he seizes in the same manner, but is careless of the position in which he may hold her.' The natives assert that (in the wild state) if the ground is not very favorable for his approaching them without being seen, he makes a circuit to the place where he thinks they will pass over, and if there is not grass enough to cover him, he scrapes up the earth all round and lies flat until they approach so near that by a few bounds he can seize on his prey.



THE CHEETAH.

Although capable of domestication, the cheetah is, when roused, anything but a pleasant animal to come across. Two colonists from the Cape of Good Hope

happened to meet one while they were out shooting gazelles, and unfortunately for themselves, pursued it. "The roughness of the road retarded the animal's flight, and a ball reached it. It immediately turned upon the hunter who had wounded it, and leaping upon him, pulled him from his horse, and a hand-to-hand conflict began between the two adversaries. The other hunter dismounted and hastened to succor his comrade, at the risk of hitting him as well as the animal from which he wished to deliver him. His shot was badly aimed. The noise of the discharge changed the aspect of the combat, for the cheetah abandoned the man whom he had thrown down, to fling himself with redoubled fury on the new assailant, who had not even time to draw his hunting-knife. The animal seized him by the head, and without letting go, rolled with him to the bottom of a ravine. It was of no avail that the first man, left alive, but horribly mutilated, dragged himself to the new battlefield; the wounds of his companion were mortal, and he only had the melancholy satisfaction of giving the *coup de grace* to the animal, who was already exhausted by loss of blood."

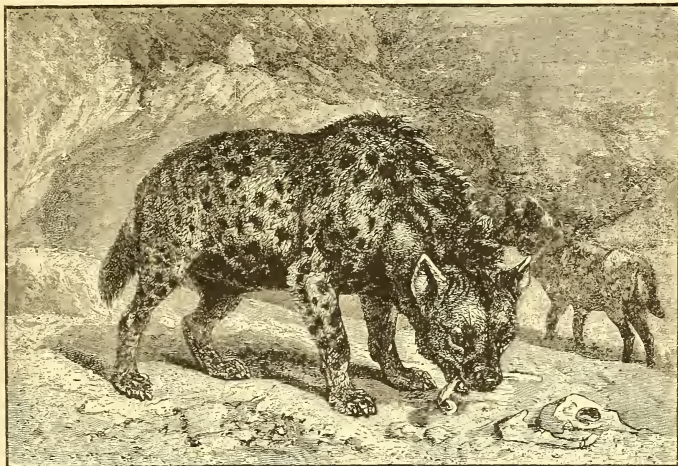
The young animal is covered with soft brown hair, without spots, a curious fact, quite reversing the usual order of things, for as we have seen, the young of the lion, puma, and other one colored cats, are distinctly spotted. The black mark on the cheek appears first, and then the body spots. Mr. Jerdon gives an interesting account of a cheetah kitten belonging to him :

"I brought up the young one alluded to along with some greyhound pups, and they soon became excellent friends. Even when nearly full-grown it would play with the dogs (who did not over relish its bounding at them), and was always sportive and frolicsome. It got much attached to me, at once recognizing its name (Billy), and it would follow me on horseback like a dog, every now and then sitting down for a few seconds, and then racing after me. It was very fond of being noticed, and used to purr just like a cat. It used to climb on any high object—the stump of a tree, a stack of hay—and from this elevated perch look all around for some moving object. As it grew up, it took first to attacking some sheep which I had in the compound, but I cured it of this by a few sound horse-whippings; then it would attack donkeys, and get well kicked by them; and when not half-grown it flew one day at a full-grown tame Nylghau, and mauled its legs very severely before it could be called off. I had some Chikaras (*Gazella Bennettii*) caught, and let loose before it to train it. The young cheetah almost always caught them easily, but it wanted address to pull them down, and did not hold them. Occasionally, if the antelope got too far away, it would give up the chase, but if I then slipped a greyhound, it would at once follow the dog and join the chase. It was gradually getting to understand its work better, and had pulled down a well-grown antelope fawn, when I parted with him, as I was going on field service."

Brehm had a cheetah called "Jack," which was so tame that his master led him about like a dog, and even took him into a drawing-room full of ladies, by

whom, after they had recovered their fright at seeing a real wild beast enter the room, he allowed himself to be patted and caressed. The same author states that a cheetah once lived at large in an English seaport, and was the greatest possible favorite with the sailors and other inhabitants.

THE HYENAS. Externally, the hyenas have something the appearance of extremely ugly and unattractive-looking dogs. They are somewhat larger than a shepherd's dog, and are covered with coarse bristly hair, short over the greater part of the body, but produced into a sort of mane along the ridge of the neck.



SPOTTED HYENAS.

The mode of progression is entirely digitigrade, the legs having much the same proportion as in an average dog, except for the fact that the hind legs are shorter than the forelegs, so that the body slopes from the withers to the haunches. The claws resemble those of the dog in that they cannot be retracted in sheaths of skin; here, therefore, we have a great and marked difference from all the cat tribe.

The tail is bushy, the snout long, but blunt, giving the beast a snub-nosed appearance and a horridly vulgar expression, quite different to that of most of his relatives. The long-nosedness is partly, however, only a matter of external appearance, for the skull, although nothing like as short as a cat's, is yet very far from being as long as that of a dog or a civet.

THE SPOTTED HYENA. This species exists over the whole of Africa south of the Sahara. The skin is of a yellowish-brown ground tint, irregularly blotched with circular black spots. On the back of the neck and on the withers it has a quantity of long stiff hairs, forming a kind of reversed mane. The fur is coarse and bristly, its character adding greatly to the animal's singularly unattractive appearance. The height at the shoulder is about two feet six or eight inches, the extreme length five feet ten inches, of which length the tail takes up some sixteen inches.

Like some other beasts of a similarly mean nature, the Spotted Hyena prefers not to do his own killing, but likes better to live as a sort of humble messmate on those better provided than himself with the courage requisite to good hunters. When he does cater for himself, instead of subsisting on the leavings of his betters, he always makes his attack in a cowardly way, and trusts rather to stratagem than to any of the higher qualities of a sportsman. Dr. Livingstone says: "In the evening of our second day at Serotli, a hyena appearing suddenly among the grass, succeeded in raising a panic among our cattle. This false mode of attack is the plan which this cowardly animal always adopts. His courage resembles closely that of a turkey-cock. He will bite if an animal is running away; but if the animal stands still so does he."

Other authors tell a similar tale, showing too, that under cover of darkness the hyena can be moderately plucky; can, at any rate, muster sufficient courage to attack the herds in an encampment. "More than once, during dark and drizzling nights, they made their way into the sheep-kraal, where they committed sad havoc. We had several chases after them, but they managed invariably to elude us." Again, "The sheep having been placed in a pit to prevent them from straying, were visited during the night by a party of hyenas, which slaughtered some and drove the residue to the summit of a high hill, where they were found the following morning."

The hyena has his misfortunes, like other beasts; sheep are not to be had every day, often food is scarce, and he has to go with an empty stomach for days together. He may suffer, too, in other ways, besides hunger. Thus Mr. Anderson relates: "Almost the first animal I saw at this place was a gigantic 'tiger-wolf,' or Spotted Hyena, which, to my surprise, instead of seeking safety in flight, remained stationary, grinning in the most ghastly manner. Having approached within twenty paces, I perceived, to my horror, that his fore paws and the skin and flesh of his front legs had been gnawed away, and that he could scarcely move from the spot. To shorten the sufferings of the poor beast, I seized my opportunity and knocked him on the head with a stone, and catching him by the tail, drove my hunting-knife deep into his side. But I had to repeat the operation more than once before I could put an end to his existence. I am at a loss to account for his mangled condition. It certainly could not have been from age, for his teeth were good. Could it be possible that, from want of food, he had become

too weak for further exertions, and that, as a last resource, he had attacked his own body? Or, was he an example of that extraordinary species of cruelty said to be practiced by the lion upon the hyena, when the latter has the insolence to interfere with the monarch's prey? * * * It is asserted by more than one experienced hunter, that when the hyena proves troublesome, the lion has been known to bite off all its feet, and thus mutilated, leave the poor animal to its fate."

It may well be imagined the horrible nuisance such animals are to all South African travelers. They steal everything they can get at. They devoured two handsome flags of Mr. Andersson's which he had hoped to plant on the shores of Lake Nagami. But, perhaps, the greatest trouble is caused by their infernal cachinations; no noise in the forest produces so much discomfort, for though not so loud as the lion's roar, it is totally devoid of grandeur, and is only hideously grotesque and vile in the ears of all but hyenas, who, we suppose, are charmed by it. The traveler we have just mentioned was, during an illness, laughed to scorn in the most amazing fashion by hyenas and jackals, and their derision was too much for his equanimity at a time when he sorely needed sympathy and help. Flesh and water had become very scarce, and in his trouble he says: "One evening I desperately resolved to go to the water myself in the hope of succeeding better than the attendants. Accordingly I ordered my servants to prepare a 'skaran,' and to carry me there, taking the chance of being run over or gored by elephants or rhinoceroses, for in my disabled state it was impossible, should any animal charge, to get out of its way. Seeing my helpless condition, the men remonstrated, but I was resolved to go, and fortune favored me. I had patiently waited till high morning without seeing anything but hyenas and jackals. I believe these creatures knew I would not hurt them, for they approached within a very few paces, staring and laughing at me in the most impudent manner. I threw gravel pebbles at them, but this only served to increase their mockery. I could stand it no longer, but hurled my camp-chair at their heads, when they quickly betook themselves to flight."

Livingstone had the same trouble with the fearful din. "An astonishing number of hyenas collected round, and kept up a loud laughter for two whole nights. Some of them do make a very good imitation of a laugh. I asked my men what the hyenas were laughing at, as they usually give animals credit for a share of intelligence. They said that they were laughing because we could not take the whole, and that they would have plenty to eat as well as we."

THE STRIPED HYENA. The striped hyena takes the place of the spotted kind over the northern part of Africa. It also extends into Asia, where it ranges over Asia Minor and Persia, and through India to the foot of the Himalayas. Among other places, it is "common in every part of Palestine, and indifferent as to the character of the country. We obtained the young occasionally in spring, and

procured on Mount Carmel the largest pair of adults I ever saw. The old rock-hewn tombs afford to the hyena convenient covert. It attacks the graves even in the vicinity of towns."

In ground-color it resembles the spotted kind, but instead of being marked with spots, its hide is covered with complete black transverse bands like the hoops of a barrel, which extend downward on to the legs. It is as nearly as possible of the same size as the brown variety.

As to its habits and characteristics, there is but little to add to what has already been said of its South African brother; it follows the lion for scraps, roams about the Arab cemeteries to dig up and devour the dead, prowls round the towns and villages in Egypt and elsewhere to pick up offal, and is always the same ugly, ill-conditioned, repulsive, and yet useful beast. For the Arabs and Egyptians are never greatly inclined to sanitary reform, and without hyenas, jackals and vultures would be in a sad case indeed.

As to the animal's cowardliness, every writer bears witness. Jules Gérard says: "The Arabs say, 'as cowardly as a hyena,' and the Arabs are right." So much do the sons of the desert despise their scavenger, that when Gérard killed one with his saber, they implored him never again to use the defiled weapon, saying that it would certainly betray him after having been sheathed in such a dastardly carcass. It is stated that the dog is the only animal the hyena dares attack, and even this game they like some help in killing. "When they feel inclined to eat a dog, they hang about some douar, in the neighborhood of which there happens to be a good cover. The female stations herself behind some brushwood, and the male goes toward the dogs, who attack him, and follow him as far as the position of his consort. The female comes out at the fitting moment to attack, throttle, and devour on the spot the dog who ventures farthest in pursuit of her husband."

Although the hyena is generally considered unworthy of being hunted, yet the Arabs occasionally condescend to come to the rescue of their dogs, by beating their destroyers to death.

THE AARD-WOLF is a remarkable animal inhabiting the southern parts of Africa, where its range is almost co-extensive with that of the brown variety of the hyena. It is an extremely interesting animal, as it forms a connecting link between the Civet family and the hyenas; although more nearly allied to the latter than to the former, it is found to be impossible to assign it to one of these groups in preference to the other, and it is, in consequence, placed in a family by itself.

This rare animal was first mentioned and described by Andrew Sparrmann in 1772-6, but his account of it attracted little notice until it was re-discovered by the traveler Delalande, who brought specimens to France, where the beast was described and christened after him.

The relationships of the aard-wolf are well shown by its external appearance. It has the sloping back of a hyena, owing to the forelegs being longer than the

hind legs; but its head is quite civet-like, the snout being long and pointed, and altogether unlike a hyena's. Its size is that of a full-grown fox, but it stands higher upon its legs; its ears are considerably larger and more naked, and its tail shorter and not so bushy. At first sight it might easily be mistaken for a young Striped Hyena, so closely does it resemble that animal in the colors and peculiar markings of its fur, and in the mane of long stiff hair which runs along the neck and back; indeed, it is only to be distinguished by its more pointed head, and by the additional fifth toe of the fore feet. It is also quite hyena-like in color, being of a dull yellowish-grey tint, and marked with dark brown stripes and a black muzzle.

In its habits and manners the aard-wolf resembles the fox. Like that animal it is nocturnal, and constructs a subterranean burrow, at the bottom of which it lies concealed during the day-time, and only ventures abroad on the approach of night to search for food. It is fond of the society of its own species; at least many individuals have been found residing together in the same burrow; and, as they are of a timid and wary character, they have generally three or four entrances to this hole; so that, if attacked on one side, they may secure a retreat in an opposite direction. Notwithstanding the disproportionate length of their fore legs, they are said to run very fast, and so strong is their propensity to burrow, that one of M. Delalande's specimens, perceiving itself about to be run down or captured, immediately ceased its flight, and began to scratch up the ground, as if with the intention of making a new earth." Its food consists very largely of carrion, but it also devours ants. Owing to the former "high" kind of diet, the animal is generally possessed of an extremely bad smell.

THE CIVET FAMILY.

The name of this family is given to it from the fact that the most important forms included in it are what are known as civets, or civet cats, animals from which the well known perfume of that name is obtained.

In anatomical characters as well as in external appearance, the animals are related both to the cat family and to the hyenas.

THE AFRICAN CIVET. This animal, by its rough spotted skin, calls to mind the hyena, to which, however, it is inferior in size, being hardly three feet long. It differs also from our laughing friend in many more important particulars. Its legs are shorter, its tail longer and not so bushy, its snout more pointed, its ears shorter, and its expression less villainous looking. It is found in the north of Africa and in Eastern Asia.

"The civet approaches, in its habits, nearest to the foxes and smaller cats, preferring to make its predatory excursions against birds and smaller quadrupeds in the night, although, like other carnivora, it will occasionally attack its prey in the daytime. In a state of captivity it becomes in a degree tame, but never familiar, and is dangerous to handle. The young ones feed on farinaceous food—millet-pap,

for instance—with a little flesh or fish, and when old, on raw flesh. Many of them are kept in North Africa, to obtain the perfume which bears the name of the animal, and brings a high price.”

THE LESSER CIVET. The Lesser Civet, or Rasse, is found in the island of Java, as well as in many parts of India, such as Nepaul and Madras. “It is not an uncommon species in Hong-Kong and the adjacent islands. In Formosa it is the commonest of all the carnivorous group. Skulking during the day in the dark ravines that intersect the hilly country in the northwest, in the twilight it threads its way with great speed through the long grass, and searches the fields for small



THE LESSER CIVET. (One-sixth natural size.)

mammals and birds. It is much dreaded by the Chinese for the havoc it commits in the hen-roost; and as its skin is somewhat valued for lining to great-coats, its haunts and creeps are sought after, and traps laid for it. Of these the slip-knot noose for the head and feet is the most commonly practiced and the most killing. As the cool season approaches, hawkers may be daily met with, even in the villages, offering for sale the stretched skins of these animals. The poorer classes, who are unable to purchase the dearer furs, make use of these cheaper yet pretty skins.” The Rasse is about thirty-two inches in length, its tail thirteen inches. The odor of musk is so strong as to taint the skin and the flesh of the entire animal. “The Chinese,” says Mr. Swinhoe, “eat the flesh of this animal; but a portion that I had cooked was so affected with the civet odor that I could not palate it.”

The Rasse is a much smaller animal than the preceding species, its head and body together being about twenty-two or twenty-three inches long, and its tail sixteen or seventeen. It is of a yellowish or brownish grey color, with longitudinal bands on the back, and regular rows of spots on the side. The tail has eight or nine complete dark rings.



THE BINTURONG. (*One-seventh natural size.*)

In India it is kept tame, the natives often domesticating it for the purpose of more conveniently extracting the civet.

THE MUNGOOS, OR ICHNEUMON, form a well defined genus of weasel-like animals. It frequents alike the open country and low jungles, being found in dense hedgerows, thickets, holes in banks, etc., and it is very destructive to such birds as frequent the ground, for it only sucks the blood, and so kills many birds before it is satisfied.

It is sixteen or seventeen inches long, its tail fourteen, and is of a tawny yellowish grey color. The head is marked with reddish and yellowish rings, so arranged as to produce a resultant iron-grey hue. The Mungoo proper is a cleanly, lively, good-tempered creature, and keeps the house of its owner free from rats and mice, and such creatures, as well as from those horrible nuisances in all tropical countries—snakes and scorpions. It is from its combats with the latter that it obtains its fame. The name it bears has been given it because, according to native reports, when it is bitten by a poisonous serpent, it digs up a very bitter root named the mungo-root, which it eats, and then with renewed vigor resumes its combat with its foe. European observers who have watched the animal when it leaves the field of battle, say it eats either grass or any other herb in the neighborhood. One eye-witness writes: "The snake—a Spectacled Snake—was a yard and a half long; the Mungus attacked it immediately, and a terrible struggle ensued. At the end of five minutes the snake struck the Mungus with its poison-fang. The animal fell, lay for some time like a dead thing, and foamed at the mouth; then suddenly rose and rushed into the jungle. In twenty minutes it returned and renewed the attack with greater spirit than ever, and killed the snake within six minutes."

THE BINTURONG. This is a curious little animal of a black color, with a white border to its ears, a large head and turned-up nose, and a long, immensely thick, tapering tail, which, remarkably enough, is prehensile, like that of a New World monkey. It is twenty-eight to thirty inches long from snout to root of tail, and the tail itself is nearly of the same length. It is sometimes called the "black Bear Cat."

"It is slow and crouching. In its habits it is quite nocturnal, solitary, and arboreal, creeping along the large branches, and aiding itself by its prehensile tail. It is omnivorous, eating small animals, birds, insects, fruit, and plants. It is more wild and retiring than Viverrine animals in general, and it is easily tamed; its howl is loud." It walks entirely on the soles of its feet, and its claws are not retractile.

Altogether the Binturong is a decidedly interesting animal, and has been a great puzzle to zoologists. It was formerly placed in the Raccoon family, to many of the members of which it bears a very strong resemblance; but this resemblance is quite superficial, and brought about by the similarity in the mode of life, etc. In the characters of the skull and teeth, it undoubtedly belongs where we have placed it, among the Civet group. Thus it forms a capital warning to those zoologists whose knowledge is only skin-deep, and who group animals entirely by their external character, without taking into account the important points of fundamental structure, which should in every case be considered first.

CHAPTER II.

THE DOG FAMILY.

The dogs form a sort of connecting link between the cat-like species on the one hand, and the bear-like group on the other. In the matter of being digitigrade, they agree with the cats; the number of their teeth agrees with that of the bears; in the character of the skull, they come just half way between the two.

THE DOMESTIC DOG. We have now to consider an animal which has more interest for us than any other member of the animal kingdom; indeed, many people, if asked to name the creature which feels for them the most disinterested friendship, the most devoted love, and which shows the most constant and untiring kindness and attention, would without hesitation name the humble carnivore. No animal has been so universally or so thoroughly domesticated as the dog; in none have the moral and intellectual faculties been so largely developed; and there is certainly none which the human race could so ill spare. We might possibly, with a proper amount of practice, become vegetarians, and so do without our sheep and cattle, our pigs and poultry. The cat we might easily dispense with, for she is, after all, a very passive sort of creature, and rarely condescends to express either emotion or affection, whatever her feelings may be; but to lose the dog would be to lose a friend, and a friend so faithful and true that his loss would be a veritable plucking out of the right eye and a cutting off of the right hand. As Mr. Darwin observes: "It is scarcely possible to doubt that the love of man has become instinctive in the dog," which it can hardly be said to have done, as yet, in man!

Wherever man of any degree of civilization is found, there the dog is to be found too—everywhere invaluable, though often grossly and brutally ill-treated. In all probability, too, dogs occur as true natives in all parts of the world, except in the Australian region—Australia, New Zealand, and the surrounding islands; in these places he has, in all probability, been introduced by man.

Among our American Indians the dog is, or was, held as an object of adoration, and dog-worship seems to have been a more ancient *culte* than the sun-worship practiced by the Mexicans. By most people the dog is valued only during his life; his skin is not particularly valuable, and his flesh is little esteemed. This is by no means, however, the case everywhere. It is well known that the Chinese use the

dog as a regular article of food. Many of the North American tribes look upon an *entree* of dog as the greatest possible delicacy they can set before a stranger.

Unlike the lion and tiger, the male dog takes no interest whatever in his offspring, who are taken care of during the weeks of their helplessness entirely by the mother. She, however, quite makes up for paternal neglect by the assiduity with which she tends and cares for her feeble offspring. It is one of the most touching, and at the same time, almost amusing sights to see the mother with her first litter; how jealously she watches the blind, fat, slug-like little creatures. At first she will growl and snap even at her beloved master, if he approaches too near her treasures. When they have grown a little, how fussy she becomes when they are noticed; she will even drag them by the leg, one by one, up stairs, to exhibit their perfections! For several weeks this care continues, but by the time the pups have grown half as big as their mother, and can see and run about, her solicitude diminishes. She begins to quarrel with them over bones and other tidbits, and before long takes no more notice of them than if they were the commonest stray dogs in the street. It is this evaporation of mother-love which so distinguishes a dog-parent from, at any rate, a great number of human parents.

Like most animals, the female dog, if deprived of the natural objects of her affections, will lavish her care on almost any young and helpless thing with which she may be brought in contact.

We have stated that the male dog is perfectly oblivious of his paternal duties; we have, however, met with one instance of a dog, who, whatever may have been his qualities as a parent, discharged with great fidelity the part of guardian, and that too, not to one of his own species, but to one of an alien and hostile race. This curious instance of canine affection was exhibited by a small male pet spaniel, belonging to some friends of ours, who brought up a kitten. The *food*, certainly, was supplied by the family, but the brooding and tendance were done most faithfully. On warm days, the dog would carry the kitten and lay it in the sun, choosing some snug place out of the wind, in the garden. The kitten, a female, lived to become a very beautiful cat; but her unsuspecting innocence led to her death. Not fearing any of the dog kind, she made no attempt to escape from them, and was worried to death by a strange stray dog.

One of the most striking circumstances with regard both to the general and the special instincts of the dog, namely, those instincts common to the whole species, and those possessed by a particular breed, is the way in which they are transmitted from parent to child. The Pointer points the first time he is taken out; the Shepherd's dog learns his duties with astonishingly little teaching. Not only are instincts transmitted in pure breeds, but in cross-breeds the special characteristics of both parents come out with the most marvelous accuracy. " *

* * It is known that a cross with a bull-dog has affected for many generations the courage and obstinacy of greyhounds; and a cross with a greyhound has given a whole family of shepherd-dogs a tendency to hunt hare. Le Roy describes a



A BREAKFAST PARTY.

dog, whose great grandfather was a wolf, and this dog showed a trace of its wild parentage only in one way—by not coming in a straight line to his master when called."

A very remarkable trait in the dog's character, which has undoubtedly become instinctive, and is consequently transmitted from generation to generation, is his love of human society. A well-cared for dog will always prefer his master's company to that of his own kind, and will take any amount of trouble, and give up any amount of personal ease, that he may not be parted from him.

But, undoubtedly, the most wonderful canine instinct is the sense of direction, the power possessed by so many dogs of finding their way back to an old and well-loved home, after being forcibly removed from it to a new place of abode. Instances are numerous in which dogs, taken from their usual habitation, shut up in a basket, or by night, or in a swift railway train, have unerringly found their way back, greatly to the surprise of both their new and their old masters.

We are indebted to Mr. Hugh Miller for a good instance of reasoning power in a dog belonging to his brother, Captain Miller. This dog, "Tara" by name, a greyhound, with a dash of pointer, was one day taken out with a carriage for a run of forty miles. Now, it is estimated that a dog, by his uncontrollable habit of "meandering," usually goes over about three times the ground of a horse or man he accompanies, so that on this occasion Tara must have run over a hundred miles, and was in consequence rather done up when she reached home. She usually slept in the dining-room, whence she was always ejected at 7 A. M. by the housemaid who cleaned the room. On this occasion, however, no amount of persuasion could induce Tara to occupy her accustomed sleeping-place; she positively insisted upon following her master upstairs to his bedroom, where she evidently expected she could remain undisturbed for a good long rest, and where she did actually remain till 2 P. M. on the following day.

Another and more striking instance of the exercise of reasoning power is given in the *Quarterly Journal of Science* for April, 1876. It is there stated that a Newfoundland dog was "sent across a stream to fetch a couple of hats, while his master and friend had gone on some distance. The dog went after them, and the gentlemen saw him attempt to carry both hats, and fail, for the two were too much for him. Presently he paused in his endeavor, took a careful survey of the hats, discovered that one was larger than the other, put the small one in the larger, and took the latter in his teeth by the brim!"

In the face of facts such as these, the question as to whether dogs possess the power of reasoning becomes merely one of words. No one would say that a human being who did as this dog did acted from blind instinct. One can easily call to mind several persons of one's acquaintance, to whom it would be the height of presumption to deny the possession of reason, and who yet would never have thought of putting the hats one inside the other. It is related that the great Newton made, in his study door, a big hole for his cat and a little one for the

kitten. In doing this he showed far less exercise of reason than the dog; and it is quite conceivable that if he had been sent to fetch the hats he would have brought them over separately!

One of the most interesting points in the dog's character, and one in which many of his human masters would do well to imitate him, is his teachableness. A good dog may be taught almost anything, no matter how difficult or distasteful, or how foreign to his nature. And not only will he learn to do anything, but to understand anything, for there can be no doubt whatever that dogs actually do understand what is said to them, in many cases, quite irrespectively of tone or gesture. Of course with an ordinary dog who has received no special and systematic training, it is the tone of his master's voice or his gestures which convey meanings to him, far more than the actual words; but with many dogs, whose intelligence is great, and whose education has been thorough, this *acme* of culture is attained, and the animal does, undoubtedly, understand the actual words said to him. After finding that the dog can understand what is said to him, one is always tempted to wish he could go one step further, and answer again, for to hear from a dog's own lips his opinion on "men and things" would be an entertainment of no small interest. Attempts have been made to teach dogs to speak, but as one might imagine, with very partial success. A curious account of an attempt of this kind was communicated by the great philosopher Leibnitz to the French Academy.

"A little boy, a peasant's son, imagined that he perceived in the dog's voice an indistinct resemblance to certain words, and therefore took it into his head to teach him to speak. For this purpose he spared neither time nor pains with his pupil, who was about three years old when his learned education commenced, and in process of time he was able to articulate no fewer than thirty distinct words. He was, however, somewhat of a truant, and did not very willingly exert his talent, and was rather pressed than otherwise in the service of literature. It was necessary that the words should be pronounced to him each time, and then he repeated them after his preceptor. Leibnitz attests that he heard the animal talk in this way, and the French Academicians add, that unless they had received the testimony of so celebrated a person they would scarcely have dared to report the circumstance. It took place in Mesnia, in Saxony."

But "actions speak louder than words," and although the dog is not gifted with the power of articulate speech, he is yet capable of expressing his feelings by look and gesture as eloquently as most people. It is altogether wonderful to see how a dog's whole expression and demeanor are changed by a word or look, either of praise or blame. The eye, the mouth, the ear, the tail, the whole trunk, all are called into requisition, and together speak a language which is unmistakable. Mr. Darwin gives a most interesting account of the mode of expression of two opposite states of mind in the dog; an account which, like everything written by the same author, leaves nothing to be desired for clearness and accuracy.

"When a dog approaches a strange dog or man in a savage or hostile frame of mind, he walks upright and very stiffly; his head is slightly raised, or not much lowered, the tail is held erect and quite rigid; the hairs bristle, especially along the neck and back; the pricked ears are directed forward, and the eyes have a fixed stare. These actions follow from the dog's intention to attack his enemy, and are thus to a large extent intelligible. As he prepares to spring, with a savage growl, on his enemy, the canine teeth are uncovered, and the ears are pressed close backward on the head. Let us now suppose that the dog suddenly discovers that the man whom he is approaching is not a stranger, but his master; and let it be observed how completely and instantaneously his whole bearing is reversed. Instead of walking upright, the body sinks downward, or even crouches, and is thrown into flexuous movements; his tail, instead of being held stiff and upright, is lowered and wagged from side to side; his hair instantly becomes smooth; his ears are depressed and drawn backward, but not closely to the head, and his lips hang loosely. From the drawing back of the ears the eyelids become elongated, and the eyes no longer appear round and staring."

There can be no doubt that dogs are perfectly capable of communicating their thoughts to one another, and of understanding one another's meaning as well as that of their master's. One often sees two dogs, after a friendly sniff, carry on a small conversation, before trotting on their ways, evidently quite fond of a little chat.

The method of hunting in packs adopted by wild dogs is an undoubted proof of the faculty of combining together for a definite end, a number of animals agreeing to hunt a quarry, which one alone would be powerless against. But there are many instances of civilized dogs concocting plans in the cleverest way, and carrying them out with a care and circumspection perfectly wonderful in a "dumb animal." For instance, Mr. Romanes says: "A small Skye and a large Mongrel were in the habit of hunting hares and rabbits upon their own account, the small dog having a good nose, and the large one great fleetness. These qualities they combined in the most advantageous manner, the terrier driving the game from the cover toward his fleet-footed companion, which was waiting for it outside." The same gentleman gives another and still more curious instance:

"A friend of mine in this neighborhood had a small terrier and a large Newfoundland. One day a shepherd called upon him to say that his dogs had been seen worrying sheep the night before. The gentleman said there must be some mistake, as the Newfoundland had not been unchained. A few days afterward the shepherd again called with the same complaint, vehemently asserting that he was positive as to the identity of the dogs. Consequently, the owner set one watch upon the kennel, and another outside the sheep inclosure, directing them (in consequence of what the shepherd had told him) not to interfere with the actions of the dogs. After this had been done several nights in succession, the small dog was observed to come at day-dawn to the place where the large one was chained.



ESKIMO DOGS.

The latter immediately slipped his collar, and the two animals made straight for the sheep. Upon arriving at the inclosure, the Newfoundland concealed himself behind a hedge, while the terrier drove the sheep toward his ambush, and the fate of one of them was quickly sealed. When their breakfast was finished, the dogs returned home, and the large one, thrusting his head into his collar, lay down again as though nothing had happened. Why this animal should have chosen to hunt by stratagem prey which he could so easily have run down I cannot suggest; but there is little doubt that so wise a dog must have had some good reason."

In another case we have met with a "solemn league and covenant" was made, for purposes of offence and defence, between a dog and a cat. A Blenheim spaniel was taken to a strange house, and, shortly after his arrival, was attacked and severely scratched by the two cats living there. The spaniel was no match for both antagonists at once, and so judiciously beat a retreat into the garden. He there met a cat belonging to the gardener, and succeeded in making friends with her and prevailing on her to join with him against his cruel enemies. The two allies then went into the house, and finding one of the victorious cats alone, attacked and defeated her. Shortly after she was put to flight, victor number two entered the room; she was also presently attacked and routed with great loss by the allied forces, who were thus left masters of the field. The narrator of this tale goes on to state that the spaniel remained ever afterward on terms of the firmest friendship with his feline helper.

It is a subject of great interest to consider which of the virtues and vices of man himself are exhibited by the dog. We will take first, his good qualities, and then shall "follow his vices—close at the heels of his virtues;" so that we may see how many of both he can be found to possess.

First, and most important of all, is a clear sense of right and wrong, without which no moral advancement is possible. That nearly all dogs have this sense, and that many possess it in a very marked degree, there can be no doubt. Several instances of this faculty are given by the author we have already quoted, Mr. G. J. Romanes, who writes of a little dog in his possession:

"For a long time this terrier was the only canine pet I had. One day, however, I brought home a large dog, and chained him up outside. The jealousy of the terrier toward the new comer was extreme. Indeed, I never before knew that jealousy in an animal could arrive at such a pitch; but as it would occupy too much space to enter into details, it will be enough to say that I really think nothing that could have befallen this terrier would have pleased him so much as would any happy accident by which he might well get rid of his rival. Well, a few nights after the new dog had arrived, the terrier was, as usual, sleeping in my bedroom. About 1 o'clock in the morning he began to bark and scream very loudly, and upon my waking up and telling him to be quiet, he ran between the bed and the window in a most excited manner, jumping on and off the toilette table after each journey, as much as to say: 'Get up quickly; you have no idea of

what shocking things are going on outside!' Accordingly I got up and was surprised to see the large dog careering down the road: he had broken loose, and being wild with fear at finding himself alone in a strange place, was running, he knew not whither. Of course I went out as soon as possible, and after about half an hour's work succeeded in capturing the runaway. I then brought him into the house and chained him up in the hall; after which I fed and caressed him, with the view of restoring his peace of mind. During all this time the terrier had remained in my bedroom, and although he heard the feeding and caressing process going on down stairs, this was the only time I ever knew him fail to attack the large dog when it was taken into the house. Upon my re-entering the bedroom, and before I had said anything, the terrier met me with certain indescribable grinnings and prancings, which he always used to perform when conscious of having been a particularly good dog. Now I consider the whole of this episode a very remarkable instance in an animal, of action prompted by a sense of *duty*. No other motive than the voice of conscience can here be assigned for what the terrier did: even his strong jealousy of the large dog gave way before the yet stronger dread he had of the remorse he knew he should have to suffer if next day he saw me distressed at a loss which it had been in his power to prevent. What makes the case more striking is, that this was the only occasion during the many years he slept in my bedroom that the terrier disturbed me in the night-time. Indeed, the scrupulous care with which he avoided making the least noise while I was asleep, or pretending to be asleep, was quite touching; even the sight of a cat outside, which at any other time rendered him frantic, only causing him to tremble violently with suppressed emotion, when he had reason to suppose that I was not awake. If I overslept myself, however, he used to jump upon the bed and push my shoulder gently with his paw.

"The following instance is likewise very instructive. I must premise that the terrier in question far surpassed any animal or human being I ever knew in the keen sensitiveness of his feelings, and that he was never beaten in his life. Well, one day he was shut up in a room by himself, while everybody else in the house where he was went out. Seeing his friends from the window as they departed, the terrier appears to have been overcome by a paroxysm of rage, for when I returned I found that he had torn all the bottoms of the window-curtains to shreds. When I first opened the door he jumped about as dogs in general do under similar circumstances, having apparently forgotten, in his joy at seeing me, the damage he had done. But when, without speaking, I picked up one of the torn shreds of the curtains, the terrier gave a howl, and rushing out of the room, ran upstairs screaming as loudly as he was able. The only interpretation I can assign to this conduct is, that his former fit of passion having subsided, the dog was sorry at having done what he knew would annoy me; and not being able to endure in my presence the remorse of his smitten conscience, he ran to the farthest corner of the house, crying *peccavi*, in the language of his nature.

"Sensitiveness such as this generally goes along with the keenest susceptibility to ridicule; and here, again, the same dog showed a dislike of being laughed at which is amusingly human, as is also the clever trick by which he tried to escape the gibes which were entering so deeply into his soul.

"The terrier used to be very fond of catching flies upon the window panes, and if ridiculed when unsuccessful, he was evidently much annoyed. On one occasion, in order to see what he would do, I purposely laughed immoderately every time he failed. It so happened that he did so several times in succession—partly, I believe, in consequence of my laughing; and eventually he became so distressed that he positively *pretended* to catch the fly, going through all the appropriate actions with his lips and tongue, and afterward rubbing the ground with his neck as if to kill the victim; he then looked up at me with a triumphant air of success. So well was the whole process simulated, that I should have been quite deceived had I not seen that the fly was still upon the window. Accordingly I drew his attention to this fact, as well as to the absence of anything upon the floor; and when he saw that his hypocrisy had been detected, he slunk away under some furniture, evidently much ashamed of himself."

Honesty is a virtue very commonly developed in good dogs, and instances of it are numerous. But, as usual, the best anecdote is given by Mr. Romanes, again *apropos* of his wonderful terrier:

"I have seen this dog escort a donkey, which had baskets on its back filled with apples. Although the dog did not know that he was being observed by anybody, he did his duty with the utmost faithfulness; for every time the donkey turned back its head to take an apple out of the baskets the dog snapped at his nose; and such was his watchfulness, that, although his companion was keenly desirous of tasting some of the fruit, he never allowed him to get a single apple during the half hour they were left together. I have also seen this terrier protecting meat from other terriers (his sons) which lived in the same house with him, and with which he was on the best of terms. More curious still, I have seen him seize my wristbands while they were being worn by a friend to whom I had temporarily loaned them."

The tales of canine magnanimity are endless. Every one knows that of the big Newfoundland who, being long plagued by a number of little yelping curs, one of whom at last bit him, revenged himself only by dipping the offender in the quay hard by, and, after he was cowed, plunging in and bringing him safe to land. But all dogs are not magnanimous. Some of them, like certain men one meets with, have quite a talent for taking offence, and will pick a quarrel on the slightest provocation, or, indeed, on no provocation at all. There are, of course, the wretched little curs one meets in the street, whose sole delight seems to be to rush out suddenly and bark furiously at every passer-by; but these miserable beings act as they do rather from lack of brain, and for want of something to do, than from real badness of heart. There are dogs, however, who are naturally quarrel-

some, and will do all in their power to get up a row, simply for the pleasure of the thing. "There is a well authenticated instance of a terrier who, in picking a quarrel, contrived, as if trained in the Kanzellei of Prince Bismarck, to place himself technically in the right. He would time his movements so that some passenger should stumble over him, and would then fasten on the calf of his leg. With a



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most statesman-like aptitude, he selected the aged, the infirm, and the ill-dressed as the objects of his cunningly planned attacks."

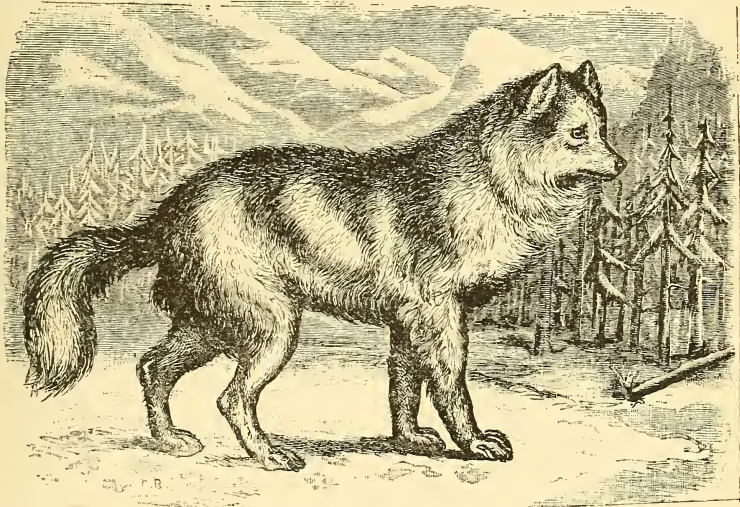
Not only are instances of quarrelsome-ness to be found in dogs, but also of the strongest desire to revenge real or supposed injuries, of the exercise of a wonderful amount of cunning and reasoning power to bring a hated rival to justice. The following anecdote forms a capital antithesis to that of Mr. Romanes' terrier, who prevented the escape of the dog he disliked and was jealous of, although such an event would have brought him the greatest possible comfort:

"A fine terrier, in the possession of a surgeon, about three weeks ago exhibited its sagacity in a rather amusing manner. It came into the kitchen and began plucking the servant by the gown, and in spite of repeated rebuffs, it perseveringly continued in its purpose. The mistress of the house hearing the noise, came down to inquire the cause, when the animal treated her in a similar manner. Being struck with the concern evinced by the creature, she quietly followed it upstairs into a bedroom, whither it led her; there it commenced barking, looking under the bed, and then up in her face. Upon examination, a cat was discovered there quietly demolishing a beefsteak, which it had feloniously obtained. The most singular feature in the whole case is that the cat had been introduced into the house only a short time before, and that bitter enmity prevailed between her and her canine companion." Besides illustrating the desire for vengeance, this is as good an instance of reason as any we have given. The dog evidently argued to himself in this wise: "If I fly upon this wretched cat and deprive her of her stolen goods by force, she will get nothing more than a fright, or, perhaps, a few tooth marks; but if I lodge a complaint against her before the proper tribunal, her guilt will be manifest to the whole household, and she will be got rid of, or even killed." The dog, by the way he conceived and acted on this plan, showed himself to be nearly as clever and almost as wicked as a great many men one reads about in history.

The varieties or breeds of the dog are extremely numerous, and differ from each other to a wonderful degree. In the matter of size, we have the mastiff, as large as a pony, at one end of the series, and the toy-terrier, a few inches long, at the other. As to the development of hair, there is every gradation, from the hairless Turkish dog to the Skye terrier or the poodle; as to running powers, there are the greyhound and the turnspit; in the matter of mental and moral characteristics, we have the intelligent shepherd's dog, the obstinate and courageous bulldog, the silly Italian greyhound, and the lazy lap-dog. Never was animal so thoroughly, so unanimously, and so successfully selected; never did any show such endless variation in so many particulars. Not only has civilized man his endless breeds of dogs, but nearly every savage tribe of any degree of intelligence has, to a greater or less degree, succeeded in producing a race exhibiting well marked characters, useful to them as a guardian of flocks or a beast of burden. Then, in many parts of the world there are to be found troops of dogs which have become wild, though not sufficiently so to be actually dangerous, and which act as scavengers in those countries which, like Turkey, are not blessed with a particularly stringent code of sanitary regulations.

THE HARE INDIAN DOG. This interesting variety is found only in North America, in the region of the Great Bear Lake and the Mackenzie River, where it is kept as a hunting dog by the Hare Indians and one or two other tribes. It deserves great interest from the fact that it closely resembles the prairie wolf, from which it is very probably descended.

"The Hare Indian dog is very playful, has an affectionate disposition, and is soon gained by kindness. It is not, however, very docile, and dislikes confinement of every kind. It is very fond of being caressed, rubs its back against the hand like a cat, and soon makes an acquaintance with a stranger. Like a wild animal, it is very mindful of an injury, nor does it, like the spaniel, crouch under the lash; but if it is conscious of having deserved punishment, it will hover round the tent of its master the whole day, without coming within his reach, even when he calls it. Its howl, when hurt or afraid, is that of the wolf; but when it sees any unusual



HARE INDIAN DOG. (*One-ninth natural size.*)

object, it makes a singular attempt at barking, commencing by a kind of growl, which is not, however, unpleasant, and ending in a prolonged howl. Its voice is very much like that of the prairie wolf. The larger dogs, which we had for draught at Fort Franklin, and which were of the mongrel breed in common use at the fur-posts, used to pursue the Hare Indian dogs for the purpose of devouring them; but the latter far outstripped them in speed, and easily made their escape. A young puppy, which I purchased from the Hare Indians, became greatly attached to me, and when about seven months old ran on the snow by the side of my sledge for nine hundred miles without suffering from fatigue. During this march it frequently, of its own accord, carried a small twig, or one of my mittens, for a mile

or two; but, although very gentle in its manners, it showed little aptitude in learning any of the arts which the Newfoundland dogs so speedily acquire, of fetching and carrying when ordered. This dog was killed and eaten by an Indian on the Saskatchewan, who pretended that he mistook it for a fox."

THE ESKIMO DOG. Not only does the Eskimo dog agree with the wolf in appearance, but also in disposition; it is wild, savage, and obstinate to a degree almost inconceivable to us, who are only acquainted with civilized dogs. In illustration of the wolf-like disposition of the beast, Dr. Robert Brown relates an incident which shows that it is but little removed from its probable ancestor. We said above that it was only half tamed; so certainly is this the case, that it "can only be kept in subjection by the most unmerciful lashing, for its savage nature will out."

The chief use of the Eskimo dog is to draw the sledges, which are the only possible conveyance in that frozen land. In all the Arctic expeditions which have been sent out at various times, a good supply of sledge-dogs has been one of the greatest *desiderata*, as without them it would be absolutely impossible to proceed far. No other animal would answer the purpose, both horses and cattle being quite useless in journeys over ice and snow, among which the pack of light, active dogs make their way with wonderful ease and safety.

The presence of a good leader to every sledge team is of the first importance; the other dogs obey him far more implicitly than the driver, as he has gained his proud position *vi et armis*, and keeps all his subordinates in the strictest order. Notwithstanding this, the behavior of the team while running is far from exemplary. Captain Lyon says, "They are constantly fighting, and I do not recollect to have seen one receive a flogging without instantly wreaking his passion on the ears of his neighbor." So that it is always best to trust to a good leader than to any amount of whipping, as the latter may only involve the whole concern—team, sledge, driver, and all—in hopeless and inextricable confusion. "Among the Eskimo on the western shore of Davis Straits, a loose dog usually precedes the sledge, and, by carefully avoiding broken places in the ice, acts as a guide to the sledge team, which carefully follows his lead."

Besides their use as draught animals, these dogs are employed in bear and seal hunting. Their skin is also valuable, and the natives are extremely fond of their flesh, although, as the dog is getting gradually scarcer, they can seldom indulge in the dainty.

THE GREYHOUND. The various breeds of this dog are the most elegant in the whole species. The head is proportionally smaller than in any other variety, and in consequence of this, the greyhound is by no means one of the dogs particularly noted for intellect, his energy having all gone off in the direction of speed, and there being, in consequence, none to spare for brain power. He is, in fact, an

athlete, and nothing more—a pace *et præterca nihil*. In former times the greyhound was sufficiently strong to cope with the wolf, but for many hundred years he has gradually degenerated in strength, and toward the close of the last century was so deficient in courage and perseverance that Lord Oxford, one of the lights of the sporting world at that time, hit upon the ingenious plan of crossing his greyhounds with bulldogs. This expedient was so successful that, “after the sixth or seventh generation, there was not a vestige left of the form of the bulldog; but his courage and indomitable perseverance remained, and, having once started after his game, he did not relinquish the chase until he fell exhausted, or perhaps died.



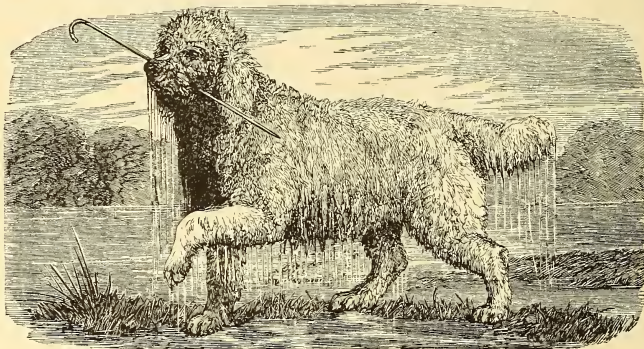
THE ITALIAN GREYHOUND. (*One-ninth natural size.*)

This cross is now almost universally adopted. It is one of the secrets in the breeding of the greyhound.”

The form of the greyhound is as well known as that of any dog; its long, slender muzzle, capacious chest, slender loins, and beautifully shaped limbs, are familiar to every one; the latter form a set of spring levers only equaled by the limbs of a racehorse or a deer. The color is very variable—black, white, fawn, or brindled. The hair is short and fine, and the ears rise erect for a certain height and then hang over. This dog is now used only for coursing or hare-hunting. In performing this task, it is guided entirely by the eye, its sense of smell being deficient, and practically of no importance in the chase; so that if once the greyhound loses sight of the game, the latter is started again by a spaniel. The speed attained by a good greyhound is very remarkable; it is, indeed, just inferior to that of a race-horse.

THE WATER SPANIEL is larger than any of the other spaniels; it is also a stronger dog, and has closely curled hair, and ears proportionally much shorter. It is used in shooting, having first to find the game, and then, when a bird falls, to bring it to its master without mangling. It is one of the most docile and intelligent of dogs, and has numerous tales told of it, both in prose and poetry. Among the latter we may mention Cowper's well known piece, "The Water Lily."

THE POODLE is a dog of European origin, and is well known by its thick, generally white, curly hair, which conceals its face and covers its body like a mat. In France, and sometimes, alas! in England and America, people try to improve the breed by shaving off the hair from the hinder half of the body, with the excep-



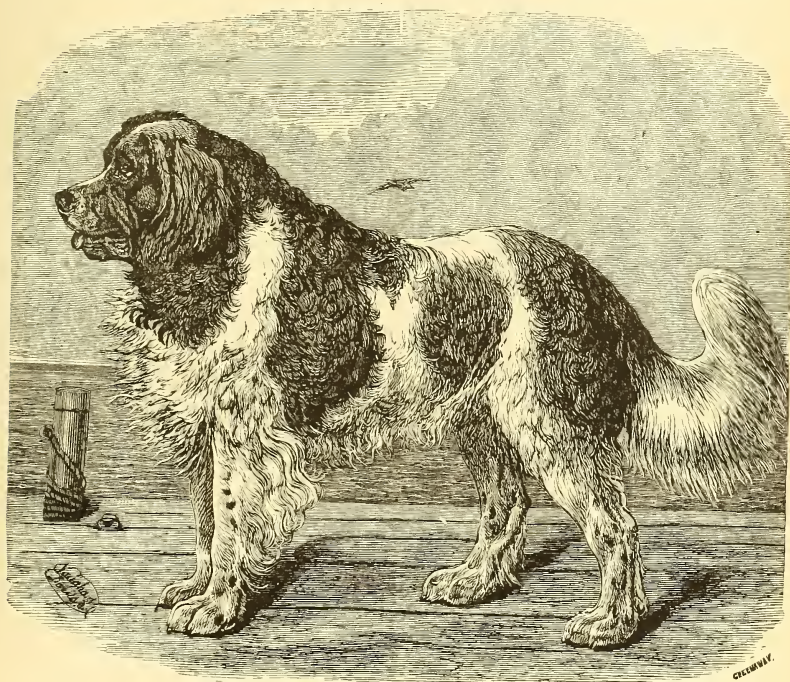
THE POODLE.

tion of the tip of the tail, thus making the wretched animal a spectacle to men and angels. Some misguided people go even further than this, and dye the hair of various colors—making, perhaps, a magenta body and a yellow tail, or some other equally tasteful and appropriate combination.

The poodle, notwithstanding the way it is treated, is an extremely intelligent dog, and capable of learning all sorts of tricks; it will walk on its hind legs, dance, sham dead, and, in fact, do almost anything it is taught. It is also affectionate and devoted, and has shown itself capable of retaining for life the memory of a deceased master.

THE ST. BERNARD DOG. This magnificent breed is now better known than formerly, as it is becoming quite usual to keep them instead of mastiffs or Newfoundlands. The breed was, until lately, almost confined to the Alps, where it was kept by the monks of the convent of Mount St. Bernard, and sent out, pro-

vided with a little barrel of brandy tied round its neck, to rescue travelers lost in the snow. The number of people who have been saved from death in this way, by the humanity of these good monks and the intelligence of their dogs, must be



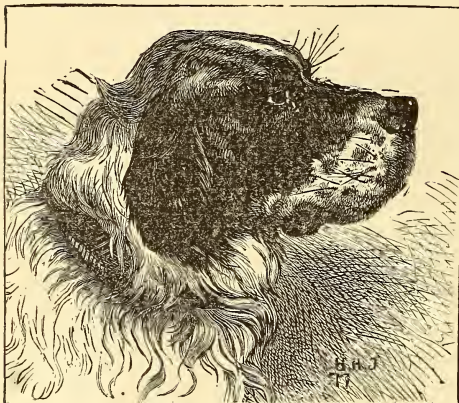
THE NEWFOUNDLAND DOG.

very great, for a single dog, the celebrated "Barry," saved no less than forty lives himself, and at last perished on one of his expeditions of mercy.

THE NEWFOUNDLAND DOG is the finest and largest of water-dogs, besides being among the most intelligent and courageous. It is covered with thick curly hair, usually black or black and white, the curls being more flowing and not so close and woolly as in the ordinary spaniel or the retriever. So fully is this dog

adapted for swimming, that its feet have very considerable webs, extending between the toes—an evident adaptation to its aquatic habits.

The attachment which these magnificent dogs feel toward mankind is almost unaccountable, for they have been often known to undergo the greatest hardships in order to bring succor to a person whom they had never seen before. A Newfoundland dog has been known to discover a poor man perishing in the snow from cold and inanition, to dash off, procure assistance, telling by certain doggish language of its own of the need for help, and then to gallop back again to the sufferer,



HEAD OF SETTER.

lying upon him as if to afford vital heat from his own body, and there to wait until the desired assistance arrived.

One day a Newfoundland dog and a mastiff had a sharp quarrel over a bone. They were fighting on a bridge, and over they went into the water. The banks were so high that they were forced to swim some distance before they came to a landing place. It was very easy for the Newfoundland; he was as much at home in the water as a seal. But not so poor Bruce, the mastiff; he struggled and tried his best to swim, but made

little headway. The Newfoundland dog quickly reached the land, and then turned to look at his old enemy. He saw plainly that his strength was fast failing, and that he was likely to drown. So what did the noble fellow do but plunge in, seize him gently by the collar, and keeping his nose above water, tow him safely into port! It was funny to see these dogs look at each other as they shook their coats. Their glance said as plainly as words, "We'll never quarrel any more."

Another incident exhibits the intelligence of the Newfoundland. A large, heavy wagon, which was, notwithstanding its enormous weight, dragged along at a smart trot by a vigorous horse, was passing lately through the Rue de la Chapelle, at Paris. An infant of three years of age having ventured on the public road, unconscious of the danger it was running, was just about to be crushed beneath the wheels of the huge vehicle. Quicker than thought, a magnificent Newfoundland dog, which was sitting on the pavement, darted forth with one immense bound, snapped up the little being, passed-like an arrow beneath the wagon between the four wheels, and deposited the poor child safe and sound upon

the opposite pavement. Another of these animals, belonging to a workman, was attacked by a small and pugnacious bulldog, which sprang upon the unoffending canine giant, and after the manner of bulldogs, "pinned" him by the nose, and there hung, in spite of all endeavors to shake it off. However, the big dog happened to be a clever one, and spying a pailful of boiling tar, he bolted toward it,



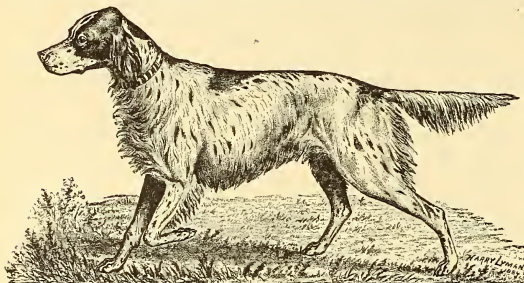
THE BLOODHOUND.

and deliberately lowered his foe into the hot and viscous material. The bulldog had not calculated on such a reception, and made its escape as fast as it could run, bearing with it a scalding memento of the occasion.

THE SHEEP DOG. This is not only the most important of all our domestic breeds, but it is second to none for intelligence and devotion. It is quite

a rare thing to find a shepherd's dog who will offer the slightest violence to the animals under its care; and it can often be trusted almost with the entire management of the flock, driving them from place to place, gathering them together to be counted, and making altogether a far more valuable assistant to the shepherd than any human being could possibly be. The dog is wholly devoted to the work, and his obedience and skill are perfect, penning the sheep from field after field, for his owner, who foots it slowly after him, and finds the flock ready to his hand. It used to be credibly reported to us in our boyhood, that some of these dogs would lay themselves down by a sheep that had got *cast*; these dogs, it was said, would push their arched spine against the helpless sheep, and give them sufficient leverage to enable them to rise.

THE BLOODHOUND. This dog resembles pretty closely the deerhound, or old English hound, but is considerably larger, with longer ears of a soft and



THE SETTER.

delicate texture, and deeper "fews," or down hanging upper lips. The color is brown, verging to reddish along the back, and to light fawn-color below. The eyes should be surrounded with a distinct red ring, due to the exposure of the delicate membrane lining the eyelids. To judge

from the animal's countenance, no one would imagine the horrid purpose for which it was originally bred, for few dogs have a milder, more benevolent, or more intelligent visage. In former times these dogs were used to track runaway slaves, robbers and other offenders, a duty which they performed with the most unerring accuracy, never giving up the chase until they had brought their miserable quarry to bay. When engaged in this work, all their mildness disappeared, and they were transformed into perfect furies. Mr. Youatt, writing in 1845, says: "The Thrapstone Association lately trained a bloodhound for the detection of sheep-stealers. In order to prove the utility of this dog, a person whom he had not seen was ordered to run as far and as fast as his strength would permit. An hour afterward, the hound was brought out. He was placed on the spot whence the man had started. He almost immediately detected the scent, and broke away, and after a chase of an hour and a half, found him concealed in a tree fifteen miles distant!"

THE SETTER, according to Youatt, "is evidently the large spaniel, improved to his peculiar size and beauty, and taught another way of marking his game, viz., by *setting* or crouching. If the form of the dog were not sufficiently satisfactory on this point, we might have recourse to history for information on it. Mr. Daniel, in his 'Rural Sports,' has preserved a document, dated in the year 1685, in which a yeoman binds himself, for the sum of ten shillings, fully and effectually to teach a spaniel to *sit* partridges and pheasants. The first person, however, who systematically broke in sitting dogs is supposed to have been Dudley, Duke of Northumberland, in 1335." The hind surface of the legs, and the under surface of the tail of the setter should be well "feathered," that is, beset with long hair.

THE POINTER. Mr. Darwin says: "The pointers are certainly descended from a Spanish breed, as even the names Don, Ponto, Carlos, etc., would show." The value of this dog consists in his habit of "pointing," or standing silently, with lifted foot and outstretched muzzle, as soon as he finds game. A very remarkable circumstance with regard to this habit is the way in which it is inherited. A young dog points instinctively the first time he is taken into the field.



THE BADGER DOG.

THE BADGER DOG is a German breed. The fore-legs are crooked at the wrist-joint, and the feet are very large. It was originally bred, as its name implies, for badger-hunting, and so strong is its instinct for the sport even now it has become a drawing-room pet, that it will rush at anything that looks like a hole, and begin to burrow vigorously.

THE BULLDOG is undoubtedly the most savage and untamable of all the breeds; he is, moreover, except to the eyes of the fancier, the ugliest; for, although he has not the grotesque proportions of the turnspit, yet his crooked legs, rat's tail, flat forehead, little wicked eyes, turned up nose, big mouth, and underhung lower jaw, make him a creature absolutely hideous to any one whose taste is not sufficiently cultivated to enable him to admire anything "proper." The two features of the crooked legs and the underhung jaw are simply selected

and perpetuated deformities. The projection of the lower jaw and the receding of the nose are extremely marked, and give the dog a most sinister appearance. The chest of a good bulldog is very broad and strong. The hindquarters, on the other hand, are comparatively feeble. The bulldog was formerly used—as its name implies—for the barbarous “sport” of bull baiting, in which our forefathers took so much delight. The dog would seize upon the bull’s nose and lip, and no power in heaven and earth could make him leave his hold. He would even fight with the lion, and seize upon his gigantic antagonist again and again, although torn and mangled all over with great claw wounds.

Although not a water dog, the bulldog is a capital swimmer, his immense strength and indomitable pluck giving him an advantage over even such a professed swimmer as the Newfoundland. “During a heavy gale, a ship had struck on a rock near the land. The only chance of escape for the shipwrecked was to get a rope ashore; for it was impossible for any boat to live in the sea as it was then running. There were two Newfoundland dogs and a bulldog on board. One of the Newfoundland dogs was thrown overboard, with a rope thrown round him, and perished in the waves. The second shared a similar fate; but the bulldog fought his way through that terrible sea, and arriving safe on shore, rope and all, became the saviour of the crew.”

THE MASTIFF. This dog “is probably an original breed peculiar to the British Islands.” It is larger than the bulldog, has a head of somewhat the same shape, with deep flews, but its ears are pendant, and it has none of the bulldog’s deformity. From the bloodhound it is distinguished by the shape of the head, which is rounder and shorter, and by the absence of a red ring round the eye. At the present day, the mastiff is used chiefly as a house dog, for which purpose his fidelity and strength make him thoroughly well suited.

PARIAH DOGS. We come lastly to those nondescript animals, the *Pariahs*, or domesticated dogs run wild, which occur in packs in many parts of Eastern Europe and of Asia. These herds of miserable, half-starved animals are undoubtedly not true wild dogs, but degenerated tame ones; the dog being derived from a wild ancestor, under certain circumstances shows his descent by reverting to the habits of his forbears.

“The dogs of the Egyptian towns are masterless, and live on carcasses thrown out on the mounds of rubbish outside the walls, and what is cast them by the charitable. In the villages, and with the shepherds along the desert, they are better cared for, protecting the property of the people from thieves, and their animals from wild beasts. These dogs are generally sandy in color, but they vary—some are black, and others white.”

In Siam, these unhappy creatures are equally abundant, and are even worse off. Mr. Thomas states that they occur in great numbers in nearly all the temples.

“It is contrary to the Buddhist creed to take away life; hence many of their temples become places of refuge for troops of famished dogs, who remain there till they die; for though the priests give them what food they can spare, there is never enough for them all. These dogs, then, are usually animated skeletons, their skins destitute of hair, and covered with many sores. I tossed them a little food: it gave rise to the most savage fight I ever witnessed. One or two wretched curs limped away from the strife, torn and lacerated, probably to lie down and die. This canine community—fierce, hungry, and diseased—must surely be one of those many Buddhist hells where sorcerers expiate their crimes. The animals are



THE MASTIFF.

deemed to be animated by the spirits of the departed, and are undergoing a lifetime of torture. The priests, if they are good men, look on at their misery with pious complacency, and probably take the lesson to heart, lest they, too, in the next stage of their existence, should be condemned to howl for offal or garbage to satisfy the hungry pangs and sore-eaten frames of starving Pariah dogs.'

THE DINGO. The dingo is not a noble savage who has never known civilization, but a civilized dog run wild. It is the only carnivorous animal found in Australia, consequently is not a marsupial, and therefore is not indigenous to the island. It has all the look of a domestic dog. It is about as large as a sheep-dog,

and is of a reddish brown color, sprinkled with black. It crosses freely with the tame dog.

Large packs of these wild dogs ravage the localities in which they have taken up their residence, and have attained to so high a degree of organization that each pack will only hunt over its own district, and will neither intrude upon the territory which has been allotted to a neighboring pack of dingoes, nor permit any intrusion upon its own soil. For this reason their raids upon the flocks and herds are so dangerous that the colonists have been obliged to call meetings in order to arrange proceedings against the common foe. Before the sheep-owners had learned to take effectual measures to check the inroads of these marauders, they lost their flocks in such numbers that they counted their missing sheep by the hun-



KANGAROO PURSUED BY DINGOS.

dred. From one colony no less than twelve hundred sheep and lambs were stolen in three months.

The dingo is cowardly, and will rather run away than fight; but when hard pressed, and it finds that its legs are of no use, it turns to bay with savage ferocity, and dashes at its opponents with the furious energy of despair. It carries these uncivilized customs into domesticated life; and even when its restless limbs are subjected to the torpifying thralldom of chain and collar, and its wild, wolfish nature allayed by regular meals and restricted exercise, it is ever ready to make a sudden and unprovoked attack upon man or beast, provided always that its treacherous onset can be made unseen. After the attack it always retreats into the farthest recesses of its habitation, and there crouches in fear and silence, whether it has failed or succeeded in its cowardly malice.

THE INDIAN WILD DOG. This animal exists in large numbers all over the peninsulas of India and Malacca. They have in many respects, an appearance



YOUNG WOLVES.

resembling that of a fox or a jackal, with which it also agrees in its filthy smell. It is, however, a true dog, although less specialized than the domestic kinds, and therefore approaching the average structure of the wild *Canidae*.

These dogs hunt in packs, six, eight, ten, or as many as thirty animals in a pack. They hunt either by night or day; and it is said that "when once a pack of them put up any animal, no matter whether deer or tiger, that animal's doom is sealed; they never leave it. They will dog their prey for days, if need be, and run it down exhausted, and if it turns to fight, they go in fearlessly and by their numbers win. All animals dread the wild dog; others they may elude by speed, artifice, or battle; but their instinct tells them that there is no escaping the wild dog, as it hunts in packs by scent as well as by sight, and is as brave as it is persevering."

They make no noise when running, except sometimes a low whispering kind of note, which may either express their own gratification, or act as a signal to other dogs. Great numbers of them are destroyed in their hunting expeditions, as the larger animals, such as the elk and boar, defend themselves with great fierceness, and sacrifice many of their pursuers before they fall a victim to the overwhelming numbers and unconquerable perseverance of the latter.

THE WOLF.

We have considered all the most important "beasts of prey," with two exceptions, under the cat family, to which they belong. Two important ravagers still remain—the bear and the wolf. Of the great cats, much good is often spoken. Notwithstanding their cruelty and bloodthirstiness, they are handsome, strong, and usually courageous; each one hunts his prey for himself, and when he has satisfied his appetite, leaves the remainder to inferior beasts, disdaining, unless when reduced by starvation, to touch any but fresh meat. The bear, too, often has a word said for him; his curious, half good natured look, his semi-human waddle, the tricks he is capable of learning, all combine to make him seem not so very objectionable a beast after all. But who ever heard any good said of a wolf? There have, indeed, been a few instances of wolves in captivity who have shown much affection and fidelity to their masters; but, under ordinary circumstances, cruel, cowardly, dastardly, greedy, pitiless, are the adjectives applied to him.

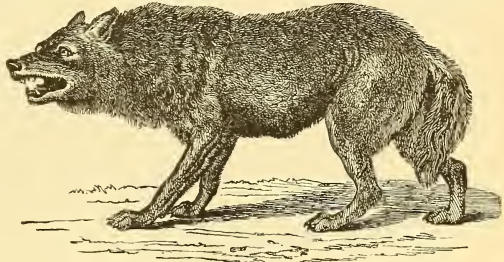
The wolf has a place in history as venerable as that of the lion, and he was the dread of the shepherd four thousand years ago. The wolf is about the size of a large shepherd dog. The skin is of a dark yellowish grey color, or sometimes almost black; the hair is long and coarse in the northern varieties, which have to sustain existence through a long, cold winter, and shorter in the southern kinds, which enjoy a warmer climate. There is also a good deal of variation in color, according to the country from which the animal comes.

The muzzle has much the same shape as that of many shepherd's dogs, but the ears are upright and pointed, and the eyes are set obliquely; in this respect the

difference between a wolf and a dog is very striking—the obliquity of the eye in the former gives him a most sinister expression. The bushy tail, too, is not curled up like a dog's, but held down, almost between the hind legs. But perhaps the most striking difference from the dog is in the voice; the wolf never barks—that is entirely a civilized habit; even dogs allowed to become wild lose it—but howls in a horrible and ghastly manner.

The wolf usually lives in solitary places in mountains; but in Spain he is said sometimes to make his lair in cornfields, in close proximity to inhabited dwellings. Here he lives with his wife and family, usually *cache* during the day, and issuing forth at night to take his prey. During the warmer periods of the year wolves, as a rule, hunt each one for himself, but in the winter they often unite into great packs, and pursue their prey over the snow at a rapid pace and with indomitable perseverance. Swift and untiring must be the animal which, on an open plain, can

escape from them; even the horse, perfectly constructed as he is for rapid running, is almost certain to succumb, unless he can reach a village before his pace begins to flag. They never spring upon an animal from ambush—the nearest approach ever made to such an attack being their practice of attacking sheepfolds by



A WOLF.

leaping into the midst of the flock and killing right and left; when they reach their prey, too, the first onslaught is made with the teeth, and never by a blow of the paw. Thus, a wolf's attack—like that of all members of the genus *Canis*—is entirely different from a cat's. The cat lies in ambush all alone, springs upon the passing prey, which, if he misses he scarcely ever pursues, and kills by a blow of the paw. The dog and wolf attack openly, sometimes alone, but oftener in company, pursue their prey with unflagging energy until it falls a victim, and give the death-wound at once with their teeth. To shepherds the wolf is, and has been from the earliest times, a most unmitigated curse. A single wolf will leap the wall of a sheepfold and murder perhaps a quarter or a third of the flock before his lust for slaughter is satisfied. Of course, he cannot eat more than one, or part of one, and the others he slays from wanton cruelty. Mutton is naturally his standing dish, as it can be procured, if at all, in abundance, and with comparatively little difficulty; but he is not at all particular, and will eat deer, goats, birds, and even reptiles. But his favorite meat, curious to relate, is *dog*, and there are many instances related of the eagerness and recklessness shown by wolves to obtain this

cannibal feast. "Wolves have been known to carry off a pointer from a sledge going at full gallop. The animal leaps with a single bound among the three or four persons in the vehicle, who remain stupefied at so much audacity, seizes his innocent victim, and plunges again into the forest. The whole is done in less time than it takes to tell. Another time it is a young Newfoundland, which his master, traveling on horseback, has placed before him on the pommel of his large saddle; the wolf sees him, leaps upon and seizes him, and carries him off without touching man or horse."

If the wolf confined himself to sheep and dogs, matters would be bad, indeed, but still endurable; unfortunately, however, this horrible savage likes human flesh just as well as "flesh of mutton, beeves, or goats." A single wolf hardly ever dares attack a man, for he is essentially a cowardly animal, but a child may be now and then carried off, and a man or a body of men may be attacked by an immense troop of wolves, and then, unless they can get to a village or some other shelter, their fate is sealed. They may kill the wolves by dozens, expend all their ammunition, making every shot tell, fell the howling monsters until their swords are hacked, but it is all of no avail; each falling wolf is replaced by a fresh one hungrier and more vigorous than himself, and the end, unless succor come, can only be death by the teeth and a grave in the maw of perhaps hundreds of wolves.

The wolf, savage though he be, is quite tamable; he has often shown great devotion to his master, and has, in fact, behaved in every respect like an affectionate dog, a very interesting fact, as bearing upon the evolution of dogs from wild *Canide*.

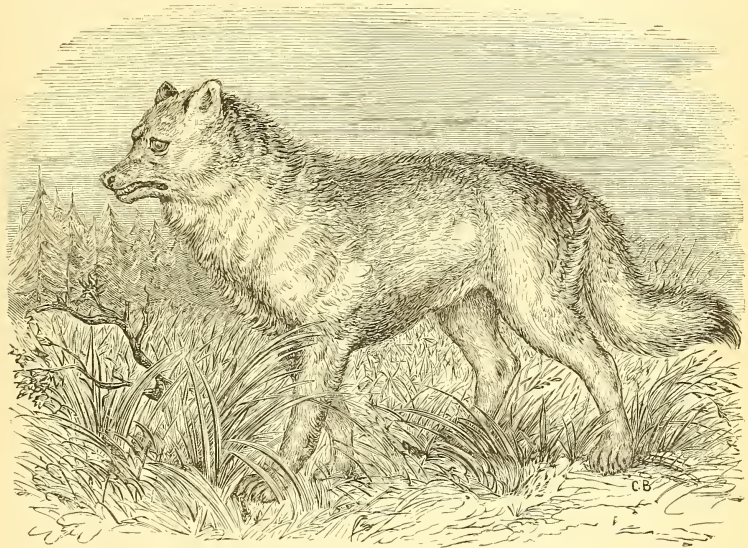
THE NORTH AMERICAN WOLF, which extends from Greenland in the north to Mexico in the south, differs from the European kind chiefly in its fur being finer, denser, and longer, and in the curious fact that its feet are very broad, so as to enable it to run easily on the snow. The development of these natural snow shoes in the American wolf fitting it so beautifully for its particular mode of life, is highly interesting. This species is entirely absent from South America, but its wide distribution in North America may be gathered from the following account:

"Wolves are found in greater or less abundance in different districts, but they may be said to be very common throughout the northern regions; their footmarks may be found by the side of every stream, and a traveler can rarely pass a night in these wilds without hearing them howling around him. They are very numerous on the sandy plains which, lying to the eastward of the Rocky Mountains, extend from the sources of the Peace and Saskatchewan Rivers toward the Missouri. There bands of them hang on the skirts of the buffalo herds, and prey upon the sick and straggling calves. They do not, under ordinary circumstances, venture to attack the full grown animal; for the hunters informed me that they often see wolves walking through a herd of bulls without exciting the least alarm; and the marksmen, when they crawl toward a buffalo for the purpose of shooting it,

occasionally wear a cap with two ears, in imitation of the head of a wolf, knowing from experience that they will be suffered to approach nearer in that guise."

THE COYOTE, or Prairie Wolf, occurs, along with the common North American Wolf, as far south as Mexico, its northern range being about the 55th degree of latitude.

"The Prairie Wolf has much resemblance to the common Grey Wolf in color; but differs from it so much in size, voice, and manner, that it is fully entitled to rank as



COYOTE, OR PRAIRIE WOLF. (*One-ninth natural size.*)

a distinct species. It inhabits the plains of the Missouri and Saskatchewan, and also, though in smaller numbers, those of Columbia. On the banks of the Saskatchewan, these animals start from the earth in great numbers on hearing the report of a gun, and gather around the hunter in expectation of getting the offal of the animal he has slaughtered. They hunt in packs, and are much more fleet than the common wolf. I was informed by a gentleman who has resided forty years on the Saskatchewan, and is an experienced hunter, that the only animal on the plains which he could not overtake, when mounted on a good horse, was the prong-horned antelope, and that the Meesteh-chaggoneesh, or Prairie wolf, was the next in speed.

"The fur of the prairie wolf is of the same quality with that of the grey wolf, and consists of long hairs, with a thick wool at their base. The wool has a smoky or dull lead color; the long hairs on the back are either white for their whole length, or they are merely tipped with black. The prevailing color along the spine is dark blackish-grey, sprinkled with white hairs. Its cheeks, upper lip, chin, throat, belly, and insides of the thighs, are white. There is a light-brown tint upon the upper surface of the nose, on the forehead, and between the ears, on the shoulders, on the sides, where it is mixed with grey, and on the outside of the thighs and legs. The tail is grey and brown, with a black tip. Some individuals have a broad black mark on the shins of the fore-legs, like the European wolf. The ears are short, erect and roundish, white anteriorly and brown behind. The tail is bushy, and is clothed, like the body, with wool and long hair. Some specimens want the brown tints, and have most of the grey color." The length of body and head together amounts to about three feet; that of the tail about fourteen or fifteen inches.

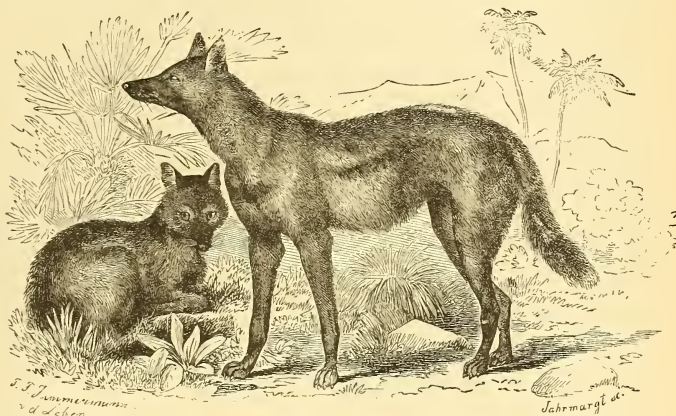
THE JACKAL. Next to the wolf, the jackal is the most important wild member of the dog tribe. It is a much smaller animal than the wolf, not exceeding thirty inches in length, and seventeen in height at the shoulder. It is also distinguished from wolves and true dogs by its curious long pointed muzzle. Its fur is of a dusky yellowish color—whence its name of Gilded Wolf, and its specific appellation *aureus*—"the hairs being mottled black, grey, and brown, with the under fur brownish yellow, the lower parts yellowish grey, tail reddish brown, ending in a darkish tuft." There is a good deal of variation from this color, depending partly on the time of year, partly on the locality.

The jackal is a cowardly animal, blessed with a most evil smell, and with a voracious appetite. It lives largely upon carrion, a good deal of which it gets as a sort of "perquisite" from the remains of the lion's feast. It is sometimes called "the lion's provider," a name which "may have arisen from the notion that the yell of the pack gives notice to the lion that prey is on foot, or from the jackals being seen to feed on the remnants of the lion's quarry." Dr. Jerdan says, "It is a very useful scavenger, clearing away all garbage and carrion from the neighborhood of Cape Town, but occasionally committing depredations among poultry and other domestic animals. Sickly sheep and goats usually fall a prey to him; and a wounded antelope is pretty certain to be tracked and hunted to death by jackals. They will, however, partake freely of vegetable food."

Like most other dogs, the jackal hunts in packs; and then, while on an expedition for food, makes night hideous by its fearful cries. In this it calls to mind the hyena, as well as in some other particulars, as, for instance, in its love for carrion, and in the remarkably cool way in which it will stare and laugh at travelers, as if holding them up to general ridicule. The habits of the jackal are altogether canine. Their hunts are conducted under the guidance of a leader,

who is said to give the signal for every attack by a peculiar cry, and so powerful are these little animals in their union, that they are capable of pulling down a deer. Their chief food in Ceylon seems to be hares, the numbers of which they keep down to such an extent that those palatable rodents are quite scarce in regions infested by jackals.

The jackal resembles in one respect, the fox, more than even the wolf or wild dog. It has the reputation for excessive cunning, and indeed takes the place of our old vulpine friend, in the legends of the East. It is said that "when a jackal has brought down his game and killed it, his first impulse is to hide it in the nearest jungle, whence he issues, with an air of easy indifference, to observe whether any-



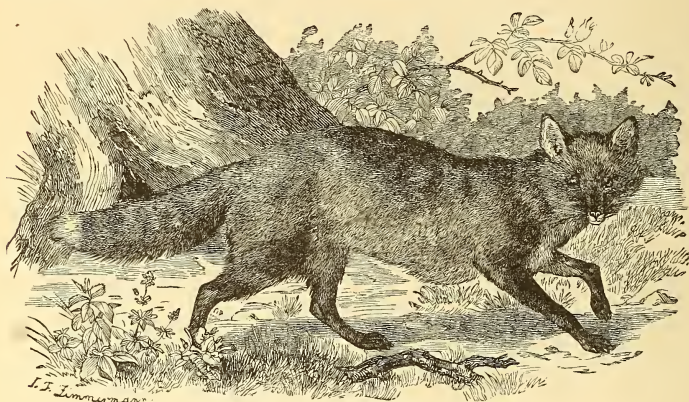
THE JACKAL OF SENEGAL.

thing more powerful than himself may be at hand from which he might encounter the risk of being despoiled of his capture. If the coast be clear, he returns to the concealed carcass, and carries it away, followed by his companions. But if a man be in sight, or any other animal to be avoided, my informant has seen the jackal seize a cocoanut husk in his mouth, or any similar substance, and fly at full speed, as if eager to carry off his pretended prize, returning for the real booty at some more convenient season."

Jackals have often been tamed; and, under the circumstances, behave exactly like the domestic dog; they fawn upon their masters, wag their tails, and throw themselves on their backs with all four paws in the air, altogether like dogs. The chief drawback to their domestication is their abominable smell; but it is stated by Colonel Sykes that a tame female jackal in his possession was quite devoid of

this odor, while a recently caught male, which was placed with her, smelt so horribly as to be almost unapproachable.

The jackal of Senegal is one of the best marked varieties of the jackal, and has a strong claim to the distinction of a separate specific name. It is considerably larger than the common kind, more elegantly built, and has very long legs, almost like those of a greyhound. It is of a bright tawny color, with dark band on the back, side and chest. It is one of the commonest animals in Central Africa, and "its habits are different to those of the common jackal. It is more prudent and suspicious, and is completely nocturnal. During the day it lies hidden in a safe retreat, and nothing but chance can reveal its presence to the hunter."



THE COMMON FOX. (One-tenth natural size.)

THE COMMON FOX. The foxes form a very distinct group of *Canidae*, differing far more from the dog, wolf, and jackal than those animals do from one another. The most characteristic and important difference between them lies in the fact that in the foxes the pupil of the eye contracts under the influence of strong light to a vertical slit, dilating and becoming circular again as the light diminishes. This is the case, as will be remembered, in the common cat, and many other members of the same family; it is, in fact, very usual in animals of nocturnal habits, which, being used under ordinary circumstances to make shift with the smallest quantity of light obtainable, are advantaged by being able to exclude all superfluous rays when the illumination becomes stronger than they can comfortably bear.

The habits and appearance of the fox are thoroughly well known. His cunning is proverbial. When hunted, he "makes a thousand shifts to get away," and



SLY FOXES.

often succeeds in baffling the whole pack of well-trained hounds. His stealthy tread, as he winds along the hillsides and valley slopes to seek his prey or to reach his lair, is altogether characteristic of one thoroughly well up to his work. Numberless tales are told of his sagacity, but we will content ourselves with one which forms almost as good an example of animal reason as any we have met with, even in the dog: "A farmer was looking out of his window one summer's morning, about three o'clock, when he saw a fox crossing a field before it, carrying a large duck which he had captured. On coming to a stone dyke, about four feet high, on the side of the field, Reynard made an effort to leap over it with his prey, but failed, and fell back into the field. After making three attempts, with the same result, he sat down, and viewed the dyke for a few minutes; after apparently satisfying himself, he caught the duck by the head, and standing up against the dyke with his forepaws as high as he could reach, he placed the bill of the duck in a crevice in the wall; then springing upon the top he reached down, and pulling up the duck, dropped it upon the other side, leaped down, and picking it up, went on his way."

The common fox is found, under more or less well marked varieties, some of which are often elevated to the rank of species, over the greater part of Europe, Asia, and North Africa, and in many parts of America.

THE ARCTIC FOX. This is an extremely well marked species of fox, found in the southern and central portions of Greenland, and extending high up Smith's Sound. It is sometimes seen during the seal hunting season hundreds of miles from land, on the frozen sea, where it has wandered to feast on the dead seals.

It is usually stated that the color of the skin of this animal varies with the season—that in summer it is of a blue-grey color, while in winter it is perfectly white; these colors, of course, serving as a protection to the animal; the blue harmonizes well with the rocky shore and the thick, dark ice, while the winter coat is perfectly undistinguishable on the snow with which the ground is then thickly strewn.

An interesting account of the manners and customs of this pretty little animal is given by Sir J. Richardson, who says:

"The Arctic fox is an extremely cleanly animal, being very careful not to dirt those places in which he eats or sleeps. No unpleasant smell is to be perceived, even in a male, which is a remarkable circumstance. To come unawares on one of these creatures is, in my opinion, impossible, for even when in an apparently sound sleep, they open their eyes at the slightest noise which is made near them, although they pay no attention to sounds when at a short distance. The general time of rest is during the daylight, in which they appear listless and inactive; but the night no sooner sets in than all their faculties are awakened; they commence their gambols, and continue in unceasing and rapid motion until the morning. While

hunting for food, they are mute, but when in captivity or irritated, they utter a short growl, like that of a young puppy. It is a singular fact that their bark is so undulated as to give an idea that the animal is at a distance, although at the very moment he lies at your feet. Although the rage of a newly caught fox is quite ungovernable, yet it very rarely happened that on two being put together they quarreled. A confinement of a few hours often sufficed to quiet these creatures; and some instances occurred of their being perfectly tame, although timid, from



THE ARCTIC FOX.

the first moment of their captivity. On the other hand, there were some which, after months of coaxing, never became more tractable. These, we supposed, were old ones.

“Their first impulse on receiving food is to hide it as soon as possible, even though suffering from hunger, and having no fellow prisoners of whose honesty they are doubtful. In this case snow is of great assistance, as being easily piled over their stores, and then forcibly pressed down by the nose. I frequently observed my dog-fox, when no snow was attainable, gather his chain into his mouth, and in that manner carefully coil it so as to hide the meat. On moving away, satisfied with his operations, he of course had drawn it after him again, and

sometimes with great patience repeated his labors five or six times, until in a passion he has been constrained to eat his food without its having been rendered luscious by previous concealment. Snow is the substitute for water to these creatures, and on a large lump being given to them, they break it in pieces with their feet, and roll on it with great delight. When the snow was slightly scattered on the decks, they did not lick it up, as dogs are accustomed to do, but by repeatedly pressing with their nose collected small lumps at its extremity, and then drew it into the mouth with the assistance of the tongue." In another passage, Captain Lyon, alluding to the above mentioned dog-fox, says, "He was small and not perfectly white; but his tameness was so remarkable that I could not afford to kill him, but confined him on deck in a small hutch with a scope of chain. The little animal astonished us very much by his extraordinary sagacity; for, during the first day, finding himself much tormented by being drawn out repeatedly by his chain, he at length, whenever he retreated to his hut, took this carefully up in his mouth, and drew it so completely after him that no one who valued his fingers would endeavor to take hold of the end attached to the staple."

The skins of both the white and the blue fox are important articles of commerce, but the blue variety, being much rarer than the white, is far more valuable, the price for it being six or seven times as much as that of the white.

CHAPTER XIII.

THE BEAR FAMILY.

We now come to the last group of Carnivora, and to a family which forms an extreme limit to the long series of which the dogs constitute the center, and the cats the opposite end. The bears, with which we have now to do, depart as widely from the dogs in one direction as the cats in the other; and their distance from the latter family is great indeed. The cats attain the perfection of quadrupedal form, while few animals are more clumsy and awkward looking than a Sloth bear. Cats walk, with an elegant and silent tread, on the very tips of their toes; bears shuffle along with a waddling, though often rapid gait, and with the whole sole of both fore and hind feet applied to the ground. Cats have a clean-cut, rounded face, with beautifully chiseled nostrils and thin lips; bears a long snout, almost like a pig's. The fur of cats is usually short, and brilliantly colored; that of bears long, shaggy and somber. Lastly, while the cats are almost exclusively flesh-eaters, many bears are strict vegetarians, or at most eat such matters as ants and honey, and only have recourse to meat when their favorite food cannot be had.

THE BROWN BEAR is the most common member of the whole family, and has been known from very early periods. It is found in many parts of Europe, and in a part of the Arctic regions of North America.

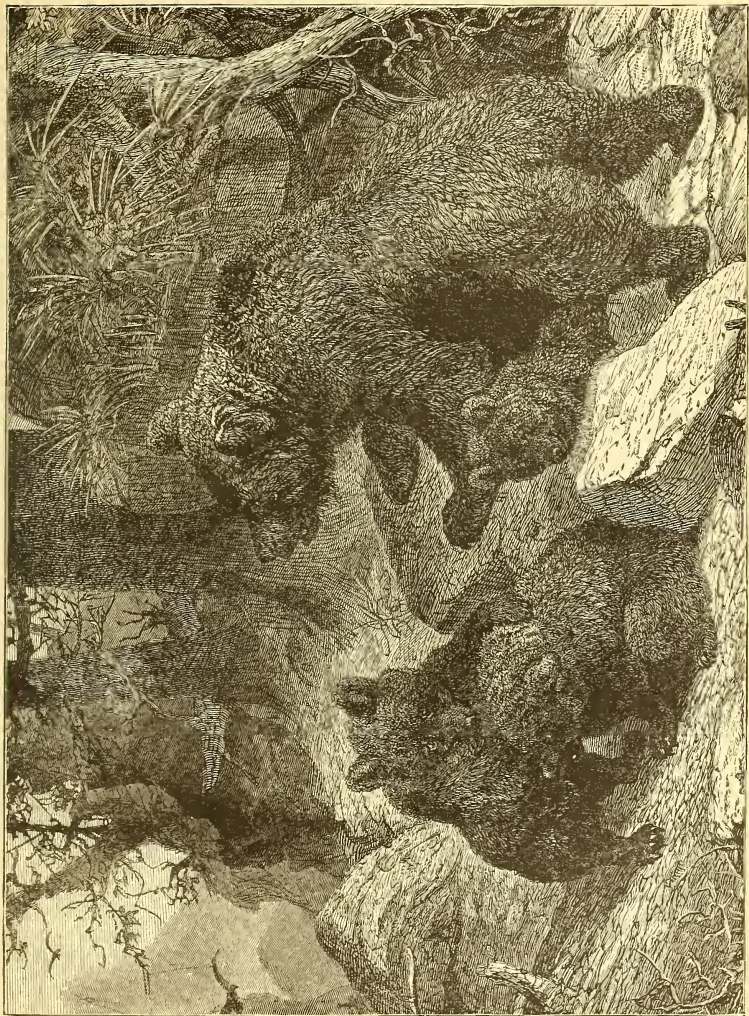
The Brown Bear is an awkward looking brute, with sprawling gait, heavy body, and no tail to speak of. It is about six feet long, and from about three or three and a half feet high at the shoulder. Its fur is longish, rather woolly, and of a dark brown hue. It lives a solitary life, and, like many of its kin, has the curious habit of *hibernating*. During the summer, when food is abundant, it lays in a very large stock of provisions, thereby becoming immensely fat. This operation being satisfactorily performed by the beginning of winter, the bear, finding that his foraging operations become more and more arduous, seeks out a resting place, such as a hollow tree or a cavern, or if these are not to be had makes a sort of rude nest for himself of branches and moss, and then goes into winter quarters and calmly settles down for a post-prandial slumber, which lasts until spring. He then emerges from his hiding place, very thin and weak—altogether a mere ghost of his former self—and immediately sets about repairing his losses by as many

heartly meals as he can possibly cram into the time at his disposal, or as the means at his command will allow.

The bear feeds chiefly on roots, berries, and other vegetables; it has also a fondness for ants, and a perfect passion for honey, in the capture of which he is often severely stung about the nose—almost his only vulnerable part—by the infuriated inhabitants of the comb. He also preys upon small quadrupeds, and sometimes—especially when fully adult—on larger ones. He is occasionally bold enough to attack the bull, but is, as often as not, worsted in the encounter. He rarely attacks man, unless provoked, and then, when his blood is up, is a most dangerous antagonist. His mode of attack is peculiarly his own. He does not fell his victim with a blow of his paw, like one of the larger cats, or seize it at once with his teeth like a dog, but “gives it the hug”—embraces it tightly, and with a great show of affection, with its powerful fore limbs, and continues the squeeze until the wretched animal is suffocated. The female bear, especially when her family is about, is a particularly ferocious creature. Her savageness is, indeed, proverbial; she is devoted to her cubs, and any one threatening their safety does so at his own peril. The bear is not only an affectionate mother, but is capable of a very firm friendship, as the following anecdote, related by Mr. Andersson, shows. He tells us that, amongst a collection of animals he possessed “were two brown bears—twins—somewhat more than a year old, and playful as kittens when together. Indeed, no greater punishment could be inflicted upon these beasts than to disunite them, for however short a time. Still, there was a marked contrast in their dispositions; one of them was good tempered and gentle as a lamb, while the other frequently exhibited signs of a sulky and treacherous character. Tempted by an offer for the purchase of the former of these animals, I consented, after much hesitation, to his being separated from his brother.

“It was long before I forgave myself this act. On the following day, on my proceeding, as usual, to inspect the collection, one of the keepers ran up to me, in the greatest haste, exclaiming, ‘Sir, I am glad you are come, for your bear has gone mad!’ He then told me that during the night the beast had destroyed his den, and was found in the morning roaming wild about the garden. Luckily, the keeper managed to seize him just as he was escaping into the country, and, with the help of several others, succeeded in shutting him up again. The bear, however, refused his food, and raved in so fearful a manner that, unless he could be quieted, it was clear he would do mischief.

“On my arrival at his den, I found the poor brute in a most furious state, tearing the wooden floors with his claws, and gnawing the barricaded front with his teeth. I had no sooner opened the door than he sprang furiously at me, and struck me repeated blows with his powerful paws. As, however, I had reared him from a cub, we had too often measured our strength together for me to fear him now; and I soon made him retreat into the corner of his prison, where he remained howling in the most heartrending manner. It was a most sickening



BROWN BEAR AND YOUNG.



BLACK BEAR.

of smallpox, and the bear from henceforth refused all food, and soon followed its little *protege* to the grave.

THE BLACK BEAR. This animal is distinguished from the common brown bear, not only by its black fur, but by its slender snout, more convex forehead, and smaller size; it rarely exceeds five feet in length. Its habits are more strictly vegetarian than those of the brown kind. "Its favorite food appears to be berries of various kinds, but when these are not to be procured, it preys upon roots, insects, fish, eggs, and such birds or quadrupeds as it can surprise. It does not eat animal food from choice; for when it has abundance of its favorite vegetable diet, it will pass the carcass of a deer without touching it."

It usually hibernates—at any rate, when able to obtain a sufficiently plentiful meal, or rather series of meals, before the commencement of winter. Sometimes, however, when food is scarce, bears will roam about the whole winter, never being able to obtain a sufficiently good feed to warrant their going, with any safety or comfort, into permanent winter quarters. With regard to the hibernating bears a very remarkable fact is mentioned by Sir J. Richardson, who is a most cautious and accurate writer, namely, that when the bear "comes abroad in the spring it is equally fat" (as it was at the commencement of winter), "though in a few days thereafter it becomes very lean."

sight to behold the poor creature, with his eyes bloodshot and protruding from the sockets, his mouth and chest white with foam, and his body crusted with dirt. I am not ashamed to confess that at one time I felt my own eyes moistened. Neither blows nor kind words were of any effect; they only served to irritate and infuriate him; and I saw clearly that the only remedy would be either to shoot him or to restore him to his brother's companionship. I chose the latter alternative; and the purchaser of the other bear, on being informed of the circumstance, consented to take this one also."

A more curious case is related by Brehm, who tells us of a little boy who crept one night for warmth and shelter into the cage of an extremely savage bear. The latter, instead of devouring the child, took him under its protection, kept him warm with the heat of its body, and allowed him to return every night to its cage. The poor boy soon died

The Indians have an unbounded reverence for the bear. When they kill one, they make exculpatory speeches to it, give it tobacco to smoke, call it their relation, grandmother, etc., and try in every possible way to appease its *manes*. They then cook and eat it with great gusto.



THE GRIZZLY BEAR. (One-eighteenth natural size.)

THE GRIZZLY BEAR. This animal, which inhabits the region of the Rocky Mountains as far south as Mexico, is the most savage member of the whole family, and is more dreaded by Indian and Canadian trappers than any other. It is stated to attain a length of nine feet and a weight of eight hundred pounds, so that it greatly exceeds the Brown and Black bears in size, and approaches in these respects to the Polar bear. Its strength is enormous. "It has been known to drag to a considerable distance the carcass of a buffalo, weighing about one

thousand pounds." Its size and strength, its immense teeth and claws, its tenacity of life and ferocious determination, render it a terrible antagonist to the bravest and coolest sportsman.

The grizzly bear varies in color; some specimens are of a dull brown, flecked with gray, while others are of a steely-gray; but the grizzled hairs are always conspicuous. The length of a full-grown male is about eight and one-half feet, and the girth the same, while the weight is about eight hundred pounds. The fore limbs are very powerful, the feet measuring eighteen inches, and the claws five inches; these claws are very sharp, and cut like chisels; the head is large, the tail very short and quite hidden in the fur. The gait of the grizzly is awkward and rolling; when young it can climb trees; fortunately, however, as it increases in size and weight, it loses this power, its claws being unable to sustain its unwieldy bulk.

The grizzly is the king of all our animals, and can destroy by blows from his armed paws even the powerful bison of the plains; wolves will not even touch the carcass of this dreaded monster, and it is said, stand in such awe, that they refrain from molesting deer that he has slain. Horses also require careful training before they can be taught to allow its hide to be placed on their backs.

Terrible stories are told of encounters with grizzlies. General Dodge says one of the most complete wrecks of humanity he ever witnessed was a huntsman for a party of California miners. He suddenly, one day, came face to face with a grizzly; the bear stood up on its hind legs, the man presented his rifle, and stood waiting the attack. The bear advanced, and took the muzzle of the rifle in its mouth; the man fired, and before he had time to think, was in the bear's clutches. "It was all over in a second," the narrator stated; "*I didn't feel any pain*, and I didn't know anything more till I come to next day." His companions found the man and the bear together, the latter dead with a bullet in the brain; the man had received only one stroke from each paw. One forepaw had passed over the shoulder, and a claw had hooked under the shoulder blade and torn it out entirely; the other forepaw tore all the flesh from the left side; a hind claw had torn open the abdomen, letting out the bowels, while the remaining hind paw had torn away the muscle of the right leg from groin to knee. The man recovered, and when he described the fight to the General, added, "Anybody can fight bear that wants to; I've had enough grizzly."

THE MALAYAN BEAR is found in the Malayan Peninsula, and in the adjacent islands of Borneo, Sumatra, and Java. "The fur is black, becoming brownish on the nose, and the chest is marked with a crescentic white mark, or in the Bornean variety of the species, by a heart-shaped, orange-colored patch. The claws are remarkably long. It lives chiefly on fruits and roots, apricots, walnuts, apples, currants, etc., and in winter chiefly feeds on various acorns, climbing the oak trees and breaking down the branches. * * * They are very fond of honey.



The Raccoon,



ow and then they will kill sheep, goats, etc., and are occasionally said to eat flesh.
* * This bear has bad eyesight, but great power of smell, and if approached
n windward is sure to take alarm. A wounded bear will sometimes show fight,

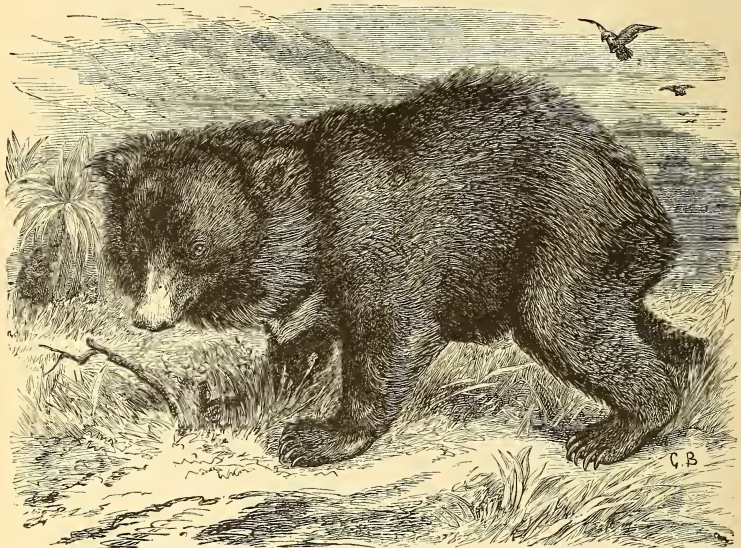


THE MALAYAN SUN BEAR. (*One-twelfth natural size.*)

but in general it tries to escape. It is said sometimes to roll itself into the form of a ball, and then roll down steep hills, if frightened or wounded. If met suddenly, when there is no means of escape, it will attack a man at once; and curious to say,

it always makes for the face, sometimes taking off most of the hairy scalp, and frightfully disfiguring the unfortunate sufferer. There are few villages in the interior where one or more individuals thus mutilated are not to be met with."

The Sun Bears are distinguished in menageries for their gift of walking about on their hind legs, which they do in a curiously human manner. This mode of progression seems sometimes to be adopted in the wild state. Both species are noticeable in their state of captivity for the antics they perform. The Himalayan



THE SLOTH BEAR. (*One-fourteenth natural size.*)

bears play with one another like two awkward boys, stand on their hind legs to wrestle, then fall down, and roll over and over, biting and hugging in the most laughable manner. The Malayan bear is even more amusing. When the keeper gives it one of the hard biscuits on which it is fed, it will sometimes lie down on its back, and hold the biscuit now with its fore paws, now with both fore and hind paws, swaying about all the time, and expressing its satisfaction by the most comical noises.

THE SLOTH BEAR. This curious and ungainly looking beast is another of the Indian bears, being found "throughout India and Ceylon, from Cape



POLAR BEAR AND WALRUS.

Comorin to the Ganges." It is distinguished by its extremely awkward shape, its long, shaggy hair, its long and very flexible snout and lower lip, all of which peculiarities combine to give it a remarkable and anything but a prepossessing appearance. The fur is mostly black, the muzzle and the tips of the feet being of a dirty white or a yellowish color, and the breast ornamented with a V-shaped or crescentic mark. It attains a length of between five and six feet.

The Sloth bear feeds on ants, honey, fruit, etc. "The power of suction in the bear, as well as of propelling wind from its mouth, is very great. It is by this means enabled to procure its common food of white ants and larvæ with ease. On arriving at an ant-hill, the bear scrapes away with the fore feet until he reaches the large combs at the bottom of the galleries. He then, with violent puffs, dissipates the dust and crumbled parts of the nest, and sucks out the inhabitants of the comb by such forcible inhalations as to be heard at two hundred yards' distance, or more. Large larvæ are in this way sucked out from great depths under the soil. When bears abound their vicinity may be readily known by numbers of these uprooted ants' nests and excavations, in which the marks of their claws are plainly visible. They occasionally rob birds' nests, and devour the eggs." The capture of ants is, however, by no means always devoid of inconvenient consequences for the ursine ravisher. The insects are as brave and ferocious as they are industrious, and their strong, sharp mandibles are capable of making a considerable impression upon the snout, lips, and eyelids of their huge enemy.

Like the Sun bear, the Sloth bear rarely attacks man unless provoked, but like it, is, when attacked, a most dangerous antagonist, always making for the face, and especially the eyes. Both in Ceylon and in India the natives have a very wholesome dread of the animal, and, indeed, fear his onslaught more than that of any other beast.

THE POLAR BEAR. The great white bear of the Arctic regions is the largest as well as one of the best known of the whole family. It is a gigantic animal, often attaining the length of nearly nine feet, and is proportionally strong and fierce. It is found over the whole of Greenland; but its numbers seem to be on the decrease. It is distinguished from other bears by its narrow head, its flat forehead in a line with the prolonged muzzle, its short ears, and long neck. "It is of a light creamy color, rarely pure white, except when young; hence the Scottish whalers call it the 'brounie,' or 'brownie,' and sometimes 'the farmer,' from its very agricultural appearance as it stalks leisurely over the furrowed fields of ice. Its principal food consists of seals, which it persecutes most indefatigably; but it is somewhat omnivorous in its diet, and will often clear an islet of eider duck eggs in the course of a few hours. I have seen it watch a seal for half a day, the seal continually escaping, just as the bear was about putting its foot on it, at the *atluk* (or escape hole) in the ice. Finally, it tried to circumvent its prey in another manner. It swam off to a distance, and when the seal was again half asleep at its

atluk, the bear swam under the ice, with a view to cut off its retreat. It failed, however, and the seal finally escaped. The rage of the animal was boundless; it roared hideously, tossing the snow in the air, and trotted off in a most indignant state of mind."



INTERIOR OF BEAR HOLE.

Being so fond of seal flesh, the polar bear often proves a great nuisance to seal hunters, whose occupation he naturally regards as a thoughtful catering for his wants. He is also glad of the whale carcasses often found floating in the Arctic seas; and travelers have seen as many as twenty bears busily discussing the huge body of a dead whalebone whale.

As the polar bear is able to obtain food all through the Arctic winter, there is not the same necessity, as in the case of the vegetable-eating bears, for hibernating. In fact, the males and young females roam about through the whole winter, and only the older females retire for the season. These—according to the Eskimo account, quoted by Captain Lyon—are very fat at the commencement of winter, and on the first fall of snow they lie down and allow themselves to be covered, or else dig a cave in a drift, and then go to sleep until the spring, when the cubs are born. By this time the animal's heat has melted the snow for a considerable distance, so that there is plenty of room for the young ones, who tumble about at their ease, and get fat at the expense of their parent, who, after her long abstinence, becomes very thin and weak. The whole family leave their abode of snow when the sun is strong enough to partially melt its roof.

The flesh of the polar bear is sometimes eaten by the Eskimo, but parts of it are said to be poisonous; this is especially the case with the liver. Scoresby relates that sailors who have incautiously partaken of the latter have been made very ill, and have died from its effects; and Kane, who wished to try for himself the truth of the statement, was upset by the first taste. The fat of this bear is used for burning; it has not the disagreeable smell of train oil.

THE RACCOON FAMILY.

This is a small family of curious bear-like animals, of small size, and differing a good deal in external appearance, although agreeing closely in all essential particulars. The four genera of the Raccoon family are found only in the New World; their northern limit is British Columbia, while southward they reach to Paraguay in the central part of South America.

THE RACCOON. Every visitor to any zoological gardens must have been struck with the curious habits of this animal. If any one gives it a bit of bun or biscuit, the Raccoon holds out both its hands for the morsel, and takes it almost as deftly as a monkey; it then waddles off to the little pond in the middle of its cage, dips its prize in the water, and when it is well soaked, proceeds to devour it. Except in the case of meat, which the raccoon seems to consider moist enough, the food always has to undergo this soaking process before it is thought to be fit to eat. It is from this habit that the raccoon derives its specific name of *lotor*, "the washer."

The raccoon is a decidedly handsome animal, about the size of a large and very corpulent cat. The hair is of a brown or grizzled color, long and furry, the tail bushy and beautifully ringed. Its body is large and somewhat unwieldy, its legs short, and its feet armed with strong claws, suitable for burrowing or climbing. The head is large, the cheeks prominent and black, and the snout sharp, light colored, and somewhat upturned—"tip-tilted, like the petal of a flower"—

giving the animal a curious inquisitive look, which is quite borne out by its character. It investigates every object within reach, animate or inanimate; the latter, if portable, it is fond of carrying off and carefully washing.

In the matter of diet it is omnivorous, and seems almost equally fond of meat, insects, fruit, or bread. It is said also to catch and eat oysters and crabs, and to confine itself, in the case of the birds it catches, to the brain and blood. It is a decidedly cunning animal, and in captivity, when allowed a certain amount of liberty, shows great talent in stealing fruit and killing fowls. When eating, it very usually sits up on its haunches, and holds the food with both fore paws.

The skin of the raccoon forms a valuable fur, and the animal is, consequently, much sought after throughout the whole of its range, which extends over a considerable portion of North America. It is usually caught in traps, but is also hunted by dogs. The hunt takes place at night, by the light of torches. The raccoon is pursued until he takes refuge up a tree, when the dogs form a circle round the trunk, and an experienced climber swarms up to the animal's refuge, pursues him to the end of a branch, and then, by shaking the branch, makes him fall to the ground, when the dogs have another turn. So active is the raccoon, and so dangerous when roused, that this operation often has to be repeated two or three times before he is finally caught.

The crab-eating raccoon is a South American species, differing from the foregoing chiefly in the shortness of its fur, and its consequently slender shape. It is

a far less handsome animal than its North American relative, which it resembles very closely both in structure and in habits.



THE RACCOON. (One-eighth natural size.)

THE COATI. The Coati is an animal of far less attractive appearance than the raccoon. The body is proportionally longer, the limbs are short, and the snout of a remarkable length, and very pig-like; in fact, the head of a coati reminds one strongly of

that of a small dark colored pig pulled out until the muzzle was two or three times its ordinary length. The snout is, moreover, very flexible, and the animal perpetually turns it about in various directions in a highly inquisitive way. The body



THE PANDA. (*Three-fourths natural size.*)

is somewhat over half a yard in length, the tail a little shorter. The fur is short and of a reddish or greyish-brown color, the muzzle and feet are black, the tail ringed with black and brownish yellow. Like the raccoon, it feeds upon fruits, insects, small birds, etc., and like it, is a good climber. In captivity they are in a constant state of activity, trotting about from one end of the cage to another, climbing over the tree-trunk placed in their prison, and turning their queer-looking snouts about ceaselessly. The geographical range of the Coati extends from Mexico in the north to Paraguay in the south.

THE PANDA is a really beautiful creature, rich red chestnut in color on the upper surface, jet black as to the lower surface, the limbs also black, the snout and the inside of the ears white, the tail bushy, reddish brown in color, and indistinctly ringed. The fact of the under surface being black while the upper is bright reddish-yellow is remarkable; with most animals, when there is any difference in color, it is the under surface which is lighter. The body and head are about half a yard long, the tail about a foot. The mode of progression is plantigrade, and the large curved claws are half retractile. The main anatomical characters are

decidedly ursine, as also are the habits. Mr. Bartlett, who has studied the Panda in captivity, states that, when drinking, it sucks up the fluid like a bear, instead of licking it up as a dog or cat would do. When offended it would rush at Mr. Bartlett, and strike at him with both feet, the body being raised like a bear's and the claws projecting. It also, when angry, made a sharp, spitting noise; and at other times it used a "weak squeaking call-note." It runs on level ground, in the same manner as the weasel and otter, with a sort of jumping gallop, the back being kept much arched.

The panda is found in the forests of the Eastern Himalayas, as well as in Eastern Tibet. It is sometimes known as the Wah, or the Red Bear-Cat.



THE GLUTTON.

THE WEASEL FAMILY. This family, including the weasels, martens, skunks, gluttons, otters, badgers, etc., is the most heterogeneous assemblage of all the carnivorous group. Its members have a very wide geographical distribution, being found in all parts of the world, except the West Indies, Madagascar, and the Australian region. They differ very much among themselves, but have, nevertheless, certain important characters in common. Many of these animals are looked upon as "vermin," but among them are some of the most valuable of the fur-producing animals, the ermine, sable, mink, and marten. These are all inhabitants of the

Northern hemisphere, and the business of trapping them is a very important branch of industry.

THE GLUTTON or wolverine, the largest of the weasel group, is found over the greater part of the northern regions, both of the Old and New Worlds, being especially abundant in Siberia and Kamstchatka. It attains a length of some three feet, four inches, ten inches of which go to the tail. It has a dog-like snout, a broad or rounded head, short ears, an arched back, a short, bushy tail, and long, dark brown or almost black fur. A band of pale reddish-brown runs along the sides, and unites with the corresponding band of the opposite side on the rump.

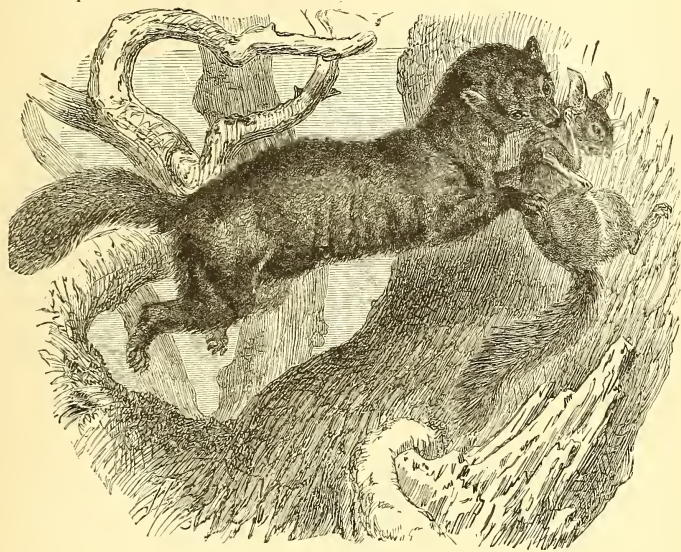
Besides its great strength, the wolverine is noted for its excessive cunning, and the two qualities combined give it a power of destructiveness of which one would hardly expect any animal below a schoolboy to be capable. One of its favorite tricks is to frequent the "Marten-roads"—that is, the lines of traps for catching martens—and one by one to demolish the traps, and carry off either the bait or the imprisoned animal. To make matters worse for the unlucky trapper, the glutton's experience and knowledge of traps in general is so great that he shows equal skill in avoiding those set for his own benefit, as in despoiling those meant for others; either he takes no notice of them, or carefully pulls them to pieces, and so gets the bait and outwits the hunter, without danger to himself. It is only in a trap constructed with the greatest care, and disguised so as to resemble a "cache," or store of hidden food, that the wary beast can be caught. Mr. Lockhart gives some really charming instances of his own experience in trying to get the better of his inveterate enemy. In one case he had carefully buried a lynx's skin in the snow, to the depth of some three feet; the snow was arranged so as to present a perfectly undisturbed appearance, and the lynx's entrails and blood were strewed about, and its carcass left, so as to take off the scent. On returning next morning to his beautifully made "cache," he found the carcass, etc., gone, but everything else apparently as he had left it. His joy was great, but premature; for on digging, no skin was to be found; the wolverine had stolen it during the night, but had added insult to injury by filling up the hole, and putting everything *in statu quo*.

One very extraordinary habit of the wolverine is shared by very few animals except man. It is stated that when it meets a man it will often, if it be to windward, approach within fifty or sixty yards, and then sitting calmly down on its haunches, will shade its eyes with one fore-paw, and gaze earnestly at its enemy. This very human action it will often repeat two or three times before attempting to flee.

THE MARTEN. The Pine Marten is perhaps the most pleasing of the weasel group, as far as appearance is concerned. Its long, lithe body attains a length of over half a yard; its tail is about a foot in length. The legs are short,

though not nearly so short as in the weasel's, and its paws are armed with short claws. The snout is sharp and beset at the sides with long vibrissæ. The skin is very beautiful, dark brown for the most part, lighter on the cheeks and snout, and on the throat and under side of the neck a light yellow.

The Pine Marten occurs over a considerable portion of Europe and Asia, and amongst other places in our own country, where, however, it is becoming rare. The finest specimens are said to come from Sweden.



THE SABLE. (One-fourth natural size)

This animal is essentially arboreal in its habits, inhabiting chiefly thick coniferous woods, whence its name of Pine Marten is derived. In the branches the female makes a nest of leaves or moss, and sometimes saves herself this trouble by ejecting squirrels or woodpeckers, and occupying the vacant dwellings. For its size it is, like all the *Mustelidæ*, extremely ferocious and strong. It attacks and kills fawns, notwithstanding their superior size; from these down to mice, nothing comes amiss to it, and nothing is safe from its attack.

THE AMERICAN SABLE, often called the marten, attains a length of eighteen inches, not including the tail, which measures about a foot more. Its

capture gives the trapper his staple occupation. It "is ordinarily captured in wooden traps of very simple construction made on the spot. The traps are a little inclosure of stakes or brush, in which the bait is placed upon a trigger, with a short upright stick, supporting a log of wood. The animal is shut off from the bait in any but the desired direction, and the log falls upon its victim with the slightest disturbance. A line of such traps, several to the mile, often extends many miles. The bait is any kind of meat, squirrel, piece of flesh, or bird's head. One of the greatest obstacles that the sable hunter has to contend with in many localities is the persistent destruction of his traps by the wolverine and pekan. * * * I have accounts from Hudson's Bay trappers of a sable road fifty miles long, containing 150 traps, every one of which was destroyed through the whole line twice—once by a wolf, once by the wolverine. When thirty miles of the same road were given up, the remaining forty traps were broken five or six times in succession by the latter animal."

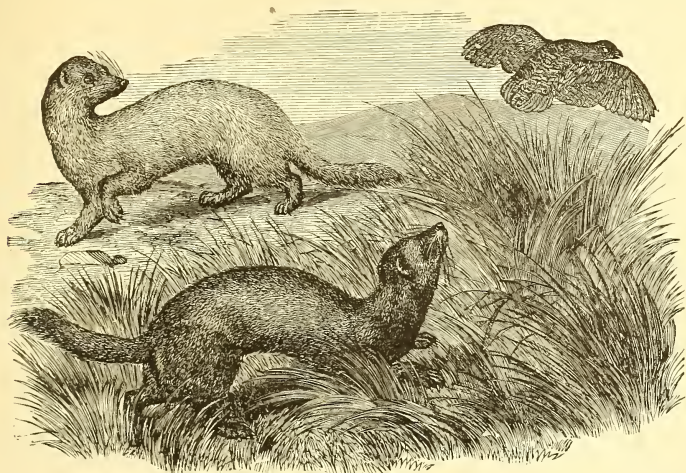
THE WEASEL, like the remaining members of the genus, are very often called "vermiform," and a better name could scarcely be applied to them, for anything more worm like could hardly be imagined in a hairy quadruped. The legs are extremely short in relation to the body, which is attenuated in the highest degree, and almost regularly cylindrical from one end to the other. Then the neck is of most disproportionate length, and carries the head out so far, that the fore legs appear as if placed quite at the hind end of the chest, instead of in the front of it. The head passes almost insensibly into the neck, and the neck into the body. The head is flattened, and bears little glittering savage-looking eyes, and small rounded ears. The length from snout to root of tail does not exceed eight inches. The tail is about two inches long. The fur is light reddish brown above, and white below; in northern latitudes the brown parts assume a much lighter color in winter, so that the weasel undergoes a change of coat similar to, but less



THE WEASEL.

extensive than, that undergone by the ermine.

The weasel is a good climber, and makes use of his skill in this accomplishment to prey upon birds, their eggs, and young. Rats and mice are, perhaps, its staple food. Of these it makes great havoc, and is therefore a useful hanger-on to the farmyard, notwithstanding its occasional depredations in the hen-roost. When it catches a mouse or



THE POLE CAT. (*One-sixth natural size.*) THE FERRET. (*One-eighth natural size.*)

rat, it gives it one bite on the back of the head, piercing the most vulnerable part of the brain, and killing it instantly. Professor Thomas Bell says: "I have observed that when a weasel seizes a small animal, at the instant that the fatal bite is inflicted, it throws its long, lithe body over its prey, so as to secure it should the first bite fail, an accident, however, which I have never observed when a mouse has been the victim. The power which the weasel has of bending the head at right angles with the long and flexible, though powerful neck, gives it a great advantage in this mode of seizing and killing its smaller prey." The first part eaten is usually the brain. The stories of the weasel's blood-sucking propensities are probably false, or at any rate grossly exaggerated.

The weasel will pursue its prey over fields, in trees, in subterranean burrows, or across water. Like many of the wild cats, it kills far more than is necessary for its support, and in pursuance of its favorite occupation of slaughter shows an unequalled courage and pertinacity. Its power of keeping its presence of mind under very trying circumstances is well shown in the following anecdote related by Bell: A gentleman, "while riding over his grounds, saw at a short distance from him a kite pounce on some object on the ground, and rise with it in his talons. In a few moments, however, the kite began to show signs of great uneasiness, rising rapidly in the air, or as quickly falling, and wheeling irregularly round, while it was evidently endeavoring to force some obnoxious thing from it with its

feet. After a sharp but short contest, the kite fell suddenly to the earth, not far from where Mr. Pindar was intently watching the manœuvre. He instantly rode up to the spot, when a weasel ran away from the kite, apparently unhurt, leaving the bird dead, with a hole eaten through the skin under the wing, and the large bloodvessels of the part cut through."

THE POLE CAT. In form this animal does not differ very markedly from the marten, except for the fact that its head is broader, its snout blunter, and its tail very much shorter; the latter being about five and a half inches, while the head and body together are nearly a foot and a half long. The neck is considerably shorter, and the body stouter than in the weasel and stoat. The fur is made up of hairs of two kinds, the shorter woolly and of a yellowish color, the longer black or brownish black and shining. One of its most marked characters is its horrible stench. This is produced, like the scent of the civet, in a pair of glands near the root of the tail, which secrete a yellowish creamy substance of the most fetid character.

The pole cat is perhaps more destructive than the other Mustelidæ, and is certainly a far greater plague to the farmer. Its ravages among rabbits, hares, and partridges is immense, and if once it gets unobserved into a poultry yard, the fate of a very considerable number of the inmates is sealed, as it possesses in a high degree the family love of slaughter for slaughter's sake. It has been known to kill as many as sixteen turkeys in a single night; and indeed, it seems a point of honor with this bloodthirsty little creature to kill everything it can overpower, and to leave no survivors on its battlefields. It has, too, an unfortunate liking for eggs, as well as for game and poultry, and in this way alone does great harm to preserves. There are also many accounts of its fondness for fish. Bell also quotes an instance in which a female pole cat was pursued to her nest, and was found to have laid up, in a side hole, a store of food, consisting of forty frogs and two toads, all of which she had skilfully "pithed," that is, bitten through the brain, so that, although retaining a certain amount of vitality, they were effectually prevented from running away!

The pole cat is found throughout Northern Europe, not extending southward into the warmer parts of the continent, but being quite at home in snow-covered regions. It is essentially, like the marten, a sub-arctic and temperate animal.

THE FERRET is of African origin. It shows its southern nature by being, unlike the pole cat, unable to endure great cold; even a mild winter is enough to kill it if not properly housed. It is an interesting animal, from the fact that it is a true breeding albino, having the white fur and pink eyes of that peculiar "sport." It is a little smaller than the pole cat, with which it will breed with perfect readiness, producing hybrids intermediate in character between the two parent species.

Ferrets are much used, both in this country and England, chiefly for killing rats and for driving rabbits out of their burrows. For the latter function the ferret is muzzled, to prevent its killing the rabbit in the burrow; the latter is either netted or killed immediately, as soon as it is driven out. The ferret is also frequently employed to kill fowls for the table. Its particularly neat method of slaughtering by one bite in the neck is much admired by ferret-fanciers, who make quite a pet of the animal. It, however, never shows the slightest affection for its master, and has usually to be confined.



THE RATEL.

THE MINK. This important fur-producing animal is found in the northern part of both hemispheres under various specific forms, the most important of which are the European mink and the American mink. It shows a certain resemblance to the marten in its larger and stouter body, which attains a length of from fifteen to eighteen inches, the tail being about seven or eight inches long, and bushy at the tip. Like most of its allies, it has two kinds of fur—"a soft, matted, under fur, mixed with long, stiff, lustrous hairs." The color varies from dull yellowish-brown to dark chocolate-brown; the upper lip is usually white in the European, dark in the American species. The scent-glands are well developed, and their secretion is second only in offensiveness to that of the skunk.

The habits of the mink differ altogether from those of the other species of the genus. "It is to the water what the other weasels are to the land, or the martens to the trees. It is as essentially aquatic in its habits as the otter, beaver, or muskrat, and spends, perhaps, more of its time in the water than it does on land. In adaptation to this mode of life, the pelage has that peculiar glossiness of the longer bristly hairs and felting of the close under fur which best resists the water." It feeds chiefly upon aquatic or amphibious animals, such as fish, frogs, crayfish, mollusks, and the like, but also preys largely on the smaller mammals. It is stated that it is not an indiscriminate slaughterer, but kills only what is necessary for its actual wants.

THE RATEL. This animal, sometimes known as the Honey Badger, is one of the exceptional animals whose color is lighter above than below. Its stiff, wiry hair is ashy-grey on the upper surface, while on the under surface, the muzzle, limbs, and tail are black. The line of demarcation between the grey and black is so sharp, that the animal has the appearance of being really black, but covered, as to its back, with a grey cloak. It is about three-quarters of a yard long, the tail taking up about a sixth of the length. In the matter of teeth it is interesting, as its molars are reduced to one on each side in each jaw; a reduction equal to that found in the cats. It is said to live largely on bees, and to show a great amount of skill in tracking to their nest the insects which it observes on the wing. Sparrman states that it seats itself on a hillock to look out for the bees, and shades its eyes with one fore paw against the rays of the setting sun. It is a stupid animal, very sleepy during the day, and issuing from its burrows at sunset to seek for the birds, tortoises, insects and worms on which it feeds. It is very tenacious of life, and is well protected from attacks by the thickness and looseness of its skin, and the thick subcutaneous layer of fat. It also possesses an additional means, if not of defense, at least of offense, in its tail glands, the secretion of which is very strong, and pungent as to its odor. It is still further advantaged by its burrowing powers; it will scratch up a hole and disappear into it in an incredibly short space of time.

The ratels in captivity exhibit a remarkable peculiarity. We have often watched one of them run round and round his cage in the usual purposeless manner of captive animals, but with this peculiarity—when he reached a particular corner of the den, he quietly and without effort, turned over head and heels, and then went on again. On one occasion, after he had been doing this with great regularity for some rounds, he seemed to become abstracted, and passed the usual spot without the somersault. When, however, he had proceeded a few paces, he recollected himself, stopped for a moment, returned to the exact place, turned over as usual, and proceeded on his way.

THE EUROPEAN BADGER is a heavy and somewhat clumsy animal, long and stout-bodied, and short-legged, with a tapering and mobile snout, and a short,



scrubby tail. The long hair is of three colors, black, white and reddish, the mingling of the three producing a varying grey hue. The head is white, except for a black band on each side, which commences a little behind the nose, and extends backward, including the eye and ear, the tip of the latter being, however, white. The lower parts of the body and the legs are black, the tail grey. The length of the body from snout to root of tail is about two feet three inches; that of the tail, seven inches and a half.

It is fond of retired places, such as sheltered woods, and in them it makes for itself a large burrow of earth "which has but a single entrance from without, but afterward divides into different chambers, and terminates in a round apartment at the bottom, which is well lined with dry grass and hay." The badger is consequently a very skillful digger, and for this purpose is possessed of strong curved claws. Its diet is completely mixed; it eats roots, fruit, eggs, small mammals, frogs, insects, etc. It is quite susceptible of domestication, and is said to show a vast amount of affection and good temper. As to its habits, we cannot do better than to quote an excellent account of some half-domesticated badgers given by Mr. Alfred Ellis: "About ten years since, the badger was established here, but it was not until the third attempt that my efforts prospered. The badgers then introduced, or their successors, have bred every year, and as not more than one pair remain in permanent occupation it is probable that there are many more of these animals in this country than is generally supposed; but their shyness, their color, and the short time they require to obtain their food, and the recesses of the woods in which they delight to dwell, make it no easy task to study their life and habits. The deep earth in which our badgers live is only fifty yards from the window at which I write. The building of this house two years ago did not disturb them, and they have shown an increasing confidence and trust. The badger breeds later than the fox, and it was the middle of March this year before the preparations for the coming family were made. These consisted in cleaning out the winter bed, and replacing it by a quantity of dry fern and grass, so great that it would seem impossible the earth could receive it. In June the first young badger appeared at the mouth of the earth, and was soon followed by three others, and then by their mother. After this, they continued to show every evening, and soon learned to take the food prepared for them. The young are now almost full grown, and, forgetting their natural timidity, will feed so near that I have placed my hand on the back of one of them. The old ones are more wary, but often feed with their family, though at a more cautious distance. Their hearing and sense are most acute, and it is curious to see them watch, with lifted head and ears erect, then, if all is quiet, search the ground for a raisin or a date. But the least strange sight or sound alarms them, and they rush headlong to earth with amazing speed.

"The badger, like the bear, treads upon the whole heel, and its walk closely resembles that animal. They caress each other in the same grotesque manner while they gambol and play, and at times they utter a cry so loud as to startle any

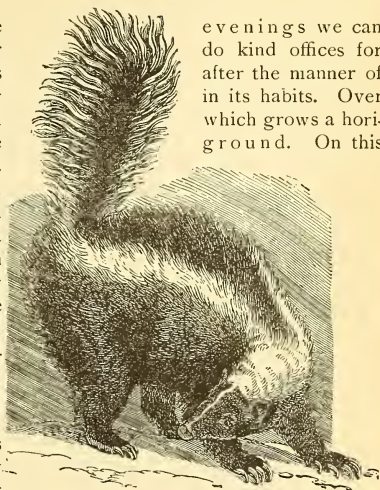
one ignorant of its source. On fine watch them dress their fur-like coats, or each other, and search for parasites monkeys. No creature is more cleanly their earth hangs a birch tree, from zontal bough eighteen inches from the they scrape their feet in dirty weather.

"As the winter approaches, the old bedding is replaced by dry fern and grass, raked together by their powerful claws. This is often left to wither in little heaps till dry enough for their purpose. Partially concealed, I have watched a badger gathering fern and using a force in its collection quite surprising."

THE AMERICAN BADGER.

The distinction between this species and the European badger consists chiefly in the shorter and more hairy character of the snout, and in the fact that the body is of a uniform whitish hue, sometimes shaded with grey or tawny. The body and head together are about twenty-four inches long, the tail six inches. It is found throughout the greater part of North America.

In its shyness, its general mode of life, and its habits, it differs but slightly from the common badger. Although in many parts it is so numerous that its burrows form a very serious obstacle to the traveler, yet it is a comparatively rare thing to see a specimen, so immediately does it retire to its strongholds on the first intimation of man's approach. It can, however, be trapped without much difficulty, and thousands are caught in this way every year. Dr. Coues quotes an interesting account of the habits of a captive badger. He says: "In running, his fore feet crossed each other, and his body nearly touched the ground. The heel did not press on the ground like that of the bear, but was only slightly elevated above it. * * * We have never seen any animal that could exceed him in digging. He would fall to work with his strong feet and long nails, and in a minute bury himself in the earth, and would very soon advance to the end of a chain ten feet in length. In digging, the hind as well as the fore feet were at work, the latter for the purpose of excavating, and the former (like paddles) for expelling the earth out of the hole; and nothing seemed to delight him more than burrowing in the ground. He seemed never to become weary of this kind of amusement; and when he had advanced to the end of his chain he would return and commence



THE SKUNK.

evenings we can do kind offices for after the manner of in its habits. Over which grows a horizontal ground. On this

a fresh gallery near the mouth of his first hole. Thus he would be occupied for hours, and it has been necessary to drag him away by main force."

THE COMMON SKUNK. This notorious American species is a stoutly-built animal, with short legs, a long conical head with a truncated snout, and a long bushy tail. The general color of the fur is black, or nearly so, but on the forehead there is a white streak, and on the neck a white patch, from which two broad bands of the same hue proceed backward along the upper surface of the body. The length from tip of snout to root of tail is something over a foot: the tail itself is less than a foot in length. The general appearance of the animal is decidedly badger-like; it has, in fact, a good deal of resemblance. It occurs throughout the whole of the temperate portion of North America.

We have mentioned that several of the weasel family enjoy the distinction of being able to eject a foul smelling fluid from glands at the root of the tail. In this accomplishment the skunk is the undoubted chief. It can eject its perfume to a considerable distance, and with unerring aim; and the smell! The "odor of mingled guano and pole cat," is simply nothing in comparison with the horrible stench emitted by this little animal. It is so durable, that the spot where a skunk has been killed will often retain the scent for days, or even weeks; indeed, Audubon relates that at one place where a skunk had been killed in the autumn, the odor was quite perceptible in the following spring after the snow had melted. Clothes defiled with the secretion cannot be thoroughly cleansed by any ordinary means; for even if the scent seems to have disappeared, it will make itself evident every time the wearer goes near a fire, or into the sun. Notwithstanding this, furriers have found out a way for effectually purifying skunk-skins, which are now a good deal used as furs.

THE COMMON OTTER. We now come to the most thoroughly aquatic of the sub-family of otters, animals which, although quite capable of active and unembarrassed movement on land, are yet thoroughly at home only in the water. In accordance with this mode of life, the toes are webbed, and provided with very short claws, and the tail is long, tapering, and flattened, so as to serve the precise purpose of the corresponding appendage in a fish. The length of the head and body is about two feet, that of the tail, one foot five inches. The fur is of a soft brown color, becoming lighter on the under side of the throat and the breast, and consists of long, coarse, shining hairs, with a short under fur of fine texture, well calculated to preserve equality of temperature as the animal resorts alternately to land or water. The skull is greatly elongated, and flattened from above downward; the facial part of it is small, as compared with the brain-containing or cranial part. The region of the skull between the eyes is very narrow, and its floor is wide and thin. In all these points, save the first mentioned, the skull of the otter approaches that of the seal.



THE OTTER.

The habits of the otter are so entirely aquatic, that in the good old times it was thought to be a sort of cross between a beast and a fish, just as the bat was thought to be intermediate between a beast and a bird.

The movements of the otters in water are marvelous. They swim about in families, performing the most astonishing pranks, from mere exuberance of spirits and excess of energy. The otter makes a sort of nest in hollows in the banks of the river in which it lives, but does not, as is sometimes stated, construct complicated burrows; its claws, indeed, are too weak for any such work. It usually confines itself to rivers, but is sometimes found on the seashore.

Otters are quite capable of domestication, and may be taught to catch fish for their masters. For this purpose they must be caught young, and gradually brought to live upon bread and milk. When this end is attained they are taught to fetch and carry, like a dog—first sticks, etc., then a stuffed fish, then a dead one. When this part of their education is perfect, and they make no attempt to mangle the fish given to them, they are sent into the water to catch living fish. Otters are trained for this purpose in India, and also in China, where they are used by the fishermen of the Yang-tse-kiang. Mr. J. Thompson says: "We noticed men fishing with trained otters in this part of the river. There were a number of boats, and each boat was furnished with an otter tied to a cord. The animal was thrust into the water, and remained there until it had caught a fish; then it was hauled up, and the fisherman, placing his foot upon its tail, stamped vigorously until it had dropped its finny prey."

There is one peculiar habit of the Canadian otter which is worthy of mention. "Their favorite sport is sliding, and for this purpose in winter the highest ridge of snow is selected, to the top of which the otters scramble, when, lying on the belly, with the fore feet backward, they give themselves an impulse with their hind legs, and swiftly glide head foremost down the declivity, sometimes for the distance of twenty yards. This sport they continue apparently with the keenest enjoyment until fatigue or hunger induces them to desist."

THE SEA OTTER. This interesting animal differs in many important respects from the common otter, and in all such points shows an approximation to the structure of the seals. It is a large animal, about three feet long, not counting the tail, which is about a foot more. Its fur is dark brown, both on the upper and lower surfaces, and presents a frosted or silvered appearance, owing to the fact that the long, stiff hairs, which differ greatly from those of the under fur, are grey or colorless at the tip. The head is very short, the snout naked; the eyes extremely small, and placed low down on the sides of the head, and the whiskers are short, but stout and stiff, and mostly directed downward; altogether there is something very seal-like about the face. The fore limbs and feet are small, the paws rather cat-like in their rounded form, and the claws are quite hidden by the hair. The hind feet, on the other hand, are flat and expanded, being no less

than six inches long by four broad, and webbed like a duck's feet, or a seal's flippers; they differ, however, from the seal's, in the fact that the toes increase in length from the inner to the outer side; both above and below they are covered with dense fur, which quite hides the short, stout claws.

The Sea Otter is found in the North Pacific, chiefly in the regions of Kamstchatka and Alaska, and extends as far south as California.

Like the seal, the Sea Otter is gregarious, being often found "in bands numbering from fifty up to hundreds. When in rapid movement they make alternate undulating leaps out of the water, plunging again as do seals and porpoises. When in a state of quietude, they are much of the time on their backs. They are frequently seen in this posture, with the hind flippers extended, as if catching the breeze to sail or drift before it. They live on clams, as well as crabs and other species of Crustacea; sometimes small fish. When the otter descends and brings up any article of food, it instantly resumes its habitual attitude on the back to devour it. On sunny days, when looking, it sometimes shades its eyes with one fore paw, much in the same manner as a person does with the hand." This curious habit, as we have seen, is adopted also by the glutton. The supine position is so habitual that the females actually sleep in the water on their backs, with the young ones clasped between their fore paws. While in this position, too, the otter will toss a piece of seaweed backward and forward from paw to paw, like a ball, and the mother play with her offspring for hours together.

The fur is very valuable, and the animal is consequently hunted regularly; so regularly, that there is every possibility of the species becoming speedily extinct unless some check is put upon the chase.* For taking some action in the matter, there is the further reason that the natives of the Aleutian Isles, the chief resort of the animal, are dependent on its hunting for their subsistence, and it has been shown that the people have diminished in numbers, coincidentally with the otters.

CHAPTER XIV.

THE AQUATIC OR MARINE CARNIVORA.

The walrus, the sea lions, and the seals, collectively termed the Pinnipedia, constitute the second well marked group or sub-order of the Carnivora. They are truly inhabitants of the high seas, the land being to them only an occasional resort, when procreation or other causes induce short visits, or temporary residence thereon. In the previous chapters it has been noted that certain of the so-called land Carnivora, the white polar bear, or the common otter, for example, take freely to the water, and even subsist on finny and other prey derived therefrom, but nevertheless, as a rule, such Carnivora only are semi-aquatic. The one notable instance to the contrary is the sea otter, an animal seldom seen on land, though rarely met with far from rocky reefs and islets.

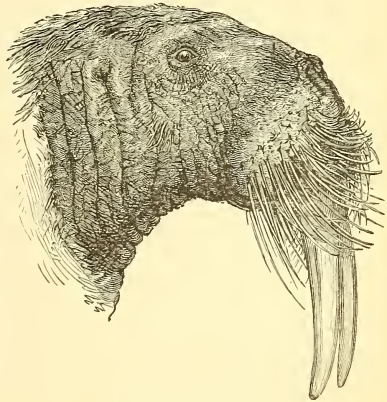
THE WALRUS, *or Morse.* So far as looks are concerned, scarcely a more uninviting fellow can be conceived than this animal. This ungainly creature, though so repellant in features, is in reality quiet and inoffensive, unless attacked or roused in love-time, when woe betide those who measure his strength, especially if he reaches his native watery element. They are very gregarious, seldom being met with singly, but often in herds from a dozen to several hundreds, as Captain Cook long ago observed. They crowd up from the water on to the rocks or ice one after the other, grunting and bellowing. The first arrived is no sooner composed in sleeping trim, than a second comes prodding and poking with its blunt tusks, forcing room for itself, while the first is urged farther from the water; the second in turn is similarly treated by the third; and so on, until numbers will lie packed close, heads and tails resting against and on each other, in the most convenient and friendly manner possible. There they sleep and snore to their heart's content, but nevertheless, according to Elliott, keep guard in a singular fashion. Some one would seem to disturb another; then this fellow would raise his head listlessly, give a grunt and a poke to his nearest companion, who would rouse up a few minutes, also grunt, and pass the watchword to his neighbor, and so on through the herd, this disturbance always keeping some few on the alert. Danger announced, they scuttle pell-mell and topsy-turvy into the water.

Once in the sea, their sluggish deportment vanishes, and activity is the order of the day. Curiosity aroused, or attack threatened, as Lamont remarks, the herd keep near each other. One moment a crowd of grizzly heads and long, gleaming white tusks are above the waves; then follow snorting, and hasty breathing; immediately thereafter, a host of brown hemispherical backs, followed by pairs of flourishing hind flippers, and the lot have dived, again to appear at an interval, and the same performance be gone through. If one gets injured, or a young one is in danger, the host of walruses close round the boat, grunting, rearing and snorting, and if their wrath be roused, they rush simultaneously to the fight, and attack the boat. When a young sea horse is wounded, the parent becomes desperate, and fearlessly exposes herself, or seizes the youngster under her fore flipper, and makes off, or defends herself and progeny to the death. There is no security to the hunter on the ice, which the animal, in its fury, will break through, even when six inches thick.

The tusks vary from eight inches to two feet long, and may weigh from five to fifteen pounds; in the males they are generally supposed to be thicker and more divergent. These teeth continuously grow, and, as they wear away, their interior becomes filled with tooth bone.

Whatsoever their diet they thrive on it, and store up much fat, though less proportionally than seals. Like some of the sea-lions, they have the curious habit of swallowing stones, the economy of which is imperfectly understood. But there can be no doubt of the fact, or of another equally strange, that of their protracted fasts. During the autumn months the sea horses will muster in force on land, and quite lethargic there doze for days or weeks without tasting food, thus recalling the hibernation of the bear tribe. The walrus is infested with skin parasites and intestinal worms, and the pebble-swallowing habit is supposed to relieve the irritation of the latter.

Not infrequently a troop will be found sleeping bolt upright in the water, and so soundly that a boat can approach close to them before they awake. They can remain under water, some say an hour, before requiring to take breath, but the length of time doubtless depends on circumstances; and ordinarily, or when suddenly disturbed, barely a third of that time.



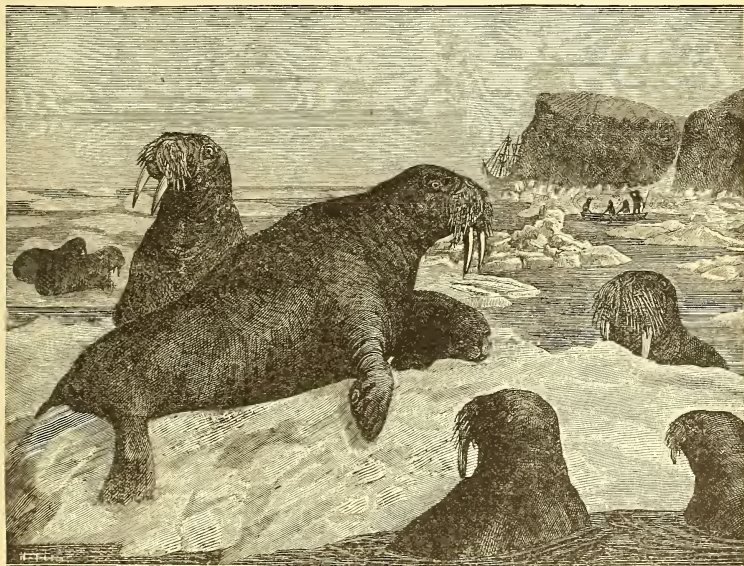
HEAD OF WALRUS.

The brain is largely developed, and has many sinuosities, so that in comparison with the dog or cat tribes the walrus ought to possess considerable intelligence. Acts displaying this quality, however, are only sparingly manifested in the young where domestication has been attempted.

A surgeon who accompanied one of the Dundee sealers relates how a juvenile walrus, being captured, became in a few days quite at home, and a general favorite among the crew. It quickly formed an acquaintance with an Eskimo dog which was on board. They ate out of the same dish, although "Jamie," the walrus, took good care always to secure the larger share. Whenever the dog retired to his barrel to sleep, "Jamie" bundled his own fat carcass right on the top of him, and as doggie rebelled against such an unwieldy bedfellow it usually ended in "Jamie" having it all to himself. The latter ate blubber, beef, pork, and almost everything given him, but his favorite dish was pea soup. Into this he would plunge his face, which procedure left him a most comical countenance. He seemed to know his name well, for even if fast asleep the instant any one cried out "Jamie!" he would rouse up, gaze anxiously about, and grunting in reply. But the most remarkable trait in his character was an intense hatred of solitude. When alone on deck he appeared a picture of misery, grunting and endeavoring to make his way down "tween deck" after the men; and on more than one occasion precipitated himself, to his peril, plump down the main hatchway, a height of about nine feet. If the cabin door were open he at once waddled in, laid himself before the stove, and went to sleep; but if the cabin were empty he would not remain a moment. Nothing made him so angry as to shake a piece of paper in his face, or to run suddenly away after caressing him; he then followed with open mouth in a great passion. When a whale had been killed, and the ship's crew busy on deck, "Jamie" was in his glory in the very midst of the men covered with grease and oil. At these times he was a perfect nuisance, hindering the men in their duties by continually poking his head first between one seaman's legs and then another's, and so on, meantime running a chance of being cut down in the "flensing" operations. He evinced no particular attachment to any one individual on board, liking all equally from cabin boy to captain. But he knew full well when he did anything wrong; for if a rope's end were shown him in a threatening manner, "Jamie" instantly would slink off, furtively casting a look over his shoulder to see if he were followed. After being on board four months he fell ill and died. The expression of this creature's countenance during his sickness was indicative of a great desire for sympathy from any one who came near. He took his medicine to the last, and when his remains were committed to the deep, regret was felt by all on board. At one time a considerable trade was devoted to walrus-hunting, but the diminishment of their numbers has practically reduced it to the lowest ebb. The tusks alone have now any commercial significance, but formerly walrus-hides were used for various purposes, such as machine-bands, carriage-springs, rigging of ships, and the like.

THE NORTHERN FUR SEAL. The habits and life history of this animal are probably more accurately known than those of any other of the eared seals. The males, when full grown, are between six and seven feet long, the females not being over four to four and one-half feet in length, from head to tail. The former will weigh between four to six hundred pounds, the latter scarcely reaching one hundred pounds, but often eighty or less.

From whatever reason, the adult males seem to leave the herd and betake



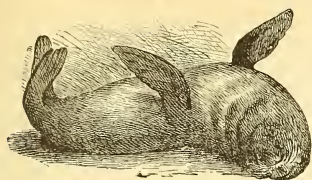
HERD OF WALRUSES.

themselves to the Pribyloff Islands in the spring months, when, in the first few days of May, they make their appearance, and in a suspicious, doubtful manner swim idly about, apparently reluctant to land. Soon, however, the older "bulls" approach the loose rocky shore, and commence to locate themselves. Each individual animal takes possession of a piece of ground about ten feet square, and as those fresh from the sea approach, there begins a series of battles as to which is to retain the ground first occupied. All during the month of May, and even to the first week of June, this terrible warfare proceeds incessantly, and

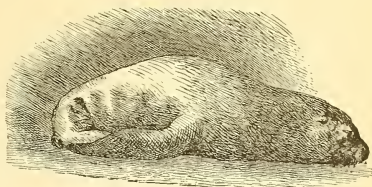
those next the water have to resist all comers, or themselves be forced farther back. Meantime, from the beginning till almost toward the end of June, the pregnant females make their appearance, first in small numbers, until the great body arrive in mass at the close of the month. Each male retains his position as best he can, while some of the females hesitate to land, calling out as if in search of some particular mate. The males coaxingly try to inveigle them ashore, and no sooner do the females approach than they are laid hold of, and a general warfare among the whole "rookery" ensues. The quiet, unoffending, small-sized females are subjected to dreadful usage. The strong and powerful males secure, where possible, from twelve to fifteen partners in their seraglio, but to retain these is indeed a most serious business. Day and night the males, who have never left their station for at least six weeks, have still to keep watch and ward over their accommodating spouses, the only sense of *meum* and *teum* being force. If the master of the harem dare for a moment to doze, down comes his more wide-awake neighbor from behind, to obtain by foul means what he cannot obtain by fair; or some slippery partner, desirous of change, seeks to escape the bondage of her lord. Then ensues internecine and domestic strife, in which all the neighboring males join, whenever there is a chance of capturing a coveted female. The poor wives suffer equally with their spouses—trampled, bitten, and dashed about. It results that he alone keeps who has the power to withstand his numerous assailants. Some of the females may have the fortune to get more comfortably settled than the others, which are bandied from one location to another, until most of the males obtain a few partners, the lucky ones in front securing and holding the greatest number, those behind being obliged to content themselves with half a dozen or thereabouts.

A few days only have elapsed, and matters settled down more quietly, when the females give birth each to a single one. The little fellows soon find their voice—a kind of bleat like a young lamb's—begin paddling about, and then suckle. They gorge themselves heartily with the rich creamy milk. But, strange to say, the mother seems remarkably indifferent to her offspring; and, if it stray beyond the limits of the family group, it may be abducted by the other seals for all that she cares.

About this time, many of the old males who have successfully held their position become exhausted, and now and again the less fortunate or single males behind, in stronger or fresher condition, drive the former from their posts, and the latter take their places. There is no wonder that exhaustion succeeds. Indeed, one of the most remarkable features in the history of the sea lions is that for two months and more these heroic males, that arrived fat and plump from their winter quarters, have held their positions on land against all comers, and this without tasting food, water, or almost sleep during this period. It seems scarcely credible that animals incessantly on the watch, excited and bearing the brunt of sanguinary contests, should be able to undergo starvation under such circum-

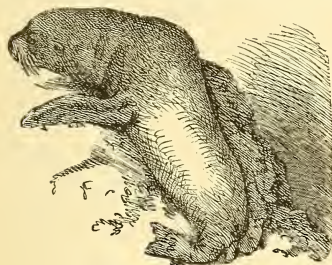


SEA LION DOZING ON HIS BACK.

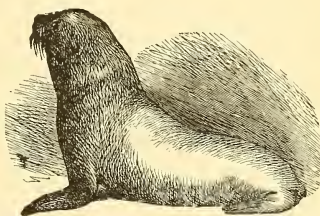


SEA LION FAST ASLEEP.

stances. This fact is almost unique in natural history; for, though hibernation for long periods is common to the bear, hedgehog, etc., their winter sleep is accompanied by cessation of all bodily exertion, and the functions of circulation, respiration, and digestion are comparatively at a standstill. In truth, how this



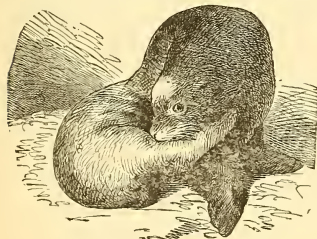
SEA LION CLIMBING.



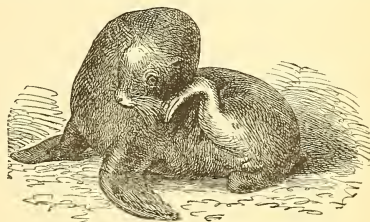
SEA LION IN WATCHFUL ATTITUDE.

and other species of *Otaria*, for the habit is not limited to the fur seal, endure such a lengthy abstinence, physiology fails to explain.

While the families, in groups as afore mentioned, with their dominant lords, hold the favorite grounds, the great mass of the younger members of the com-



SEA LION LICKING HIS LEG.



SEA LION SCRATCHING WITH HIND LEG.

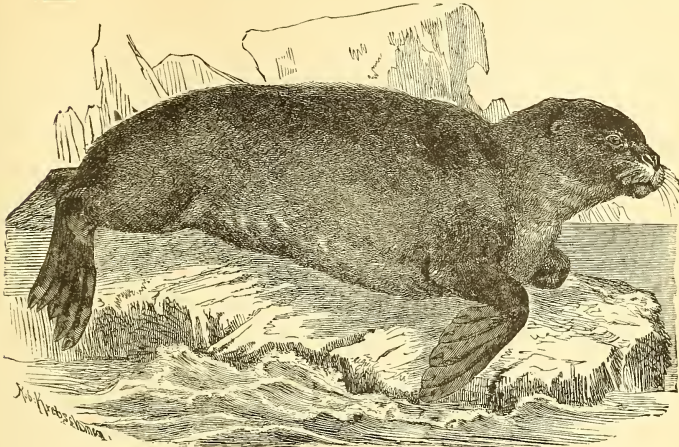
munity are not thoroughly excluded from the domains of the "rookery." By common consent, here and there long narrow lanes of neutral ground are left open from the beach upward, and along these continually pass to and fro the non-breeding animals. These go to the rear, where they pack themselves in a kind of general medley, their gregarious nature leading them there to swarm.

The young animals in the beginning of August begin to take to the water, with which they soon become familiar, frolicking about and returning like lazy dogs to sleep after their exertions. They grow fast, and gathering in squads swarm over the whole "rookery." The colony now begins to break up from the family parties first instituted. Some besport themselves, or possibly feed in the neighborhood; others range on the sandy and grassy uplands, in groups of hundreds to thousands, and seem to play and enjoy themselves in a rollicking, lively manner. Their gamboling is very good natured, they seldom quarreling. They appear to delight in dashing through the breakers, and "hauling up" on the surf-beaten shore. In dull, foggy weather, they crowd close together in myriads, and a bright, warm day sends them off quickly to the water, seemingly to avoid heat.

What they live on during all this period it is difficult to state, for the fish round the island appear to be driven off on the arrival of the sea lions. They, nevertheless, subsist and thrive. In the stomachs of most of the older animals several pounds' weight of pebbles are usually found.

The killing of these seals is quite a peculiar occupation of the islanders. After the breeding season, the hunters take advantage of the dull and foggy weather, and creep down between the herd and the water. Then suddenly rising and shouting together, they drive landward the affrighted animals, though many of course escape. Closing on them, they allow the females and the very old males by degrees to pass, and then drive the remainder at a slow rate toward the killing ground, some distance off. Watchers remain over night with them, and in the morning, when the seals have rested and cooled down, the work of slaughter begins. Squads of forty or fifty are separated, and the islanders then surround these in a body; the animals meantime huddling together and treading over each other's flippers, cannot well attack or defend themselves, and they are then clubbed by blows on the head. While this bloody process is going on, a number of the men dexterously skin the animals, and others look after the blubber, and such parts as are useful for food and other purposes.

THE PATAGONIAN SEA LION. It was this animal that attracted the attention of Captain Cook and his naturalist, Forster, both describing it. Apart from the historical connections attaching to this creature, inasmuch as many famous voyagers' names have been associated with it, in our own generation it is remarkable as that first taken alive to England. The individual in question was, by kindness and dint of training, taught to become quite a performer in its way,



THE FALKLAND ISLAND FUR SEAL.

mounting a ladder with perfect ease, and descending indifferently, head or tail foremost. It fired a small cannon, and went through several other performances indicative of the teachableness of its disposition and the successful assiduity of its trainer. So well known have its appearance and little tricks of mounting chairs, catching with open mouth fish thrown toward it, kissing its keeper, and so on, become, that it is needless to enter upon a detailed account of these matters. There is no doubt, however, that this animal, and others of different species, have manifested traits of brain power of a superior kind. One feature has struck all, namely its voracity, twenty-five pounds of fish a day being barely more than short commons. If one estimates this amount to each individual, namely, an equivalent of 7,000 pounds a year, and consider that there exist colonies of those animals more than a million in number, the wonder arises that the finny tribe is not exterminated in those spots inhabited by the seals

The success accompanying the above animal's exhibition led to the Zoological Society's sending Lecomte to the Falklands to procure more. Although he obtained a number, most met mishaps and died before reaching London. His account of their habits and nature corroborates the earlier observers. According to him, families range from six to twenty, a dozen being the average, while a herd would be composed of several families. Located in the islands and isthmuses, an old male guards as sentinel, and signals, by a growl, approaching danger. Between sleeping and procuring food, they pass their time, often lying huddled in a drowsy condition.

Captain Cook says he met with immense males, twelve or fourteen feet in length, and eight or ten in circumference. Such big customers now no longer exist, though the truth of what our circumnavigator asserts would seem to be substantiated by the fact of skulls of enormous size being found hither and thither, weather-worn, on the beach.

THE FALKLAND ISLAND FUR SEAL. The headquarters for the capture of this valuable species of commercial fur seal are the Falkland Isles, and the South Shetlands, within the Antarctic circle, but it is also found on the coast of South America. The best account of the habits of this species is that of Captain Weddell. When he visited the South Shetlands, so little did they apprehend danger from man, that they lay quietly by while their neighbors were killed and skinned. But, as he remarks, they soon acquired habits for counteracting danger, by placing themselves on rocks whence they precipitated themselves into the water. Their agility is very great, outstripping men running fast in pursuit. The absurd story of their throwing stones at their pursuers with their tails, Weddell accounts for by their awkward, trailing gait, and in an attempt to scamper, scattering rocky fragments hither and thither behind them. He mentions their exceeding disproportion of size, the males, as in other species, being the more bulky, the latter being six to seven feet long, the females seldom more than four feet, and often less. He computed the females at about twenty to one male. They assemble gregariously on the coast at different periods and in distinct classes. The young are born in December. At first they are black, a few weeks later become grey, and afterward, as they frequent the sea, moult and acquire their peculiar furry coats.

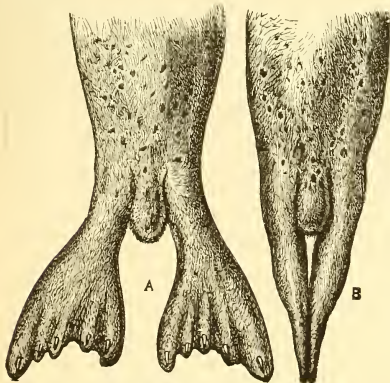
THE NEW ZEALAND FUR SEAL. During his second voyage of circumnavigation, Captain Cook cast anchor in Dusky Bay, New Zealand, and records that he saw great numbers of seals on the small rocks and islets in this neighborhood. Forster made careful notes thereon, besides his drawings. He says they are seals with ears, hands free, feet webbed on the under surface, naked between the fingers, hardly nailed. Gregarious in habits, they are timid, and fling themselves off the rocks into the sea at the approach of man; but they most powerfully resist when attacked, bite the weapons used against them, and even venture to assail the boats. They swim with such rapidity under water that a boat rowed by six strong men can scarcely keep up with them. Tenacious of life to a degree, a fractured skull did not dispatch them. The weight of the full grown is 220 pounds, cubs scarcely twelve pounds; the former are six or seven feet long, the latter barely two and a half. The hair is soft, black, with reddish grey tips and a delicate reddish under fur.

The young are black when wet, when dry, lighter below; individual hairs pale yellow at base with light yellow tips, and a dense under fur of the same tint.

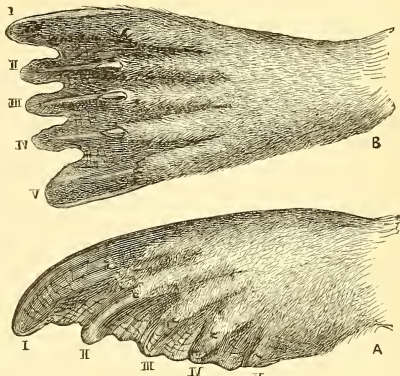
The older animals have hairs tipped with white. Round the mouth and ears are pale yellow. These seals are fast disappearing or retiring to the Southern Antarctic Ocean.

THE COMMON SEAL. This most familiar species of the group is as ludicrous in its gait on land as it is surpassingly elegant in its movements in water. It is of a yellowish grey color, spotted above with black and brown, so as to give a mottled appearance, while below it is of a whitish or silvery grey. Ordinarily the hairs are shining and stiff, the color being dependent somewhat on their being moist or dry; when the former, dark grey predominates. In length it varies from three to six feet, the head being about a tenth part. The roundish head has a short muzzle, prominent whiskers, and large expressive eyes.

Although as valuable as certain other forms hunted by the sealers, its numbers in the polar regions are comparatively smaller, so that it is not separately pursued by them, though the Greenlanders have a high appreciation of its worth.



HIND FLIPPERS OF RINGED SEAL.
A, opened out; B, closed.



LEFT FORE (A) AND HIND (B) FLIPPER OF NEW ZEALAND FUR SEAL.

THE GREENLAND, or Saddle-Back Seal. It is this species that forms one of the chief objects of chase, both in the Spitzbergen and Newfoundland seas. In habits it agrees with the ordinary seals, though said to be careless and stupid, and easily captured. It feeds on small fish, crustacea, and mollusca. The males and females differ in appearance, and the changes from the younger to the older stages are also very remarkable. Indeed, one may say scarcely two animals are alike.

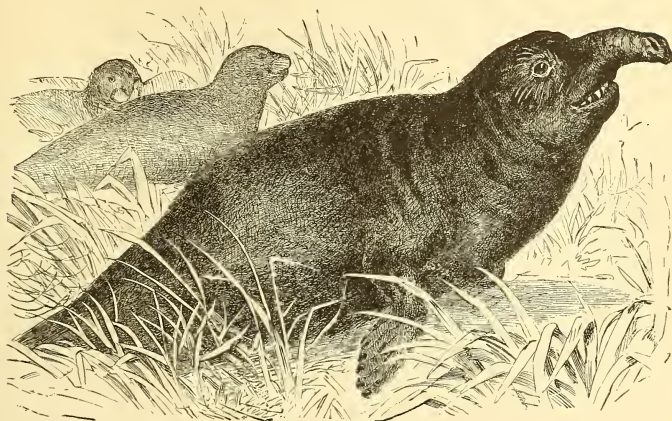
THE CRESTED SEAL. Named from the remarkable prominence of

the front upper part of the head, this is one of the largest and most powerful of the northern seals. Certainly it is the fiercest and most dangerous, as the Eskimo know to their cost in attacking it from their kayaks. It does not hesitate to return an assault, and the crest, it is said, affords some protection from wounds inflicted by the club. These brutes fight ferociously among themselves, and the roaring during such ice battles, in the still Arctic regions, is said to be audible



THE CRESTED SEAL.

four miles off. The so-called crest, hood, or bladder, is in reality nothing of the sort, but only a peculiar enlargement of the nasal passages, more particularly developed in the old animals of both sexes. From eight to twelve feet in length has been given as the limits of size it obtains. The young are pure white; when a year old they become greyish, and the hue deepens, becoming deep chestnut and black above, though the lighter shade is retained on the under parts; chiefly on the back are black spots and rings of white. The muzzle is hairy, and the hair on the rest of the body long, with thick soft under-wool. It visits Greenland in



THE ELEPHANT SEAL.

May and June, leaves in July, and again returns in August and September. This animal is one which the sealers hunt, it frequenting the outside of the ice packs.

THE ELEPHANT SEAL. In the young and females, the characteristic feature, or so-called proboscis, is deficient, but in the old males it extends quite a foot beyond the angle of the mouth, and hence the name of Elephant Seal. The females are nine or ten feet, the males fourteen, sixteen, and even twenty feet in length. The color varies with age from brown to leaden grey.

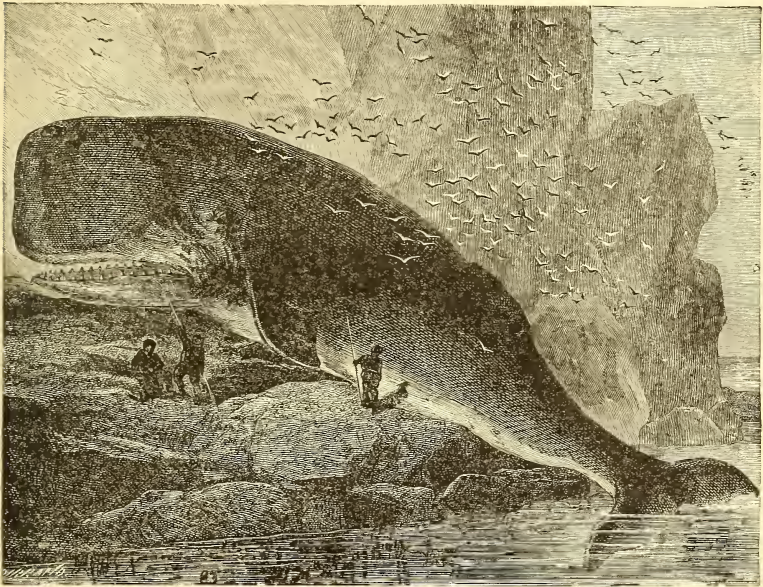
CHAPTER XV.

ORDER V—CETACEA—WHALES.

The whales form one of the most extraordinary groups of the Mammalia, for they are warm-blooded, air-breathers, and sucklers of their young, and are most strangely adapted for life in a watery element. Oddly enough the term "Fish" is still applied to them by the whalers, though they have nothing in common with these creatures, save a certain similitude in shape. The vulgar notion of a whale is an enormous creature with an extremely capacious mouth, but the fact is that many of the Cetacea are of relatively moderate dimensions, though doubtless, on the other hand, the magnitude of some is perfectly amazing. Thus, in size they are variable as a group, a range of from five or six feet (equal to the stature of man) to seventy or eighty feet giving sufficiently wide limits. With certain exceptions, notwithstanding length, an average-sized whale by no means conveys to the eye the same idea of vastness, say for instance, as does an Elephant. The reason is that most Cetaceans are of a club shape, the compact cylindrical body and long narrow, tapering tail reducing the idea of size. The head is in such continuity with the body that of neck there seems nothing. In some there are upright fleshy back fins; in others these are wanting. The gristly caudal fin is horizontal and not upright or rayed like a fish's. The body is smooth and devoid of hair. The eye is remarkably small and without eyelashes, and the ear orifice is so diminutive as to seem deficient. The head is either rounded, massive, or has a long snout. There are no hind limbs, and only in the enormous whalebone whales have the rudiments of any been found. Small pelvic bones, however, are present, embedded in the flesh at the setting on of the tail. The fore-limbs, which are ordinarily termed flippers, have the usual bones extremely broadened and flattened; the free part—equivalent to the hand—being encased in a rigid or stiff nailless membrane.

THE SPERM WHALE, or *Cachalot*. Next to the Greenland Whale the Cachalot is by far the most important animal of the whale tribe in a commercial point of view. A rare interest, moreover, is attached to it from the daring deeds and hairbreadth escapes of the whalers pursuing it, inasmuch as in certain cases it is among the fiercest of the Cetacea. At times it not only attacks

boats and their crews in pursuit of it, but there are also well-authenticated instances of ships themselves being assailed and sunk by this powerful monster of the deep. It attains a size varying from forty to seventy feet, the average of old males being about sixty feet, while the females are much smaller. It is black above, lighter on the sides, and silvery-grey on the belly parts. Its head is of enormous proportions, forming nearly half the bulk of the animal. The snout is



THE SPERM WHALE.

extraordinarily dilated and terminates abruptly; the upper jaw quite overhangs the lower, and the bones of the latter are united close together for a long distance, and are furnished with from twenty to thirty teeth on each side. Each tooth is conical and slightly curved, hollow at the base, but elsewhere it is dense and solid. When the lower jaw is closed the teeth fit into hollows in the upper lips, in this respect somewhat resembling what takes place in the crocodile's mouth; but besides the remarkable lower jaw, the Sperm Whale's skull rivets attention from the extensive basin-shaped spermaceti reservoir. The upper surface of the broad shoe-shaped skull has a large basin-like cavity, wherein in the soft parts the

material known as spermaceti is lodged. The blow-hole is single, and is situated quite in front. The throat is very large as compared with that of the Greenland whale. The Sperm whale is seldom found in inland waters, but is met with in all the oceans, from the Polar to the Antarctic, though it chiefly inhabits the tropical or sub-tropical seas.

Many thrilling stories are told of the capture of this whale, but space will not permit more than a passing notice. On the coast of Japan, in 1832, three boats pursued a whale all day long. By a dexterous move the animal was at last lanced, when it spouted blood, suddenly descended about forty fathoms, and as quickly rose and dashed the boat into the air into fragments. The men clung to the oars and broken wood, and, in spite of the vicinity of sharks and the whale itself, were saved by the other boats, the crews of which avenged themselves by ultimately killing the whale. Of fighting whales there are numbers of stories, that of one old male, familiarly known as "New Zealand Tom," being still traditionally recounted in the fore-castle. In 1804 the *Adonis* and several other ships simultaneously attacked the fellow, who destroyed some nine boats before breakfast, but in the end was captured, when a host of harpoons were found in its body. There can be no doubt that the Sperm whale is a migratory animal, though its migrations are by no means clearly understood. It is a gregarious creature, "schools" of a dozen to fifty or sixty being occasionally met with. At other times great fellows are found here and there on lonely pilgrimages, while still at other times a few together will be seen *en route* to fresh feeding grounds. Adult females, or those with young in their company, evince a strong affection for each other, and when one is killed or sustains injury, parents or companions hover about and even render assistance. The whalers take advantage of this trait, and often kill a number ere the others make off. When, however, a company of young male whales are found, and one is attacked, little love or interest in each other's welfare is manifested, every one rushing off helter-skelter in all directions, to the whalers' chagrin. The old "bulls," on the other hand, are more sedate and less easily frightened, and unless roused by injury to retaliate on their pursuers are more readily harpooned. The Sperm whale is easily known from all others, even at a great distance, from the regularity of its blowing and the manner in which it throws up a volume of vapor obliquely forward. It traverses the ocean surface in a steady, methodical manner, at the rate of four or five miles an hour, its great head or hump-like back occasionally appearing above water. It will remain on the surface from ten to fifteen minutes, and then will descend, staying below an hour or more, but the females and young remain up and descend at more frequent intervals. At times, instead of quietly swimming on the surface, they proceed more quickly by a kind of lounging motion, the head being thrust well out of the water, a mass of spray accompanying this mode of progression. Occasionally they spring headlong out of the sea, or violently beat the surface with their tails, or at other times dash about in a variety of attitudes. Sometimes they

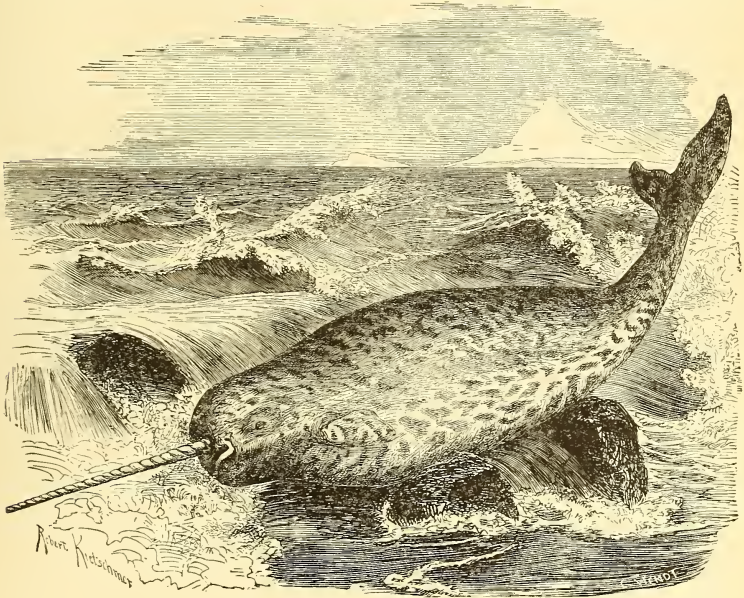
move their fins as feeling around for enemies, or throw their bodies awry, bringing the mouth well to the surface. It is pretty certain that cuttle-fish form a large proportion of their food, though there is reason to believe that they do not despise fish and other marine creatures. It is still a moot point how they feed, and to what use they put their teeth. Some assert that in the depths the under jaw is lowered, and the glistening pearly teeth fully shown; attracted by the latter, its prey approach and the trap is closed. Blindness at times supervenes. Still more curious are instances where the lower jaw is twisted like a shepherd's crook, and strange to say, notwithstanding this deformity, these whales seem fat and hearty—this fact giving rise to much speculation whether such malformation has arisen from fighting and distortion of the jaw in youth, or from other causes not yet ascertained. The Sperm whale has its enemies, the Thresher shark leaping on it, and attacking it from above, while the daring Killer Whale (*Orca*) assaults it from below. The female, it is said, breeds at all seasons, producing one, but occasionally two, at a time.

The double-bowed whale-boats are manned by six men, and when they approach the whale one steers aft with an oar while the harpooner plies his craft. No sooner struck than the rowers "back" away. Meanwhile the creature dives, carrying harpoon and line, or rolls rapidly round coiling the rope on its body. The other boats approach, and as it rises harpoons and lances are dexterously used, and as the blood escapes in volumes, spite of its vast efforts, the creature succumbs. Immediately after its death the boats are made fast to the carcass, and the ship reached as circumstances best permit. Secured alongside, a man descends, cuts a hole behind the head, inserts a hook, often under most dangerous conditions, especially if the sea is rough. The fat or blubber is cut by sharp spades in a long spiral strip, and pulleys applied, when these skin and blubber strips are thereupon hove on deck. The carcass afterward is rolled round and the opposite side similarly treated. The great head meantime is cut off, and floated astern until the trunk is deprived of its blubber. The head is then opened from above, and among the coarse fat and blubber of the forehead is a fluid oily matter, the spermaceti. This substance is handed up in bucketfuls, and preserved in casks. On its removal the wedge-shaped oily and fibrous head-piece, the "junk," is next secured; head and trunk are then sent adrift. Then follows the "trying out," that is, boiling the fatty masses and extracting the oil, which operation is done in furnaces, the scraps of fat mainly serving as fuel. Finally the oil and head matter are casked up, and a fresh lookout from the masthead is kept for more whales. The crow's nest is a large barrel on the crosstrees, where a watcher is stationed during the whole voyage. No sooner is a whale spied than the shout, "There she blows!" or "There she spouts!" is replied to from the deck by a hurried rush to the boats, for each seaman's kit and provisions are beforehand ready prepared in a bundle, and before many minutes, the hardy mariners are on their way toward their gigantic spoil. Sperm oil is exceedingly valuable.

THE PILOT WHALE is one of the best known whales that frequent the English coasts, great herds of hundreds having often been run ashore in the Shetlands, Orkneys, and even in the Frith of Forth. Adults average from sixteen to twenty-five feet in length, are of a jet-black color, but lighter or whitish on the abdomen. The body is cylindrical, tapering to the tail; the dorsal fin is high, placed at the middle of the back; the flippers are unusually long and narrow. The head is quite characteristic, having the form of a massive boss. When these whales are seen gamboling in the bays of our own northern coasts, the hardy fishermen start in their boats, and form a cordon seaward. Then by gunshots, shouts, splashing, and throwing stones, they drive them toward the shore; and as the animals madly plunge to shallower water, pressing through fear one over the other, the men dash into the water and begin havoc with harpoons, scythes, spears, picks, or spades—indeed, whatever weapon comes handiest. Thus numbers, from even fifty to as many as two hundred, fall an easy prey. Such an encounter took place in 1867 near Prestonpans on the Frith of Forth, when one whale wounded by harpoons struck seaward, hauling a boat and crew of twelve men nearly as far as Inchkeith ere it succumbed. There may be more than one species of this whale, widely distributed, but whether or not, their habits and general appearance have much in common.

THE NARWHAL, or *Sea-Unicorn*. Of all whales this is the most unique on account of its so-called horn, or rather tusk, or, still better, enormously developed canine tooth. Most museums contain examples of this extraordinary object, which seems like a solid rod of ivory, tapers from root to tip, has a kind of striated spiral surface, and is often from five to seven feet or more in length, thus being the longest tooth in the Mammalia. The adult animals vary from ten to sixteen feet long, and, like the Beluga, have a blunt short head, no dorsal fin, and very small flippers. It is essentially a northern form, inasmuch as it frequents the coasts of Greenland, Spitzbergen, and Siberia, though occasionally met with off Scandinavia and Britain. It travels in great herds, and Dr. R. Brown saw thousands in their summer migrations following tusk to tusk and tail to tail like a regiment of cavalry, and swimming with perfect, regular, undulating movements. These herds are of both sexes. The narwhals have grey backs, mottled with black, the sides and belly paling downward to white, and equally spotted with grey or darker tint. The females are more spotted than the males, the young are darker, but some animals are much paler than others. The crescentic blowhole externally is single. Occasionally they utter a gurgling noise. In the stomachs of captured narwhals, fish bones, crustaceans, mollusks, and cuttlefish remains have been found. They swim with great velocity, and are most active creatures. They dash and sport about apparently with much glee, and Scoresby says that in their playful moments they parry horns as if fencing. He suggests that the horn may be used for spearing fish, as he found a large flat skate in the stomach of one.

Others imagine that it may be for stirring up food from the bottom; but it has been very deftly remarked that the female would thus fare badly, seeing she is destitute of the tooth in question. Fabricius' view, that it was to keep the ice holes open during the winter, has a touch of truth in it, inasmuch as one among other instances has been recorded where it usefully supplied such a purpose. Dr. R. Brown mentions that in 1860 a Greenlander observed in a hole in the ice hun-



THE NARWHAL.

dreds of narwhals and white whales protruding their heads to breathe. It was likened to an Arctic Black Hole of Calcutta, so eager were the creatures pushing toward it. The natives gathered around, harpooned and shot the creatures by the dozen, though many were lost, such was the scramble.

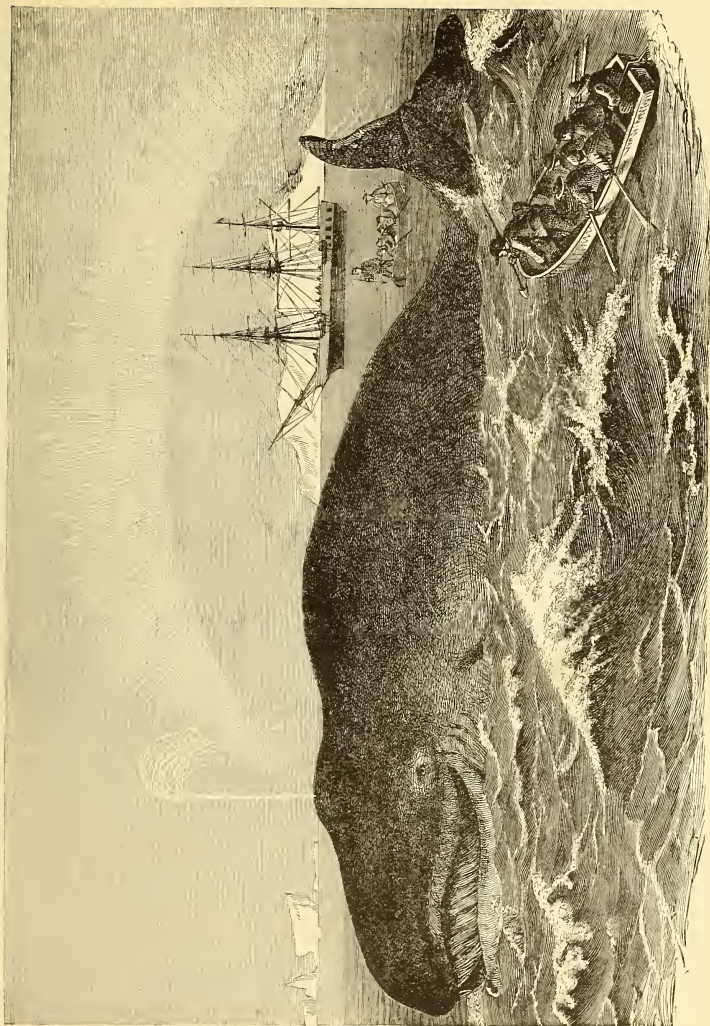
THE WHALEBONE WHALES.

These are distinguished from the Toothed whales by their great upper jaws being provided with baleen plates instead of teeth. Most people have seen a large

plate of whalebone, dark tinted or occasionally lighter, and one extremity ending in a fringe of bristle-like hairs. The whalebone blade of dense horny-like material is in the early stage composed of a brush of hair-like bodies, which, lengthening, solidify and assume the hard, horny appearance afterward known in the blade. The gum of the upper jaw has a series of these plates, the one in front of the other, which elongate as growth proceeds, but leave the free extremity with a fringe of separate hairs. Again, the blade toward the gum is embedded in a fleshy substance similar to the roots of our finger nails. It grows continuously from the roots, like the latter, and in many respects corresponds, save that the free end is always fringed. Baleen, therefore, though varying from a few inches to a number of feet long, in fact approximates to a series of, so to say, mouth nail-plates, which laminae have a somewhat transverse position to the cavity of the mouth, and thus their inner split edges and lower free ends cause the mouth to appear as a great hairy archway, shallower in front and deeper behind. The animal in opening its mouth gulps a quantity of water containing its minute marine food, and then closing the mouth the liquid escapes and the small zoöscopa, etc., are entangled in the hairy meshes.

THE GREENLAND, or Right Whale. Among the Cetacea, this may be denominated *the* whale, for much of the popular knowledge, interest, and commercial value of the group has centered in this animal. It is the well known form followed by the Greenland whalers into the Arctic seas. The stories of its hunting and authenticated accounts of its vast size, etc., associate it in many minds as the most typical of the whale tribe. But the truth is, it is unusual in many respects, and not even quite representative of the group of Whalebone whales as a whole.

THE BISCAY WHALE. This creature ordinarily attains a length of fifty or sixty or not more than seventy feet. The females are said to be larger and fatter than the males, to produce one or rarely two young ones in the spring, which are suckled for a twelvemonth, and they exhibit a constancy and affection for this offspring not surpassed by any other of the tribe. The bulky body is largest about the middle, tapering rather suddenly toward the tail, the flukes of which are occasionally over twenty feet from tip to tip. The flipper is short and broadish; while the head is a third of the length of the animal. The small eye is placed very low, but nevertheless above the angle of the great arched mouth. The head is surrounded by a large swelling, at which point the double orifice of the blowhole forms an obtuse angle. The adult is almost black, the young bluish grey, the lower parts of the throat cream color, and occasionally dispersed whitish markings on the body. Gregarious in habits, they go in twos and threes, but sometimes in greater numbers, even in large flocks; but the herds now are indeed rare. Among the most remarkable peculiarities in this whale are the nature of its



GREENLAND WHALE.

food and its mode of feeding. In the high latitudes there floats in immense quantities a small soft-bodied Mollusc an inch long, with expansions like wings; and besides it there are numerous small Crustaceans and Jelly fish of various kinds. These, curiously enough, feed on infinitesimally minute jelly-specks. These latter thus form subsistence to the former, which in their turn are the whale's food; so that, as Dr. Robert Brown has remarked, this enormous marine monster in a secondary manner is sustained by incredible numbers of organisms of which 1,000 or more might be laid on a shilling piece. Captain David Gray, a well-known successful whaler, has given a good account of the mode of feeding. When the animal opens its mouth to feed, the whalebone springs forward and downward so as to fill the mouth entirely. When in the act of shutting it again, the whalebone being pointed slightly toward the throat, the lower jaw catches it and carries it up into the hollow of the mouth. They choose a space between two pieces of ice, and swimming backward and forward secure the food near the surface. They will continue feeding in this way for hours, afterward disappearing under the ice to sleep, and again suddenly reappearing as hunger compels them. When the food is submerged ten or fifteen fathoms, after feeding, the whale comes to the surface to breathe, and swallows its mouthful. It then lies still a minute, raises its head partially out of the water, again diving, throwing its tail in the air as it disappears. At such times the whalers successfully harpoon them. Occasionally they are easily captured, but more often are approached with great danger. The periods of surface-breathing and descents in the Right whale are very different and irregular compared with those of the Sperm whale. At intervals of from five to fifteen or twenty minutes they rise to breathe, and remain on the surface for about two minutes. Their ordinary rate of traveling is nearly four miles an hour, but if alarmed or wounded their pace is considerably increased. Like the other whales they travel head to the wind. They appear to have periods of migration. In May they are found off West Greenland; at the end of June they cross Baffin's Bay toward Lancaster Sound and Eclipse Bay, whence in August and September they strike south, and in November or later reach Hudson Straits and the coast of Labrador. It is supposed that the young are produced in these lower latitudes, and in spring the whales are believed to proceed again northward. This ordinarily quiet, harmless, but unwieldy creature, whose time seems to be divided between feeding and sleeping, occasionally disports itself in fun and frolic, like its more elegant and smaller congeners. It will then throw itself clean out of the water.

The whaling ships, which are now most powerfully built screw propellers, leave our coasts in the beginning of May for the Greenland seas, and endeavor to come across the track of their prey in the Baffin's Bay districts. The men in the crow's nest have a weary and cold outlook, and as opportunity offers chase is given in the whaleboat in these dreary regions under circumstances well calculated to test the bravest spirit. The vessels often hover on the edges of the ice,

or ram and bore their way through it, and when whales are announced they are assailed by the boats' crews with harpoons, lances, and at times harpoon-guns. These whales when struck will occasionally run out more than a mile of cable, but return to breathe at no great distance, when the lance is used, and the extraordinary loss of blood weakens the monster and lays him at the mercy of his pursuers. Whales that have once been attacked and got free become very cunning, and instead of diving direct go straight along the surface, dragging boats and even ships into most dangerous positions, or cutting the ropes as they seek shelter under the ice. The whalers on the Okhotsk Sea vary their mode of pursuit according to the district, often landing and even making night-whaling expeditions, being guided by the phosphorescence accompanying the creature's movements. An ordinary sized whale, between forty and fifty feet, will yield from sixty to eighty barrels of oil, and 1,000 pounds of baleen. The usual manner is for the whale to be brought along the port side of the vessel, its tail forward, belly up, and head aft. Tackled at either extremity, the men with spiked boots commence to strip the blubber, which is hoisted on deck. When the belly and right side with flipper are disposed of, the carcass is canted and the other side is similarly treated. The material is hastily put aside until the first quiet opportunity admits of its being cut in pieces and finally stowed in the holds, where it is kept in perfect safety until the return of the vessel. The skin and waste pieces of flesh or "kreg" are thrown away, and as the carcass and such useless matter are abandoned, they are quickly seized by the Killer whales, Threshers, and Greenland sharks, and by enormous numbers of sea-fowl that hover in the wake of the whaler.

Considerable interest is attached to another Cetacean of the North Pacific, the California Grey whale. The female of this animal is from forty to forty-four, and the male seldom more than thirty-five feet in length. In shape it may be said to be somewhat intermediate between the Right whale and the Hump-backs. It has no back fin or hump, but instead a series of cross ridges on the hind part of the back toward the tail. Occasionally individuals are nearly black, but the more common and characteristic color is a mottled-grey or speckled patches of white on all the upper parts, underneath being darkest in body-tint. The flippers are fully six feet long, broad in the middle, but taper to a point. The head arches downward from the blowhole forward, and the baleen is remarkably short, brownish white, and coarse in texture. From November till May this whale frequents the Californian coast, and then the females enter the shallow bays and lagoons, and give birth to their young, while the males keep seaward. During the summer months they all journey northward along the coast, and congregate amidst the ice in the Arctic Ocean and the Okhotsk Sea. So regular are their migrations, and so close in-shore do they swim, that Eskimos and Indians alike keep watch at the proper season, and as they pass successfully attack them in their canoes. The flukes, lips, and fins form native dainties, the oil is bartered for rein-

deer, a sauce is made of the entrails, and the Eskimo dogs feast on the flesh. Since 1851 a system of coast and bay whaling has been profitably pursued along the Californian shores. At first 1,000 whales would daily pass the outlook stations, though not a tenth part are now seen, so great has been the havoc and so shy of the land and whale boats have the California Greys become. In calm weather these whales will lie motionless for an hour or so on the surface of the water, but they nevertheless seem to delight in dashing and splashing among the surf and breakers. At other times they huddle together in shoal water, almost getting aground, while their young swim freely about in sportive play. The dam's attachment to her offspring is very great, and hence lagoon whaling is most dangerous. Casualties are of constant occurrence in these narrow passages, the old whale in her frenzy dashing her head against the boats, and lashing all around with her tail-flukes; hence the sailors call them "Devil-fish," and "Hard-head," while "Mussel-digger" is applied to them from their habit of probing among the mud. They often roam among the seaweed banks, where the whaler shoots them with the harpoon gun, as he lies in wait in a small boat or sailing craft. Thus this piebald whale runs every chance of early extinction, seeing that whether in warm or cold latitudes, it is relentlessly pursued by its dire enemy—man.

ORDER VI.—SIRENIA (THE MANATEES).

This order of the Marine Mammalia comprises only a few animals, which however, possess a peculiar interest. But two genera are now found alive, and a third genus was utterly extirpated about a century ago. Others are only known from fossil remains. Notwithstanding the ungainly, almost positively repulsive, appearance of the living forms, they yet have a hold on the popular imagination on account of their being the actual representatives of the famed Sirens and Mermaids of yore. The ancients, in their voyages to eastern climes, gathered stories concerning the existence of strange creatures, half woman, half fish, chiefly frequenting the shores of Ceylon; and fancy, with oft told but unchecked repetition of tales, soon lent a charm to the supposed beings, by conferring on these sea-nymphs imaginary flowing tresses, and sweet dulcet voices, by whose luring wiles the unwary mariner was entrapped, or led to destruction. Howsoever ridiculous such notions may now be regarded, they are, nevertheless, to be satisfactorily explained, for the singular Dugong, with its fish-like tail, roundish head, and mammæ on its breast, has the habit of occasionally raising half of its body perpendicularly out of the water, and clasping its young to its breast. These actions have, doubtless, given a colorable pretext to all the fables of mermaids—those "missing links," which even yet our children delight in, when narrated in "The Little Mermaid," by the talented pen of a Hans Andersen.

THE DUCONG is ordinarily from ten to twelve feet long, though very old males are said occasionally to reach as much as eighteen to twenty feet. Its dis-

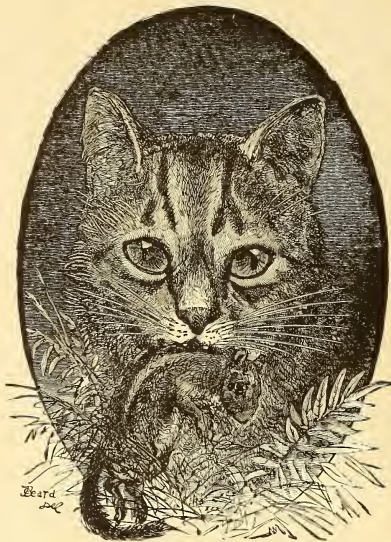
tribution is rather widespread, namely, from the Red Sea and East African coasts to the west coast of Australia. Their color is slaty brown or bluish black above, and whitish below. The earlier traveler, Leguat, speaks of droves of several hundreds grazing like sheep on the seaweeds a few fathoms deep in the clear waters of the Mascarene Islands. Usually this tropical animal frequents the shallow smooth waters of the bays, inlets, and river estuaries where marine vegetation is in abundance, and there it leisurely feeds, being lethargic in disposition, but an immense eater. When they have not been much chased they are not shy or timid, but even allow the natives to handle them; on which occasions the admiring spectators generally manage to abstract the smaller and fatter cubs as dainties, for they are considered uncommon good food. So highly prized are they, that the Malay king considers it a royal "fish," and he claims all taken in his dominions. The flesh of the young, when cooked in a variety of ways, is certainly wholesome—by some compared to veal, and by others to beef or pork—but the older animals are tougher. In the spring months the males do battle for partners, and the young are born toward the end of the year. The Dugong shows intense maternal affection, for if the young be taken, the mother suffers herself to be speared in following her offspring. In its strange bristly-clad muzzle the Dugong resembles its congeners.

THE MANATEE inhabits the African and American continents. In Africa it ranges along the west coast, and ascends the Senegal, Niger, Congo and other rivers, where it not only frequents the lagoons, but even has been captured in Lake Tchad. In America two forms are supposed to exist—one, the manatee of Florida, is said to have a closer resemblance to the African form than to its fellow countryman; the other is found in Surinam, Guiana, Jamaica, the Amazon and its tributaries, and indeed, in the various rivers, bays, and inlets of the tropical American coast. These creatures, like the foregoing, browse upon the aquatic vegetation of the shallow lagoons and river banks, apparently, however, having a preference for fresh water plants. Their habits and mode of feeding are, in a measure, similar to those of the Dugong. The full grown manatee is from ten to twelve feet in length. Its long body terminates



THE MANATEE.

in a thin, wide, shovel-shaped, fibrous, horizontal tail, proportionally broader, but resembling somewhat that of the beaver. The fore limbs, or flippers, have diminutive flat nails. The skin of the body can be compared only to that of the elephant, not in color alone, but also in its coarse, wrinkly texture, and widely-scattered, delicate, but long hairs. Its deep-set, minute eye is surrounded by skin-wrinkles.



CAT AND SQUIRREL.



African Elephant and Young.

CHAPTER XVI.

ORDER VII—PROBOSCIDEA—ELEPHANTS.

The order Proboscidea, or animals possessed of a proboscis, or trunk, consists of two living species, the Indian and African elephant, and two extinct genera known as *Dinotherium* and *Mastodon*. The elephant, from its large size and its singular sagacity, attracted the attention of man in the earliest times, and was always looked upon with feelings of awe and reverence. At the present time the African savage, in the region of the Congo, compasses its death with the mysterious aid of the medicine man, as well as by the ordinary means of hunting. The animal, in early times, was used both for purposes of war and peace, and figures, at the present time, alike in the gorgeous retinue of Indian princes, and ministers to the more humble and more useful services of the husbandman. The ivory furnished by its tusks was known in the remotest antiquity.

The elephants were used in war by the Indian nations, and were looked upon as most formidable engines in battle. By the aid of these huge creatures, to a large extent, they conquered and held possession of the region of Central Asia west of the Indus. These elephants were well trained, and taught to hold out one of their hind legs horizontally, when it was necessary to mount them in a hurry. They appeared to take considerable delight and satisfaction in the gaudy trappings with which they were usually decorated. In some cases, elephants have proved more dangerous to the army in whose ranks they were serving than to the enemy, by being suddenly confronted with objects previously unobserved. On such occasions they turn in haste, and spread terror and death into their own ranks. Careful, judicious, and long continued training was the only remedy against these sudden surprises.

The shape of the elephant is familiar to every one. The trunk or proboscis, from which the name of the order to which this animal belongs is derived, is certainly a remarkable and wonderful organ. It is really a prolongation of the nose, of a sub-conical form, consisting of two tubes divided by a septum. At the extremity on the upper side, above the opening of the nostrils, is a lengthened process to be looked upon in the light of a finger; beneath this finger is a tubercle, opposable to it, and acting, so to speak, as a thumb. With this organ, which is nearly eight feet in length, of considerable stoutness, and extreme sensibility, the

elephant is enabled to uproot or shake trees, lift a cannon, or pick up a pin. By its aid, food and water are carried to the mouth, and when necessary, it can be converted into a syringe or a shower bath. The length of the organ does away with the necessity of a long neck, a short and muscular neck being absolutely required for the support of the enormous head and tusks.

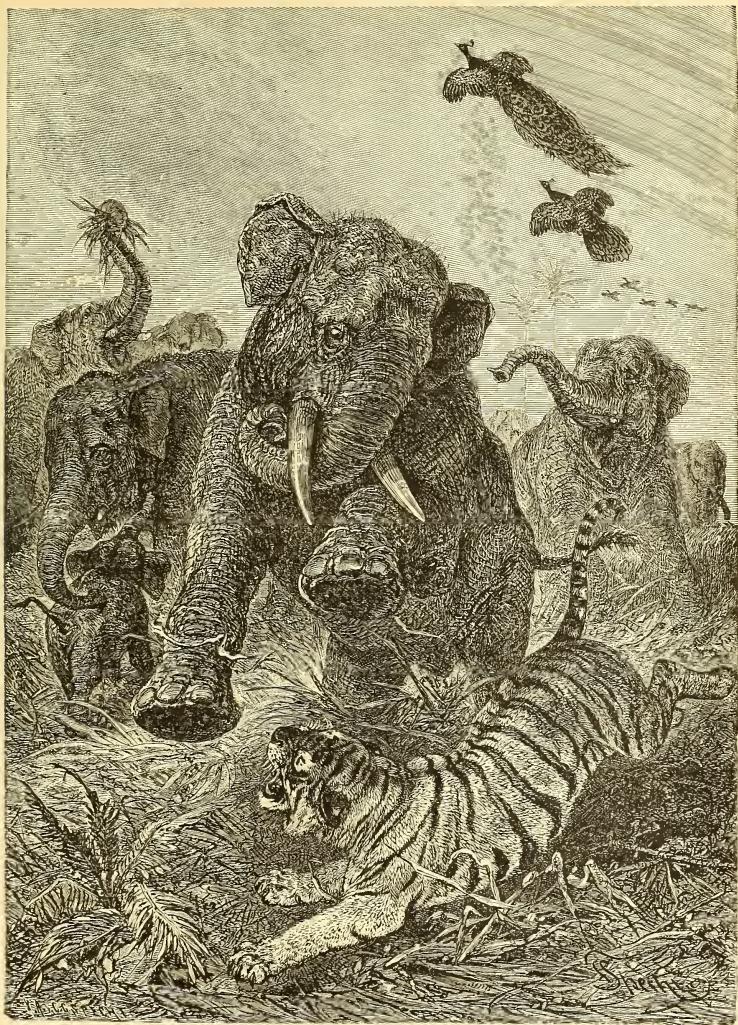
The principal characteristics of the Indian species, as compared with the African, are the small ears, concave forehead, small eye, lighter color, and the possession of four instead of three nails or hoofs on the hind foot.

THE INDIAN ELEPHANT. There are but two species of elephant, viz., the Indian and the African. In size, notwithstanding the differences of opinion to be found between certain writers on this subject, some saying that the Indian and others that the African elephant is the larger, it seems perfectly clear that there cannot be much difference between that of the two species, and that the maximum height is about eleven feet.

The Indian elephant is found over the greater part of the forest-lands of India, Ceylon, Burmah, Siam, Cochin-China, the Malay Peninsula, and Sumatra. Unlike the African species, to a certain extent, it appears to have a partiality for coolness and shade.

In some parts of the country elephants are exceedingly destructive to crops of grain. And in various parts of India, notwithstanding the care and trouble taken to watch the crops, they do much injury. When the rice approaches maturity it is necessary to place watchers throughout the night in places which they frequent. Stages are erected on posts twelve or fourteen feet high, and on one side of the stage a small shed is made for the watchmen, two of whom always mount the same stage. One feeds a fire kept constantly burning on the open part, while the other in his turn is allowed to sleep, and when any elephants come into the field, he is awakened, and both join in shouting and making all the noise they can with sticks and drums.

The food of the elephant appears to be considerably varied, and chosen by the animal with no small amount of daintiness; sweet-tasting fruits, seeds, and blossoms he has the greatest partiality for, and in their selection much destruction is occasioned by a herd of these huge animals. Tennent says that in Ceylon, where the food of the elephant is most abundant, the animal never appears to be in a hurry to eat, but amuses himself with playing with the leaves, shaking the trees, tearing the bark, and now and then pausing to eat, altogether taking the whole affair in a very leisurely sort of way. He is especially fond of the fruit of the palmyra palm, and never fails to make his appearance in the districts where these trees grow when the fruit begins to fall to the ground. Although the amount of food consumed by elephants in their wild state is very large, there is reason to believe that many stories told of their extraordinary eating capabilities are much exaggerated. It by no means follows that because an elephant in a tame state will



THE INDIAN ELEPHANT.

eat so much bread, turnips, hay, etc., that it consumes the same quantity of its natural food in a wild state. The elephants are believed to drink nightly in very hot weather, but in cooler weather only every third or fourth day, and for this purpose they travel long distances to their watering places, even as far as ten or twenty miles, refreshing themselves with a bath and a drink at the same time when they reach their destination.

Various modes are used for catching elephants; but the usual and most satisfactory practice is to drive them into what is termed a keddah. The keddah is a large area surrounded by a broad ditch, and toward the entrance is a similar construction to the main body, acting as a sort of funnel, into which the elephants enter when driven from a jungle, and which assists in getting them into the keddah itself.

On discovering a large herd of elephants, a body of men, often numbering six or eight thousand, are collected to surround them, carrying all sorts of instruments likely to create a noise, such as firearms, drums, trumpets, etc., elephants being exceedingly alarmed by any unusual noises. By this means they are gradually driven into the keddah, sometimes from a distance of thirty or forty miles, which frequently occupies some days. When the elephants find themselves fairly entrapped, they become violent and use their utmost endeavors to break down the barriers.

Formerly, it was the practice to starve these captured elephants into submission. Now, however, by means of two tame ones trained for the purpose, they can be captured without injury, one by one, and afterward bound to a tree. To accomplish this the trained animals are sent into the inclosure, and on a wild elephant being singled out, the two trained ones place themselves one on each side, and attract its attention while the attendants are occupied in binding its legs, which, having been satisfactorily accomplished, the captive is dragged to a tree and fastened firmly, where it remains until reduced to submission and obedience by kindness and good feeling.

Indian elephants are also sometimes captured by means of pitfalls formed in a similar manner to those used in Africa. There is, however, one great objection to this mode of capture, which is, that the animal is rendered very liable, from the heavy fall it sustains, of being seriously hurt, and indeed some injuries thus received have often proved fatal.

Another way of catching these animals in some districts of India is by means of the lasso. Two trained females are procured for the purpose. These are provided with a long rope which is fastened to their girdle, and then coiled on their backs. Its end forms a noose, which a man, who sits on the back of the female, throws round the neck of the wild elephant. The tame one then walks away until the captured one is almost strangled. In the meantime the people, assisted by another tame female, endeavor to fasten ropes to his legs, and he is dragged to a place where there are trees, to which he is fastened until he becomes tame.

The elephants caught in this manner are usually small, and the majority, from some reason or other, die, probably from the rough usage they have undergone.

Elephant shooting, especially in Ceylon, is considered to be the acme of sport, but from the numbers that have been wantonly destroyed, an order has been issued by the Governor prohibiting their destruction. The elephant is invaluable as a laborer. Its assistance in road making, bridge building, plowing, piling logs, lifting weights, and other similar operations, is of the utmost service. Even as a nurse for young children, its services, we are told, are sometimes required. An Indian officer relates that he has seen the wife of a mahout (for the followers often take their families with them to camp), give a baby in charge of an elephant, while she went on some business, and has been highly amused in observing the sagacity and care of the unwieldy nurse. The child, which, like most children, did not like to be at rest in one position, would, as soon as left to itself, begin crawling about, in which exercise it would probably get among the legs of the animal, or entangled in the branches of the trees on which he was feeding, when the elephant would in the most tender manner disengage his charge, either by lifting it out of the way with his trunk, or by removing the impediments to its free progress. If the child had crawled to such a distance as to verge upon the limits of his range (for the animal was chained by the leg to a peg driven in the ground), he would stretch out his trunk and lift it back as gently as possible to the spot whence it started.

Endless other stories are told of the sagacity of this noble animal, some of them, however, probably not ungarished with considerable exaggeration. However, this creature does undoubtedly possess a most wonderful amount of intelligence, and it is believed that the Indian species, both in sagacity and docility, surpasses the African.

The White Elephants, held in reverence in Siam, and extremely rare, are not distinct from the rest; they are merely albinos, or white varieties, and are to be viewed in the same light as white blackbirds or white sparrows.

THE AFRICAN ELEPHANT is distinguished at once from the Indian species by the great size of its ears, its larger eye, convex forehead, darker color of skin, and by possessing only three instead of four nails or hoofs in the hind foot. It is indigenous to Africa, being found south of the Sahara as far as Cape Colony, and from the Indian Ocean to the Atlantic. It formerly lived north of the Sahara.

Unlike the Indian species, both the males and the females are provided with tusks. The African differs also considerably in his habits, for while the Indian enjoys coolness and shade, the African is more or less exposed to the burning sun.

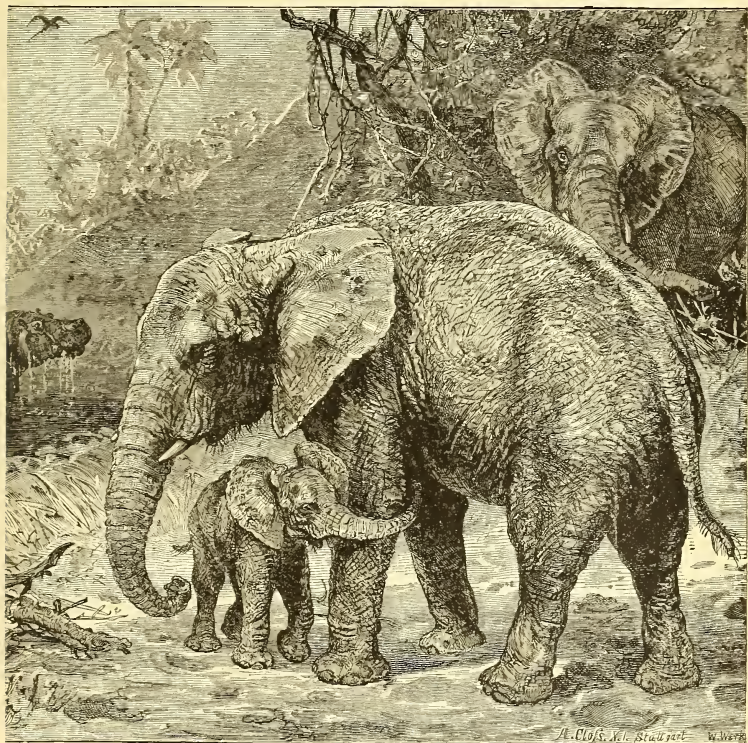
According to Sir Samuel Baker, "In Africa the country being generally more open than in Ceylon, the elephant remains throughout the day either beneath a solitary tree, or exposed to the sun in the vast prairies, where the thick grass

attains a height of from nine to twelve feet. The general food of the African elephant consists of the foliage of trees, especially of mimosas. Many of the mimosas are flat-headed, about thirty feet high, and the richer portion of the foliage confined to the crown. Thus, the elephant, not being able to reach to so great a height, must overturn the tree to procure the coveted food. The destruction caused by a herd of elephants in a mimosa forest is extraordinary, and I have seen trees uprooted of so large a size that I am convinced no single elephant could have overturned them. I have measured trees four feet six inches in circumference, and about thirty feet high, uprooted by elephants. The natives have assured me that they mutually assist each other, and that several engage together in the work of overturning a large tree. None of the mimosas have tap roots; thus the powerful tusks of the elephants applied as crowbars at the roots, while others pull at the branches with their trunks, will effect the destruction of a tree so large as to appear invulnerable."

The elephant is widely diffused through the vast forests, and is met with in herds of various numbers. The male is much larger than the female. He is provided with two enormous tusks. These are long, tapering, and beautifully arched; their length averages from six to eight feet, and they weigh from sixty to a hundred pounds each. In the vicinity of the equator the elephants attain to a larger size than to the southward; and I am in possession of a pair of tusks of the African bull elephant, the larger of which measures ten feet nine inches in length, and weighs one hundred and seventy-three pounds.

Old bull elephants are found singly or in pairs, or consorting together in small herds, varying from six to twenty individuals. The younger bulls remain for many years in the company of their mothers, and these are met together in large herds of from twenty to a hundred individuals. The food of the elephant consists of branches, leaves, and roots of the trees, and also of a variety of bulbs, of the situation of which he is advised by his exquisite sense of smell. To obtain these he turns up the ground with his tusks, and whole acres may be seen thus plowed up. Elephants consume an immense quantity of food, and pass the greater part of the day and night in feeding. Like the whale in the ocean, the elephant on land is acquainted with, and roams over, wide and extensive tracts. He is extremely particular in always frequenting the freshest and most verdant districts of the forests, and when one district is parched and barren, he will forsake it for years and wander great distances in quest of better pastures. The elephant entertains an extraordinary horror of man, and a child can put a hundred of them to flight by passing at a quarter of a mile to windward; and when thus disturbed they go a long way before they halt. It is surprising how soon these sagacious animals are aware of the presence of a hunter in their domains. When one troop has been attacked, all of the other elephants frequenting the district are aware of the fact within two or three days, when they all forsake it and migrate to distant parts, leaving the hunter no alternative but to remove to fresh ground.

This constitutes one of the greatest difficulties which a skilful elephant-hunter encounters. Even in the most remote parts, which may be reckoned the headquarters of the elephant, it is only occasionally, and with inconceivable toil and

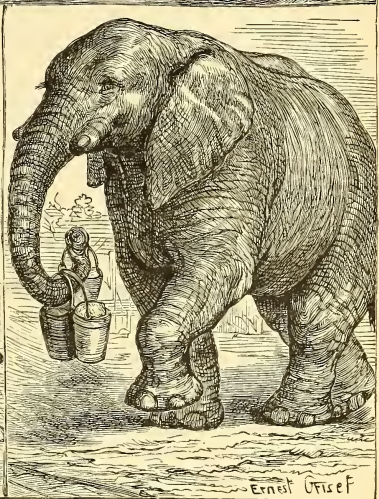
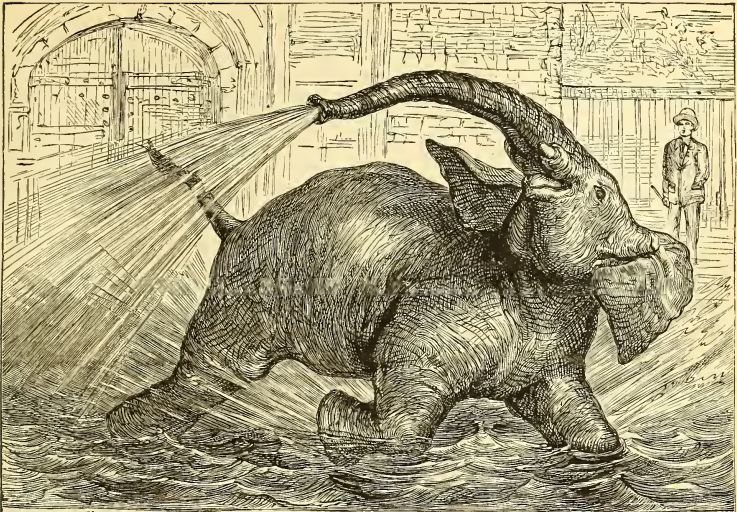


AFRICAN ELEPHANT AND YOUNG.

hardship, that the eye of the hunter is cheered by the sight of one. Owing to habits peculiar to himself, the elephant is more inaccessible and much more rarely seen than any other game quadruped, excepting certain rare antelopes. They choose for their resort the most lonely and secluded depths of the forest, generally at a very great distance from the rivers and fountains at which they drink. In dry

and warm weather they visit these waters nightly; but in cool and cloudy weather they drink only once every third or fourth day. About sundown the elephant leaves his distant midday haunt, and commences his march toward the fountain, which is probably from twelve to twenty miles distant. This he generally reaches between the hours of nine and midnight, when, having slaked his thirst and cooled his body by spouting large volumes of water over his back with his trunk, he resumes the path to his forest solitudes. Having reached a secluded spot, I have remarked that full grown bulls lie down on their broadsides about the hour of midnight and sleep for a few hours. The spot which they usually select is an ant-hill, and they lie around it with their backs resting against it. These hills, formed by the white ants, are from thirty to forty feet in diameter at their base. The mark of the under tusk is always deeply imprinted in the ground, proving that they lie upon their sides. I never remarked that females had thus lain down, and it is only in the more secluded districts that the bulls adopt this practice; for I observed that, in districts where the elephants were liable to frequent disturbance, they took repose standing on their legs beneath some shady tree. Having slept, they then proceed to feed extensively. Spreading out from one another, and proceeding in a zigzag course, they smash and destroy all the finest trees in the forest which happen to lie in their course. The number of goodly trees which a herd of bull elephants will thus destroy is utterly incredible. They are extremely capricious, and on coming to a group of five or six trees they break down, not unfrequently, the whole of them, when, having perhaps only tasted one or two small branches, they pass on and continue their wanton work of destruction. I have repeatedly ridden through forests where the trees thus broken down lay so thick across one another that it was almost impossible to ride through the district; and it is in situations such as these that attacking the elephant is attended with most danger. During the night they will feed in open plains and thickly wooded districts, but as day dawns, they retire to the densest covers within reach, which nine times in ten are composed of the impracticable wait-a-bit thorns; and here they remain drawn up in a compact herd during the heat of the day. In remote districts, however, and in cool weather, I have known herds to continue pasturing throughout the whole day.

The African elephant is not now hunted for domestic purposes, but for the sake of the flesh and of the ivory; and its death is a grand affair for the natives, since it affords opportunity not merely for a feast, but for obtaining fat for internal and external uses. There are various methods of killing them. Pitfalls are most common, and are generally placed in the neighborhood of a drinking place, the natives showing great skill in felling trees, so as to turu the elephants into them. According to Sir Samuel Baker, "The pits are usually about twelve feet long, and three feet broad, by nine deep; these are artfully made, decreasing toward the bottom to the breadth of a foot. The general elephant route to the drinking places being blocked up, the animals are diverted by a treacherous path toward the



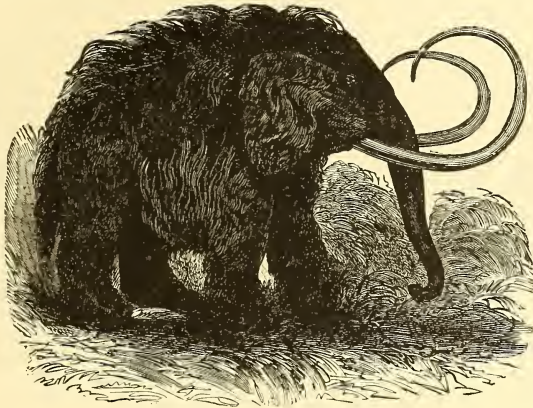
JUMBO AT WORK AND PLAY.

water, the route intersected by numerous pits, all of which are carefully concealed by sticks and straw, the latter being usually strewn with elephants' dung, to create a natural effect. Should an elephant during the night fall through the deceitful surface, his foot becomes jammed in the bottom of the narrow grave, and he labors shoulder-deep, with two feet in the pitfall so fixed that extrication is impossible. Should one animal be thus caught, a sudden panic seizes the rest of the herd, and in their hasty retreat one or more are generally victims to the numerous pits in the vicinity. Once helpless in the pit, they are easily killed with lances."

The same author also relates that sometimes the elephant hunters, or agga-gcers, of the Hamran tribe, use swords for killing elephants. They follow the tracks of the animal, "so as to arrive at their game between the hours of 10 and 12 A. M., at which time it is either asleep or extremely listless, and easy to approach. Should they discover the animal asleep, one of the hunters would creep stealthily toward the head, and with one blow sever the trunk while stretched upon the ground; in which case the elephant would start upon his feet, while the hunters escaped in the confusion of the moment. The trunk severed would cause a loss of blood sufficient to insure the death of the elephant within about an hour. On the other hand, should the animal be awake upon their arrival, it would be impossible to approach the trunk. In such a case, they would creep up from behind, and give a tremendous cut at the back sinew of the hind leg, about a foot above the heel. Such a blow would disable the elephant at once, and would render comparatively easy a second cut to the remaining leg. These were the methods adopted by poor hunters, until by the sale of ivory they could purchase horses for the higher branch of the art. Provided with horses, the party of hunters should not exceed four. They start before daybreak, and ride slowly throughout the country in search of elephants, generally keeping along the course of a river until they come upon the tracks where a herd, or a single elephant, may have drunk during the night. When once upon the track, they follow fast toward the retreating game. The elephants may be twenty miles distant, but it matters little to the agga-gcers. At length they discover them, and the hunt begins. The first step is to single out the bull with the largest tusks; this is the commencement of the fight. After a short hunt, the elephant turns upon his pursuers, who scatter and fly from his headlong charge until he gives up the pursuit; he at length turns to bay, when again pressed by the hunters. It is the duty of one man in particular to ride up close to the head of the elephant, and thus to absorb its attention upon himself. This insures a desperate charge. The greatest coolness and dexterity are then required by the hunter, who, now the *hunted*, must so adapt the speed of his horse to the pace of the elephant that the enraged beast gains in the race, until it almost reaches the tail of the horse. In this manner the race continues. In the meantime, two hunters gallop up behind the elephant, unseen by the animal, whose attention is completely directed to the horse almost within his grasp. With extreme agility, when close to the heels of the elephant, one of the hunters, while

at full speed, springs to the ground with his drawn sword, as his companion seizes the bridle, and with one dexterous two-handed blow he severs the back sinew. He immediately jumps out of the way, and remounts his horse; but if the blow is successful, the elephant is ham-strung, and, as it cannot run rapidly on three legs, is easily killed."

Elephant shooting, although not unattended by danger, appears to be on the whole accomplished with considerable success, five or six elephants having been killed occasionally in a very short space of time by one man; and many are the



THE MAMMOTH. (*Restored.*)

tales of hairbreadth escapes related to us by Gordon Cumming, Tennent, Baker, and others.

FOSSIL ELEPHANTS.

The Proboscidea, represented, as we have already seen, by two species only among living animals, both of which are met with in and near the tropical regions of the Old World, in the fossil state are met with over nearly the whole of the Old World, and of the New.

By far the best known and most important of these huge creatures is the far-famed mammoth. This elephant has been found frozen in Siberian soil beautifully preserved, with the hair and tissues in so good condition that microscopical sections have been made of them.

The story of finding the first mammoth embedded in the ice has been often told, but is still of sufficient interest to be related again. A Tungoosian fisherman,

named Schumachoff, about the year 1799, was proceeding, as is the custom of fishermen in those parts when fishing proves a failure, along the shores of the Lena in quest of mammoth tusks, which have been found there in considerable abundance. During his rambles, having gone farther than he had done before, he suddenly came face to face with a huge mammoth embedded in clear ice. This extraordinary sight seems to have filled him with astonishment and awe; for instead of at once profiting by the fortunate discovery, he allowed several years to roll on before he summoned courage to approach it closely, although it was his habit to make stealthy journeys occasionally to the object of his wonder. At length, seeing, it is presumed, the terrific monster made no signs of eating him up, and that its tusks would bring him a considerable sum of money, he allowed the hope of gain to overcome his superstitious scruples. He boldly broke the barrier of ice, chopped off the tusks, and left the carcass to the mercy of the wolves and bears, who, finding it palatable, soon reduced the huge creature to a skeleton. Some two years afterward a man of science was on the scent, and although so late in at the death, found a huge skeleton with three legs, the eyes still in the orbits, and the brain uninjured in the skull.

In addition to the peculiarity of the mammoth having its body covered with long woolly hair, it was also remarkable for the extraordinary formation of its enormous tusks, which curved upward, forming a spiral. The remains of the mammoth are met with in incredible numbers in the river deposits of Middle and Northern Europe, as well as those of North America, showing that in ancient times the animal ranged over a tract of land extending from the Mediterranean to the Arctic Sea, and from Behring's Straits to the Gulf of Mexico. It is also met with in the caves of Middle Europe, having been dragged into them by the hyenas, or having fallen a prey to the ancient hunter.

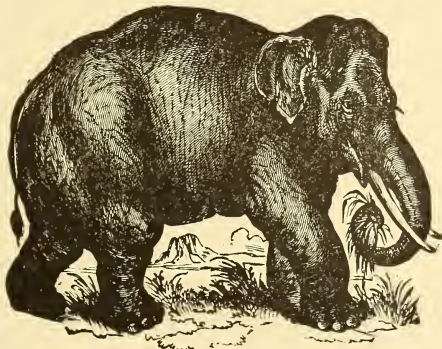
ORDER VIII. HYRACOIDEA (CONIES),

The order of animals known to naturalists as hyracoidea contains but one genus, called hyrax. All travelers who have noticed the hyrax are agreed that it is a most wary and crafty animal, and that the utmost caution is required even to obtain a view of it, and to kill one requires a most skillful and practiced sportsman.

The hyrax is a little animal clothed with a brownish fur, of about the size of an ordinary rabbit, to which, indeed, it has some resemblance. It is allied to the rhinoceros, the tapir, and rodents; but the whole form of the skeleton approaches more nearly to that of the two former than it does to any known species of the latter. It is found living at the Cape of Good Hope, inhabiting the hollows and caves of the rocks, both on the hillsides and on the seashore, a little above high water mark. It seems to live in families, and in its wild state is remarkably shy. In the cold weather it is fond of coming out of its hole and warming itself in the sun on the side of a rock, and in summer it enjoys the breeze on the top of the

hills, but in both instances, as well as when it feeds, a sentinel is always placed on the lookout, generally an old male, which gives notice of any approach of danger by a long shrill cry.

“Its principal food is the young tops of shrubs, especially those which are aromatic, but it also eats herbs, grass, and the tops of flowers. To eat it tastes much like a rabbit. It is recorded that one gentleman caught two young ones which he kept for some time. They became very tame, and as they were allowed the run of the house would follow him about, jump onto his lap, or creep into his bed for the sake of warmth. One brought home by Mr. Hennah would also run inquisitively about the cabins, climbing up and examining every person and thing, but startled by any noise, it would run away and hide itself. When shut up for long, it became savage, and snarled and tried to bite at everything that came in its way. This animal, both when wild as well as when tame, is very cleanly in its habits. From its faintly crying in its sleep it may be supposed that it dreams. It has also been heard to chew its food at night. When tame it will eat a variety of things, the leaves of plants, bruised Indian corn, raw potatoes, bread and onions, and will greedily lick up salt. The one brought home by Mr. Hennah was very sensible of the cold, for when a candle was placed near its cage, it would come as close as possible to the bars and sit still to receive as much warmth as it could. I am inclined to think that the female does not produce more than two young ones at a time, from having observed in several instances but two following the old ones. Its name at the Cape is the dassé, which is, I believe, the Dutch for a badger.



INDIAN ELEPHANT.

CHAPTER XVII.

ORDER IX. UNGULATA (HOOFED QUADRUPEDS).

The hoofed quadrupeds are so called because they possess hoofs, from which fact the order Ungulata takes its name, and they include animals of widely different appearance, such as the horse, rhinoceros, giraffe, camel, and the like. They are classified into sub-orders, according to the odd or even number of toes, those having an odd number on the hind foot being termed the *Perissodactyla*, such as the horse, tapir and rhinoceros; and the *Artiodactyla*, or animals with an even number of toes on their hind feet, such as the pig, hippopotamus, sheep, ox, deer, and the like. All the animals belonging to the order feed upon vegetables, with the exception of the pig and peccary, which are omnivorous; and none of them are provided with sharp edged cutting back teeth, adapted for dividing flesh, such as are found in the carnivora—lions, tigers, wolves and hyenas. The odd-toed Ungulates come first.

FAMILY I.—EQUIDÆ, THE HORSE TRIBE.

The Equidæ, or horse tribe, comprise several living and many extinct species. Three living members are restricted, in a state of nature, to Asia and Africa, and are divided into the true horses, which have horny patches or callosities on the inner sides of both pairs of limbs, and the asses, which possess such callosities only on the fore limb. With the latter are classed the zebras and the quaggas.

The true horses are represented by one well established species, from which all the other races, or varieties, are descended, by a process of selection under the care of man, and these vary in size, proportion of parts, and color, as much as any two closely allied species of wild animals can be said to be defined from each other. According to Mr. Darwin, no aboriginal or truly wild horse is positively known to exist, for the wild horses of the East may probably be descended from those which have escaped from the service of man. In all probability the wild animal has been exterminated by the hand of man in those countries which it formerly inhabited, and in which it has left its remains to attest its former presence.

The tarpan and wild horse of Tartary, which are to be found in thousands in the great treeless plains, present us with the nearest examples of the stock from

which the domestic horses were probably derived. Their color is mouse colored, with a stripe along the back. The best and strongest of these are caught by the Tartars by the aid of the lasso, and by the help of falcons, which are trained to settle on the horse's head, and flutter their wings, so as to take its attention away from the approaching hunter.

The first domestic horses known in Europe were introduced at a very early period, long before the dawn of history. The horse was universally used for food by man before the historic period, and would be used now in Europe more generally than it is, were it not for an edict of the church in the eighth century. As Christianity prevailed over the heathen worship, it was banished from the table. From the very earliest ages known to the historian in Egypt and Assyria, horses were used for the purposes of war, and were yoked in pairs, and sometimes in threes, to the war chariots in which the kings and great captains rode. They are generally depicted as being of upright or hog manes. Horsemen were also employed by both nations, but they were evidently not thought so important as chariots for warlike purposes.

THE MUSTANG is the wild horse of the American prairies and pampas. At the time of the discovery of America there were no horses in any part of that continent, although the boundless prairies were admirably fitted for the support of countless herds. Soon, however, those imported by the settlers strayed away, and as a consequence are now to be met with in enormous numbers, in some cases amounting, it is said, to ten thousand in one troop. They appear to be under the command of a leader, the strongest and boldest of the herd, whom they implicitly obey. When threatened with danger, at some signal understood by them all, they either close into a dense mass and trample their enemy to death, or, placing the mares and foals in the center, they form themselves into a circle and welcome him with their heels. The leader first faces the danger, and when prudence requires a retreat all follow his rapid flight. In the thinly inhabited parts of South America, according to Youatt, it is dangerous to fall in with any of these troops. The wild horses approach as near as they dare; they call to the loaded horse with the greatest eagerness, and if the rider is not on the alert, and has not considerable strength of arm and sharpness of spur, his animal will divest himself of his burden, take to his heels, and be gone forever.

The city of Buenos Ayres was abandoned by the Spanish colonists soon after its settlement in 1535, and about half a dozen horses were left behind. The city was again occupied in 1580, and the new comers saw, to their astonishment, that the neighborhood was swarming with wild horses. The descendants of these Spanish derelicts are now spread in every part of the pampas, and have been seen in troops of ten thousand. They possess much of the form of the Spanish horse, but are not speedy; they are capable of enduring immense fatigue, and are frequently ridden sixty or seventy miles without drawing bit, while they have been

known to be urged on by the cruel spur of the Gauchos more than a hundred miles a day, at the rate of twelve miles an hour. They know no pace between the walk and the gallop, and at the end of the day's journey are turned loose on the plains. The mares are never ridden, and when the Gaucho or native Indian of the South American plains wants a horse, he sets out armed with his lasso, mounted on a horse that has been used to the work. He gallops alongside a troop of the wild horses, and as soon as he comes sufficiently near his prey, the lasso is thrown round the two hind legs, and as the Gaucho rides a little to one side, the jerk pulls the entangled horse's feet laterally, and throws him on his side, without endangering his knees or his face. Before the horse can recover the shock, the rider dismounts, and snatching his *poncho*, or cloak from his shoulders, wraps it round the prostrate animal's head. He then forces into his mouth one of the powerful bridles of the country, straps a saddle on his back, and, bestriding him, removes the poncho; upon which the astonished horse springs on his legs, and endeavors by a thousand vain efforts to disencumber himself of his new master, who sits quite composedly on his back, and, by a discipline which never fails, reduces the horse to such complete obedience, that he is soon trained to lend his whole speed and strength to the capture of his companions.

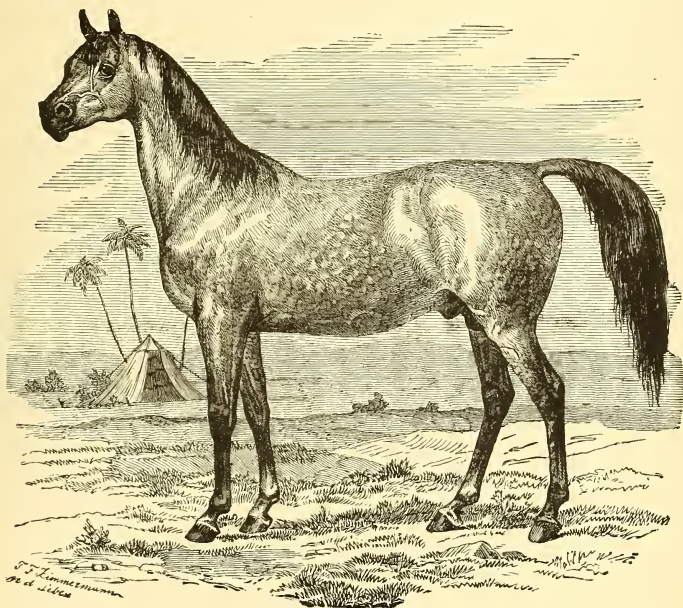
When the Gauchos have a grand breaking-in, a whole herd is driven into the corral. A young horse is lassoed by the neck and dragged out; some men on foot lasso his fore legs and throw him; in an instant a Gaucho is seated on his head, and, with his long knife, in a few seconds cuts off the whole of the horse's mane, while another cuts the hair from the end of his tail; this is a mark that the horse has been once mounted. They then put a piece of hide into his mouth to serve for a bit, and a strong hide halter on his head. The Gaucho who is to mount arranges his spurs, which are unusually long and sharp, and while two men hold the horse by his ears, he puts on the saddle, which he girths extremely tight. He then catches hold of the horse's ear, and in an instant vaults into the saddle; upon which the man who holds the horse by the halter throws the end to the rider, and from that moment no one takes any further notice of him.

"The horse instantly began," Sir F. Head writes, "to jump in a manner which made it very difficult for the rider to keep his seat, and quite different from the kick or plunge of an English horse; however, the Gaucho's spurs soon set him going, and off he galloped, doing everything in his power to throw his rider.

"Another horse was immediately brought from the corral; and so quick was the operation, that twelve Gauchos were mounted in a space which I think hardly exceeded an hour. It was wonderful to see the different manner in which different horses behaved. Some would actually scream while the Gauchos were girding the saddle upon their backs; some would instantly lie down and roll upon it; while some would stand without being held, their legs stiff and in unnatural positions, their necks half bent toward their tails, and looking vicious and obstinate; and I could not help thinking that I would not have mounted one of those for any

reward that could be offered me, for they were invariably the most difficult to subdue.

“It was now curious to look around and see the Gauchos on the horizon in different directions, trying to bring their horses back to the corral, which is the most difficult part of their work, for the poor creatures had been so scared there that they were unwilling to return to the place. It was amusing to see the antics



THE ARAB HORSE.

of the horses; they were jumping and dancing in different ways, while the right arm of the Gauchos was seen flogging them. At last they brought the horses back, apparently subdued and broken in. The saddles and bridles were taken off, and the young horses trotted off toward the corral, neighing to one another.”

Such is the life of the wild steeds that run over the wide plains of the Argentine Republic, Paraguay and Central Brazil. The mustangs north of the Isthmus of Panama are derived from Mexican horses which have escaped into the woods and savannas and roamed northward to the Rocky Mountains. The Indians have learned

to capture them, and employ them in transporting their families from place to place. The highest ambition of the young Indian is to possess a good horse; and to steal a horse is almost as glorious as to scalp an enemy. The Indian pony, as it is called, is barely fourteen hands high, rather light built, with good legs, straight shoulders, short, strong back, and full barrel. He has no appearance of "blood" except sharp, nervous ears, and intelligent eyes. He is never stabled, washed, rubbed, shod, nor fed; in winter he is an animated skeleton, sustaining a bare existence on cottonwood branches; but when spring brings out the tender grass, he is soon in condition "worthy to be trusted to the death." After endurance, the best quality of the Indian pony is his sureness of foot. He climbs rocks like a mule, he plunges down precipices like a buffalo, and crosses swamps like an elk. The amount of work got out of him by the Indians is considerable, and in Indian hands and with Indian bits he is tractable. But he does not receive civilization any better than his master. According to General Dodge, "He is either a morose, ill-tempered brute, hard to manage, and always dangerous, or he degenerates into a fat, lazy, short-breathed cob, fit only for a baby or an octogenarian. Prosperity spoils him, and his true character and value are best displayed in adversity." Among the Indians, a "pony" is the standard of value by which the price of wives and other chattels is fixed.

THE ARAB. The Arabian horse would not be acknowledged by every one to be perfect in form. The head, however, is inimitable. "The broadness and squareness of the forehead," writes Youatt, "the smallness of the ears, the prominence and brilliancy of the eye, the shortness and fineness of the muzzle, the width of the nostril, the thinness of the lower jaw, and the beautifully developed course of the veins, will always characterize the head of the Arabian horse. The neck of the Arabian is long and arched, and beautifully joined to the chest. In the formation of the shoulder, next to that of the head, the Arab is superior to any other breed."

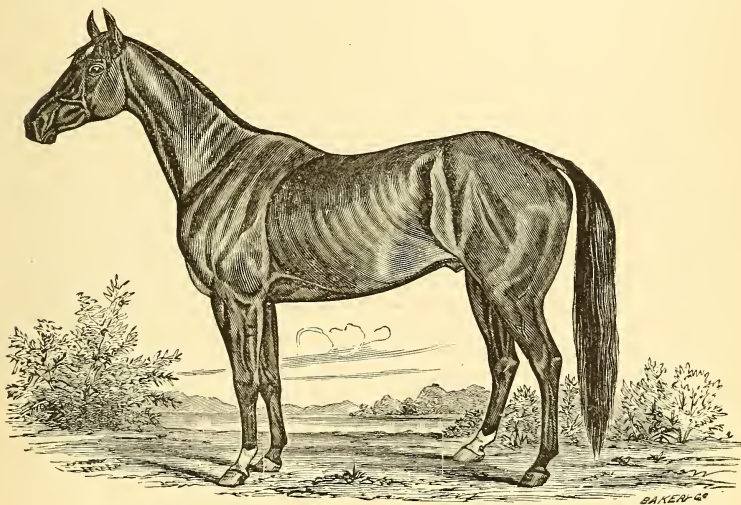
A true Arab of Arabia never mounts a stallion, and never parts with his mare. The owner of a mare bestows great pains in seeking out for her a mate of unblemished descent. The mare and foal live in the tent with the Bedouin and his children, who roll about with her and her foal; no accident ever occurs, and the animal becomes a loving friend. At the end of a month the foal is weaned, and is fed for three months on camel's milk; then a little wheat is allowed for another three months; at the expiration of this time, the young animal is allowed to graze near the tent, and some barley is given it. The kindness with which the Arab is treated from her very birth gives her an affection for her master, a wish to please, a pride in exerting every energy, and an apparent sagacity, which is seldom seen in other breeds.

When the rider falls from his mare, and is unable to rise, she will immediately stand still and neigh until assistance arrives. If he lies down to sleep, as fatigue

sometimes compels him, in the midst of the desert, she stands watchful over him, and neighs and rouses him if either man or beast approaches. The Arab horses are taught to rest occasionally in a standing position; and a great many of them never lie down.

The Arab loves his horse as truly and as much as the horse loves him; and no little portion of his leisure time is often spent in talking to and caressing his faithful steed.

The following anecdote of the attachment of an Arab to his mare has often



AMERICAN TROTTING HORSE.

been told: "The whole stock of an Arab of the desert consisted of a mare. The French consul offered to purchase her, in order to send her to his sovereign, Louis XIV. The Arab would have rejected the proposal, but he was miserably poor. He had scarcely a rag to cover him, and his wife and children were starving. The sum offered him was great. It would provide him and his family with food for life. At length, and reluctantly, he yielded. He brought the mare to the dwelling of the consul, dismounted, and stood leaning upon her. He looked now at the gold, and then at his favorite. 'To whom is it,' said he, 'I am going to yield thee up? To Europeans, who will tie thee close, who will beat thee, who will render thee miserable. Return with me, my beauty, my jewel, and

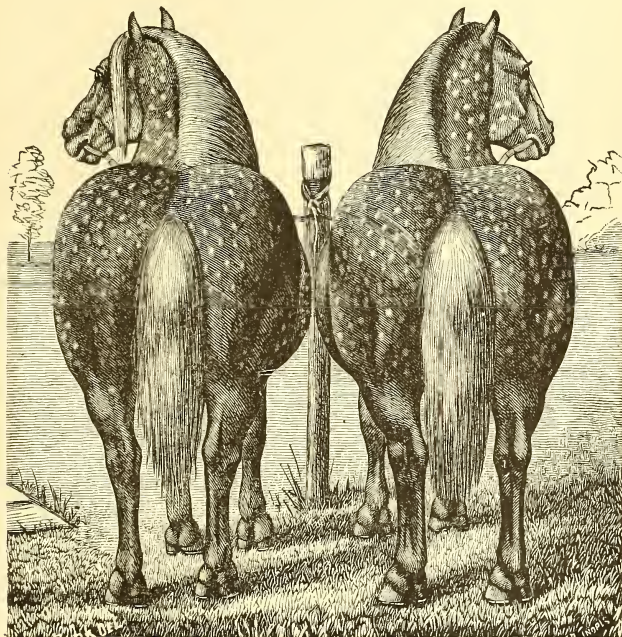
rejoice the hearts of my children.' Thus speaking, he sprang upon her back, and was out of sight in an instant."

THE RACE HORSE. The breed of horses for which England is chiefly remarkable is the race horse, resulting from a cross of the English stock with the Arabian; and this was chiefly brought about by the care of Mr. Darley. The offspring of the Arabian thus introduced was the Devonshire, or Flying Childers, the fleetest horse of his time. Descended from the same Arabian was Eclipse, who never met an opponent sufficiently fleet to test his powers. He became the sire of three hundred and thirty-four winners; while King Herod, a descendant of the same stock, was the sire of no less than four hundred and ninety-seven winners. The former of these horses died in 1789, at the age of seventy-five years, after realizing for his owner a princely fortune. His skeleton is now preserved in the museum at Oxford. The English race horse, in swiftness and energy, elegance and grace, surpasses his Arabian progenitor, and is so superior to other European breeds that it is usual on the English course to allow foreign horses an advantage in the weight that they carry. All English race horses are descended either from Arabian or Barb sires.

THE TROTTING HORSE. Two nations have the credit of introducing a race of horses known as the trotting horse. One of these is Russia, the other the United States; and the latter has so far excelled her rival that the trotting horse is now generally known in the Old World as the "trotting horse of America." The Russian breed is Arabian on a Flemish stock, and is known as the Orloff trotter; but from the bending of the knee when the horse is striding, and the trotting action not being carefully looked after, the animal is considered by good judges to be only "half-developed." The breed of the American trotter seems to have been both Barb and Arabian on an English stock, the well-known Bashaw trotters being descended from an imported Barb ancestor, the Grand Bashaw; and Top Gallant was produced by a union of Arabian or Eastern breed with some horse, either English or of English origin. One of the greatest American trainers of the trotting horse, Hiram Woodruff, says in his work on this subject that the English had the stock all along, as much as the Americans, but that the method of training and perseverance of the latter have produced the best and fastest trotters.

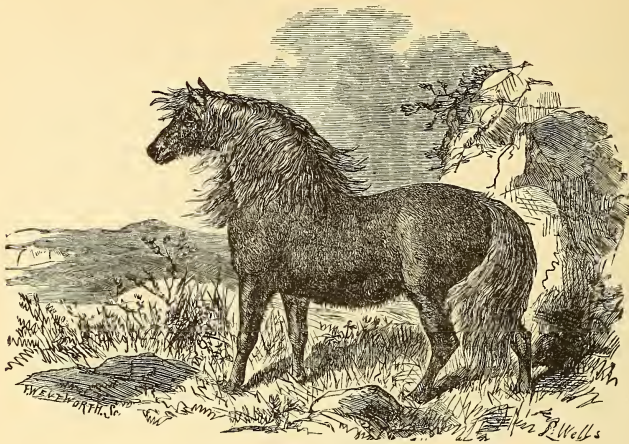
THE DRAY HORSE. The huge dray horse, in its massive form and ponderous strength, and slowness of gait, forms a striking contrast to the racer and the trotting horse. It is as admirably fitted for the slow carriage of heavy weights as the two last are for their elegant swiftness. It is as good an example of the results of judicious selection on the part of man, for a definite purpose, as can be offered by the study of any of the domestic animals.

THE SHETLAND PONY, an inhabitant of the extremest northern Scottish Isles, is a very diminutive animal—sometimes not more than seven hands and a half in height, and rarely exceeding nine and a half. He is often exceedingly beautiful, with a small head, good-tempered countenance, a short neck, fine toward the throttle, shoulders low and thick—in so little a creature far from being a blemish—back short, quarters expanded and powerful, legs flat and fine, and



A PAIR OF DRAFT HORSES.

pretty, round feet. These ponies possess immense strength for their size, will fatten upon almost anything, and are perfectly docile. One of them, nine hands (or three feet) in height, carried a heavy man the distance of forty miles in one day. Its wild, shaggy mane gives it somewhat the appearance, as has been remarked, of a Skye terrier. It is mischievous and skittish, and generally harder to ride than a larger horse.



SHETLAND PONY.

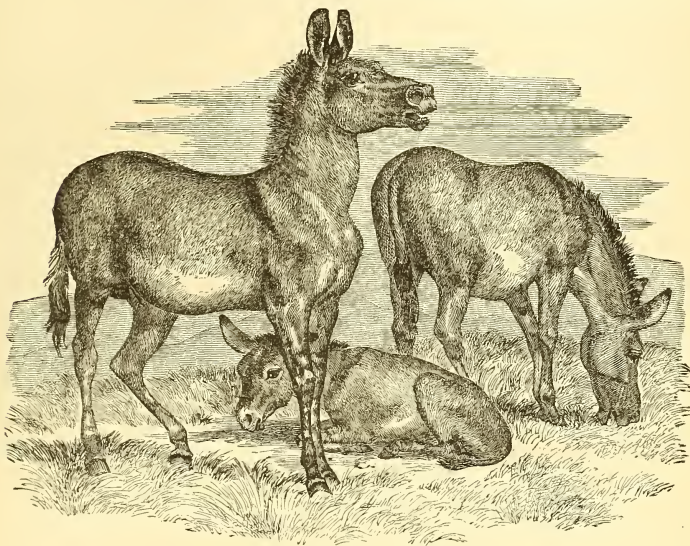
THE ASS. Four species of asses and three of zebras are described by naturalists, but our domestic animal is probably descended from one alone, that of Abyssinia. In this country, and generally in Central Europe, the ass has not given rise to distinct breeds like those of the horse. Its small size is probably due far more to want of care in breeding than to cold, for in Western India it is not much larger than a Newfoundland dog, being generally not more than from twenty to thirty inches high.

The asses, besides the characters above mentioned, have the upper part of the tail covered with short hairs, while the lower part terminates in a long hairy tuft. Horny excrescences, or warts, exist on the fore legs alone. In this country asses are small and without much variation, because their points have not been selected. When, however, care is taken in breeding, the result is as remarkable as in the case of the horse. Near Cordova, according to Mr. Darwin, they are carefully bred, as much as one thousand dollars having been paid for a stallion ass. Asses from Spain, Malta and France have been introduced into Kentucky for the breeding of mules, which have been raised by the care of the Kentuckians from their original size of fourteen hands to sixteen hands in height. Great prices are put on these splendid animals, one of great celebrity having been sold for over five thousand dollars.

Asses have always been in repute in the East, and much pains have been taken in their breeding. They are frequently mentioned in the Bible, from which it appears that white asses were used by people of high rank.

THE MULE AND HINNY. The hybrid offspring of the ass and the mare is the mule, while the hinny is that of the horse and female ass. Of these the mule is by far the larger, taking more the form and appearance, as well as the dimensions, of the mare; while the latter assumes so much of the nature and general appearance of the ass as to render the breeding of it undeserving of attention.

BURCHELL'S ZEBRA is found in great numbers north of the Orange River, and, according to Sir Cornwallis Harris, "Seldom congregating in herds of

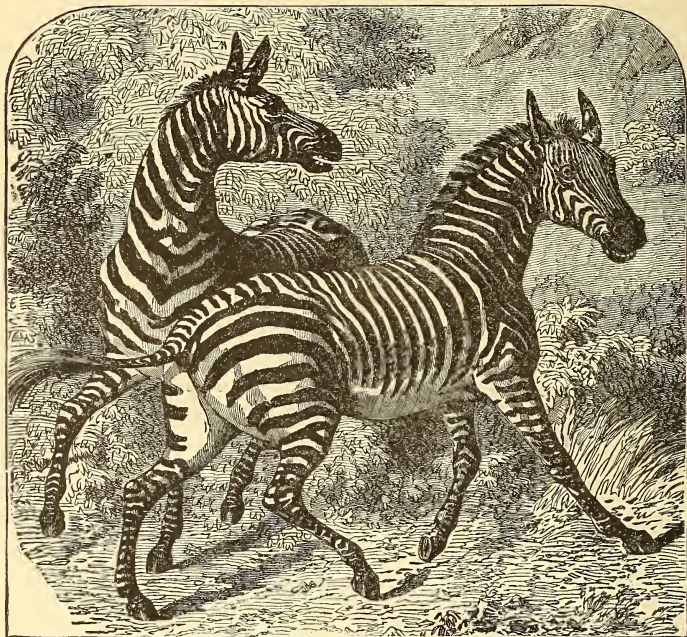


THE WILD ASS OF ABYSSINIA.

fewer than eighty or a hundred, it abounds to a great extent in all the districts included between that noble stream and the southern tropic. Occupying the same regions and delighting in the same pastures as the brindled gnu, rarely is it to be seen except in the companionship of that fantastic animal, whose presence would seem to be almost indispensable to its happiness. It is singular enough that the members of two families so foreign to each other should display so great a predilection for each other's society, uniformly mixing as they do, and herding in bonds of the closest friendship. Fierce, strong, fleet, and surpassingly beautiful,

there is, perhaps, no quadruped in the creation, not even excepting the mountain zebra, more splendidly attired, or presenting a picture of more singularly attractive beauty, than this freeborn child of the desert."

The true zebra inhabits the hilly districts of Southern Africa, and is remarkable for its beauty, and its fierce and untamable nature. It is by far the most con-

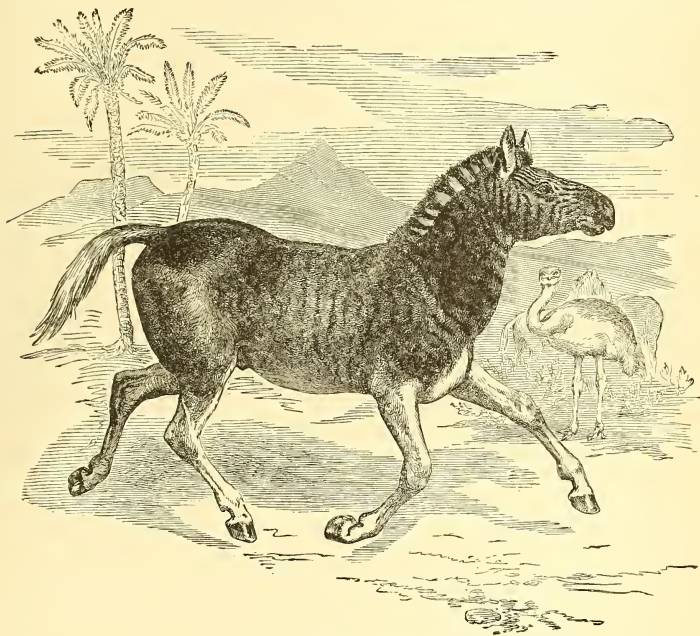


BURCHELL'S ZEBRAS.

spicuous and most beautiful of the ass tribe. The stripes which define it from the ordinary asses are remarkably like those of the tiger in their arrangement. Those on its legs are horizontal, while those on its body are for the most part vertical.

THE QUACCA, which is less attractively colored, and inhabits a different tract of country, is also described by Sir Cornwallis Harris, as follows: "The geographical range of the quagga does not appear to extend to the northward of

the River Vaal. The animal was formerly extremely common within the colony, but, vanishing before the strides of civilization, is now to be found in very limited numbers, and on the borders only. Beyond, on those sultry plains which are completely taken possession of by wild beasts, and may with strict propriety be termed the domains of savage nature, it occurs in interminable herds; and, although never intermixing with its more elegant congeners, it is almost inva-



THE QUAGGA.

riably to be found ranging with the white-tailed gnu and with the ostrich, for the society of which bird especially it evinces the most singular predilection; Moving slowly across the profile of the ocean-like horizon, uttering a shrill, barking neigh, of which its name forms a correct imitation, long files of quaggas continually remind the early traveler of a rival caravan on its march. * * Bands of many hundreds are thus frequently seen during their migration from the dreary and desolate plains of some portion of the interior, which has formed their secluded

abode, seeking for those more luxuriant pastures where, during the summer months, various herbs thrust forth their leaves and flowers to form a green carpet, spangled with hues the most brilliant and diversified."

II.—THE TAPIRIDÆ (FAMILY OF TAPIRS).

The hog-like creatures which constitute the family of tapirs form the second division of the quadrupeds possessed of an uneven number of toes on their hind feet, and therefore termed, as has already been said, the Perissodactyla. It must not, however, be forgotten that these creatures possess a fourth toe on the fore foot, which is small and does not reach to the ground. The family is represented by one genus only—*Tapirus*—which is distributed over wide regions in the warmer parts of the Old and the New Worlds. All the animals comprised under it possess short and movable trunks, by which they convey their food into their mouths, and at the extremity of which are placed the nostrils. They are of a brownish black color; the skin is hairy and extremely thick, and the tail is very short.

The tapir inhabits principally the inmost recesses of dense forests, is nocturnal in its habits, and is phytophagous, that is, feeds on vegetables. However, it is said also that it is also an indiscriminate swallower of everything, filthy or clean, nutritious or otherwise, pieces of wood, clay, pebbles, and bones being not uncommonly found in its stomach; and it is even stated of one that was kept in confinement that it gnawed a silver snuff-box to pieces and swallowed the contents.

THE AMERICAN TAPIR is found in almost all parts of South America from Buenos Ayres to Central America, and from the Andes to the Atlantic. In its habits it is nocturnal, spending the whole of the daytime in the cool shades of the densest forests, and coming forth to feed on the surrounding vegetation as evening approaches. It is a most powerful animal, and everything in the under-wood of the forest gives way to its rush. It has the habit of making runs or roads through the brushwood, which beaten tracks are usually selected by travelers in passing through the forests. It is stated that it has a most keen sense of smell, enabling it to detect its enemies at long distances, when it at once rushes into brushwood or thicket so dense that neither man nor horse can follow. It never attacks man without being very hardly pressed and brought to bay.

It is excessively fond of the water, being a most expert swimmer, and usually keeping to a particular track in the element in which it indulges.

The American species is characterized by having the general color throughout of a deep brown, approaching to black; but the sides of the lower lip, band on the under and middle part of the chin, upper edges of the ears, and naked line at the bottom of the hoofs, are snowy white. The scanty hair of the body is very short, and is hardly to be distinguished at a comparatively short distance.

The skin, which is of great density beneath, is described by M. Roulin to be not less than seven lines thick on the back; and he says that in the days when rifles



THE AMERICAN TAPIR.

were not brought to their present pitch of perfection a ball from one of them would scarcely make an impression.

On the back of the neck there is a thick rounded crest, which extends from the forehead, as low as the level of the eyes, to the shoulders, and beset with a comparatively thin mane of stiff blackish bristles.

The American tapir is hunted for its excessively tough hide, and also for its flesh, which, although described by Europeans as unsavory, being coarse and dry, is considered palatable by the Indians. It is captured sometimes, although not often, by means of the lasso, an instrument so successful in horse catching, but often futile as regards the tapir, for its usual haunts render this mode of capture most difficult, and its determined rush and immense strength frequently enable it to break the strongest lasso. Another way of hunting the tapir practiced by the native hunters is to find out the animal's track leading to the water; there, with their dogs, they patiently lie in wait until evening approaches, when the tapir comes out for the purpose of taking his evening stroll, and indulging in the indispensable bath. They then get between him and the water, when a desperate encounter ensues, the dogs often getting very badly injured.

The most successful manner of catching the tapir, however, is by means of imitating its whistle or call, thus bringing the animal within range of the Indian's poisoned arrow.

The American tapir is mild in captivity and easily domesticated, and tame tapirs are permitted to run at large in the streets of the towns of Guiana, and often wander into the forests, but return again in the evening to the house in which they are kept and fed. The tapir is capable of considerable attachment to its owner, and possibly, by care and attention, might be turned to good account, as the qualities with which it is credited—strength, docility, and patience—ought to render it capable of the duties of a beast of burden.

THE MALAYAN TAPIR. The Asiatic tapir, which appears to have become known to Europeans only in the present century, is an inhabitant of Sumatra, Malacca, and the southwest provinces of China. It is said to have been found also in Borneo. In size it is larger than the American tapir. It is distinguished by the absence of a mane, the general color of the hair being glossy black, but with the back, rump, and sides of the belly white.

In its habits the Asiatic tapir appears to be similar to his American cousin, and in captivity it is said to be of a most mild and inoffensive disposition, becoming as tractable and familiar as a dog.

THE RHINOCEROS FAMILY (RHINOCEROTIDÆ).

The rhinoceroses form the third family of the sub-order of Perissodactyla. They are to be found at the present day in Africa south of the Sahara Desert, and in India, Java, or Sumatra, where the climate is tropical or sub-tropical. They

are represented by several living species, as well as by several extinct forms. The principal characteristics which are to be observed in the rhinoceros are the large unwieldy bodies, supported on short, stout legs, terminating in a large callous pad with hoof-bearing toes, the large and long head, the small eyes and ears, and the short tail. All the living species also possess one or two horns, which are placed in the middle line of the head on and above the nose. Each of these horns is to



THE MALAYAN TAPIR.

be viewed as a mere appendage to the skin, like hair, for they are only skin deep, and are composed of a series of fibers matted together, and similar, if not identical, to a mass of hair in which each hair is confluent with those near it.

THE WHITE RHINOCEROS. This is an animal measuring somewhat over twelve feet in length and about five feet ten inches in height. It has a square nose and two large rounded horns, the anterior one averaging about two feet six inches in length, but not uncommonly found measuring three feet six inches, some-

times even over four feet; the posterior rarely or never exceeding fifteen inches, and generally not being more than twelve inches. Its skin is smooth, and without any of those folds so characteristic of the Asiatic species. It inhabits all the coun-



THE "WHITE" RHINOCEROS.

try south of the Zambesi, and probably it may also exist in Central Africa. It feeds solely on grass, and sometimes collects into small herds.

THE BLACK RHINOCEROS is a much smaller animal, being about eleven feet in length, and five feet in height, with an elongated head and horns



THE KEITLOA.

thicker in proportion to length than those of the white rhinoceros. The front horn is twenty or twenty-two inches in length, and never attains to more than twenty-six or twenty-eight inches; while the back horn averages ten or twelve inches. Its skin is not black, but flesh-colored, and the upper lip is highly prehensile.

THE KEITLOA differs but little from the black rhinoceros, excepting in the formation of the head, which is somewhat shorter and broader, and it has a less prehensile lip. Its chief characteristic is the posterior horn, which is flattened at the sides, being of almost equal length to the anterior, and even occasionally

longer, twenty and twenty-two inches being about the average. It is found sparingly in all the country south of the Zambesi, and is not gregarious, a bull and cow only being usually seen together. The Black Rhinoceros is the smallest, being seldom over ten feet in length, or more than four feet ten inches in height. The head is more elongated, and the nose more prehensile than in any other species, while the legs are shorter in proportion, and the feet smaller. The anterior horns rarely exceed twelve inches, and the posterior seven or eight inches. It is usually found only between Zululand and the Limpopo River, although it has been killed farther north, not far from the Zambesi. It is not gregarious, two full grown ones and a calf being the greatest number that has been recorded as seen together. It feeds on thorns, leaves and shoots, and rarely, if ever, is found out of the thorn jungle.

Until recent times, it was universally believed that the hide of a rhinoceros was too tough to allow a bullet to penetrate; indeed, even now in popular opinion the belief is still retained, but, like many popular opinions, it has proved to be untrue; and that a rhinoceros may be as easily shot with an ordinary bullet as an ox, is fully established on the authority of Gordon Cummings, Sir S. Baker, Dr. Livingstone, and others.

Gordon Cummings, in his "Hunter's Life in South Africa," gives the following details of the rhinoceros: "Of the rhinoceros there are four varieties in South Africa, distinguished by the Bechuanas by the names of the Borèlé, or black rhinoceros; the Keitloa, or two-horned black rhinoceros; the Muchocho, or common white rhinoceros; and the Robaoba, or long-horned white rhinoceros. Both varieties of the black rhinoceros are extremely fierce and dangerous, and rush headlong and unprovoked at any object which attracts their attention. They never attain much fat, and their flesh is tough, and not much esteemed by the Bechuanas. Their food consists almost entirely of the thorny branches of the waitabit thorns. Their horns are much shorter than those of the other varieties, seldom exceeding eighteen inches in length. They are finely polished with constant rubbing against the trees. The skull is remarkably formed, the most striking feature being the tremendously thick ossification in which it ends above the nostrils. It is on this mass that the horn is supported. The horns are not connected with the skull, being attached merely by the skin, and they may thus be separated from the head by means of a sharp knife. They are hard and solid throughout, and are a fine material for various articles, such as drinking cups, mallets for rifles, handles for turners' tools, etc. The horn is capable of taking a very high polish. The eyes of the rhinoceros are small and sparkling, and do not readily observe the hunter, provided he keep to the leeward of them. The skin is extremely thick, and only to be penetrated by bullets hardened with solder. During the day the rhinoceros will be found lying asleep, or standing indolently in some retired part of the forest, or under the base of the mountains, sheltered from the power of the sun by some friendly grove of umbrella-topped mimosas.



White and Black Rhinoceros.



In the evening they commence their nightly rambles, and wander over a great extent of country. They usually visit the fountains between the hours of nine and twelve o'clock at night, and it is on these occasions that they may be the most successfully hunted, and with the least danger. The black rhinoceros is subject to paroxysms of unprovoked fury, often plowing up the ground for several



INDIAN RHINOCEROS AND ELEPHANT FIGHTING.

yards with its horn, and assaulting large bushes in the most violent manner. On these bushes they work for hours with their horns, at the same time snorting and blowing loudly, nor do they leave them in general until they have broken them in pieces. All the four varieties delight to roll and wallow in the mud, with which their rugged hides are generally incrustated. Both varieties of the black rhinoceros

are much smaller and more active than the white, and are so swift that a horse with a rider on his back can rarely overtake them.

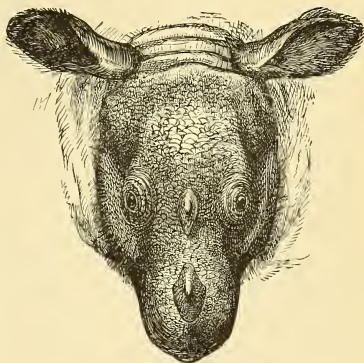
The two varieties of the white rhinoceros are so similar in habits that the description of one will serve for both, the principal difference consisting in the length and set of the anterior horn, that of the Muchocho averaging from two to three feet in length and pointing backward, while the horn of the Robaoba often exceeds four feet in length, and inclines forward from the nose at an angle of forty-five degrees. The posterior horn of either species seldom exceeds six or seven inches in length. The Robaoba is the rarer of the two, and it is found very far in the interior, chiefly to the eastward of the Limpopo. Its horns are very valuable for loading rods, supplying a substance at once suitable for a sporting implement, and excellent for the purpose. Both these varieties of rhinoceros attain an enormous size. They feed solely on grass, carry much fat, and their flesh is excellent, being preferable to beef. They are of a much milder and more inoffensive disposition than the black rhinoceros, rarely charging their pursuer. Their speed is very inferior to that of the other varieties, and a person well mounted can overtake and shoot them. The head of these is a foot longer than that of the Borèlé. They generally carry their heads low, whereas the Borèlé, when disturbed, carries his very high. Unlike the elephants, they never associate in herds, but are met singly or in pairs. In districts where they are abundant, from three to six may be found in company, and I once saw upward of a dozen congregated together on some young grass, but such an occurrence is rare."

Gordon Cummings relates that the rhinoceros and hippopotamus are usually attended by little birds known as rhinoceros birds, "Their object being to feed upon the ticks and other parasites that swarm upon these animals. They are of a grayish color, and are nearly as large as a common thrush. Their voice is very similar to the mistletoe thrush. Many a time have these ever-watchful birds disappointed me in my stalk, and tempted me to invoke an anathema upon their devoted heads. They are the best friends the rhinoceros has, and rarely fail to awaken him, even in his soundest nap. 'Chuckuroo' perfectly understands their warning, and, springing to his feet, he generally first looks about him in every direction, after which he invariably makes off. I have often hunted a rhinoceros on horseback which led me a chase of many miles, and required a number of shots before he fell, during which chase several of these birds remained by the rhinoceros to the last. They reminded me of mariners on the deck of some bark sailing on the ocean, for they perched along his back and sides, and as each of my bullets told on the shoulder of the rhinoceros, they ascended about six feet into the air, uttering their harsh cry of alarm, and then resumed their position. It sometimes happened that the lower branches of trees, under which the rhinoceros passed, swept them from their living deck, but they always recovered their former station. They also adhere to the rhinoceros during the night. I have often shot these animals at midnight when drinking at the fountains, and the birds, imagining

they were asleep, remained with them till morning, and on my approaching, before taking flight, they exerted themselves to the utmost to awaken Chuckuroo from his deep sleep."

THE ASIATIC RHINOCEROS.

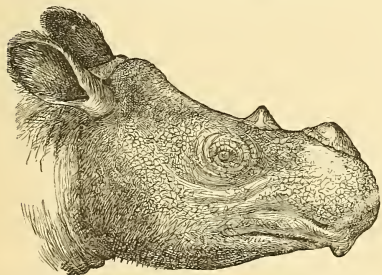
There are four different rhinoceroses in Asia, of which two are characterized by the possession of one horn, while the remaining two possess two horns, as in the African species. All the adult Asiatic possess incisors or front teeth, which are conspicuous by their absence from the African species. The normal number of these is four in the upper and four in the lower jaws, the median pair being the larger in the upper and the smaller in the lower. The development of these teeth seems to stand in relation to the development of horns, those animals with the smallest horns being provided with the largest incisors.



FRONT VIEW OF HEAD OF SUMATRAN RHINOCEROS.

THE INDIAN RHINOCEROS is the most familiar, with a single horn on the nose, and thick naked skin covered with large boss-like granulations, which lie in massive folds on various parts of the body, and more especially behind and across the shoulders and before and across the thighs. There are a few stiff hairs on the tail and ears. It inhabits the East Indies, principally beyond the Ganges, and is recorded as having been found in Bengal, Siam, and Cochin-China. It is found in shady forests, the neighborhood of rivers, and marshy places, its food consisting of herbage and branches of trees. The fully grown animal rarely arrives at a greater height than five, and its average may be taken at four feet.

Williamson, in his "Oriental Field Sports," speaking of the Indian rhinoceros, describes it as an inveterate enemy of elephants, attacking whenever he can find them single, or, at least, not protected by a male of great bulk, ripping without mercy, and confiding in his coat of mail to defend him from the puny attacks of the females, as



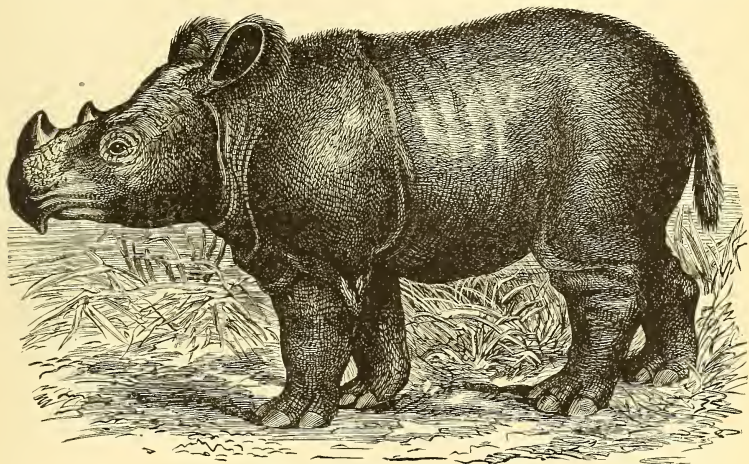
SIDE VIEW OF HEAD OF SUMATRAN RHINOCEROS.

well as to resist the tusks of young males. He relates that the apparent bluntness of the horn of the Indian rhinoceros, which is about as broad at the base as it is high, would make it appear a somewhat insignificant weapon, and inadequate to penetrate any hard or tough substance. This, however, we are informed is not the case, elephants often being found dead, obviously, it is stated, from the wounds received from the horn of the rhinoceros; and in one case, as is related by Williamson, a large male elephant and rhinoceros were found both dead together, the elephant's abdomen having been ripped open, and the rhinoceros' horn having been found transfixed beneath the ribs. Williamson also states that Major Lally, an officer of the Indian army, whose veracity is beyond question, while engaged in one of his hunting expeditions, and having arrived at the summit of a low range of hills, was suddenly presented with a distinct view of a most desperate engagement between a rhinoceros and a large male elephant, the latter, to all appearance, protecting a small herd which were retiring in a state of alarm. The elephant was beaten, and decamped, followed by the rhinoceros, into a heavy jungle, where much roaring was heard, but nothing could be discerned. From this we may conclude that the habit which Pliny describes of the rhinoceros ripping open the elephant is confirmed by modern observation.

THE SUMATRAN RHINOCEROS is the more commonly known of the two two-horned species inhabiting Asia. Its head is armed with two obtusely-pointed horns, its body is covered with bristles, and the folds of the skin are deep, and especially that behind the shoulder. The folds on the neck, however, are not so distinct as in the one-horned species.

THE HAIRY-EARED RHINOCEROS has been confounded by naturalists with the Sumatran species, until Dr. Sclater showed from the comparison of those two animals that they were specifically distinct. The former is characterized by the long hairy fringe to the ears, by the covering of long, fine reddish hair on the body, the smoother and more finely granulated skin, and the shorter tail. The one in Regent's Park was captured in January, 1868, under very singular circumstances, as described in the following extract from a Calcutta newspaper: "The quiet station of Chittagong has been lately enlivened by the presence of a rhinoceros. It appears that about a month ago some natives came into Chittagong and stated that a rhinoceros had been found by them in a quicksand, and was quite exhausted with the efforts to relieve herself. They had attached two ropes to the animal's neck, and with the assistance of about two hundred men dragged her out, and keeping her taut between two ropes they eventually made her fast to a tree. The next morning, however, they found the rhinoceros so refreshed, and making such efforts to free herself, that they were frightened, and made application to the magistrate of Chittagong for protection. The same evening Captain Hood and Mr. W. H. Wickes started with eight elephants to secure the prize, and after a

march of about sixteen hours to the south of Chittagong they came up with the animal. The elephants, at first sight of the rhinoceros, were very much afraid, and bolted one and all, but after some exertion they were brought back and made to stand by. A rope was now with some trouble attached to the animal's hind leg, and secured to an elephant. At this juncture the rhinoceros roared; the elephants again bolted, and had it not been for the rope slipping from the leg of the rhinoceros, the limb might have been pulled from the body. The rhinoceros was, however, eventually secured with ropes between elephants, and marched into Chittagong in perfect health. Two large rivers had to be crossed—first the Sungoo River, where



THE HAIRY-EARED RHINOCEROS.

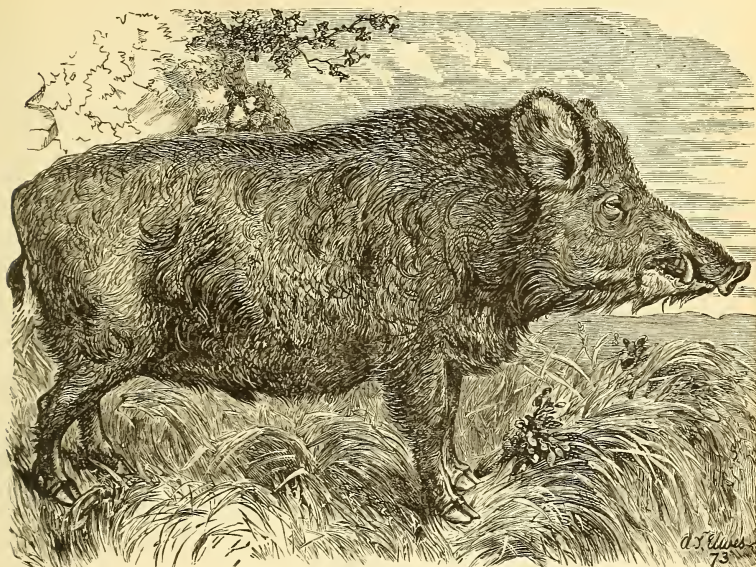
the animal was towed between elephants, for she could not swim, and cou'd only just keep her head above water by paddling with the fore feet, like a pig; and secondly, the Kurnafoolie River, when the ordinary cattle ferry boat was used. Thousands of natives thronged the march in, which occupied a few days, the temporary bamboo bridges on the Government road invariably falling in with the numbers collected thereon to watch the rhinoceros crossing the stream below: and sometimes the procession was at least a mile in length. The 'Begum,' as the rhinoceros has been named, is now free from all ropes, and kept within a stockade inclosure, having therein a good bath excavated in the ground, and a comfortable covered shed attached. She is already very tame, and will take plantain leaves or chuppatees from the hand, and might also be led about by a string." Begum was ultimately

taken to England, and sold to the Zoological Society for \$6,000, and is now living in the Regent's Park, where she is quiet and orderly, and an altogether respectable lady rhinoceros.

SUIDÆ, OR HOG FAMILY.

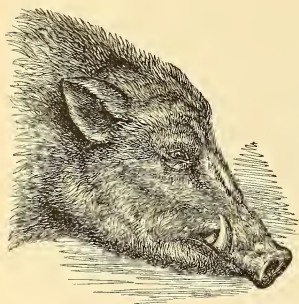
The hog family may be divided into three well marked groups—the true swine, the wart hogs, and the peccaries. In order to enable the hog family to “root” or turn up the ground, they are provided with a truncated and cylindrical proboscis, or snout, which is capable of considerable movement. The skin is more or less supplied abundantly with hair, and the tail is short, and in some cases merely represented by a tubercle. The sense of smell in the hog is very acute, and when its broad snout plows up the herbage, not a root, an insect, or a worm, escapes the olfactory sense. Although credited with stupidity, the hog in its native state is to be styled anything but a dull and lethargic animal, neither is it the filthy animal that domestication has reduced it to. Properly cared for, the pig is as cleanly in its habits, and as capable of strong attachment, as any other creature.

THE WILD BOAR inhabits Europe, North Africa, and Hindostan, each country having its own peculiar type or race, which sometimes is so marked as to constitute separate species in the opinion of first-rate naturalists. The wild boar is distinguished by a body generally of a dusky-brown or greyish color, having a tendency to black, and being diversified with black spots. The canines or tusks in the male are long and powerful, and project beyond the upper lip, the mouth is large, and the elongated head is set on a short neck rising out of a thick and muscular body. The size is variable, an old wild boar recorded by Demarest being five feet nine inches long, while a four-year-old of the more ordinary size measured three feet without the tail. The female is smaller than the male, and with smaller tusks. The hairs of the body are coarse, intermixed with a downy wool. On the neck and shoulders the hairs take the form of bristles, being long enough to assume a kind of mane, which the animal is enabled to erect if irritated. The young has the body marked with longitudinal stripes of a reddish color. In its habits the wild boar is by choice herbivorous, feeding on plants, fruits, and roots; but it will also eat snakes, lizards, and various insects, and when pressed by hunger nothing appears to come amiss to its voracious appetite; it is stated that even dead horses are sometimes called into requisition. The boar is nocturnal in its habits, rarely leaving the shadow of the woods in the daytime, and coming forth as twilight approaches in search of food, delighting in roots often deeply embedded in the soil, and which its keen sense of smell enables it easily to detect. Much mischief is often done by this animal, which plows up the ground in continuous furrows for long distances, and is not content, like the domesticated variety, with plowing up a spot here and there.



THE WILD BOAR.

THE INDIAN HOG differs but little in general appearance from the European wild boar, and is looked upon in the East as a most exciting object of the chase, its speed, endurance and courage making it one of the most formidable and dangerous animals that can possibly be encountered. The habits of this animal are admirably portrayed by Williamson, in his "Oriental Field Sports." After describing the extraordinary speed this creature is possessed of, equaling that of a good horse, and asserting that a moderate sized hog can, and often does, overthrow horses and their riders, he states that "the wild hog delights in cultivated situations; but he will not remain where water is not at hand, in which he may, unobserved, quench his thirst and wallow at his ease. Nor will he resort for a second season to a spot which does not afford ample cover, whether of heavy grass or of underwood jungle, within a certain distance, for him to fly to in case of molestation, and especially to serve as a retreat during the hot season, as otherwise he would find no shelter. The sugar cane is his great delight, both as being his favorite food, and as affording a high, impervious, and unfrequented situation. In these, hogs commit great devastation, especially the breeding sows, which not only



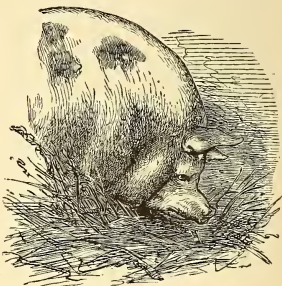
HEAD OF WILD BOAR.

blade. It is held by a man on horseback in such a manner that about a foot and a half projects in front of the stirrup-iron and the horse is ridden in such a way that when the boar charges it is transfixed by the spear."

THE DOMESTIC HOG is descended from two distinct wild stocks—the wild boar, and an Eastern type known now only in the domesticated condition. The breeds of hogs descended from the wild boar are to be found in the various parts of Northern and Central Europe, and resemble their progenitors in the length of their legs and the development of their tusk. The skull, however, has become higher and broader, and their tusks are not so large, and the body is not covered with such a dense covering of hair.

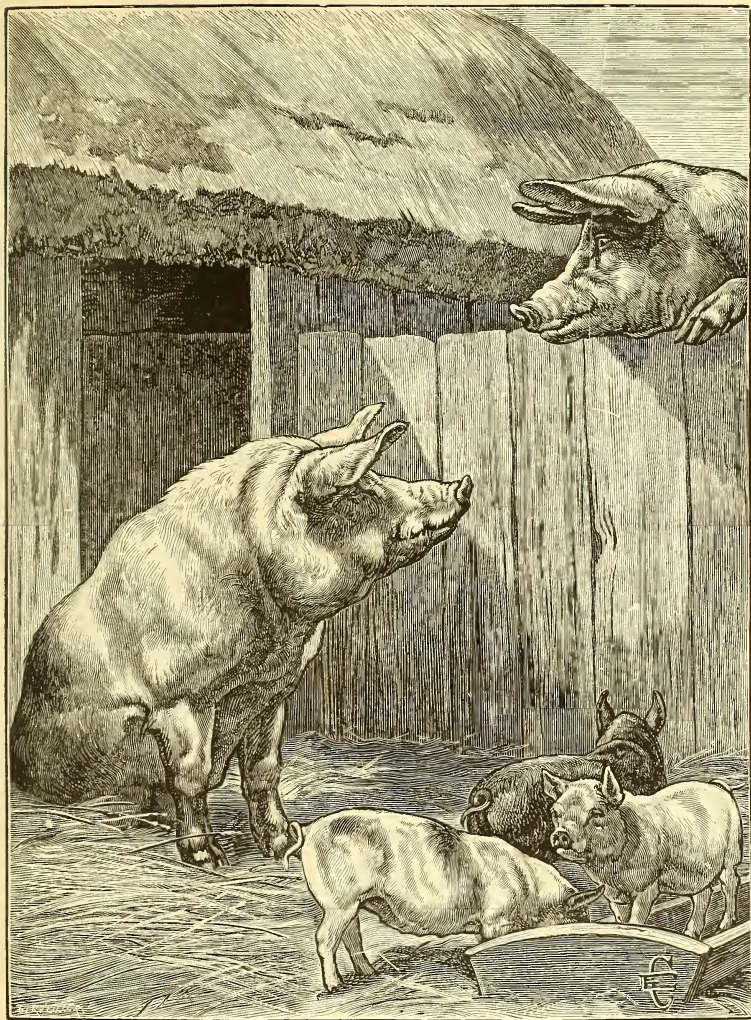
The domesticated breeds of China and Siam have, among other characters, broader and stouter heads than those which are descended from the wild boar, and are best known under the form of the Chinese breed. They constitute the type of *Sus Indica*, which is now so largely represented among the various European strains, and which is mostly due to the crossing of two original stocks. Both these breeds were brought under the dominion of man in a very remote age, and have varied in exact proportion to the care taken in selecting the various characters.

The hogs are represented in Africa, south of the Sahara, and in Madagascar, by an animal known as the bush hog, which possesses a remarkable boss or excrescence rising from the face below the eyes. The species figured has peculiar



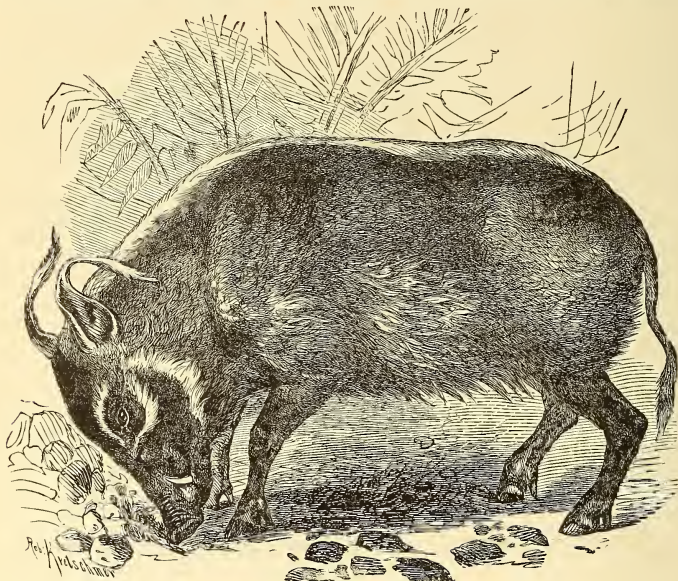
HEAD OF DOMESTIC HOG

devour, but cut the canes for litter, and throw them up into little huts, which they do with much art, leaving a small entrance which they stop up at pleasure. Sows never quit their young pigs without completely shutting them up. This, indeed, is requisite only for a few days, as the young brood may be seen following the mother at a round pace, when not more than a week or ten days old. The wild boar of India is hunted usually by men on horseback, armed with spears of a more or less variable length, averaging from about six feet and a half to eight and sometimes ten feet. The shaft of a spear consists of bamboo properly weighted with lead; the spear itself is a broad and stout



DOMESTIC HOGS.

ears, which look almost as if they had been cut. One of the most singular of the wild hogs is the Babirusa, inhabiting the islands of Celebes and Borneo, in which, in the males, the tusks arrive at an enormous size, those of the upper jaw curving upward and backward, and even, in some cases, penetrating the skull in their backward reach. These tusks, however, are useless for purposes of attack. The lower jaws, also, are armed with two sharp tusks, which are capable of inflicting severe wounds. The animal is nearly hairless, and is said to arrive at a size not



THE BUSH HOG.

much less than that of a donkey. It is very ferocious, and is a more formidable antagonist than the wild boar of Europe.

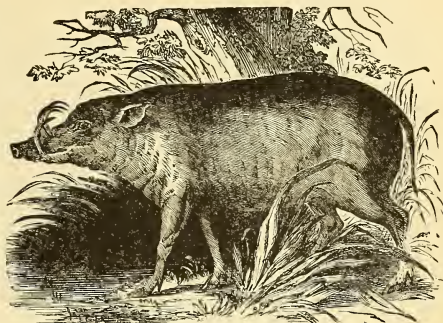
The Babirusa is described as being of a delicate nature, requiring considerable care and attention when kept in confinement.

THE WART HOGS range over tropical Africa from Abyssinia to Caffraria. They are remarkable, not only for having enormous tusks, and for the development of a large excrescence or wart, under each eye, but also for the peculiar construction of their last grinding teeth. These are massive, and composed of prisms

of enamel surrounding a central mass of dentine, and embedded in the cement which unites them into one tooth. There is only one pair of upper incisors, and the last molars are the only ones which are not shed in the old animal. The canines are large, recurved, sharp, and project eight or nine inches beyond the lips.

THE ETHIOPIAN WART

HOG is a native of the southern portions of Africa, and differs principally from the preceding in the larger size of the warts, and a more peculiarly shaped head. The food of both species of wart hogs appears to consist almost entirely of roots.



THE BAEIRUSA.

THE COLLARED PECCARY is a small pig about three feet long; the head is short, the muzzle slender, and the tail short. The thick bristles which cover its body are dark brown with yellow and black rings, and are somewhat longer on the back of the neck. The prevailing color is dark brown, but on the shoulders and round the neck is a broad band of a yellowish-white color, from which this species has obtained its name. The open gland on the back always discharges a fluid of a most fetid odor, which, however, seems to be grateful to the possessors of it, as they are often seen mutually rubbing each other's backs with their snouts.

Although the peccary is a very harmless animal to the outward view, it is a very dangerous enemy, in spite of its light weight (fifty to sixty pounds) and its short tusks; for these tusks are shaped like a lancet, double edged, and acutely pointed, and inflict terrible wounds. No animal can withstand the united attacks of the peccary. Fear is a feeling to which it is an utter stranger, and even the jaguar is forced to abandon the contest and to shrink from encountering the circular mass of peccaries. Schomburgh, whose accounts are perfectly trustworthy, writes: "As we were passing through a woody oasis I heard a peculiar noise like the galloping of horses. With the cry '*Poinka!*' the Indians cocked their guns and drew their bows, and soon an innumerable herd of peccaries came in sight. When they saw us they stopped in their charge for an instant, then grunting loudly, rushed past us. I was so surprised by the sudden appearance of the creatures that I forgot to shoot at first, and raised my gun to make up for lost time, but my arm was seized by an Indian. When the main herd was past and some stragglers came in sight,

the Indians began to use bow and gun. They affirmed that it was most dangerous to fire into the middle of a herd, for the peccaries dispersed in all directions, and tore with their tusks every living thing that came in their way; while if the stragglers only are attacked, the main body pursues its course." In Webber's "Romance of Natural History" there is a very amusing account, too

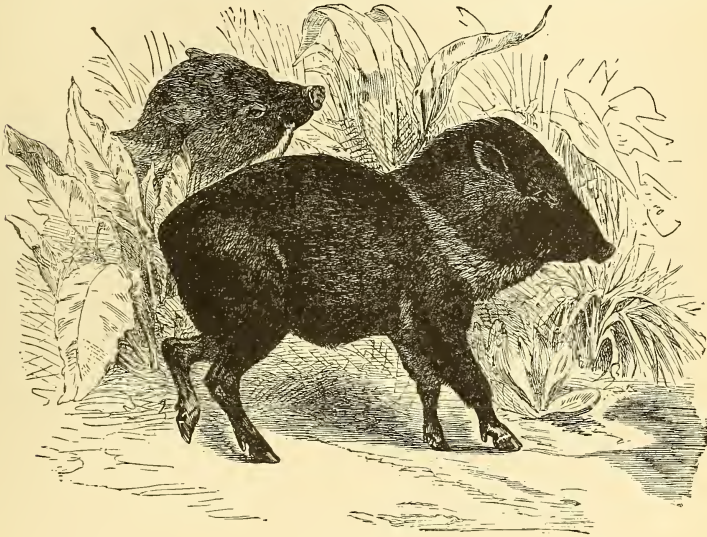


THE ETHIOPIAN WART HOG.

long to be quoted, of the consternation caused during a bear hunt by a charge of peccaries, which scattered men, dogs and bear in a common confusion. Another traveler writes as follows: "While pushing my way through a wood my dog started a peccary. Suddenly eight or ten burst through the underwood, and before I could realize the scene, had finished my unlucky companion with their sharp teeth. I suddenly found myself surrounded. I killed several, but it was no use; my ammunition was soon expended, and it was only by clubbing my gun

that I fought my way to a tree, and with more than one wound from their incisors, reached a secure position. Here I remained besieged till they dispersed."

THE COMMON RIVER HORSE is a large, unwieldy looking animal, sometimes as much as eleven or twelve feet long, with a massive body and enormous head, and short, stout legs. Nevertheless, it is capable of moving swiftly on the land, and swimming with perfect ease. Its skin is naked, thick and

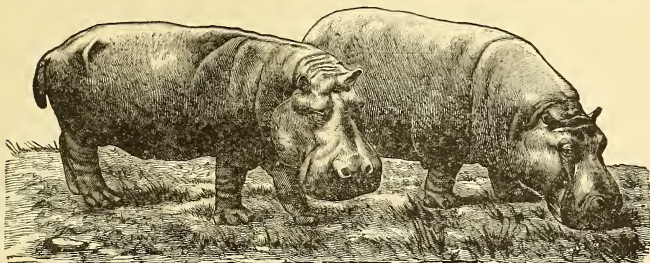


THE PECCARY.

penetrated by pores which exude a thick fatty secretion, which may perhaps be useful to it while in the water. The front part of the head is massive, and broader than that of any other living quadruped. The nostrils are comparatively small slits, which are closed and water tight during the frequent dives beneath the surface of the water. The eyes are prominent and placed far back in the head, and the ears are so short that they look as if they had been cropped. They, too, have a special arrangement of muscles by which they can be closed. The short legs are terminated by four hoof-bearing toes, and the short tail is adorned with bristles arranged laterally and on opposite sides, which are the only traces of hair found on the animal. The mouth is very large, and armed with tusks and grinders

that present a fearful appearance when the animal opens its mouth with a gape, which is unsurpassed in width by that of any other animal. The tusks are enormous, especially those in the lower jaw, which are curved upward as in the hog's and meet those of the upper jaw close to their sockets. By the attrition of their surfaces together their tips are reduced to a chisel edge. The river horse is nocturnal in its habits, frequenting rivers and lagoons, and rarely leaving them or their immediate neighborhood except at night, when it will go considerable distances in search of food, sometimes causing great damage to cultivated crops, which may be estimated from the fact that its stomach is capable of holding from five to six bushels. Its food consists principally of grass, young shrubs, and water plants, and it is particularly fond of green corn. When in the water its slow respiration enables it to remain for a long time beneath the surface without coming up to breathe; and the means of closing both its ears and nostrils against the access of water, is admirably suited for its aquatic habits.

Hippopotami keep together in herds, and where they have not been disturbed come fearlessly to the top of the water, often lazily basking on the surface and on the banks; but in places where they have been hunted and shot at they become very wary, and content themselves by just showing their noses among weeds, and sometimes they are so carefully concealed that but for their footprints on the banks of the river, their presence would be quite unknown. Cumming, in his African hunting experiences, gives a description of seeing an entire colony of these animals on the banks of the Limpopo. He says: "Presently in a broad and deeply shaded pool of the river we heard the sea cows bellowing, and approaching somewhat nearer beheld a wonderful and interesting sight. On a sandy promontory of the island stood about thirty cows and calves, whilst in the pool opposite and below them stood about twenty more sea cows, with their heads and backs above water. About fifty yards farther down the river, again showing out their heads, were eight or ten immense fellows, which I think were all bulls, and about a hundred yards below these, in the middle of the stream, stood another herd of eight or ten cows and calves, and two large bulls. The sea cows lay close together like pigs, and as they sprawl in the mire have not the least objection to their neighbors pillowing their heads on their backs and sides." Livingstone also gives a description of seeing a herd of hippopotami as follows: "On a shallow sand bank, under a dyke crossing the River Zambesi near the mouth of the Sinjere, lay a herd of hippopotami in fancied security. The young ones were playing with each other like young puppies, climbing on the backs of their dams, trying to take hold of one another by the jaws, and tumbling over into the water. Mbia, one of the Makotols, waded across to within a dozen yards of the drowsy beasts, and shot the father of the herd, who being very fat soon floated, and was secured at the village below. The men then gorged themselves with meat for two days, and cut large quantities into long narrow strips, which they half dried and half roasted on wooden frames over the fire." The harpoon is the weapon



THE COMMON RIVER HORSE OR HIPPOPOTAMUS.

usually used by the natives of Africa for catching the hippopotamus. One kind of harpoon consists of a shaft about twelve feet long, at one end of which is a combination of spear and fishhook, the spear being let into a socket of the shaft, and also attached to the shaft by means of cords. At the other extremity is a coil of rope, to which is attached a large float, so that when a hippopotamus is harpooned the float shows the position of the animal. When an animal is struck, it is followed either by men in canoes or on land, who by means of ropes get possession of the line to which the float is attached, which they entwine round a tree, and every time the animal comes up to breathe he is greeted by a shower of spears until finally finished. The hippopotamus has been considered by travelers and naturalists to be of a mild and inoffensive disposition, retiring and shy in its habits, and unless provoked rarely attacking man. Probably this to a great extent is true of the animal, but numerous instances are recorded of most ferocious and quite unprovoked attacks, and when this is the case few animals are capable of showing such blind rage.

Sir Samuel Baker relates from personal observation the capture of a hippopotamus with the harpoon above described. He says: "At length we arrived at a large pool, in which were several sand banks covered with rushes, and many rocky islands. Among the rocks was a herd of hippopotami, consisting of an old bull and several cows; a young hippo was standing, like an ugly little statue, on a protruding rock, while another infant stood upon its mother's back that listlessly floated on the water. This was an admirable place for the hunters. They desired me to lie down, and they crept into the jungle out of view of the river. I presently observed them stealthily descending the dry bed about two hundred paces above the spot where the hippos were basking behind the rocks. They entered the river and swam down the center of the stream toward the rock. This was highly exciting. The hippos were quite unconscious of the approaching danger, as steadily and rapidly the hunters floated down the strong current; they neared the rock, and both heads disappeared as they purposely sank out of view; in a few

seconds later they reappeared at the edge of the rock upon which the young hippo stood. It would be difficult to say which started first, the astonished young hippo into the water, or the harpoons from the hands of the howartis! It was the affair of a moment. The hunters dived directly they had hurled their harpoons, and swimming for some distance under water, they came to the surface, and hastened to the shore lest an infuriated hippopotamus should follow them. One harpoon had missed; the other had fixed the bull of the herd, at which it had been surely aimed. This was grand sport. The bull was in the greatest fury, and rose to the surface, snorting and blowing in his impotent rage; but as the ambatch float was exceedingly large, and this naturally accompanied his movements, he tried to escape from his imaginary persecutor, and dived constantly, only to find his pertinacious attendant close to him upon regaining the surface. This was not to last long. The howartis were in earnest, and they at once called their party, who with two of the aggageers, Abou Do and Suleiman, were near at hand. The men arrived with long ropes that form a portion of the outfit for hippo hunting. The whole party now halted on the edge of the river, while two men swam across with one end of the long rope. Upon gaining the opposite bank, I observed that a second rope was made fast to the middle of the main line; thus upon our side we held the ends of two ropes, while on the opposite side they had only one. Accordingly, the point of junction of the two ropes in the center formed an acute angle. The object of this was soon practically explained. Two men upon our side now each held a rope, and one of these walked about ten yards before the other. Upon both sides of the river the people now advanced, dragging the rope on the surface of the water until they reached the ambatch float that was swimming to and fro, according to the movements of the hippopotamus below. By a dexterous jerk of the main line the float was now placed between the two ropes, and it was immediately secured in the acute angle by bringing together the ends of the ropes on our side. The men on the opposite bank now dropped their line, and our men now hauled in upon the ambatch float that was held fast between the ropes. Thus cleverly made sure, we quickly brought a strain upon the hippo; and although I have had some experience in handling big fish, I never knew one pull so lustily as the amphibious animal that we now alternately coaxed and bullied.

"He sprang out of the water, gnashed his huge jaws, snorted with tremendous rage, and lashed the river into foam; he then dived and foolishly approached us beneath the water. We quickly gathered in the slack line, and took a round turn upon a large rock within a few feet of the river.

"The hippo now rose to the surface about ten yards from the hunters, and jumping half out of the water, he snapped his great jaws together, endeavoring to catch the rope, but at the same instant two harpoons were launched into his side. "Disdaining retreat, and maddened with rage, the furious animal charged from the depths of the river, and gaining a footing, he reared his bulky form from



the surface, came boldly upon the sand bank, and attacked the hunters open-mouthed. He little knew his enemy; they were not the men to fear a pair of gaping jaws, armed with a deadly array of tusks, but half a dozen lances were hurled at him, some entering his mouth from a distance of five or six paces; at the same time several men threw handfuls of sand into his enormous eyes. This baffled him more than the lances; he crunched the shafts between his powerful jaws like straws, but he was beaten by the sand, and shaking his huge head, he retreated to the river. During his sally upon the shore, two of the hunters had secured the ropes of the harpoons that had been fastened in his body just before his charge. He was now fixed by three of these deadly instruments, but suddenly one rope gave way, having been bitten through by the enraged beast, who was still beneath the water. Immediately after this he appeared on the surface, and without a moment's hesitation, he once more charged furiously from the water straight at the hunters, with his huge mouth open to such an extent that he could have accommodated two inside passengers. Suleiman was wild with delight, and springing forward, lance in hand, he drove it against the head of the formidable animal, but without effect. At the same time, Abou Do met the hippo sword in hand, reminding me of Perseus slaying the sea monster that would devour Andromeda; but the sword made a harmless gash, and the lance, already blunted against the rocks, refused to penetrate the tough hide. Once more handfuls of sand were pelted upon his face, and again repulsed by this blinding attack, he was forced to retire to his deep hole, and wash it from his eyes. Six times during the fight the valiant bull hippo quitted his watery fortress, and charged resolutely at his pursuers; he had broken several of their lances in his jaws; other lances had been hurled, and falling upon the rocks, they were blunted and would not penetrate. The fight had continued for three hours, and the sun was about to set; accordingly the hunters begged me to give him the *coup de grace*, as they had hauled him close to the shore, and they feared he would sever the rope with his teeth. I waited for a good opportunity, when he boldly raised his head from the water about three yards from the rifle, and a bullet from the little Fletcher between the eyes closed the last act."

CHAPTER XVII.

THE RUMINANTIA.

The swine, together with those animals which most nearly approach them, namely, the peccaries and hippopotami, form but a small division of the cloven-hoofed order of the Mammalian animals; by far the greater number of the species of the Artiodactyla being included in a group known familiarly as that of the Ruminantia, because, as part of the digestive process, they chew the cud. This chewing the cud is a phenomenon restricted to the group of animals now under consideration.

HORNED RUMINANTS have their cranial appendages developed after one or other of two principles. In one group, which, from the fact that the oxen are included with them, are named the *Bovidae*, the horns are hollow, straight, or variously-twisted cones, supported upon bony prolongations from the forehead, resembling them in shape upon a smaller scale. These horns are permanent, except in the American antelope, increasing in size each year, at the same time that they often exhibit transverse markings, which indicate the annual increase. In the other group—the *Cervide*, or Deer Tribe—the horns or antlers are deciduous, being cast off each year, to be shortly replaced by others, which share the fate of their predecessors. These antlers are entirely made of bone, and when fully grown are not covered by any less dense investment.

THE BOVIDAE, or Hollow-Horned Ruminants. In these ruminating animals the permanent bone-cones on the forehead are covered with a black horny coating, which is not shed during the whole life of their owners, and in which, as they continue to grow, until adult life at least, the tips are the oldest parts. The females in some species have horns like their mates, but smaller, as in the ox and eland; while in others—the Koodoo and the Sing-Sing antelope, for example—the males alone are horned.

THE SHEEP AND GOATS. Between the bearded goat and the beardless sheep there exist intermediate species, which so completely fill up the gaps that it is almost impossible to separate into different genera. With triangular, curved

and transversely ridged horns in both sexes, a characteristic general appearance, and feet formed for mountain climbing, the species present differences which are recognized with facility.

With reference to the domestic sheep, it is the opinion of most naturalists that it has descended from several distinct species. "Endowed by nature," as Mr. Spooner, in his work on the sheep aptly puts it, "with a peaceable and patient disposition, and a constitution capable of enduring the extremes of temperature, adapting itself readily to different climates, thriving on a variety of pastures, economizing nutriment where pasturage is scarce, and advantageously availing itself of opportunities where food is abundant," it is not to be wondered at that the animal has become the companion of man from the earliest times.

The fleece of the wild species of sheep is composed of hair with wool at its roots, in the same way that in the duck there is a covering of feathers and down. In the domesticated species the hair, by selection, has been reduced to a minimum, so that the wool forms the only coat.

In the southern parts of Western Asia many of the sheep have a curious tendency to the deposition of fat on the tail rather than under the skin of the body generally, and this may occur to such an extent that the thus loaded caudal appendage may contain a large part of the entire weight of the body.

The Astracan breed, of small size, has a fine spiral black and white wool, sometimes black, which is obtained from the lamb when the finest furs are required.

Of all the breeds of sheep the Merino of Spain is one of the most important, on account of the excellence of its wool. The animal is small, flat-sided, and long-legged. The males have long horns, these appendages being absent in the females. The face, ears and legs are dark, and the forehead is woolly, at the same time that the skin about the throat is lax. The body wool is close set, soft, twisted in a spiral, and short.

In the United States and Great Britain the breeds of sheep are very numerous, some of the best being of quite recent origin. First among the heavy breeds are the improved Leicesters, which from their early maturity, aptness to fatten, smallness of bone, and gentle disposition, well deserve the high repute in which they stand. "The head of this breed," we are told, "should be hornless, long, small, tapering toward the muzzle, and projecting horizontally forward; the eyes prominent, and with a quiet expression; the ears thin, rather long, and directed backward; the neck full and broad at its base, where it proceeds from the chest, but gradually tapering toward the head, and being particularly fine at the junction of the head and neck; the neck seeming to project straight from the chest, so that there is, with the slightest possible deviation, one continuous horizontal line from the rump to the poll; the breast broad and full; the shoulders also broad and round, and no uneven or angular formation where the shoulders join either the neck or the back, particularly no rising of the withers or hollow behind the situation of these bones; the arm fleshy through its whole extent, and even down to

the knee; the bones of the leg small, standing wide apart, no looseness of skin about them, and comparatively bare of wool; the chest and barrel at once deep and round; the ribs forming a considerable arch from the spine, so as in some cases—and especially when the animal is in good condition—to make the apparent width of the chest even greater than the depth; the barrel ribbed well home; no irregularity of line on the back or the belly, but on the sides, the carcass very gradually diminishing in width toward the rump; the quarters long and full, and as with the forelegs, the muscles extending down to the hock; the thighs also wide and full; the legs of a moderate length; the pelt moderately thin, but soft



THE MOUFLON.

and elastic, and covered with a good quantity of white wool, not so long as in some breeds, but considerably finer."

The large sized Lincoln sheep, with lengthy fleece, those of the Cotswold Hills, the Teeswater, and Romney Marsh, are also heavy breeds, not equal in the totality of their points to the improved Leicesters, although excelling them either in quantity of wool or hardness of constitution.

The Short-wooled Southdowns, with close set fleece of fine wool, face and legs dusky brown, curved neck, short limbs, and broad body, is one of the oldest and most valuable unmixed breeds that we possess. Their mutton greatly excels that of the improved Leicesters, which, taken in association with their other good qualities, has caused them to extend to nearly every country.

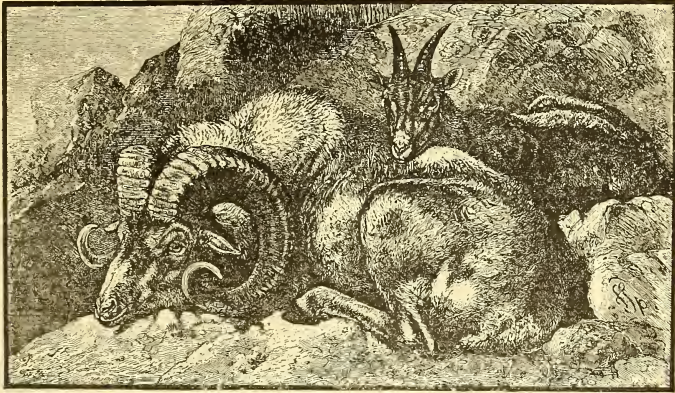
THE MOUFLON at one time abounded in Spain, but is now restricted to the islands of Corsica and Sardinia. The species is a small one, of a brownish grey color, with a dark streak along the middle of the back, at the same time that there is a varying amount of white about the face and legs. The horns, present in the males only, are proportionately not large, curve backward and then inward at the tips. The tail is very short, in which respect they differ strikingly from



THE AMMON.

the domestic sheep, to which otherwise they are intimately related. The Mouflon frequents the summits of its native hills in small herds, headed by an old ram. Its skin is used by the mountaineers for making jackets. It breeds freely with the domestic species.

THE AMMON, of Tibet, has been known to measure as much as four feet and an inch at the shoulder, and has a most imposing appearance on account of the erect attitude in which it holds its head. Its horns attain a great size, being



THE BIG HORN.

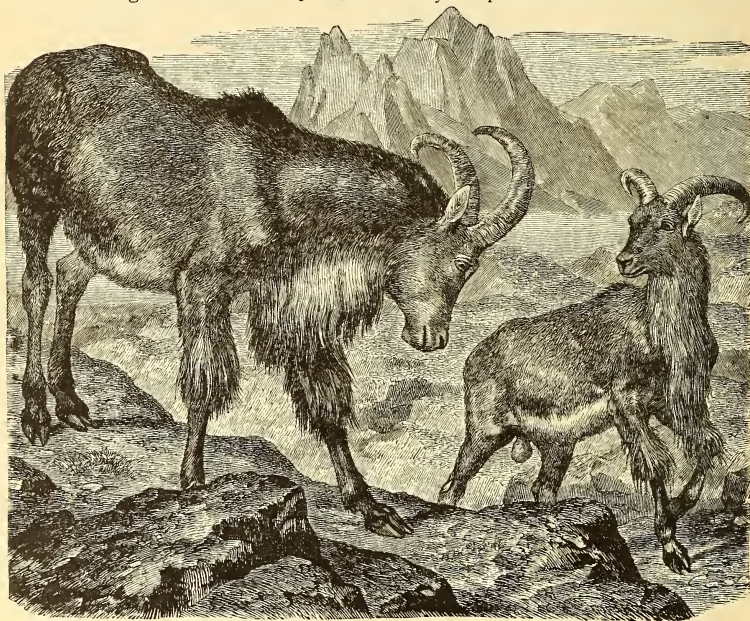
sometimes as much as four feet long and twenty-two inches in circumference at their bases, forming a single sweep of about four-fifths of a circle, their points being turned slightly outward, and ending bluntly. Its body color is dark brown above, paler posteriorly and below. A mane surrounds its neck, white in the male, dark brown in the female. The tail measures only an inch in length. In the female the horns do not exceed twenty-two inches in length.

THE BIG HORN ranks next in size to the elk among the horned beasts of the Great West. It is a curious combination of the body of a deer and the head of a sheep; the horns are, as its common name indicates, of enormous size, and make a curve that is more than a complete circle, and are nearly three feet long in the male. They are said to come so far forward and downward that old rams find it impossible to feed on level ground. The head and horns often weigh sixty pounds. Its coat is thick with short grayish hair, changing in the fall into dun, and the hair becoming more than an inch long, and rather wiry. In winter the coat is increased by a layer of exceedingly fine wool which, though sometimes three inches long, never shows outside the hair, but lies curled up close to the skin.

The big horn is found in troops of twenty or thirty in number. They never quit the craggiest regions, but find their food upon the little knolls of green herbage that are sprinkled among the precipices without being tempted by the verdure of the plains. They come down, however, from their rocky fastnesses to obtain water from the low lying springs. They are very shy and suspicious, and at the first appearance of a man, take flight. "What becomes of the mountain

sheep," writes General Dodge, "when man invades his stronghold, it is impossible to say. Hundreds may be in a locality; let man appear; a few, perhaps ten, are killed; the others disappear and leave no sign."

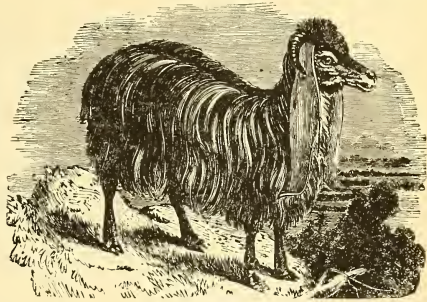
The big horn is an admirable climber, and runs up or down the faces of precipices where apparently no foothold exists. Their habits are those of other sheep. The lambs begin to be seen in June, when they are placed on some shelf of rock



THE BARBARY WILD SHEEP.

inaccessible to man, or any beast of prey. The ewes and lambs; according to Richardson, form herds apart from the males. From the middle of August till November the flesh of the big horn is in prime condition. According to General Dodge, "It is impossible to describe it, but if one can imagine a saddle of most delicious 'Southdown' flavored with the richest and most gamy juices of the black-tailed deer, he will form some idea of a feast of mountain sheep in season, and properly cooked. Except in season, the mountain sheep is thin, tough, and the poorest food that the plains furnish to man."

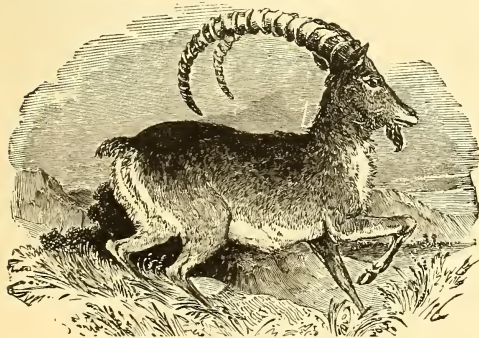
THE WILD SHEEP of *Barbary*, is a large and handsome species, with a comparatively lengthy tail, tufted at its end. The hair on the chin is short, whilst that along the lower margin of the neck, as well as on the front of the knees, attains a great length. The horns are not massive, and hardly exceed two feet in length. They are black, and are directed outward as well as backward.



LONG-EARED GOAT.

THE COATS. In the goats the horns are flattened from side to side, and rough in front and arched backward, whilst in the sheep they are more uniformly cylindrical, turned laterally, curling downward, and often cork-screwed. A beard is a common addition to the former animal, and a most unpleasant odor is emitted by them.

The domestic goat is almost certainly descended from the paseng, or ibex, of the mountains of Asia, with little or no admixture of other blood. In it, however, the female is bearded as well as the male, which is not the case with the paseng. It has been subjugated from time immemorial, when the flesh of the kid was considered a delicacy. Its sure-footedness and its boldness are proverbial, as is its unpleasant odor. The power possessed by the species of ascending precipitous heights is marvelous. On more than one occasion it has been recorded, contrary to the teaching of *Æsop*—that whilst two individuals have met on a path too narrow

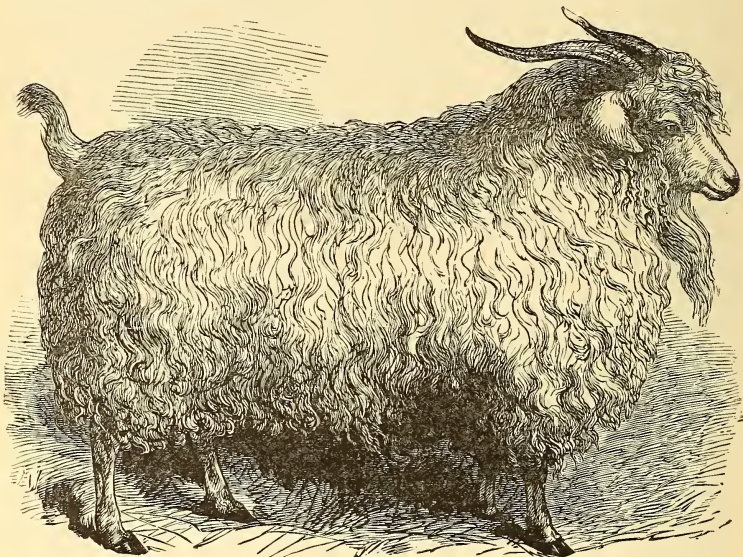


LONG-HORNED GOAT.

for both to pass, one has lain down in order that the other might go over its back. With no great bulk of body; coarse hair of different lengths and tints, springing from out of a mass of much shorter wool; horns of varying size, but always outturned at the tips; narrow ears; an almost entirely hair-covered nose; sight, hearing, and smell all acute; powerful thick-set legs, and a short tail naked below, it stands its own in

mountainous and less civilized districts. Varieties occur with large pendulous instead of upright ears; others with extra horns, occasionally spiral as in Nepal, or none at all. In the Angora and Cashmere breeds the hair is white.

THE COAT OF CASHMERE is famous on account of the long and very fine wool with which it is covered, and which is employed in the manufacture of Cashmere shawls. It is said that the wool of ten of these goats is required for the material of a single shawl.



ANGORA GOAT.

THE IBEX is found in the Alpine heights of Europe and of Western Asia, including the Himalayas. The large scythe blade-shaped horns of the male curve boldly upward and backward, diverging all the way. Along the front of their convex surfaces there is a series of protuberances or partial rings, which are only just indicated laterally. The largest specimens reach three feet and a half in height at the shoulder, which is a little less than the length their horns sometimes attain. The body color is a yellowish-gray, white below, with a dark brown line along the middle of the back. The soft and close-set hair hides an under-fur still finer. The beard is black. European specimens are smaller than those from



THE IBEX.

Asia, rarely exceeding two feet and a half in height, with horns three feet in length. The species inhabits the most precipitous and dangerous parts of mountain regions, and is wonderfully sure-footed.

THE PASENC is the wild goat of Western Asia. It is also found on the northern side of the Caucasus and in some of the islands of the Ægean. In height the male measures two feet and three-quarters at the withers, the female being nearly six inches less. In the males the horns may measure as much as four feet in length. They are flattened, slender, curved backward as a part of a large circle, having their points turned sometimes inward, so much so as now and again to cross, whilst at others they are directed outward. Along their anterior edges are protuberances, separated by a greater distance as they approach the tips, indicative of the age of the animal, as after the third year a fresh knob is formed in each succeeding one. The horns of the female are not more than a foot long, the knobs being almost obsolete. Unlike its consort, also, it has no beard. The

general color of the species is gray, shaded with reddish brown. A blackish-brown line extends from the similarly colored forehead along the spine.

THE MARKHOOR, or "*Serpent Eater*," of Northeast India and Cashmere, is a fine goat of larger size than the ibex, with much flattened triangular horns, which, while running upward from the head, are spiral and attain an immense size, sometimes as much as five feet along their curve. The spiral twist is much



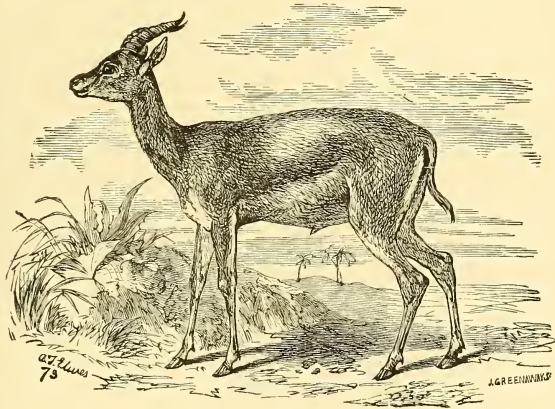
THE MARKHOOR.

more open in some specimens than in others, depending on the locality in which they are found. The body color is a dirty light blue-gray, the lengthy beard being of a darker color. It inhabits very similar localities to the ibexes, and is very shy.

THE GAZELLES. Under the title of gazelles are included several strikingly elegant, small, slender, sandy colored species of ruminating animals, in which the males always, and the females in most cases, carry horns, which are transversely ringed, and vary considerably in the direction which they take, many

having them curved in such a way that the two together form a lyre-shaped figure, at the same time that in others they are nearly straight, turned slightly backward or forward, and diverging or converging at the tips. Where present, the horns of the females are more slender than in the corresponding males.

The gazelles inhabit Africa, Arabia, Persia, India, and Central Asia only. They rarely exceed thirty inches in height at the shoulder, the largest, the swift antelope of Pennant, reaching nearly three feet. In all the gazelles the face is marked with a white band running from the outer side of the base of each horn nearly down to the upper end of each nostril, cutting off a dark triangular central patch, and bordered externally by a diffused dark line. The under surface of the



THE GAZELLE.

abdomen is white, and there is a dark line traversing the flank which bounds this. The rump is also white, which in many cases encroaches more or less upon the haunches.

The gazelle *par excellence*, from Syria, Egypt and Arabia, stands scarcely two feet high. The elegance of its proportions is too well known to need description. The beauty of its eyes is not to be compared with that of some of the other ruminating animals, the whole face being far too sheep-like, and this remark equally applies to all its near allies. The Dorcas gazelle is a name by which it is also known. Like many other members of the genus, it has a tuft of hair upon each knee. The tail is long and tapering, the body rather coarse, and of a pale fawn color. The hips, as well as the breast and abdomen, are white. As to their habits, Mr. Blanford, in his work on Abyssinia, tells us that, so far as

his observation went, "Neither the Dorcas nor Bennett's gazelle are ever seen in large flocks, like the animals of the springbok group. Usually both are seen solitary, or from two to five together, inhabiting thin bushes generally on broken ground. They feed much upon the leaves of bushes. The male has a peculiar habit, when surprised, of standing still and uttering a short, sharp cry. Like most antelopes, they keep much to the neighborhood of some particular spot. After long observation, I am convinced that Bennett's gazelle never drinks; and all that I could ascertain of the Dorcas gazelle leads me to the same conclusion in its case."

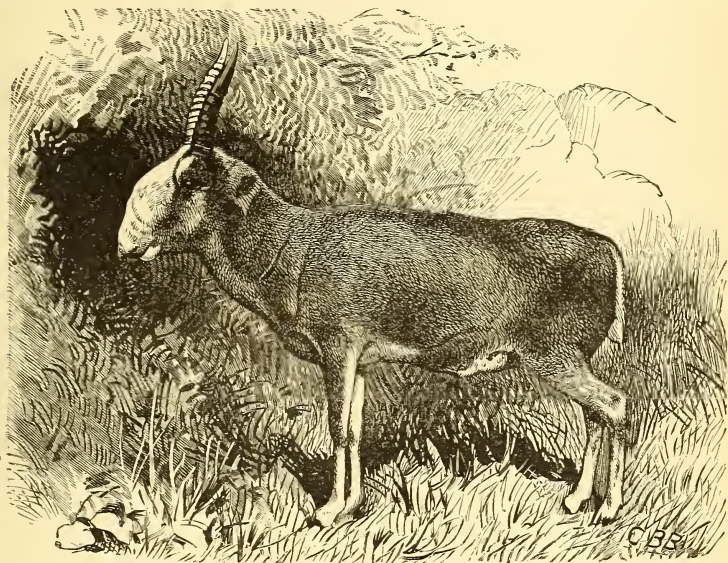
Captain Baldwin says that, "like other animals, the little ravine deer (by which is meant Bennett's gazelle) has many enemies besides man. One day, when out with my rifle, I noticed an old female stamping her feet, and every now and then making that 'hiss' which is the alarm note of the animal. It was not I that was the cause of her terror, for I had passed close to her only a few minutes before, and she seemed to understand by my manner that I meant no harm. No; there was something else. I turned back, and on looking down a ravine close by, saw a crafty wolf attempting a stalk on the mother and young one. Another day, at Agra, a pair of jackals joined in the chase of a wounded buck.

BENNETT'S GAZELLE is as easily tamed as the common antelope. They are favorite pets, and become strongly attached to those who rear and feed them. I have seen tame ones driven out with a herd of goats to graze, and never attempt to make their escape. It is not at all unusual to find the wild gazelles feeding close to, sometimes almost mingling with herds of goats, when the latter have been driven out to pasture. Like all antelopes, the eyesight of the chikarah is very acute, and the animal is perpetually on the watch against danger. It, however, appears to be gifted with only a moderate sense of hearing, and still less so of smell.

THE SPRINGBOK derives its name from the habit it has of leaping straight up in the air for several feet when alarmed, or whilst running. Its height is two feet and a half. The horns are lyrate, being very small in the females. Its color is yellow dun, with the under parts, as usual, white. A peculiar white line along the middle of the back can be varied in extent within certain limits by the animal at pleasure. Major C. Hamilton Smith, when writing of this species, tells us that it assembles in South Africa in vast herds, "migrating from north to south, and back with the monsoons. These migrations, which are said to take place in the most numerous form only at the interval of several years, appear to come from the northeast, and in masses of many thousands, devouring, like locusts, every green herb. The lion has been seen to migrate and walk in the midst of the compressed phalanx, with only as much room between him and his victims as the fears of those immediately around could procure by pressing outward. The fore-

most of these vast columns are fat and the rear exceedingly lean, while the direction continues one way; but with the change of the monsoon, when they return toward the north, the rear become the leaders, fattening in their turn."

THE SAIGA AND CHIRU differ from the gazelles but slightly, and approach the sheep, the former belonging to Eastern Europe and Western Asia, the latter to Tibet.

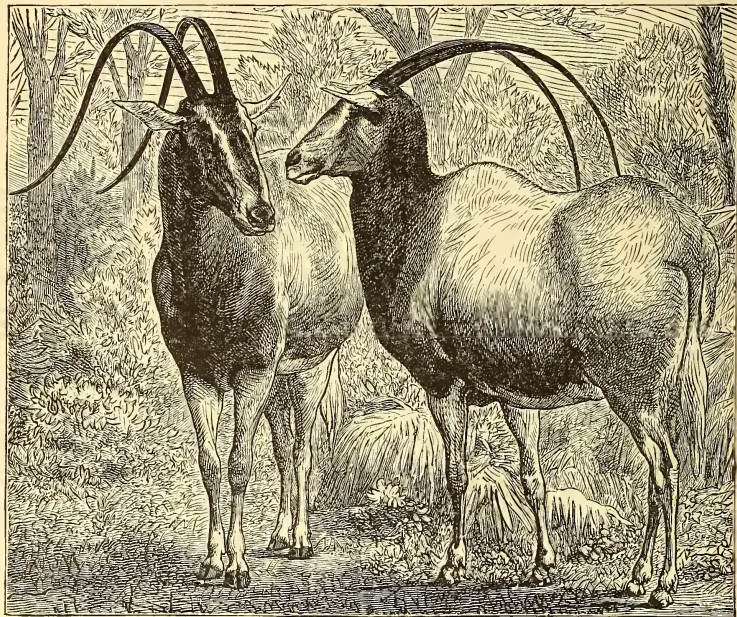


THE SAIGA.

The saiga is as large as a fallow deer, tawny yellow in summer, light grey in winter, being specially peculiar about the nose, which is much lengthened, at the same time that the nostrils are expanded to such a degree that in feeding they have to walk backward. The horns, found only in the males, are not a foot long, slightly lyrate, and annulated. In its native haunts, which are barren, sandy and salt, it assembles frequently in vast herds. It runs rapidly when pursued, but is soon exhausted.

THE INDIAN ANTELOPE, or *Black Buck*. This species differs but little from the gazelles in many respects, whilst its peculiarities are striking. Like the

Nylghau, the male differs greatly from the female in its color. The female has no horns. Those in the male are black and of great size, spirally twisted for three or four turns like a corkscrew, slightly divergent, and often reaching thirty inches in length. It stands a little over two feet and a half at the shoulder. The color of the males is deep brown-black above, with an abrupt line of separation from the pure white of the belly. This dark color extends down the outer sur-



AFRICAN ANTELOPE.

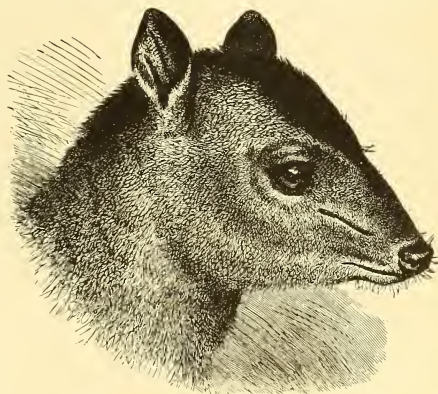
face of each limb. The face is also black, with a white circle around the eyes and nose. In the females and young of both sexes the black and brown are replaced by a light fawn color. The tail is very short, and white below. At certain seasons of the year the glands below the eyes are much enlarged, and form a prominent feature in the face of the male creature.

The black buck is one of the swiftest of the antelopes, no greyhound having any chance against it. Its flesh, being dry and unsavory, is rarely eaten. The species falls a frequent prey to the tiger, and is generally found in herds, fifty

does or so, accompanied by a single buck. The height to which they can bound is very great. According to Major C. Hamilton Smith, the native Indians "have raised the common antelope among the constellations, harnessed it to the chariot of the moon, and represented it as the quarry of the gods. In the opinion of Hindoos the animal is sacred to Chandra, female devotees and minstrels lead it, domesticated, by the harmony of their instruments, or the power of their prayers, and holy Brahmins are directed to feed upon their flesh, under certain circumstances prescribed by the *Institutes of Menu*."

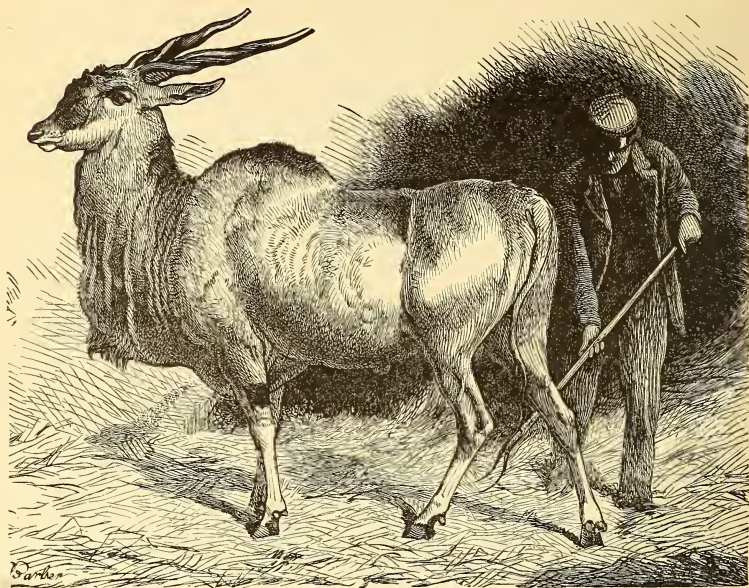
THE BUSH BUCKS form a clearly defined group of small antelopes peculiar to tropical and Southern Africa. They are also known by sportsmen as dykers or

bush goats. They are characterized by the possession of horns in the male sex, which are short, straight, and simple cones, very much depressed, or slanting backward, and rising some distance behind the eyes. At the same time there is a tuft of lengthy hair, directed backward, which is arranged in a kind of horseshoe shape between the ears. The crumen or gland in front of either eye is also peculiar. Instead of being a sac with a circular opening, it is spread out in the form of a curved line, and not contracted to form an orifice at all. This feature, which is not observed



HEAD OF FEMALE BUSH-BUCK.

in any other animal, may be seen in the drawing of the head of the female bush-buck. The muffle, or extremity of the nose, is much like that of the ox, comparatively large and always moist. The tail is very short, whilst the ears are of a fair size and oval in form. The legs are particularly slender and delicate, terminated by minute hoofs. In most the forehead is strongly convex. The coloration of the many species is not striking, being a uniform red-brown, dark bluish-grey, or sooty black. The smallest of the species, the pigmy bush buck, is not bigger than a rabbit, and might at first sight, especially the female, be mistaken for a deerlet. According to Mr. Drummond, "It feeds principally on certain berries and shrubs found growing in the jungles, and seems to be on the move, more or less, the whole day, though, in common with the rest of the animal creation, it is most often to be seen at early morning and evening."



THE ELAND.

THE ELAND. This fine species attains to the size of an ox, the bull standing six feet and a half at the withers. Two varieties are known, one of a pale fawn color from Central Africa, the other, from South Africa, of a bright yellow tan color, marked transversely with narrow white lines, about fifteen in number, running from a black line which goes along the back, to the belly. These marks are present in all young individuals, and disappear or fade considerably in the adults. The full grown bull has a broad tuft of lengthy brown hair on the forehead, between and in front of the horns, which are situated some distance behind the eyes, being straight, a foot and a half in length, and their bases carrying a thick and conspicuous screw-like ridge which extends in some cases nearly to their ends. In the females the horns are never quite so large as in the males. A large dewlap hangs from the throat of the bulls, whilst a dark, short mane continues from the forehead backward. The tail is about two feet and a quarter in length, with a large tuft of brown hair at its end. In size and shape the body of the male eland resembles that of a well conditioned Guzerat ox, not infrequently

attaining the height of nineteen hands, and weighing two thousand pounds. The head is strictly that of an antelope, light, graceful, and bony, with a pair of magnificent straight horns, about two feet in length, spirally ringed, and pointed backward. A broad and deep dewlap fringed with brown hair reaches to the knee. The color varies considerably with the age, being dun in some, in others an ashy blue with a tint of ochre, and in many also sandy grey approaching to white. The flesh is esteemed by all classes in Africa above that of any other animal. In grain and color it resembles beef, but is better tasted and more delicate, possessing a pure game flavor, and the quantity of fat with which it is interlarded is surprising, greatly exceeding that of any other game quadruped with which I am acquainted. The female is smaller and of slighter form, with less ponderous horns.



THE KOODOO.

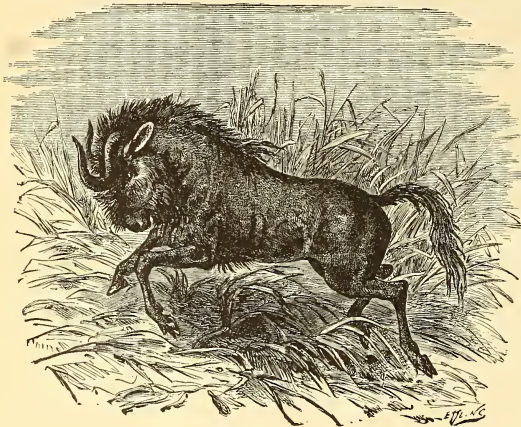
THE KOODOO. This is one of the handsomest of all the antelopes. It is more slender in build and smaller than the eland, which it somewhat resembles. The horns are about four feet long, and form most graceful open spirals like corkscrews, there being a ridge along their whole length. The females are hornless. The ears are large and trumpet shaped, moving at the slightest noise toward its source. The eyes are large and liquid. The body color is slaty-grey, with transverse white markings, like those on the striped variety of the eland. A small mane extends along the neck and withers, and another from the chin to the throat and breast. The tail is of moderate length, and hairy. This species is most abundant in Southern Africa, but it extends as high as Abyssinia. It is able to travel with very great speed, and makes prodigious bounds. It stands about five feet in height at the shoulders.

"Majestic in its carriage," writes Captain Harris, with all the enthusiasm of a true sportsman, "and brilliant in its color, this species may with propriety be

styled the king of the tribe. Other antelopes are stately, elegant or curious, but the solitude-seeking koodoo is absolutely regal! The ground color is a lively French grey approaching to blue, with several transverse white bands passing over the back and loins; a copious mane, and deeply fringed, tri-colored dewlap, setting off a pair of ponderous yet symmetrical horns, spirally twisted, and exceeding three feet in length. These are thrown along the back as the stately wearer dashes through the mazes of the forest or clammers the mountain side. The old bulls are invariably found apart from the females, which herd together in small troops, and are destitute of horns."

THE GNUS. The Gnu and the Brindled Gnu are two of the most grotesque of creatures. With the head not unlike that of a small Cape buffalo, it has the limbs and hindquarters not unlike those of a pony, in proportions as well as size. The nose is broad and flattened, with a bristly muzzle. The horns are broad at the base, where they nearly meet, and after turning downward as well as forward, they again turn up abruptly in a hook-like manner. They are found abundantly in Southern Africa, where, as their flesh is worthless, they are not much hunted. They are extremely wild and fearless, and remarkably tenacious of life. Their speed is great, and they have a habit of prancing about and kicking out furiously when suspecting danger. Both species have a mane along the neck, and lengthy hair between the forelegs. In both the tail is long, covered with a mass of hair not unlike that of the horse. The common gnu is of a deep brown

-black, the tail and mane being white, whilst the bushy beard, running back to the chest and between the forelegs, is black. Lengthy black hairs, diverging and ascending from a median line, cover the upper part of the nose, at the same time that other smaller tufts under the eyes help to give a most ferocious aspect to the face. From Captain Harris' description of the animals of South Africa, an excellent idea of the peculi-



THE GNU.



THE CHAMOIS.

arities of the creature may be gained. "Of all quadrupeds," he writes, "the gnu is probably the most awkward and grotesque. Nature doubtless formed him in one of her freaks, and it is scarcely possible to contemplate his ungainly figure without laughter. Wheeling and prancing in every direction, his shaggy and bearded head arched between his slender and muscular legs, and his long white tail streaming in the wind, this ever-wary animal has at once a ferocious and ludicrous appearance. Suddenly stopping, showing an imposing front, and tossing his head in mock defiance, his wild red sinister eyes flash fire, and his snort, resembling the roar of a lion, is repeated with energy and effect. Then lashing his sides with his floating tail, he plunges, bounds, kicks up his heels with a fantastic flourish, and in a moment is off at speed, making the dust fly behind him as he sweeps across the plain."

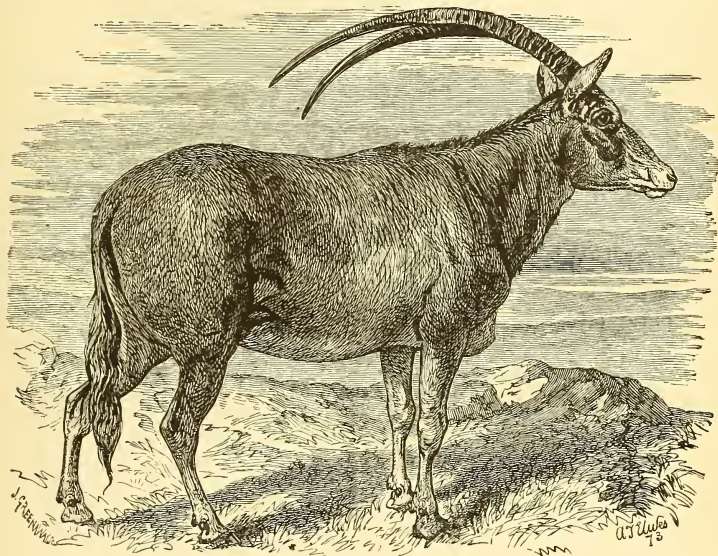
In the Brindled Gnu the front of the face lacks the lengthy hair of its ally; the tail is also black instead of white. Its body color is a dirty dun, variegated with obscure pale streaks. This species, as well as the common gnu, is the constant companion of the equally abundant quaggas of the same region.

THE CHAMOIS. This well known goat-like antelope inhabits the snow-clad mountains of Europe, from the Pyrenees to the Caucasus, ascending during the summer, and in winter going below the line of snow in search of food. Both sexes possess horns—black, short, and cylindrical—rising perpendicularly and parallel from the forehead for some distance, then forming a small hook directed backward to their pointed tips. These rarely exceed seven inches in length. The female is slightly smaller than the male, which stands a little over two feet at the shoulder. In winter the color of the lengthy, hairy coat is dark brown, which becomes a brownish yellow in the summer, a darker streak along the back alone remaining. The head is pale yellow, darker from the nose upward to between the ears and around the eyes. Behind the horns and between the ears is a pair of peculiar glands, opening externally, the function of which is unknown. The voice of the species is a rough bleat under ordinary circumstances; but when the one which watches whilst the others feed—and there is always found to be one such in every herd—finds cause to fear, it gives a shrill whistle as a danger signal to its companions.

The senses of sight, hearing, and smell of the chamois are developed to a maximum, and this fact, taken in association with the animal's great sure-footedness among the lofty, snow-covered Alps, in which it has its home, makes hunting it a task of no mean difficulty and danger. Dogs are of no service on the rocky eminences to which the chamois will retreat when it is pursued, and the sportsman has to rely upon his own sure-footedness and courage in climbing the steep and slippery precipices, whither he is tempted by the sight of game. If so hard pressed that it is driven to some height beyond which it cannot go, it is said that it will precipitate itself upon its pursuer, sending him down into the depths below.

Besides man, the eagle is an enemy, whose constant endeavor is to obtain the kids from their watchful mothers. Its skin is much valued for its toughness combined with its pliability. Its flesh is also greatly esteemed.

The appearance of a herd of Oryx is very imposing. They are some of the most elegant and symmetrical of animals, the motions being those of a wild horse rather than of an antelope. Their favorite pace appears to be either a steady quick walk, or a trot; they rarely break into a gallop unless greatly alarmed. When



THE ORYX.

frightened they dash off, sometimes snorting and putting their heads down, as if charging, raising their long tails, and looking very formidable. They are wary animals, though far less so than some other antelopes. It is said that they frequently attack when wounded, and their long, straight horns are most deadly weapons.

Of the Gemsbok, Captain Harris tells us that it "is about the size of an ass, and nearly of the same ground color, with a black list stripe down the back and on each flank, white legs variegated with black bands, and a white face, marked with the figure of a black nose-band and headstall, imparting altogether to the

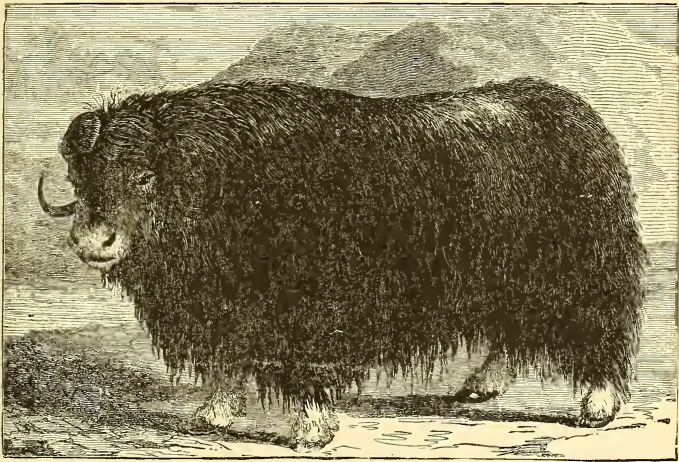


THE GEMSBOK.

animal the appearance of being clad in half-mourning. Its copious black tail literally sweeps the ground; a mane reversed, and a tuft of flowing black hair on the breast, with a pair of straight, slender horns (common to both sexes) three feet in length, and ringed at the base, completing the portrait." The resemblance between the Gemsbok, when seen from the side view, and the unicorn of heraldry, is sufficiently striking to make it more than probable that the conception of the latter originated in the former.

THE MUSK OX is an animal whose exact affinities it is not easy to determine. It is found only in Arctic America north of latitude 60° , and exhales a strong musky odor at certain seasons of the year, an approach to which is recognizable in several of the Bovidae. It is a heavy built, but not large creature, with

short legs, and a very lengthy brown hairy coat, which almost reaches to the ground. Its horns are very similar in form to those of the Cape Buffalo, and in the bulls they meet in the middle line of the forehead. The tail is very short, being entirely hidden by the fur of the haunches. The nose is not naked, as in the oxen, but is almost entirely covered with hair, as in the elk and reindeer, both Arctic ruminants also. The spread of their feet is considerable, and they can cover the ground at no little speed. Captain Franklin describes their habits as follows: "The Musk Oxen, like the buffalo, herd together in bands, and generally frequent barren grounds during the summer months, keeping near the rivers, but



THE MUSK OX.

retire to the woods in winter. They seem to be less watchful than most other wild animals, and when grazing are not difficult to approach, provided the hunters go against the wind. When two or three men get so near a herd as to fire at them from different points, these animals, instead of separating or running away, huddle closer together, and several are generally killed; but if the wound is not mortal they become enraged, and dart in the most furious manner at the hunters, who must be very dexterous to evade them. They can defend themselves with their powerful horns against wolves and bears, which, as the Indians say, they not infrequently kill. The Musk oxen feed on the same substances as the reindeer; and the prints of the feet of these two animals are so much alike, that it requires



HEAD CHILLINGHAM BULL.

the eye of an experienced hunter to distinguish them. The largest killed by us did not exceed in weight three hundred pounds."

THE OX. It being quite unnecessary to describe the general form and proportions of this animal, as seen among us in a domesticated state—Shorthorns, Alderney, Highland, etc.—we will at once proceed to notice the favorite cattle of Chillingham Park, in Northumberland, England, which are known to have been in existence in the thirteenth century. The wild cattle there are all cream white, with a brown muzzle, with the insides and tips of the ears reddish brown, at the same time that the horns are white, tipped with black, of which latter color are the hoofs. Calves more or less colored are occasionally born, but these are promptly destroyed by the keepers. Some of the bulls have a thin, short mane. Their habit, on strangers approaching them, is to "set off

in a full gallop, and at a distance of about two hundred yards make a wheel round and come boldly up again, tossing their heads in a menacing manner. On a sudden they make a full stop at the distance of forty or fifty yards, looking wildly at the object of their surprise; but upon the least motion being made, they all again turn round and fly off with equal speed, but not to the same distance, forming a shorter circle; and again returning with a bolder and more threatening aspect than before, they approach much nearer, probably within thirty yards, when they again make another stand, and then fly off. This they do several times, shortening their distance, and advancing nearer and nearer, till they come within such a short distance that most people think it proper to leave them, not choosing to provoke them further." They differ from domestic cattle in that they feed at night, and generally sleep during the day. They also hide their calves.



CURLED HORNED OX.

It is now almost universally agreed that domestic cattle are descended from two or three species of the genus *Bos*, which existed in late geologic or prehistoric times, the remains being found in Switzerland, Ireland and other parts of Europe. The Zebu, Yak, Gayal, and Arni, to be referred to immediately, have also been domesticated.

Cattle have been so distributed and mixed in breeding that any precise arrangement of the breeds according to their ancestral affinities can scarcely be tabulated. Most important of the heavy breeds are the well known Shorthorns. Several enterprising American breeders have introduced Shorthorns into the United States and Canada, Colonel Lewis Sanders, of Kentucky, being the first who did so on anything like thorough principles. Others followed his example with success. The Booth and Bates bloods predominate in these animals, and form the basis of much of the beef now shipped to England.

The great advantage of the Shorthorn breed is that they, together with a good temper, combine the advantages of great size and aptitude to fatten, rapidly reaching maturity. For dairy purposes they are excelled by the Suffolk Duns and Ayrshire cattle, the latter, with their enormous udders, broad hips, and deep flanks, being the best as milkers. Hereford, North Devon, and Scottish black Shorthorns are inferior in their slowness of growth and power of filling out.



LONG-HORNED OX.



COMMON COW.

AMERICAN WILD CATTLE.

At the discovery of this continent no cattle existed in South America. Columbus imported some on his second voyage into San Domingo, and in 1540 some Spanish bulls and cows were landed in the southern parts of the continent. Circumstances favored their rapid increase, the herds became



SYRIAN CATTLE.

proprietor are branded with his mark, and are looked after by Gauchos, who display incredible courage, patience and skill in their occupation, collecting the herds when necessary, or catching those that have to be killed or sold. The cattle are drilled, as far as possible, to assemble on the appearance of the herdsman at a certain spot situated at a convenient distance from the corral, and it is no unusual sight to see thirty-five thousand thus assembled. The proportion of men employed is very small, when compared with the numbers of the oxen. The usual allowance is four men to every five thousand head; thus an extent of two hundred thousand square miles may have only fifty inhabitants.

Those that remain in a half-wild state, are for the most part taken with the lasso, and sold to the drovers in troops of five hundred each. When a five-year-old ox is lassoed by the horns, and he turns out a Tartar, after a few ineffectual shakes of the head to throw off the lasso, he directly darts at the horse, who immediately starts off at full speed, the foaming ox close at his heels, and fast to the saddle with twenty-five yards of lasso. The horse must take all that comes in his way; patches of long grass that reach up to the stirrups, the burrows of the viscachas, and every other obstacle. Should the ox give up the chase suddenly, the rider must immediately check the speed of his horse, otherwise the jerk would break the lasso, or what is worse, it would draw the saddle back to the flanks of the horse, or break the girths; in which case the man would be brought to the ground, and be at the mercy of the furious animal, still with the lasso on his horns, but no longer fast to the horse.

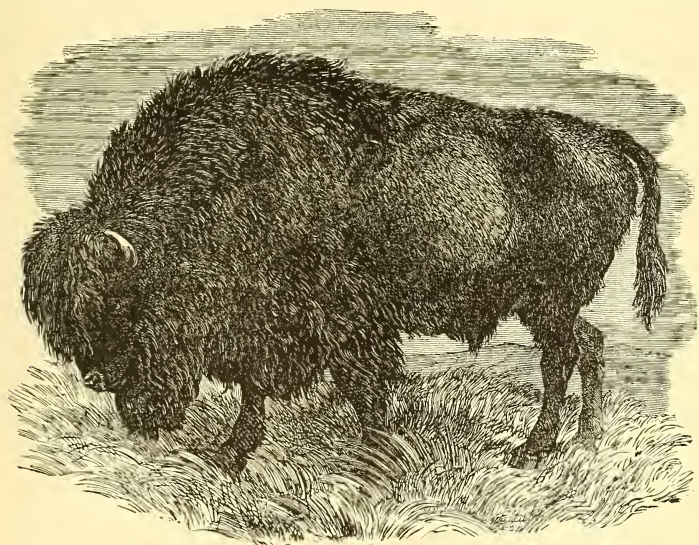
The troops of oxen when formed, are driven at the rate of nine to twelve miles a day to the *Saladero* or salting establishment.

The hide is the most valuable part of the animal, and the preparation of it is carefully attended to. The workmen lay each hide on the flat of their left hands, scrape off all the beef and fat which may be adhering to the inner coating with a knife in the right hand, trim the edges, and then stretch out the hides by means of

too large to be always watched, and soon wandered about in perfect liberty. Within a hundred years of their introduction, they were roaming over the pampas in hundreds and thousands, and were hunted by the natives as the Northern Indians hunt the bison of the plains. At present the plains on both sides the River Platte and its tributaries are swarming with cattle. They all have owners. Vast establishments named "Estancias" are scattered over the pampas; and thirty thousand cattle, five thousand horses, and twelve thousand sheep are moderate numbers for the animals belonging to one owner. The cattle of each

stakes driven into the ground, if the skins are to be dried. If they are to be salted, a pile is made of them with layers of salt. Dried hides require much more time and skill than when they are only salted. In the latter case they are packed in casks for exportation; in the former, when shipped, they are tied up in bundles. Hides form the chief export from the River Platte.

THE BISONS. Closely related to the oxen are the bisons of Europe and of North America, together with the Tibetan Yak. The two species of bison agree



THE AMERICAN BISON.

closely with one another in general appearance, the American form being shorter and weaker in the hindquarters, and a little smaller altogether.

The hair of the head and neck is very abundant and long, forming a mane of very dark color, at the same time that it nearly conceals the eyes and ears as well as the base of the short conical horns, which are directed outward and upward. Under the chin there is a lengthy beard. A line of lengthy hair also extends along the back nearly to the tail, which is itself only covered with short soft hair, except at the end, where there is a long tuft. There is a hump developed on

the shoulders, at which spot the adult male is nearly six feet in height, the female being smaller.

THE AMERICAN BISON (*or Buffalo, as it is commonly known*), was until recently found in huge herds on the great Western prairies, but is now nearly, if not quite extinct.

Vast herds, numbering millions of individuals, "so numerous as to blacken the plains as far as they can reach," were common formerly, and have been known repeatedly to stop the Kansas Pacific railway when first formed. Hunters have spread false notions as to the organization of these herds, which is of a most simple character, excellently explained by Mr. Allen, who tells us that "the timidity and watchfulness of the cows, accustomed as they are, to the care of their offspring, lead them to take the initiative in the movements of the herd, and this keeps them near the front, especially when the herd is moving. The popular belief that the bulls keep the cows and the young in the middle of the herd, and form themselves, as it were, into a protecting phalanx, has some apparent basis; but the theory that the old bulls, the least watchful of all the members of the herd, are sentinels posted on the outskirts to give notice of an approaching enemy, is wholly a myth, as is also the supposition that the herds consist of small harems."

Buffaloes are much like domestic cattle in their habits. They are, however, very fond of wallowing in the mud, and so coating themselves with a protection from their insect pests. Their ferocity of appearance is not evident in their true natures, for their disposition is sluggish and fearful. Colonel Dodge remarks of them that, "endowed with the smallest possible amount of instinct, the little he has seems rather adapted for getting him into difficulties than out of them. If not alarmed at sight or smell of a foe, he will stand stupidly gazing at his companions in their death-throes, until the whole herd is shot down. He will walk unconsciously into a quicksand or quagmire already choked with struggling, dying victims. Having made up his mind to go a certain way it is almost impossible to swerve him from his purpose."

The flesh of the buffalo is equal to the best beef if from the young animal, but dry and insipid when from the adult. The tongue and hump are esteemed great delicacies.

The Yak differs from the bison mostly in the distribution of its long hair, which, instead of being situated on its hump and neck, forms a lengthy fringe along the shoulders, flanks, and thighs, and completely invests the tail, which latter is much prized in India, where it is known as "chowry," and is employed as a fly-switch in great ceremonials.

THE YAK is a native of the high ground of Tibet, where it is rigorously protected by the native government against the foreign sportsman. Its color is black, except some spots upon the face, which are white or grey. Its tail is often



THE YAK.



HEAD OF CAPE BUFFALO.

white, as is frequently the long hair tuft on the top of the withers. Its horns reach nearly a yard in length, and are directed outward, forward, and then upward. Its voice is much like that of a pig, whence the name grunting ox, by which it sometimes goes.

As to the habits of the creature, Col. Kinloch tells us "that the yak inhabits the wildest and most desolate mountains. It delights in extreme cold, and is found, as a rule, at a greater elevation than any other animal.

Although so large a beast, it thrives upon the coarsest pasturage, and its usual food consists of a rough, wiry grass, which grows in all the higher valleys of Tibet, up to an elevation of nearly 20,000 feet. Yak seem to wander about a good deal. In summer the cows are generally to be found in herds varying in number from ten to one hundred, while the old bulls are for the most part solitary or in small parties of three or four. They feed at night or early in the morning, and usually betake themselves to some steep and barren hillside during the day, lying sometimes for hours in the same spot."

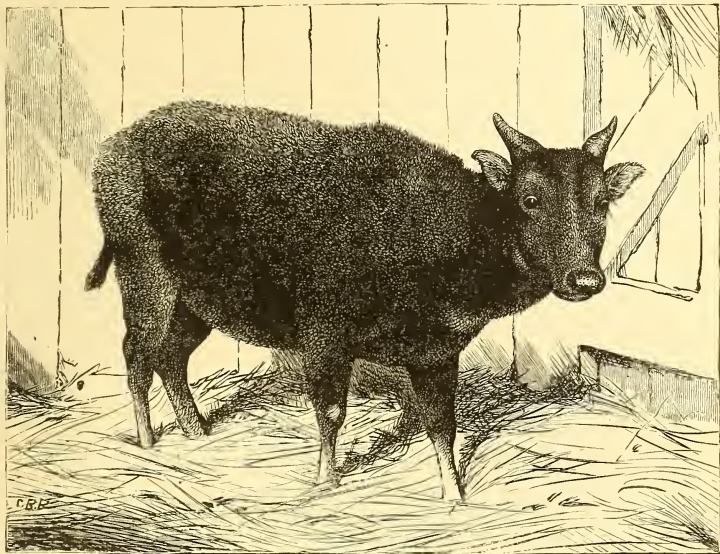
THE BUFFALOES. The buffaloes have the horns flattened and triangular in section, inclined outward and backward, turning up at the tips. The common buffalo is found in Southern Europe, North Africa, and in the Indian region. The huge Indian variety, with most lengthy horns, is also known as the Arnee. Its horns are elongated and narrow, sometimes reaching six feet and a half in length. It stands nearly or quite six feet at the shoulder. Its proportions are bulky, and its general color dusky black. It lives in small herds numbering not more than twenty, and solitary bulls are often met with which attack sportsmen in a most vicious manner without provocation.

The Cape buffalo has shorter horns, expanded at their bases, so that they almost meet in the middle line of the forehead. It is found all over Central and South Africa, and is a formidable animal when wounded, as, quite regardless of the cloud of smoke which follows the shot aimed at it, it charges right through it, and so does frequent injury to the experienced hunter. Its general color is blue-black, but in some cases it has a reddish tinge. The Hon. W. H. Drummond gives the following account of a fight between two bulls, of which he was an eye witness. After having had his attention attracted by a loud clattering noise, he remarks that, "On looking through the edge of the last thicket that had concealed them, I saw two buffalo bulls standing facing each other with lowered heads, and, as I sat down to watch, they rushed together with all their force, producing the loud crash I had before heard. Once the horns were interlocked they kept them so, their straining quarters telling that each was doing his best to force the other backward. Several long white marks on their necks showed where they had received scratches, and blood dripping over the withers of the one next me



Giraffes.

proved that he had received a more severe wound. It was a magnificent sight to see the enormous animals, every muscle at its fullest tension, striving for the mastery. Soon one, a very large and old bull, began to yield a little, going backward step by step; but at last, as if determined to conquer or die, it dropped on to its knees. The other, disengaging its horns for a second, so as to give an impetus, again rushed at him, but, whether purposely or not I could not tell, it did not strike him on the forehead, but on the neck, under the hump, and I could



THE ANOA.

see that with a twist of his horns he inflicted a severe wound. However, instead of following up his seeming advantage he at once recoiled, and stood half facing his antagonist, who, getting on his legs again, remained in the same position for several minutes, and then with a low grunt of rage, rushed at him. This time he was not met, and his broad forehead struck full on his rival's shoulder, almost knocking it over. The old bull then went a few yards off and stood watching the other for fully a quarter of an hour, when he walked slowly away in the opposite direction."

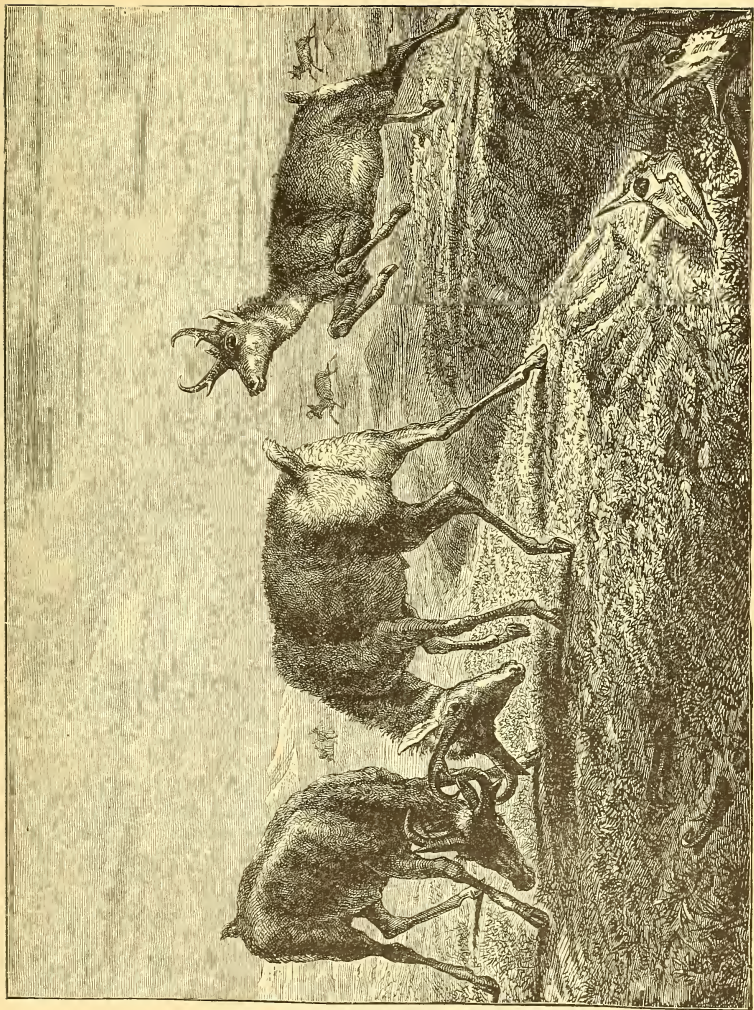
The Cape buffalo, which is found all over Africa south of the equator, is replaced in the northeastern portion of the continent by a smaller variety, of a browner color, and with much shorter horns, which are not closely approximated at their bases, at the same time that they spread out almost horizontally instead of curving downward and backward. In the Island of Celebes the smallest species of buffalo is found, which differs but little in appearance from the young of the Cape species. It is known as the Anoa; is black, with short, wavy hair, and has short parallel prismatic horns directed upward from the forehead.

THE PRONGHORN ANTELOPE. This antelope of North America, one of the few forms of the hollow-horned ruminants which inhabit the New World, is different from all the other members of the group in two respects at least, namely, that its horns are branched, as implied in the name, and that they are annually shed. Each horn itself is a foot or so in its greatest length, is pointed and gently curved backward, at the same time that from the front of it, very slightly above the middle of its height, a short branch arises which is directed forward, the whole there dividing into two. Each horn is flattened from side to side, is not annulated, and in its structure scarcely differs from that of a sheep or goat.

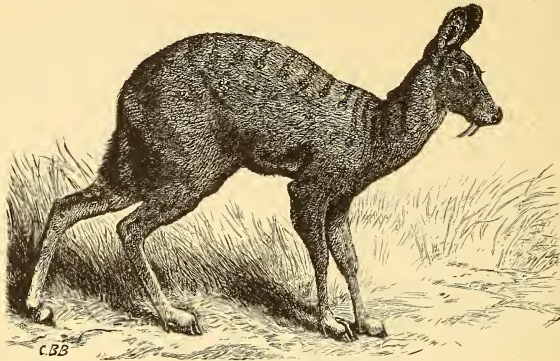
A band of pronghorn antelopes, when frightened, never run directly away from you, but cross over in front of you, running across your path from one side to the other repeatedly, and keeping about a hundred yards ahead. On this account it is sometimes easy, on a smart horse, to run into a drove of them and catch one of them with a noose. When one is alone, and is watched by a person or animal and becomes frightened, it makes a sort of shrill blowing noise like a whistle, and then commences bounding off. On the neck it has a heavy, thick, chestnut colored mane, five or six inches long, and on the rump a white patch of coarse hair, and when the animal is frightened it always erects the mane and the hair and this white spot, thus giving it a very singular and characteristic appearance as it runs bounding away from you. The antelope has a very peculiar odor, strong, and to some people, offensive. On the whole I consider the meat of the pronghorn to be excellent.

In the females of the species the horns are present, but they are much reduced in size, and almost hidden in the hairy covering of the head. The end of the nose—in other words, the muffle—is hairy, and not, therefore, damp at all times in any part, as is that of the ox and most ruminants. The tail is very short. The fur is very short and close set, being stiff and wavy. Its color is a pale fawn above and on the limbs, whilst the breast as well as the abdomen are a yellowish white, at the same time that the tail and round about it are pure white, as is the inside of the ear.

THE MUSK DEER. This interesting animal, from the male of which is obtained a powder contained in a pouch, about the size of an orange, on the



THE PRONGHORN ANTELOPE.



THE MUSK DEER.

surface of the abdomen, and which is one of the most fragrant of perfumes, is generally included among the Cervidæ.

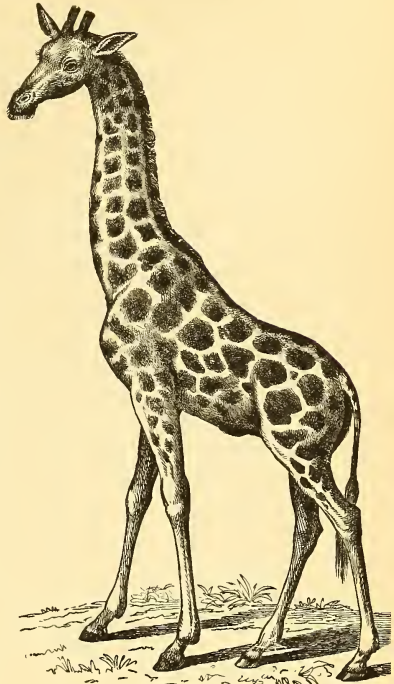
The musk deer is a solitary and retiring animal. It is nearly nocturnal in its habits, remaining concealed in some thick bush during the daytime, and only coming out to feed in the mornings and evenings. It frequents the highest parts of the forest, preferring the birch, rhododendron, and juniper, and is almost always found alone, rarely in pairs, and never in flocks. No animal seems more indifferent to cold, from which it is well protected by its thick coat of hollow hair, which forms as it were a sort of cushion, which acts as an insulator, and enables the deer to lie even on snow without much loss of animal heat. It is amazingly active and sure footed, bounding along without hesitation over the steepest and most dangerous ground. Its usual food seems to be leaves and flowers, but the natives say that it will kill and eat snakes.

The value of the musk perfume causes the animal to be persecuted beyond measure. From Chardin we learn that the hunters are obliged to cover the nose and mouth with linen when removing the scent-sac, to prevent pulmonary hæmorrhage. "I have," says he, "gained accurate information respecting this circumstance, and as I have heard the same thing talked of by some Armenians who had been to Boutan, I think that it is true. The odor is so powerful in the East Indies that I could never support it, and when I trafficked for musk I always kept in the open air, with a handkerchief over my face, and at a distance from those who handled the sacs; and hence I know by experience that this musk is very apt to create headaches, and it is altogether insupportable when quite recent. I add that no drug is so easily adulterated, or more apt to be so."

THE GIRAFFE is a native of Africa south of the Sahara. Most of the specimens which reach America in the living state are brought from Nubia and the northeast of the continent generally. The adult male attains a height of sixteen feet, the female rarely exceeding fourteen feet. The neck of the giraffe is longer than that of any other living animal. They live and have bred well in captivity, although, as may be readily imagined, they are most delicate, and require much special care, particularly to prevent the joints of their lengthy limbs from being injured.

The giraffe eats with great delicacy, and takes its food leaf by leaf, collecting them from the trees by means of its long tongue. It rejects the thorns, and in this respect differs from the camel. It is extremely fond of society, and is very sensitive. I have observed one of them shed tears when it no longer saw its companions or the persons who were in the habit of attending it.

By LeVaillant and other sportsmen most graphic accounts have been given of the hunting of the giraffe. Quoting from Captain Harris, we learn that "the rapidity with which these awkward formed animals can move is beyond all things surprising, our best horses being unable to close with them under two miles. Their gallop is a succession of jumping strides, the fore and hind leg on the same side moving together instead of diagonally, as in most other quadrupeds; the former being kept close together, and the latter so wide apart, that in riding by the animal's side the hoof may be seen striking on the outside of the horse, threatening momentarily to overthrow him. Their motion, altogether, reminded me rather of the pitching of a ship or rolling of a rocking horse, than of anything living; and the remarkable gait is rendered still more automaton-like by the switching, at regular intervals, of the long black tail, which is invariably curled above the back, and by the corresponding action of the neck, swinging as it does



GIRAFFE

like a pendulum, and literally imparting to the animal the appearance of a piece of machinery in motion. Naturally gentle, timid and peaceable, the unfortunate giraffe has no means of protecting itself but with its heels; but even when hemmed into a corner, it seldom resorts to this mode of defence."

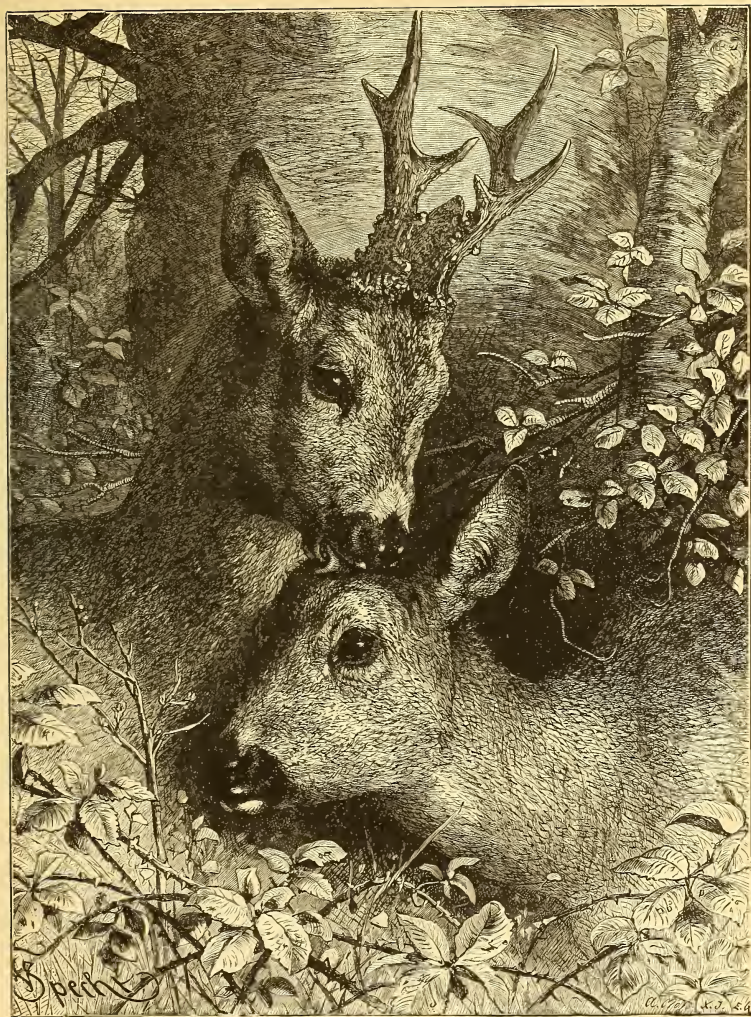
THE DEER TRIBE, known scientifically as that of the Cervidæ, is more circumscribed, and therefore better defined, than are the Bovidæ, or hollow-horned ruminants. Their best distinguishing character is that in the males there is each year developed a pair of antlers which are shed at the end of the season to be reproduced in the following spring. The females do not carry antlers, except in the case of the reindeer, in which, although these elegant appendages are of the same form as in their mates, they are constructed upon a much smaller scale. The Red Deer and the Fallow Deer are those best known.

The nature, growth and shedding of the antlers deserve special consideration. In the commencement of the spring a pair of knobs is to be seen upon the forehead of the adult male animal. This is covered with a nearly smooth, dark skin; and a scar can be detected in the middle of each, which is that left by the antler of the year before, where it fell off.

As the weather becomes more propitious these knobs commence to grow, feel warm to the touch, and are evidently filled with actively-circulating blood, supplied by special vessels which are developed at the time. They do not increase regularly in all directions, for if they did the antler would be a sphere, but they sprout out, as it may be termed, around the above mentioned scar; in most cases there being one branch which takes a direction forward, whilst a second larger one makes its way backward. These become, in the fully-formed antler, the brow antler and the main beam; and it is by other branches growing upon the beam, according to definite laws, different in different species, that the elaborate complications of the fully developed structure are produced.

As long as the antler, which is composed of genuine bone of very dense texture, is increasing in size, it will be found to be covered with the same warm black skin as is the knob from which it sprang; and as this skin is covered with short, fine, close-set hair, it has received the name of the "velvet." It is this "velvet" which secretes the bony texture of the antler from its inner surface, just in the same way that the outer covering (the periosteum) of any long bone of the body is mainly concerned in the formation of the bone itself. As, also, in the same way, if we seriously graze our shins, and scrape off this covering, the bone exposed is very apt to die, so in the deer any mishap to the "velvet" injures the growth of the antler in the part affected. The animals, therefore, during the time they are "in velvet" are more than usually careful to protect their cranial appendages, and are inoffensive, even to strangers.

When their antler-growth has ceased, their natures change. The "velvet" has performed its function and dries into a parchment-looking membrane, to get rid of



YOUNG DEER.

which the deer adopt a very simple method. They rub their antlers against any neighboring trees, and force them into the soft earth until there is none left, and the bare bone, with scarcely any trace of hollow in the middle of it, is completely exposed. Now, in the glory of their full equipment, they go in search of others of their kind, having previously maintained a comparative solitude. They try their strength by butting at imaginary enemies, and choose their wives, unless prevented by others of their species mightier than themselves, with whom, if fairly matched, they enter into the most formidable contests, to win or to be driven from the herd with ignominy. During these contests the sound of their battering antlers may be heard for considerable distances, whilst now and then, by accident, they interlock themselves inextricably, and perish both, as is attested by skulls so found, and to be seen in more than one museum.

Looking upon the deer generally, we find them inhabiting many parts of the world—Europe, Asia and America. In Africa none occur south of the Sahara, they being replaced by members of the bovine section of the order. None are found in Australia, and in America they are far less common than in England.

THE ELK, or Moose Deer. The elk, the largest of the family of the *Cervidae*, is found in North America, Northern Europe, and the coldest parts of Asia, thinly scattered in all but the first named locality. At the shoulder it may attain so great a height as eight feet when adult. The female is antler-less. In the males these appendages possess quite a peculiar shape, the two together forming a kind of basin, on account of their being developed into huge palmated concave sheets of bony tissue, which diverge laterally from the skull.

At nine months old the antlers first appear, not being more than straight and rounded dags in the first year. They reach their full length in the fifth year, from which period for many years they increase in breadth and weight, and add, it is said, a fresh point to their palmated margins until the fourteenth, when the creature is considered quite adult.

The color of the animal is a deep blackish brown. The neck is short and thick, with a peculiar, bob-shaped, pendulous, and hair covered lap of skin hanging down from the middle, just behind the angles of the jaw. The limbs, especially the front ones, are long. The tail is rudimentary. The coat is formed of close-set, harsh angular hair, which breaks when bent, produced into a mane upon the neck and shoulders. Sir John Richardson gives the following account of the habits and food of the elk, with the mode of hunting it: "In the more northern parts the moose deer is quite a solitary animal, more than one being very seldom seen at a time, unless during the rutting season, or when the female is accompanied by her fawns. It has the sense of bearing in very great perfection, and is the most shy and wary of all the deer species, and on this account the art of moose hunting is looked upon as the greatest of an Indian's acquirements, particularly by the Crees, who take to themselves the credit of being able to instruct



MOOSE AND WOLVES.

the hunters of every other tribe. The skill of a moose hunter is most tried in the early part of the winter; for during the summer the moose, as well as other animals, are so much tormented by mosquitoes that they become regardless of the approach of man. In the winter the hunter tracks the moose by its footmarks in the snow, and it is necessary that he should keep constantly to leeward of the chase, and make his advance with the utmost caution, for the rustling of a withered leaf or the cracking of a rotten twig is sufficient to alarm the watchful beast. The difficulty of approach is increased by a habit which the moose deer has of making daily a sharp turn in its route, and choosing a place of repose so near some part of its path that it can hear the least noise made by one that attempts to track it. To avoid this, the judicious hunter, instead of walking in the animal's footsteps, forms his judgment from the appearance of the country of the direction it is likely to have taken, and makes a circuit to leeward until he again finds the track. This manœuvre is repeated until he discovers by the softness of the snow, in the footprints and other signs, that he is very near the chase. He then disencumbers himself of anything that might embarrass his motions, and makes his approach in the most cautious manner. If he gets close to the animal's lair without being seen, it is usual for him to break a small twig, which, alarming the moose, it instantly starts up, but not fully aware of the danger, squats on its hams and waits a minute before starting off. In this posture it presents the fairest mark, and the hunter's shot seldom fails to take effect in a mortal part. In the



HEAD OF RED DEER, IN WHICH THE GROWING ANTLERS ARE SEEN COVERED WITH "VELVET."

rutting season the bucks lay aside their timidity, and attack every animal that comes in their way, and even conquer their fear of man himself. The hunter then brings them within gunshot by scraping on the bladebone of a deer, and by whistling, which, deceiving the male, he blindly hastens to the spot to assail his supposed rival. If the hunter fails in giving it a mortal wound as it approaches, he shelters himself from its fury behind a tree, and I have heard of several instances in which the enraged animal has completely stripped the bark from the trunk of a large tree by striking it with its fore feet. In the springtime, when the snow is very deep, the

hunters frequently run down the moose on snowshoes, which give them immense advantage, because the slender legs of the animal sink into the snow for their whole length each step they take, which makes their progress very slow."

The usual pace of a moose is a high shambling trot, and its strides are immense. On account of their neck being short at the same time that their legs are long, they browse upon the bushes rather than upon the ground, which they find difficulty in reaching with their mouths.

THE RED DEER. This species is a native of the British Isles and many parts of Europe. A well grown stag stands over four feet at the withers, with a thickly coated neck of a grayish tint, a rich red-brown body color, uniformly curved symmetrical antlers, and head held high. The stag in summer is a lordly creature. In winter its coat is longer, and of a grayer tint. As is the case in allied species, and all but a few of the Rusine deer, the newborn calves are brilliantly spotted with white.

The pairing season occupies the early part of October. The calves are born at the end of May or the beginning of June; whilst the stags drop their antlers between the end of February and the earlier days of April, the youngest latest. Up to the age of twelve the animal continues to increase in bulk and strength, and it is highly probable that they do not ever much outlive twenty years, although superstition credits them with very many more.

The red deer forms troops of various sizes, divided according to sex or age. The females and calves usually keep together; the older stags form smaller bands, but the master stags live alone till the breeding season comes on. At all times the herd, when traveling, follows a doe; the buck appears last of all. If we see in a herd several stout bucks, we can with certainty look for a still stouter one some



HEAD OF RED DEER, IN WHICH THE ANTLER IS FULLY DEVELOPED AND THE "VELVET" HAS DISAPPEARED.

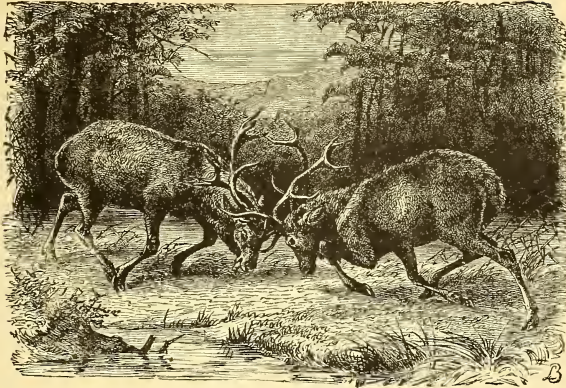
five hundred paces behind. In winter the red deer comes down from the mountains, and when its horns are soft it avoids the forests. The color varies slightly, according to the time of year. In summer its coat is a warm reddish brown, but in winter the ruddy hue becomes gray. The young, which are born about April, have the fur mottled with white about the back and sides, the white marking gradually fading as they increase in size. The young deer, for a short time after its birth, is very helpless, and crouches close to the ground till it looks like a block of stone when it has been warned by its mother that danger is nigh.

All the movements of the stag are full of grace and dignity, and its speed, when it is in full gallop, is incredibly swift. Immense leaps are executed with sportive lightness, all obstacles surmounted, and lakes or streams crossed by swimming. Its senses of hearing, smell and sight are highly developed. It can scent a man perhaps six hundred yards off, and hears the slightest rustle made by its pursuer. Like many animals it seems to have a love for some kinds of music. The notes of a flute will attract it, or at least bring it to a standstill. The stag does not seem possessed of much intelligence. It is shy, but not cautious. It acts without reflection when its passions are aroused. Although it has several times been partially tamed, and even trained to run in harness, the stag is a very unsafe servant, and at certain seasons becomes dangerous. In attacking, it uses its fore feet with terrible effect, the hard, sharp-edged hoofs being formidable weapons.

Formerly, the stag was placed in Europe under the protection of the severest penalties, its slaughter being visited with capital punishment on the offender if he could be known and arrested. Indeed, a man who murdered his fellow might hope to escape retribution except by the avenging hand of some relation of the slain man, but if he were unfortunate or daring enough to dip his hands in the blood of a stag, he could hope for no mercy if he were detected in the offence.

THE WAPITI is the largest of all the true deer. The adult male measures nearly five feet in height at the shoulders, and about eight feet from the nose to the tail. It is very commonly known by the name of elk.

The herds of Wapiti vary in number from ten or twenty to three or four hundred; but each one is always under the command of an old leader. When it halts, the herd halts; when it moves on, the herd follows; they all wheel right or left, advance and retreat with almost military precision when it commands. The proud position of ruler is gained by dint of many a fight; and the combats are unusually fierce, often indeed ending in the death of one of the rivals. Sometimes both perish miserably; their branching horns become inextricably locked, and the two adversaries, united in a common fate, slowly succumb to hunger and thirst. When the antagonists meet, they do not push with their horns, but backing from each other for about twenty feet, with blazing eyes, hair turned the wrong way, and heads lowered, rush together like knights in the tourney, with tremendous



THE WAPITI FIGHTING.

speed. At the moment of contact there is a snort of defiance, then a crash of horns, and then each backs off for a new start. This combative nature is retained even in captivity. Audubon relates the following anecdote: "A gentleman in the interior of Pennsylvania, who kept a pair of Wapiti in a large woodland pasture, was in the habit of taking pieces of bread or a few handfuls of corn with him when he walked in the inclosure, to feed these animals, calling them up for the amusement of his friends. Having occasion to pass through his park one day, and not having furnished himself with bread and corn for his pets, he was followed by the buck, who expected his usual gratification. The gentleman, irritated by its pertinacity, turned round and hit it a sharp blow, upon which, to his astonishment and alarm, the buck, lowering his head, rushed at him and made a furious pass with his horns. Luckily, the man stumbled as he attempted to fly, and fell between two prostrate trunks of trees where the Wapiti was unable to injure him, although it butted at him repeatedly and kept him prisoner for more than an hour."

Stalking the species is a common sport, but there is not so much interest associated with it as with moose stalking, because it is a more stupid creature, and its senses are less acutely developed. When started, a herd will make off for a short distance, and stop to recognize the source of danger before continuing its flight. Its food is mostly leaves of trees and shrubs, though it frequently eats grass and weeds. Dr. J. D. Caton, of Ottawa, Illinois, has published many interesting details with regard to this species. Among others he mentions, with reference to the young, that "the most prominent instinct of the young fawn

is that of deception. I have several times come across fawns evidently but a few hours old, left by the mother in supposed security. They affect death to perfection, only they forget to close their eyes. They lie without a motion, and if you pick them up they are as limp as a wet rag, the head and limbs hanging down without the least muscular action, the bright eye fairly sparkling all the time." The venison is excellent; it is said to be more nutritious than any other meat.

THE FALLOW DEER is well known on account of its being preserved in a semi-domesticated state in so many English parks. The buck is about three feet high at the shoulder. The head is short and broad, the tail between seven and eight inches long. The color of the wild animal, both buck and doe, is a rich yellowish-brown in summer, spotted with white all over. In winter the tints are more somber and grayish. Domestic varieties vary immensely, both in the distinctness of the sporting and the general coloration.

THE VIRGINIAN DEER. Perhaps no species of wild animal inhabiting North America, deserves to be regarded with more interest than the common or Virginian deer; its symmetrical form, graceful, curving leap or bound, and its rushing speed, when, flying before its pursuers, it passes like a meteor by the startled traveler in the forest, exciting admiration, though he be ever so dull an observer.

The tender, juicy, savory, and above all, digestible qualities of its flesh, are well known; and venison is held in highest esteem from the camp of the backwoodsman to the luxurious tables of the opulent, and a fat haunch with jelly and chafing dishes is almost as much relished as a "hunter's steak," cooked in the open air on a frosty evening far away in the West. The skin is of the greatest service to the wild man, and also useful to the dweller in towns; dressed and smoked by the squaw, until soft and pliable, it will not shrink with all the wettings to which it is exposed. In the form of moccasins, leggins, and hunting shirts, it is the most material part of the dress of many Indian tribes, and in the civilized world is used for breeches, gloves, gaiters and various other purposes.

In November, and sometimes a little earlier, the rutting season commences, when the neck of the buck begins to dilate to a large size. He is now constantly on foot, and nearly in a full run, in search of the does. On meeting with other males, tremendous battles ensue, when, in some rare instances, the weaker animal is gored to death; generally, however, he flies from the vanquisher, and follows him, crestfallen, at a respectful and convenient distance, ready to turn on his heels and scamper off at the first threat of his victorious rival. In these rencontres, the horns of the combatants sometimes become interlocked in such a manner that they cannot be separated, and the pugnacious bucks are consigned to a lingering and inevitable death by starvation. "We have endeavored to disengage the horns, but found them so completely entwined that no skill or strength of ours



FALLOW DEER (DOE) AND YOUNG.

was successful. We have several times seen two, and on one occasion, three pair of horns thus interlocked, and ascertained that the skulls and skeletons of the deer had always been found attached. These battles only take place during the rutting season, when the horns are too firmly attached to be separated from the skull. Indeed, we have seen a horn shot off in the middle by a ball, whilst the stump still continued firmly seated on the skull." The rutting season continues about two months, the largest and oldest does being earliest sought for, and those of eighteen months at a later period. About the month of January, the bucks drop their horns, when, as if conscious of having been shorn of their strength and honors, they seem humbled, and congregate peaceably with each other, seeking the concealment of the woods, until they can once more present their proud antlers to the admiring herd. Immediately after the rutting season, the bucks begin to grow lean. Their incessant traveling during the period of vengery—their fierce battles with their rivals, and the exhaustion consequent on shedding and replacing their horns by a remarkably rapid growth, render them emaciated and feeble for several months. About three weeks after the old antlers have been shed, the elevated knobs of the young horns make their appearance. They are at first soft and tender, containing numerous bloodvessels, and the slightest injury causes them to bleed freely. They possess a considerable degree of heat, grow rapidly, branch off into several ramifications, and gradually harden. They are covered with a soft, downy skin, and are now in what is called "velvet." When the horns are fully grown, which is usually in July or August, the buck shows a restless propensity to rid himself of the velvet covering, which has now lost its heat, and become dry; hence he is constantly engaged in rubbing his horns against bushes and saplings, often destroying the tree by wounding and tearing the bark, and by twisting and breaking off the tops. The system of bony development now ceases altogether, and the horns become smooth, hard and solid.

This animal cannot exist without water, being obliged nightly to visit some stream or spring for the purpose of drinking. Deer are fond of salt, and like many other wild animals, resort instinctively to salt-licks or saline springs. The hunters, aware of this habit, watch at these "licks," as they are called, and destroy vast numbers of them. We have visited some of these pools, and seen the deer resorting to them in the mornings and evenings, and by moonlight. They did not appear to visit them for the mere purpose of drinking, but after walking around the sides, commenced licking the stones and the earth on the edges, preferring in this manner to obtain this agreeable condiment, to taking a sudden draught and then retiring. On the contrary, they lingered for half an hour around the spring, and after having strayed away for some distance, they often returned a second and even a third time to scrape the sides of it, and renew the licking process. Our common deer may be said to be nocturnal in its habits, yet on the prairies, or in situations where seldom disturbed, herds of deer may be seen feeding late in the morning and early in the afternoon. Their time for rest, in such

situations, is generally the middle of the day. In the Atlantic States, where constantly molested by the hunters, they are seldom seen after sunrise, and do not rise from their bed until the dusk of the evening. The deer is more frequently seen feeding in the daytime during spring and summer, than in winter; a rainy day, and snowy, wintry weather, also invite it to leave its uncomfortable hiding place and indulge in its roaming habits.

The Virginian deer has been often tamed. A pair kept as pets by Audubon were most mischievous creatures. They would jump into his study window, and when the sashes were shut would leap through glass and woodwork like harlequins in a pantomime. They ate the covers of his books, nibbled his papers, and scattered them in sad confusion, gnawed the carriage harness, cropped all the garden plants, and finally took to biting off the heads of his ducklings and chickens.

The Muntjac form a group of small and elegant deer found in India, Burmah, China, the Malay Peninsula, and the large islands of the Indo-Malay Archipelago. They differ from all other members of the family in that their diminutive antlers are supported on lengthy bony pedestals, covered with a hairy skin much like the horn-processes of the giraffe. Most, also, have a pair of elongated longitudinal ridges between the eyes, within the folds of which small glands are situated, at the same time that there is a dark crest of retroverted hair, tending to the shape of a horseshoe upon the forehead. In the males the upper canine teeth develop into tusks, which project externally some way below the lip, though not so far as in the musk, forming efficient instruments of attack.

THE INDIAN MUNTJAC, or *Kidang*, is a small and elegant deer found in India, Java and China. Its antlers are not more than four inches long, composed of an undivided beam, at the base of which there is a diminutive brow-tyne. Its size is slightly less than that of the Roebuck, its color uniformly foxy red-brown, with the throat, hind part of abdomen and under surface of tail white. A black line runs up the inner side of each antler-pedestal of the male, instead of forming the frontal horseshoe of the female.

Dr. Horsfield tell us that in Java, where it is much hunted, "The muntjac selects for its retreat certain districts, to which it forms a peculiar attachment, and which it never voluntarily deserts. Many of these are known as the favorite resort of our animal for several generations. They consist of moderately elevated grounds, diversified by ridges and valleys, tending toward the acclivities of the more considerable mountains, or approaching the confines of extensive forests. * * * The muntjac has a strong scent, and is easily tracked by dogs. When pursued it does not go off, like the stag, in any accidental direction; its flight, indeed, is very swift at first, but it soon relaxes, and taking a circular course, returns to the spot from which it was started. After several circular returns, if the pursuit be continued, the kidang thrusts its head into a thicket, and in this si-

uation remains fixed and motionless, as if in a place of security, and regardless of the approach of the sportsman."

In China the muntjacs are smaller than those of India and Java; their antlers are less developed at the same time that the tint of their coats is less rufous, and the neck is not white. It is there usually found in small herds, basking in the sun, or lying in hidden lairs. They are very seldom approached near, except by stealth. The least noise startles them, and they dash away with bounds through the yielding grass, occasionally showing their rounded backs above the herbage. They have, however, their regular creeps and passes through the covert, near which the natives lie when stalking them, while others drive them. The little startled creatures hurry from danger along these beaten tracks, and are then picked off with the matchlock. In captivity they soon become very docile, even when taken in the adult state. The flesh of this animal is very tender and palatable.

THE CHINESE ELAPHURE. This most interesting deer was discovered in 1865 by the indefatigable French naturalist, M. Armand David. In his account of the animal Dr. Sclater tells us that M. David first observed it whilst looking over the wall of the imperial hunting park at Peking, to which no European is allowed admission. There it is found in a semi-domesticated state, its native place probably being Eastern Manchuria. In 1869 Sir Rutherford Alcock succeeded in sending a living pair to England, where they were exhibited for some time in the gardens in the Regent's Park, and from which much information has been obtained with reference to their habits. It resembles the Swamp deer of India in its proportions and size, standing nearly four feet at the shoulder. The legs are somewhat heavy and the feet expanded, but it is in its antlers that the elaphure is different from any other deer. They are represented in the accompanying engraving, from which the abrupt ascent of the beam, with an enormous back-tyne arising from the lower end, and no brow-tyne, may be most clearly seen. The beam branches higher up, but its bifurcations follow none of the ordinary rules of cervine antler growth.

THE REINDEER, or Caribou, which differs from all its allies in that the females carry antlers as well as the males, forms so important an element in the social economy of the Laplanders that more has been written on its habits than of any other species of the family. It is found distributed throughout the Arctic regions of Europe, Asia, and America. In Spitzbergen, Finland and Lapland it attains the greatest size, being inferior in strength and stature in Norway and Sweden. In Iceland it has been introduced, and thrives. The Caribou is the name by which it goes in the New World, where it extends through Greenland, Canada and Newfoundland. The horns of the American variety differ from those of the Old World so much that it is not difficult to recognize their origin.



THE CHINESE ELAPHURE.

The animal, with a characteristic deer-like form, is powerfully built, with short limbs and heavy neck. The feet have the false hoofs well developed, while the fissure between the median toes is so much extended upward, and the ligaments which bind them together are so loose, that their hoofs spread out considerably when pressed upon the ground, and so increase the surface for support upon the yielding snow—their most frequent foothold. Upon raising the limbs in rapid action these hoofs make a sharp snap at the moment when they close together.

Individuals vary much in tint as well as with the season. Some are entirely white, whilst in winter the coat is always lighter than in summer. Deep brown is the prevailing tint, and there is generally a band of white above each hoof. As in the elk—another Arctic ruminating animal—the muffle of the nose is covered with hair, and is not moist. The fur is of two sorts—an outer covering of longer, harsh, brittle hair, and an undercoat of closely matted and much finer, wool-like texture, which serves as an excellent protection against the inclement temperature, and makes the skins so valuable for articles of clothing in the Arctic regions.

The antlers are strikingly large for the size of their owners. Although they vary considerably in detail, the general plan of their construction is always the same, agreeing with that of the Virginian deer.

The Woodland Caribou and the Barren Ground Caribou are the names given to a larger and a smaller breed in Canada. Both are hunted by the Indians for their flesh as well as for their hides, the venison obtained from the latter being held in high estimation. The pounded meat, when mixed with melted fat, is known as pemmican. The tongue is esteemed a great delicacy.

The reindeer, from the nature of the country it inhabits, is compelled to lead a migratory life, in which the natives of Lapland, who have to depend entirely for their sustenance on the animal, have to participate. Troops of them during the winter months reside in the woods, from the trees of which they feed on the lichens which depend from their boughs, as well as from those which grow upon the ground beneath. In the spring they repair to the mountains in order to escape the swarms of stinging gnats and gadflies which infest the air, and inflict wounds in the skin, of most serious severity.

All the senses of the reindeer are good; its power of smell is remarkable, it can hear as keenly as a stag, and its sight is so sharp that a hunter, even coming against the wind, has to conceal himself most carefully. They are, according to the testimony of all sportsmen, shy and cunning in the highest degree. During the summer their food consists of Alpine plants, in winter they scrape away the snow with their feet, and eat the lichens on the rocks.

The chase of the reindeer is of the highest importance to the Northern tribes. Many of those in Siberia depend entirely on the reindeer for food, clothing, conveyance and shelter. The chase of the reindeer decides whether there will be famine or prosperity, and the season when these animals migrate is the harvest



REINDEER PURSUED BY WOLVES.

time. The hunters attack them when crossing a river, and the slaughter made on these occasions can be best described as immense.

The reindeer is domesticated by the Lapps and Finns, as well as by the Samoyede tribes, the Ostzaks, Tunguses, and others in Siberia. According to Norwegian statistics, the Lapps in that kingdom possess seventy-nine thousand reindeer. It is the support and pride, the joy and riches, the plague and torment of the Laplander. He is the slave of his reindeer; where they go, he must follow.



THE WATER DEERLET, OR CHEVROTAIN.

He has to be out for months, tormented in summer by the mosquitoes, half-killed in winter by the cold, and with no other companion than his dog. The latter is an indispensable auxiliary; watchful, sagacious, reliable, it obeys every sign of its master, and will for days keep the herd together by its own independent action. The uses to which the tame reindeer is put are manifold. The Lapps use it for driving, the Tunguses mount and ride on their backs. On even ground it can travel seven or eight miles an hour, but its ordinary pace is four or five miles.

The mode of harnessing and driving the reindeer is most simple. A collar of skin is fastened round its neck, and from this a trace hangs down, which, passing

under the belly, is fastened into a hole bored in the front of the sledge. The rein consists of a single cord fastened to the root of the animal's antlers, and the driver drops it on the right or left side of the back, according to the side to which he wishes to direct the animal. The vehicle being very light, traveling may be rapidly performed in this equipage, but not without running some risk of breaking your neck; for, to avoid being upset, one must be very skillful in this sort of locomotion. The Laplander becomes by practice a perfect master of this art.

We have not yet mentioned the most important articles this ruminant of the Arctic regions yields man. The female produces milk superior to that of the cow, and from it butter and cheese of excellent quality are made. Its flesh, which is nutritious and sweet, forms a precious alimentary resource, and almost the only one in the polar regions. Its coat furnishes thick and warm clothing, and its skin is converted into strong and supple leather.



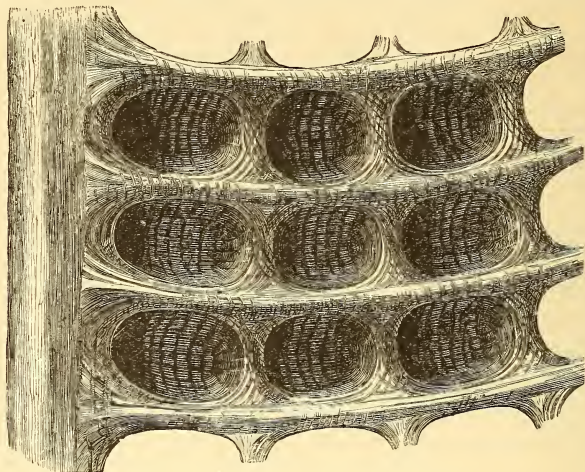
CAMEL'S HEAD.

THE WATER DEERLET of West Africa is about twenty inches long and ten inches high at the shoulder. Its deep glossy brown coat is streaked with white lines, and is irregularly spotted.

All the deerlets are particularly delicate, diminutive, and graceful animals, the slenderness and clear cut outlines of the limbs being exceedingly striking. With bodies as big as that of a hare or rabbit, their legs are not so thick as a cedar penholder or a clay pipe stem. Their proportions are very much those of the small water bucks of Africa, and many of the kinds of deer, especially the hog deer of India, in which the body, as in them, is not carried very high above the ground. The want of antlers in both sexes makes them resemble hinds rather than stags at first sight, whilst their elegantly pointed noses, and large dark eyes, add to their general interesting appearance.

THE CAMELS form a very restricted group of two species. They now exist only in a state of domestication. The feet, instead of being protected by hoofs, are covered with a hardened skin, inclosing the cushion-like soles of the feet, which are so constructed that they spread out laterally when brought in con-

tact with the ground, an arrangement of evident advantage to desert-ranging animals. The tips of each of the two toes are protected by nails instead of hoofs. They have no horns, and the upper lip is cleft. In the walls of the stomach there are present two extensive collections of "water cells," which serve their owners in good stead while traversing the desert or residing in regions where fresh water is not to be procured except with difficulty. These water cells, seen from within, are formed by the development of septa, both transverse and longitudinal, in the substance of the paunch wall. They are deep and narrow, much like the cells of a honeycomb, and have a muscular membrane covering their mouths, in which



WATER CELLS OF THE CAMEL'S STOMACH.

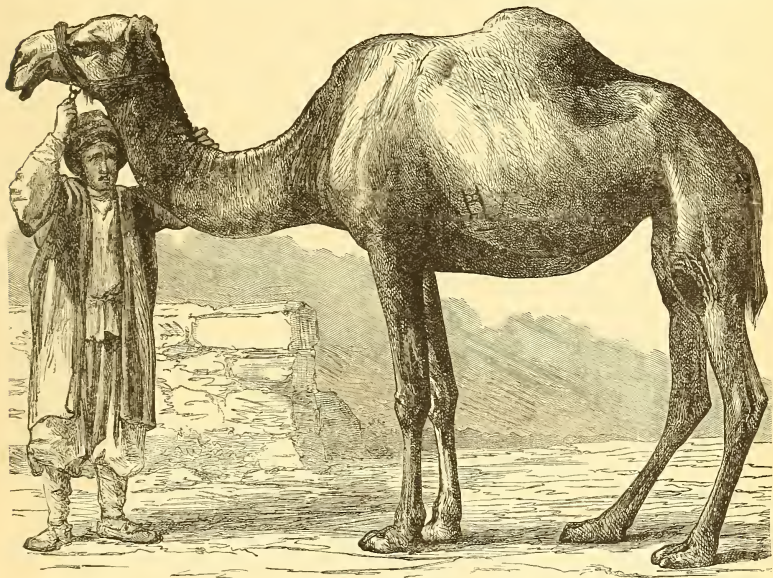
there is an oval orifice opposite to each compartment capable of being further dilated or completely closed, probably at the will of the animal. When fully distended, these cells in the Arabian camel are capable of storing a gallon and a half of water.

THE TRUE CAMEL. The one-humped camel of Arabia is frequently termed the dromedary, but this latter name is correctly applicable only to the swift variety of the species, which is employed for riding, the heavier built one-humped pack camel not being included under the designation.

It is the Arabian Camel—the Ship of the Desert—which is more serviceable to man than its Bactrian ally. Its distribution has extended westward along

North Africa, from which attempts have been made to introduce it into Spain. Eastward it is found as far as India.

In the camel the limbs and neck are lengthy. A single bulky lump is present on the middle of the back, composed of fatty cells held together by strong bands of fibrous tissue which cross in all directions. Like all similar accumulations, it varies much in size according to the condition of the animal, dwindling almost to



THE TRUE CAMEL.

nothing after protracted hard work and bad feeding, being firm and full in times of ease and plenty. When on the point of commencing a lengthy journey, there is nothing on which an Arab lays so much stress as on the condition of his camel's hump, which, from what we have just said, must be considered to be nothing more or less than a reserved store of food.

Upon the chest, the elbows, the fore knees (true wrists), knees and hocks, callous pads of hardened skin are found, upon which the creature supports its weight whilst kneeling down, a position in which it always rests, and one which it assumes when being loaded. These pads are present in the newborn camel calf,

proving, contrary to the view maintained by some, that they are not the direct result of pressure, but are special provisions in accordance with the requirements of the species, arrived at by a process of natural selection, those individuals alone surviving in which there is the power of resisting the injurious effects of protracted strain upon a few spots of the skin.

The coat is, in the summer, scanty; in the winter, of considerable length, and matted into lumps. The two-toed feet are very much expanded, and tipped with a pair of small hoofs. The lips are covered with hair, the upper one being split up for some distance in the middle line. The nostrils, when closed, are linear, and from their construction prevent sand from entering the air passages when the animal desires it. The tail is of fair length, reaching to the ankle joint. There is a fixity about its attitudes, and a formality about its paces, which is quite characteristic. Its power of enduring fatigue upon its scanty fare, whilst carrying a weight as great as six hundred pounds, together with its endurance, makes it invaluable in its desert home.

A stolid obstinacy is its usual disposition. Mr. Palgrave, criticising the reputation that the animal has for docility, remarks: "If docile means stupid, well and good. In such a case the camel is the very model of docility. But if the epithet is intended to designate an animal that takes an interest in its rider so far as a beast can; that in some way understands his intentions, or shares them in a subordinate fashion; that obeys from a sort of submissive or half fellow-feeling with his master, like the horse or elephant; then I say that the camel is by no means docile—very much the contrary. He takes no heed of his rider, pays no attention whether he be on his back or not, walks straight on when once set a-going, merely because he is too stupid to turn aside; and then, should some tempting thorn or green branch allure him out of his path, continues to walk on in the new direction, simply because he is too dull to turn back into the right road. In a word, he is from first to last an undomesticated and savage animal rendered serviceable by stupidity alone, without much skill on his master's part, and any co-operation on his own, save that of an extreme passiveness. Neither attachment nor even habit impresses him. Never tame, though not wide awake enough to be exactly wild."

Nevertheless, the animal undoubtedly gives indications of intelligence when it has been badly treated, if we may judge from its revengeful nature, well illustrated in the following account: "A valuable camel, working in an oil mill, was severely beaten by its driver. Perceiving that the camel had treasured up the injury, and was only waiting a favorable opportunity for revenge, he kept a strict watch upon the animal. Time passed away. The camel, perceiving that it was watched, was quiet and obedient, and the driver began to think that the beating was forgotten, when one night, after the lapse of several months, the man was sleeping on a raised platform in the mill, whilst, as is customary, the camel was stabled in a corner. Happening to awake, the driver observed by the bright

moonlight that, when all was quiet, the animal looked cautiously around, rose softly, and stealing toward a spot where a bundle of clothes and a bernous, thrown carelessly on the ground, resembled a sleeping figure, cast itself with violence upon them, rolling with all its weight, and tearing them most viciously with its teeth. Satisfied that its revenge was complete, the camel was returning to its



THE BACTRIAN CAMEL.

corner, when the driver sat up and spoke. At the sound of his voice, and perceiving the mistake it had made, the animal was so mortified at the failure and discovery of its scheme, that it dashed its head against the wall and died on the spot."

THE BACTRIAN CAMEL. The two-humped camel is found in the regions to the east and north of the home of its one-humped ally, extending as far as Peking and Lake Baikal. It is a heavier, shorter legged, and thicker-coated species, at



THE LLAMA.

the same time that the feet are more adapted to a less yielding soil from their greater callousness. The hair is specially abundant upon the top of the head, the arm, wrist, throat, and humps. There is no variety of this species corresponding to the Dromedary or one-humped camel.

THE LLAMAS, when the term is employed in its wider sense, include the American representatives of the camel tribe, none of which have any trace of the dorsal hump or humps found in their

Old World allies. They are mountain animals, found in the Cordilleras of Peru and Chili, in this respect also differing from the desert-loving camels, with which they agree in all important structural peculiarities, including the stomach, lips, nostrils and coat. The feet are somewhat modified in accordance with the rocky nature of the mountain regions which they inhabit, the sole-pads being less considerable, and almost completely divided into two hard cushions, with a long and hooked nail in the front of each.

Llamas were found domesticated when South America was first discovered by the Spaniards, and as there were then no mules or horses there, these creatures were employed exclusively as beasts of burden, as well as for their flesh, their wool and hides. Their disposition and their habits also resemble those of the camel. They have their own peculiar gait and speed, from which they cannot well be made to vary. When irritated they foam at the mouth and spit, sulking and lying down when overloaded. As beasts of burden their most important use is to convey the ores from the mines of Potosi and elsewhere in the Andean range. From the account of Augustin de Zerate, who was a Peruvian Spanish government official in the middle of the sixteenth century, we learn that "in places where there is no snow the natives want water, and to supply this deficiency they fill the skins of sheep (llamas being meant) with water, and make other living *sheep* carry them, for it must be remarked that these *sheep* of Peru are large enough to serve as beasts of burden. They can carry about one hundred pounds or more, and

the Spaniards used to ride them, and they would go four or five leagues a day. When they are weary they lie down upon the ground, and as there is no means of making them get up, either by beating or assailing them, the load must of necessity be taken off. When there is a man on one of them, if the beast is tired he turns his head round and discharges his saliva, which has an offensive odor, into the rider's face. These animals are of great use and service to their masters, for their wool is very good and fine, particularly that of the breed called Pacas, which have very long fleeces; and the expense of their food is trifling, as a handful of maize suffices them, and they can go four or five days without water. Their flesh is as good as that of the fat sheep of Castile."



THE ALPACA.

THE ALPACA is smaller than the llama, very like a sheep, with a long neck, and well-shaped head. The wool is long and very soft, and white or black in color.

The Alpacas live in large herds, which pasture all the year on the plateaux, and which are only collected to be shorn. There is, perhaps, no more obstinate animal than the Alpaca. When one is separated from the herd, it flings itself on the ground, and neither coaxing nor flogging can make it get up; it will rather die than stir; the only way to induce it to exert itself is to bring up another herd, and then it condescends to join itself to them. The wool attains the length of nearly four inches, and has from time beyond the memory of man been spun into garments. The Indians make from it tablecloths and other things which are remarkable for wearing well, and having a smooth surface. The Incas of Peru had great masters in the textile art. The most skilful lived near the Lake of Titicaca. They dyed the wool with various herbs. The present Indians have lost the art, except in its ruder manufacture of coverlets and cloaks. The best wool is sent to Europe, where, as we all know, it is spun and woven into a variety of articles.

All attempts to acclimatize alpacas in Europe have failed. Nor do they succeed any better in Australia. An Englishman named Leeds was sent out by the government of New South Wales to procure the animals from Bolivia. But the Bolivian government forbade the exportation, and only after great difficulties did he manage to ship three hundred alpacas. Five years later, after the government had spent fifteen thousand pounds, scarcely a dozen of the animals were alive, while the young ones born from the imported ancestors were in a very poor condition. There are, however, many places where they might be domesticated, but it is not worth the while to do so, such places being already occupied by more profitable animals. The alpacas are enduring, require little attention, and breed fast, and in addition to their wool, supply good flesh. They are never used for

carrying burdens, but kept solely for the hair and flesh. To obtain the former, the herds are annually driven in and shorn, which is no light task with an animal so full of natural obstinacy. The shearing over, they are again turned loose.



CHAPTER XIX.

ORDER X.—RODENTIA.

While the last few chapters have been devoted to orders which contain the largest and most powerful of terrestrial mammalia, we have now to treat of a group, all the members of which are of comparatively small size. "Mice, rats, and such small deer," to use Shakespeare's phrase, make up a great proportion of the order Rodentia. The biggest of them is only about the size of a small pig; and perhaps the common house rat, or, at any rate, the common squirrel, may be taken as showing the average dimensions of a rodent. But, although from this point of view they may be looked upon as "a feeble folk," their numerous species render them a most important section of the mammalian fauna of nearly all countries, and this importance is greatly increased, practically, by the immense number of individuals by which each species is usually represented.

The Rodentia, or gnawing mammals, notwithstanding the great number of the species and the immense variety of forms which they display, constitute, perhaps, the most definitely circumscribed order of the mammalia. In most other groups of the same value, we find that some types exhibit divergent characters, which render it difficult to frame a general description of the order which shall include them; or else some species present a marked tendency toward some other order; but in the case of the rodents, we never have any difficulty; a cursory inspection of the dentition is always sufficient to decide whether a quadruped belongs to the Rodentia or not; and in spite of an almost infinite variety of form, the structure of the rest of the organism is most clearly in accordance with the evidence derived from the teeth.

The teeth are only of two kinds—incisors and grinders—and the number of efficient teeth of the former kind is never more than two in each jaw. Almost throughout the order, indeed, there are actually, even from the first, only two incisors present; but in the hares and rabbits, and some allied forms, there are in the upper jaw, in addition to the working teeth, a pair of rudimentary incisors, placed immediately behind the large ones, but quite incapable of taking any part in the business of gnawing, for which the latter are so admirably fitted. Their presence is, however, of interest, as indicating the direction in which an alliance with other forms of mammalia more abundantly supplied with teeth, is to be sought.

The great incisors, which are characteristic of the rodents, exhibit the following peculiarities: They possess no roots, but spring from a permanent pulp, so that they continue growing during the whole life of the animal; and their form, and that of the cavity which constitutes their socket, is always that of a segment of a circle, in consequence of which, they always protrude from the front of the jaws in the same direction, and meet at the same angle. By this means, as the teeth are worn away at their summits by use in gnawing, a fresh supply of tooth is continually being pushed forward to take the place of the portion thus removed, and, in fact, so intimately are the two functions of use and growth correlated in the teeth of these animals, that if by chance one of the incisors should get broken, or the natural opposition of these teeth should be disturbed in consequence of injury to the jaw, the teeth, thus deprived of their natural check, continue growing, and, following the curve of their sockets, gradually form circular tusks, which must always be greatly in the way of the animal when feeding, and sometimes, by actually penetrating again into the mouth, cause its death by absolute starvation. The teeth themselves are composed of dentine, coated along the front surface with a layer of hard enamel, which substance is wanting on the other surfaces of the teeth, except in the hares, rabbits, and other forms with additional rudimentary incisors in the upper jaw, in which, as further evidence of their relationship to the other mammalia, the whole surface of the incisors is encased in enamel, although this coat is excessively thin except on the front or outer face. The purpose of this structure of the incisors is easily understood. In the action of gnawing, the dentine, which forms the greater part of the tooth, is more easily abraded than the harder enamel, which is thus left as a sharp front edge, to which the mass of dentine behind it, being worn away into a beveled surface, gives the necessary firmness and support, the whole forming a chisel-like instrument, constructed precisely on the principle of those tools in which a thin plate of hard steel forms the cutting edge, and is stiffened by a thicker beveled plate of softer iron.

The grinders are sometimes furnished with true roots, but are more commonly open below, and provided, like the incisors, with a permanent pulp. They are sometimes tubercular, at least in youth, but generally show a flat, worn surface with transverse bands, or re-entering folds, and sometimes cylinders of enamel, which display a great variety of patterns. Sometimes the enamel is confined to the surface of the tooth. In other cases each tooth is, as it were, made up of two or more variously shaped tubular portions of enamel, filled up with dentine. Curiously enough, this structure of the grinders, especially the arrangement of the transverse ridges and plates of enamel in these little animals, reminds us strongly of the characters of the molars of the gigantic Proboscidea, in which, moreover, the incisors are also represented by the permanently growing tusks. The feet have usually five toes, but sometimes this number is reduced to four, or even to three, in the hind feet. These toes are armed with claws, which, however, in one family, acquire more or less of the appearance of hoofs.



Carolina Gray Squirrel.

In point of intelligence the rodentia do not stand high. The brain is comparatively small, and the cerebral hemispheres show no traces of those convolutions of the surface which are characteristic of most mammals. The organs of the senses are generally well developed, and the eyes and external ears, especially, are often of large size. In the mole rats and some other burrowing animals, however, the external ears are entirely wanting, and the eyes are very much reduced in size, and in some instances even concealed beneath the skin. The body in the rodents is generally plump and short, and the head is borne upon a short neck. The limbs also are usually short, so that the belly is close to the ground, but in some cases all four legs are of moderate length, or the hind legs are enormously developed, forming powerful leaping organs.

SECTION I.—SQUIRREL-LIKE RODENTS.

THE TRUE SQUIRRELS, which may be regarded as the types of this family, are distinguished by their slender and graceful forms, and their long and generally bushy tails, the latter character having originated their classical name of *Sciurus*, as a compound of two Greek words, indicating their habit of carrying their tails thrown up, so as to shade the back. Our common Northern gray squirrel may serve as a good example of this division of the family. It is too well known as a pet to need any detailed description. Its elegant form and graceful movements, the rich grayish color of its upper surface, contrasting with the white of the belly, and which, combined with its bright black eye, give it such a lively appearance, must be familiar to every one. When full grown the squirrel measures from ten to twelve inches in length of body, and has a tail nearly as long as the body.

Everywhere it haunts the woods and forests, living chiefly upon the trees, among the branches of which it displays the most astonishing agility. On the ground—to which, however, it does not often descend—it is equally quick in its movements. If alarmed under these circumstances, it dashes off to the nearest tree with lightning-like rapidity, and by the aid of its sharp claws rushes up the trunk till it reaches what it considers a safe elevation, when the little sharp face and bright eyes may be seen peeping at the intruder, apparently in triumph over his supposed disappointment.

The food of the squirrel consists chiefly of nuts, beech-mast, acorns, and the young bark, shoots, and buds of trees. In eating the former articles, they are held in the forepaws, which thus supply the place of hands, and the strong incisors soon make a way through the outer shells into the contained kernels, which alone are eaten; for in all cases in which the kernel is coated with a coarse brown skin (as in the common hazel nuts), the squirrel carefully removes every particle of this from the portions on which he feeds. The bark, buds, and young shoots of trees seem generally to be attacked by the squirrel when he finds a deficiency of other

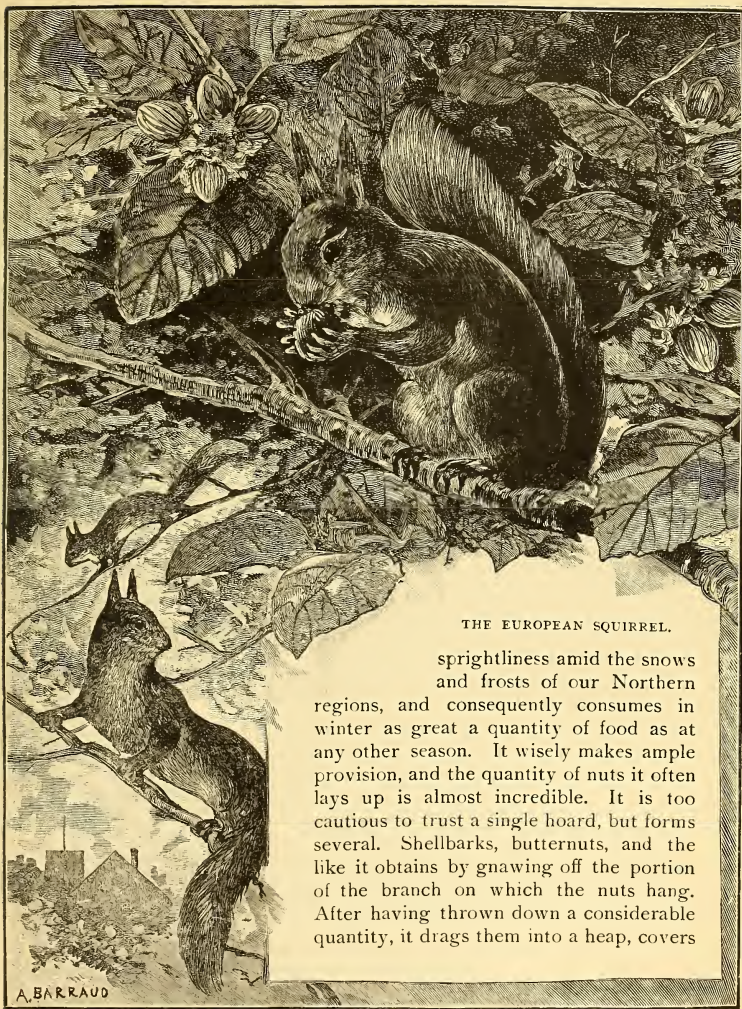
and more congenial nourishment; but this is so regularly the case in the spring of the year, that these animals actually cause a great amount of damage to the trees in forest regions. Hence, not unnaturally, the squirrel is regarded in forest countries as a most mischievous little animal, whose depredations are not to be condoned on account of its elegant appearance and lively habits. As another unamiable quality, may be mentioned its habit of plundering birds' nests and eating the eggs, which appears to be established upon unquestionable evidence. In some Northern regions the inhabitants turn their squirrels to a more profitable use than putting them, as we so often do, into a sort of treadmill. In Lapland and some parts of Siberia, especially on the banks of the Lena, these animals are killed in great numbers for the sake of their gray winter coats.

The squirrel passes the greater part of the winter in a torpid state, lying coiled up in some hole of a tree, where its long bushy tail is of service in keeping it warm and comfortable. On fine and warm days, however, it rouses itself from its slumbers, and, as if foreseeing the occurrence of such days, it lays up in the autumn stores of nuts, acorns and beech-mast, upon which it can feed when it wakes during the winter. This winter provision is not laid up all in one place, but stored away in several different holes in trees surrounding the place of its own retreat.

Squirrels appear to be strictly monogamous, pairing for life, and constantly inhabiting the same dwelling. The young, three or four in number, are produced in June, and for their reception the parents prepare a very beautifully constructed nest, formed of interlaced moss, leaves, and vegetable fibres, which is placed either in the hole of a tree, or in the fork between two branches. The young squirrels are very carefully attended by both parents, and the family remains united until the following spring, when the young go out to find partners, and settle themselves in the world.

The common squirrel may serve as an example of the whole genus, which includes the ordinary tree squirrels, the species of which are very numerous, probably more than one hundred, and distributed over all parts of the world. The species are most numerous in the warm oriental regions, in India, and the countries and islands lying to the east of it, from which nearly fifty species have been recorded. The northern parts of the Old World only possess half a dozen species, while North America has about eighteen, many of which are considerably larger than the gray squirrel.

THE RED SQUIRREL or *Chickaree* is the most common species in the Northern and throughout the Eastern States. It is fearless to a great degree of the presence of man, and in its quick, graceful motions from branch to branch, reminds one of a bird. It is always neat and cleanly in its coat, industrious and provident. The Chickaree obtained its name from its noisy chattering note which it repeats at frequent intervals. Unlike the gray squirrel, it exhibits the greatest



THE EUROPEAN SQUIRREL.

sprightliness amid the snows and frosts of our Northern regions, and consequently consumes in winter as great a quantity of food as at any other season. It wisely makes ample provision, and the quantity of nuts it often lays up is almost incredible. It is too cautious to trust a single hoard, but forms several. Shellbarks, butternuts, and the like it obtains by gnawing off the portion of the branch on which the nuts hang. After having thrown down a considerable quantity, it drags them into a heap, covers

them with leaves till the thick outer covering falls off or opens, and then carries off the nuts more conveniently. But even if these stores of nuts fail, the chickaree can live on the cones of the pine and fir tree. In the southern part of New York, and in more Southern States, it is satisfied with a hollow tree for its winter residence, but in Northern New York, Massachusetts, Canada, and further north, it digs deep burrows in the earth. It can swim and dive moderately well.

THE BLACK SQUIRREL is a native of many parts of North America. The whole of its fur, with very slight and variable exceptions, is of a deep black color; even the abdomen, which in most animals is lighter than the back, displays the same inky hue. The total length of the animal is about two feet ten inches, including a tail thirteen inches long. It is vanishing before the inroads of the gray squirrel, and seems to be a timid creature, flying in terror from the anger of the red squirrel. When undisturbed, it is an active and lively animal, and is remarkable for a curious habit of suddenly ceasing its play, and running to some water to refresh itself. After drinking, which it does by putting its nose and mouth in the water, it carefully washes its face.

THE CAROLINA GRAY SQUIRREL has, on its back, for three-fourths of its length, fur of a dark lead color, succeeded by a slight indication of black edges with yellowish brown in some of the hairs, giving it on the surface a dark grayish yellow tint. The feet are light gray, three-fourths of the tail is a yellowish brown, the remainder black, edged with white, the lower surface of the body white. It differs in many respects from the Northern gray squirrel. Its bark is more shrill, and instead of mounting the tree when alarmed, it plays around the trunk. It is less wild than the Northern species, and haunts swampy places, or trees overhanging rivers, and is constantly found in the cypress swamps. It is abundant in Florida, Georgia, and the Carolinas, but does not extend northward.

THE TACUAN is a large species, indeed, the largest of the whole family Scuriidae. It measures about two feet long, and has a bushy tail of nearly equal length. Its ears are pointed, but not tufted, and its eyes are large and prominent. Its color above is grayish-black, produced by a mixture of entirely black hairs with others having the tips grayish-white; beneath it is grayish-white. About the head and on the limbs the fur is tinged with brown or chestnut brown, and the lateral folds are sometimes of the latter color, sometimes blackish-brown above and gray beneath. The tail is rounded in its form.

This species inhabits the peninsula of India and Ceylon, Malacca and Siam, where it is found only in the forests, living in trees, either singly or in pairs. Its activity is chiefly nocturnal, in which respect it differs from the ordinary squirrels. During the day it sleeps in the holes of trees, but at night it comes forth, climbing and leaping with the greatest rapidity about the trees on which it lives. While



THE TAGUAN.

thus engaged the lateral membranes are loosely folded at the sides of the body; but from time to time the squirrel wishes to pass from one tree to another at some distance, and then it ascends to a considerable elevation and springs off, at the same time extending all four limbs as much as possible, when the tightly stretched folds of skin lend the body a support, which enables it to glide through the air to some distance, although it seems always to alight at a lower level than that from which it started. During these aerial excursions the long bushy tail serves as a sort of rudder, and enables the animal even to change its course during flight. Of the habits of the taguan very little is known. It appears to feed upon fruits, and is exceedingly shy and fearful. Of a nearly allied species which he observed in China, Mr. Swinhoe says that the nest, which was placed high up in a large tree, measured about three feet in diameter, and was composed of interlaced twigs, and lined with dry grass. It contained only a single young squirrel; but this might be exceptional.

THE FLYING SQUIRREL is the smallest of all the squirrels, measuring about nine inches, including the tail. Its fur is delicate and soft, brownish-gray on

the back, lighter on the sides of the neck, yellowish-white on the whole under side. The paws are silver-white, the flying membrane is edged with black and white, and the bright eyes are of a black-brown color.

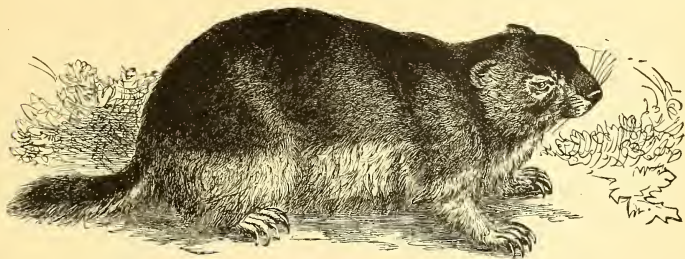
The flying squirrel is a harmless and very gentle species, becoming tame in a few hours. After a few days it will take up its residence in some crevice, or under the eaves, and will remain there for years. They are gregarious, and live in considerable communities. There is nothing resembling flying in their movements; they merely descend from a high position by a gliding course, alight on a tree,



THE GOPHER.

ascend it at once, and again descend with their membrane expanded. They do not build nests, like the true squirrels, but confine themselves to a hollow in a branch.

THE GROUND SQUIRRELS are distinguished from the rest of the squirrels and approach the Marmots. Like some of the latter, they possess large cheek pouches opening into the mouth. The ears are short; the fourth toe of the fore feet is longer than the rest; the limbs are short, and nearly equal in length; and the tail is shorter than in the true squirrels. In general form and appearance, however, the ground squirrels greatly resemble the latter, except that they are rather stouter in the body. Four species of this group inhabit North America and are known as chipmunks; one of these is identical with the only known Old World species.



THE ALPINE MARMOT.

Chipmunks are exceedingly pretty little animals, with light colored fur adorned with darker stripes, varied with streaks of white. They are from eight to ten inches long, including the tail. These animals live in burrows in the ground, and feed upon nuts, acorns, grain, and other seeds of various kinds, of which they lay up great stores in the autumn, carrying home their provisions in their cheek pouches, which they stuff as full as they can hold. In this way they do no small damage to cultivated grounds near their haunts, plundering the corn fields very freely; over eight pounds of corn in the ear are often found in the granaries of the Siberian form. The burrow is made deep enough to protect the animals from frost in winter, and the sleeping chamber contains a large nest of leaves and grass, in which several individuals, probably the parents with their grown-up family, sleep through the cold weather; but it must be remarked that their torpidity is very imperfect, and they have frequent recourse to the supplies of food which they have stored up during the summer and autumn in separate chambers at the ends of lateral passages. These stores are so large that they generally exceed the wants of the provident little animals. From the ground squirrels we pass, by a perfectly natural transition, to

THE MARMOTS. These animals differ from the preceding forms by their broader incisors, shorter tail, and stouter form of body, and by having the third finger longer than the rest. The marmots are all terrestrial animals, living and storing provisions in burrows, which they dig in the ground, and they are strictly confined to the northern part of the two hemispheres.

The nearest approach to the squirrels is made by the Spermophiles, several species of which occur in North America from Mexico to the Arctic regions, but never to the east of the great central prairie region. The spermophiles are squirrel-like in form and have rather short tails. The mouth is furnished with large cheek pouches, and the ears are very small. These animals live in society, and prefer a dry, sandy, or loamy soil, in which they can easily make their burrows, which

terminate in a chamber lined with grass and herbage, and have, besides, side chambers, in which provisions can be stored for winter use. Like the other species of the family, the spermophiles pass the winter in a state of partial torpidity. In the summer they are exceedingly lively and playful. Their food consists of roots, berries, and seeds of various kinds, and their winter stores of these articles are carried into the burrows in their large cheek pouches. The commonest and most widely distributed of the North American species is the Gopher, a pretty little creature of from six to eight inches long, usually of a chestnut brown color with seven yellowish-white lines running along the back, and between these six rows of small squarish spots of the same color. This species



PRAIRIE DOGS.

extends its range from the Red River in Canada southward as far as Texas, and is common on the prairies east of the Mississippi. This and some other species of the genus are said to be very carnivorous in their habits, preying upon small birds and mammals; and the gopher is even described as feeding upon the flesh of bisons, which it finds lying dead on the prairies.

THE PRAIRIE DOGS are of a stouter form than the gophers, and have the ears and tail short. The claws are well developed on all the toes of the fore feet, and the cheek pouches are shallow. These animals are peculiar to North America, where they inhabit the prairies east of the Rocky Mountains. The best known of the two species is the prairie dog, this name being given to it from a fancied

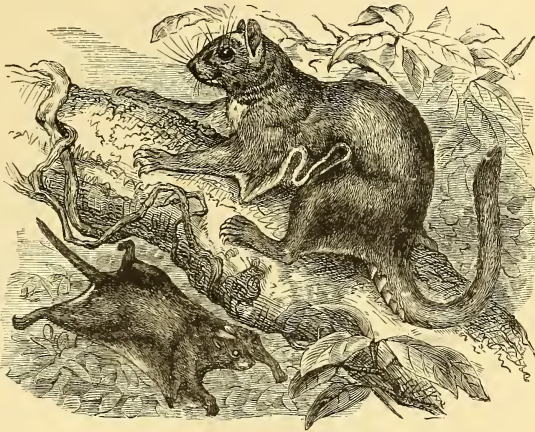


PRAIRIE DOG TOWN, SHOWING INTERIOR OF BURROW.

resemblance of its voice to the barking of a small dog. It measures about a foot in length, and its tail is about four inches long. Its color on the upper surface is reddish-brown, variegated with gray, and with a few scattered black hairs; the tail is flattened, and brownish-black toward the end, and the lower surface is brownish or yellowish-white. These animals live together in great societies, especially upon those portions of the prairies where the buffalo grass grows most luxuriantly, this grass and succulent roots constituting their chief food. They live in burrows, which they dig in the ground at a distance of twelve or fifteen feet apart; a hard beaten path runs from burrow to burrow, and would seem to give evidence of the sociable disposition of the animals; and at the mouth of every burrow there is a little hillock, formed by the earth thrown out of it, which serves the occupant as a watch tower. These burrows are usually so numerous upon favorable pieces of ground that the space occupied by them is quite populous, and presents a scene of considerable animation when the inhabitants are out in the pursuit of their business or their pleasure, and hence they are in common parlance spoken of as "towns" or "villages." Their curious appearance is heightened by the almost constant presence in them of numerous small owls, of the species known as the burrowing owl, a widely spread species which in some places digs its own subterranean habitation, but on these prairies saves itself the trouble by taking possession of the deserted abodes of the prairie dogs. These birds are diurnal in their habits, and are to be seen mixed up with the prairie dogs in their settlements. Another inhabitant of the burrows is the rattlesnake; and some of the earlier observers thought that the prairie dogs, owls, rattlesnakes, and some other animals, such as horned frogs, and an occasional tortoise, occupied the same burrow, and lived there on the most amicable footing. Unfortunately, this paradisaic picture is an imaginary one. It is true that the rattlesnake does take up his abode in the prairie dog's burrows, but he either selects a deserted one, or dispossesses, and perhaps devours, the rightful owner; and his object in his residence among the lively little marmots is anything rather than peaceful, as they constitute his favorite food. The little burrowing owl has also been said by some writers to feed on the young prairie dogs; but this is not proved, and the food of the owls is known to consist chiefly of grasshoppers and crayfish. According to the latitude in which they live, the prairie dogs seem to be more or less subject to torpidity during the winter.

The true marmots are nearly related to the prairie dogs. They are stout in the body, have a short tail, and a rudimentary thumb with a flat nail; and are either entirely destitute of cheek pouches or have mere indications of these organs. The marmots are confined to the Northern hemisphere, but over it they are widely distributed in both continents. Of the Old World species, the best known are the Bobac and the Alpine marmot. In North America the common species is the woodchuck, the distribution of which is from the Carolinas northward to Hudson's Bay, and westward from the Atlantic coast to Missouri, Iowa, and Minnesota; the

Rocky Mountain region is inhabited by a distinct species; and a third very large species, the Hoary Marmot, or Whistler, which measures from twenty-three to twenty-five inches in length of body, appears to be most abundant in the north-western parts of the continent. The marmots live usually in large societies in extensive burrows, which they form underground; and in some localities, as on the great plains of Russia and Siberia, their dwelling places are described as producing a remarkable effect, owing to the multitude of little hillocks formed by the earth thrown out of their burrows. During the summer they are in a state of constant activity, playing and running about in search of food in the neighborhood



THE FULGENT ANOMALURE.

of their dwellings. The winter they pass in a state of torpidity, in a comfortable chamber lined with soft herbage, and protected from the outside cold by the closure of the main passage leading into their abode. For a time after their retirement for the winter they continue active in their domicil, and feed upon the stores of food which they have laid up during the summer; and as a preparation for their winter sleep, they become exceedingly fat during the autumn. The marmots are the largest members of their family, and indeed, some of them may be reckoned among the larger rodents. The Alpine marmot measures more than twenty inches in length, and the bobac about fifteen inches, exclusive of the tail.

THE FULGENT ANOMALURE closely resembles the flying squirrels, and were at first regarded as belonging to that group. The tail, which is long and

well clothed with hair, although not so bushy as in the true squirrels, has on the lower surface of its basal portion a double series of horny scales, which project from the skin, and probably serve to assist the animal in climbing upon the branches of trees. The flying membrane is quite as largely developed as in the flying squirrels, and is in the same manner extended from the wrists to the heels, and further supported by cartilaginous spurs starting from the fore limbs; but, whilst in the flying squirrels this spur springs from the wrist itself, in the Anomalures it projects from the elbow, and thus produces a still greater extension of the membrane. The ears are well developed, the eyes large, and the general aspect both of head and body completely squirrel-like. Five species of this family have been described, all from the west coast of Africa. One of them occurs in the island of Fernando Po. The species figured is from the Gaboon. It is a handsome little creature, of a bright reddish color, paler below, and having a small white spot between the ears. Its length is fourteen inches, and its tail is seven inches long. In some of the other species the tail is as long as the body. Of the habits of these animals little is positively known, but they are said to feed upon fruits. They probably resemble the flying squirrels in their general mode of life.

THE BEAVER, which is the sole living representative of this family, is a more powerful animal than any of the preceding, and his incisor teeth and the means of working them are especially well developed. Unlike as the beaver may be to a squirrel, it yet presents many characters which prove that its nearest affinity is to that animal.

The general form is stout and heavy, especially in the hinder parts; the tail is of moderate length, broad, flattened, and covered with a scaly skin; the feet are all five-toed, the fore pair considerably smaller than the hinder, but all well furnished with claws, and the hinder pair fully webbed to the extremities of the toes. The eyes are small, have the pupil vertical, and are furnished with a nictitating membrane; the ears are small and short, and their antitragus can be so applied to the head as almost entirely to close the auditory aperture; and the nostrils are also so arranged as to be capable of closing.

The beaver is usually about two feet and a half long, and is, therefore, one of the largest of the Rodentia. The tail, which is flattened above and below, and of an elongated oval form, measures about ten inches. The muffle is naked; the ears scaly; the soles of all the feet are naked, and their upper surfaces clothed with hairs; and the second toe of the hind feet is usually furnished with a double claw, the additional one being placed beneath the other. The general color of the fur is reddish brown on the upper surface, lighter and grayish below. The color varies a little in different individuals, and appears to become darker, or even blackish in northern localities. White or pied individuals are not uncommon. The beaver appears to increase in size for some years after it has attained

maturity. Mr. Allen says that "two-year-old beavers generally weigh about thirty-five to forty pounds, while very old ones occasionally attain a weight of upward of sixty." The size of the skull seems to increase throughout life; the thickness and density of the bones also increase, and the ridges for the attachment of the muscles become stronger in old individuals.



THE BEAVER.

The beaver is, or has been, distributed generally over all the northern parts of the Northern hemisphere, especially in the forest regions. Formerly it ranged over the whole of Europe. The constant pursuit to which the animals are subjected, in consequence of the demand for their skins, has greatly diminished their numbers, and in many localities altogether exterminated them; but they still occur over a very large extent of the North American continent, especially in the Western territories, where they are even abundant in some of the wilder parts.

So much has been written upon the habits of the beaver, that the following short statement will suffice to give the leading facts in the natural history of the animal, the accounts of the marvelous sagacity of which, given by the older writers, have perhaps, invested it with an exaggerated interest.

In populous countries the beaver is contented, like the otter, with a long burrow for his residence; but in the wilder regions of Siberia and North America his dwelling place is a much more complicated affair. But even in these regions, according to some authorities, a certain number of beavers—always males—show a lazy unwillingness to take part in the common labors of the colony; and these, as idlers, are expelled from the community, often with rather severe treatment, and then take up their abode by themselves in holes, which they dig out in the banks of the river, whence they are called "terriers." On the other hand, it would appear that the building instinct which is so remarkably manifested by the beaver is not always extinct even in those which inhabit populous countries. A most interesting account is given by M. Meyerinck of the construction of a lodge, and even of a dam, by the colony of beavers on a tributary of the Elbe.

In North America these animals select for their habitation some small stream running through a locality well covered with trees, especially willows, birches, and poplars, upon the bark of which they chiefly feed. These trees they cut down with their powerful incisor teeth, usually selecting those from the thickness of a man's arm to that of his thigh, but sometimes even felling trunks eighteen inches in diameter. The operation, which at first sight would seem to be rather a difficult one for an animal like the beaver to perform, is effected by gnawing all round the trunk for a certain distance, and gradually working deeper and deeper into its substance in the middle of the part attacked, until at length the tree stands upon quite a slender piece of wood with the trunk both above and below this tapered off into the form of two cones, united by their apices. The work is done as sharply and neatly as if the wood had been cut away by a chisel; and the animals are said to have the sagacity to weaken the trunk more on the side that looks toward the water than on the opposite side, by which means, when it falls, it will generally do so in the direction of the water, which materially facilitates the further operations of the beavers. The quantity of trees cut down by them in this way is very great, so that in the neighborhood of a beaver encampment the ground is everywhere full of the stumps which they have left.

These tree trunks are then cut up into lengths of five or six feet, which, after their bark has been stripped off and eaten, are employed in the formation of a lodge, to serve as a shelter for the company of beavers forming it. Access to the lodge is obtained by means of several subterranean passages, which always open up under water, and lead up into the chamber occupying the interior of the lodge. The lodge is usually of an oven-like shape, and is built close to the edge of the water. Its walls are very thick, and composed of the above mentioned trunks of trees, plastered over with mud, clay, etc., mixed with grasses and moss, until the

whole fabric measures from twelve to twenty feet in diameter, and forms a hill some six or eight feet high. The larger lodges are in the interior about seven feet in diameter, and between two and three feet high, and the floor of this spacious chamber is covered with fine chips of wood, grasses, and the soft barks of trees, which serve to form the beds of the occupants. Occasionally the lodges are said to contain storerooms. In front of the lodge, according to Audubon, the beavers scratch away the mud of the bottom until they make the water deep enough to enable them to float their pieces of timber to this point, even when the water is frozen; and, communicating with this, a ditch surrounds the lodge, which is also made so deep that it will not readily freeze to the bottom. Into this ditch, and the deep water in front of the lodge, the passages by which access to the water is obtained always open, and thus the inhabitants can at any time make their way out when their business requires them to do so. In the neighborhood of the lodge the timber cut into lengths, as above described, is piled up, so as to furnish a supply of food as it is required; and the pieces of timber, after being stripped of their bark, are usually employed by the beavers either in repairing their lodges or in constructing or strengthening the dams which they very frequently throw across the streams haunted by them. These dams, which are destined to keep the water of variable streams up to the necessary height for the convenience of the beaver, are wonderful pieces of work, and almost justify the marvelous stories told of its intelligence and sagacity by the older writers. They are often of great length—sometimes 150 or 200 yards and more—and run across the course of the brook inhabited by the beavers, sometimes in a straight line, sometimes in a curved form, according to the peculiarities in the ground or the stream, and the exigencies of the engineers. They are composed, like the lodges, of lengths cut from the trunks and branches of trees, filled in with smaller sticks, roots, grasses, and moss, and all plastered with mud and clay in a most workmanlike manner, until the whole structure becomes quite water-tight. Their height is from six to ten feet, and their thickness at the bottom sometimes as much as double this, but diminishing upward by the slope of the sides until the top is only from three to five feet wide. These dams convert even small rivulets into large pools of water, often many acres in extent, and in districts where beavers abound these pools may occupy nearly the whole course of a stream, one above the other, almost to its source. Their use to the beavers, as constantly furnishing them with a sufficiency of water in which to carry on their business, and especially to float to their lodges the tree trunks necessary for their subsistence, is easily understood; but it is a more remarkable circumstance that by these means the beavers exercise a considerable influence upon the external appearance of the locality inhabited by them, which may persist even long after they themselves have disappeared. In and about the pools the constant attacks of the beavers upon the trees produce clearings in the forest, often many acres in extent. At the margins of the pools the formation of peat commences, and under favorable circumstances proceeds until

the greater part of the cleared space becomes converted into a peat moss. These peaty clearings are known as beaver meadows, and they have been detected in various countries where the beaver is now extinct.

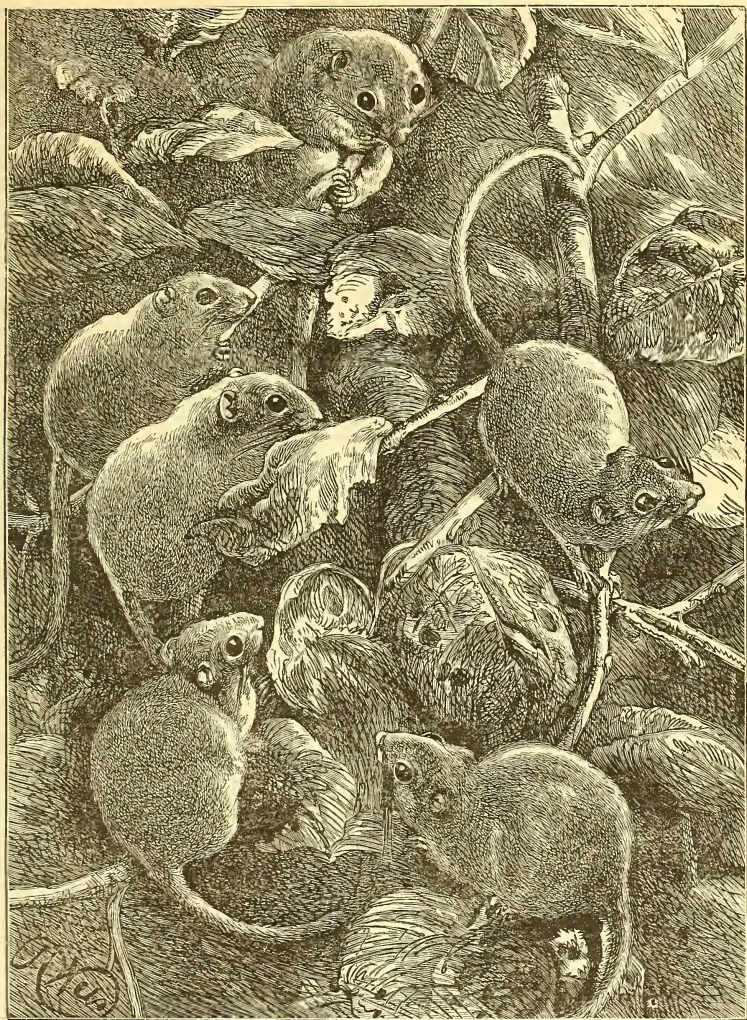
As in the case of the majority of rodents, the chief activity of the beaver is nocturnal, and it is only when driven from its lodge by a high flood, or in the wildest and most sequestered localities, that it goes about during the day. It swims quickly, but entirely by the agency of the hind feet, the fore feet being used chiefly for carrying and building operations, and for conveying the food to the mouth. Before diving, it is said to slap the surface of the water with its tail, producing a sound that may be heard at a considerable distance. On land it sometimes travels a good way in the warm season, and is then stated to indulge in a change of diet, feeding upon roots and fruits, and sometimes upon corn. The roots of the water lily are also said to constitute part of its food. The beaver is hunted—but less now than in former years—for the sake of its skin, the soft under fur of which was much used in the manufacture of hats. It is asserted that the flesh is very good, but according to some authorities, only certain parts of it are palatable; and Audubon declares that the tail, which is regarded as a peculiarly choice morsel, closely resembles marrow, and is so rich that only those whose stomachs are incapable of being upset by greasy food can eat more than a very little of it.

SECTION II.—MOUSE LIKE RODENTS.

THE DORMICE have generally been regarded as nearly related to the squirrels. In form they are squirrel-like, and the tail is long and hairy, although not so bushy as in the true squirrels. They are confined to the Eastern hemisphere, and chiefly to its temperate and colder regions, although some forms inhabit Africa. The number of known species is only about a dozen.

THE COMMON DORMOUSE is an elegant little creature about three inches long, with a somewhat bushy, cylindrical tail, two inches and a half in length. Its fur is of a light reddish, tawny color above, becoming paler and yellowish on the lower surface. On the throat there is a small whitish mark.

The dormouse is nocturnal in its habits. During the day it sleeps in its nest or in some snug retreat, and at night comes forth in search of its food, which consists of nuts, acorns, seeds, berries, and the buds of trees and shrubs. It is particularly fond of the nuts of the common hazel, hence its specific name, and the name of "Haselmans," which it bears in Germany. These nuts it is said to pierce and empty without plucking them or taking them out of their cups. The dormouse lives in small societies in thickets or hedgerows, where it is as active in its way amongst the bushes and undergrowth as its cousin the squirrel upon the larger trees. Among the small twigs and branches of the shrubs and small trees the dormice climb with wonderful adroitness, often, indeed, hanging by their hind feet



from a twig in order to reach and operate on a fruit or nut which is otherwise inaccessible, and running along the lower surface of a branch with the activity and certainty of a monkey. Detached articles of food are held up to the mouth by the fore paws, after the fashion of a squirrel. Toward the winter the dormouse becomes exceedingly fat, and having selected a small store of food, makes for itself a little globular nest, composed of small twigs, leaves, pine needles, moss, and grass, and within this, coiled up into a ball, passes into a torpid state.

Nevertheless, the winter sleep is not wholly interrupted. On mild days the dormouse wakes up for a time and takes a little of its stored up food.

THE LOPHIOMUS. In its external characters this animal is as remarkable as in its anatomical structure. In general appearance, as stated by its describer, it has much resemblance to a small opossum, but the bushy tail and the peculiar arrangement of the hair on the body are met with in no marsupials. The head is small; the general form stout; the limbs short, and the hind ones not much longer than their fellows, and the ears are of moderate size and sparingly clothed with hair. The prevailing color is blackish brown, but a triangular spot on the forehead, a streak under each eye, and the tip of the tail, are white; and the long hairs which clothe the body and tail are dark only in the middle, the base and tip being white, as are also a great quantity of the finer and shorter hairs which form a sort of under fur. But the chief peculiarity of the coat is to be found in the arrangement of the hairs of the body. The long hairs of the middle of the back and tail, some of which are nearly three inches in length, are capable of being raised into a nearly upright position, forming a sort of crest which gives the animal a very peculiar aspect, and this crest is separated from the pendulous hair of the flanks by a sort of furrow clothed with very peculiar hair of a grayish tawny color. These hairs are unlike any others known to occur among mammals. Very little is known as to the habitat of this animal.

We come now to the largest and most typical family of the Rodents; that, namely, which includes the rats and mice and their numerous allies. Mr. Wallace estimates the number of known species at 330, which is probably within the mark.

As might be expected in so large an assemblage of species, the variety of forms is very great among the *Muridæ*, but broadly, the common rats and mice, which are only too well known to most of us, may serve as characteristic types of the whole series. The family, however, includes jumping forms, swimming forms, arboreal forms, and burrowing forms, in which the peculiarities of the life habits are very distinctly indicated by the external appearance of the creatures. In their distribution the *Muridæ* are almost absolutely cosmopolitan, the family being represented in every part of the world, with the sole exception of the islands of the Pacific Ocean. Certain species also, such as the common brown rat and mouse, are now perfectly cosmopolitan in their distribution, having accompanied man in all his migrations on the surface of the globe.



THE BROWN RAT.

THE RAT AND MOUSE form the types of a great sub-family, Murinæ. They possess no cheek pouches, have the fore and hind limbs approximately equal in length, the thumb rudimentary, and the tail nearly naked, covered with scaly rings. The genus *Mus*, to which our household pests belong, includes upward of one hundred species, scattered over most parts of the Eastern hemisphere, and living sometimes chiefly in the neighborhood of human habitations, granaries, etc., where they often feed indifferently upon animal and vegetable substances, sometimes in the open country, and feeding almost exclusively upon the latter. Our common brown rat, sometimes called the Norway rat, which is almost too well known to need description, is not a native of this country, but has certainly been introduced here by commerce. Haunting ships in great numbers, it has now been introduced into all parts of the world, and it is quite impossible to ascertain its original habitat. It was known in Asia long before it made its appearance in Europe; and its passage into Europe is fixed by Pallas in the year 1727, when, he says, after an earthquake it swam across the Volga from the countries bordering the Caspian. Its first appearance in France and England is said to have occurred about the middle of the last century.

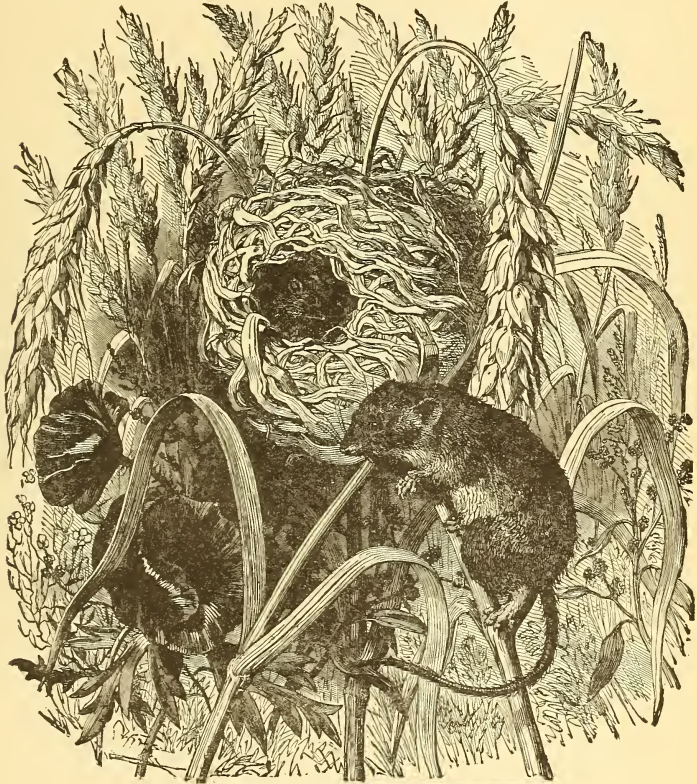
From its great fecundity and determined ferocity of disposition, the brown rat has become a great pest wherever it has taken up its abode. "It digs," says

Professor Bell, "with great facility and vigor, making its way with rapidity beneath the floors of our houses, between the stones and bricks of walls, and often excavating the foundations of dwellings to a dangerous extent. There are many instances of their fatally undermining the most solid mason work, or burrowing through dams which had for ages served to confine the waters of rivers and canals." It is almost impossible to keep them out of our houses, and, once in, there is no end to the mischief they do. Their ferocity is very great; and although they will, if possible, retreat from a powerful enemy, they will fight in the most savage fashion when they cannot escape.

Although not averse to a vegetable diet—as those who have to do with corn and seeds, whether in the field or the storehouse, know to their cost—the brown rat evinces a decided preference for animal food, which he consumes, of all kinds and in all states. The case of the horse slaughter-houses of Montfaucon, near Paris, is well known; here, the carcasses of all the horses killed during the day, sometimes to the number of thirty-five, would be picked to the bone by the next morning; and one main argument against the removal of the establishment to a greater distance from the city was that these swarms of ferocious vermin would be left without means of support, and would become a complete pest in the neighborhood. That such an apprehension was not unfounded is proved by several instances recorded of the escape of rats from wrecked ships upon small islands. In the course of a few years they exterminated every other living thing. Professor Bell relates the following instance of the extreme ferocity of the rat when driven by hunger: "In a coal pit, in which many horses were employed, the rats, which fed upon the fodder provided for the horses, had accumulated in great multitudes. It was customary in holiday times to bring to the surface the horses and the fodder, and to close the pit for the time. On one occasion, when the holiday had extended to ten days or a fortnight, during which the rats had been deprived of food, on re-opening the pit, the first man who descended was attacked by the starving multitude, and speedily killed and devoured." Stories are also told, with what truth we do not know, of the occurrence of similar catastrophes in the sewers of Paris and London, where, as is well known, rats abound. The brown rat breeds several times during the year, and produces as many as ten, twelve or fourteen young ones in a litter. Its general length is about nine inches.

Although the true mice are very nearly allied to the rats, of which they are copies on a small scale, they do not excite by any means the same sentiments of disgust with which rats are generally regarded; ladies, indeed, will sometimes scream at the mere sight of a mouse, but most of them will admit that, apart from its predatory habits, it is an elegant little creature. The common mouse seems to be as completely associated with man as the rat, and has accompanied him in his wanderings to all parts of the world. Of its general appearance and habits we need say nothing; they are too familiar to need description. But besides haunting

our houses, the mouse takes up its abode in the rick-yard, and here its devastations are often very serious. The mice live in the ricks, through which they make passage in every direction, and their fecundity is so great that several bushels of



THE HARVEST MOUSE.

mice are often destroyed during the removal of a single rick. The mouse breeds all the year round, and usually produces five or six young at a birth, so that its rapid increase under favorable circumstances is easily understood. Several

varieties of the species are well known, especially the Albino form, or white mouse, which is such a favorite pet with boys. The common mouse in this country is sometimes patched with white; and we sometimes see in the shops pied mice, which are said to be of Indian origin. A pale buff variety is also sometimes met with; and during the removal of a rick some years ago, it was found to be infested by a breed of mice with a naked, wrinkled skin, to which the name of rhinoceros mice was given at the time.

THE HARVEST MOUSE is found in nearly all parts of the Old World. The total length of this pretty little mouse is about five inches, of which nearly one-half is made up by the tail. In it the eyes are less prominent than in the common field mouse, and the ears considerably shorter in proportion. Its color on the upper surface is bright reddish brown, and below pure white, the two colors being sharply separated. During the summer, the harvest mouse associates with the other field mice, and with them is very frequently carried in the sheaves to barns, where it then takes up its abode for the autumn and winter, and, like other mice, multiplies very rapidly, and no doubt does a good deal of mischief. The less fortunate individuals who are left behind in the fields retreat to little burrows for protection from the inclemency of the winter, which they pass in a state of at least partial torpidity; and to provide against exigencies they lay up in their dwellings a small store of food, to which they can have recourse when a fine day recalls them for a time to activity. Those which have been introduced into ricks and barns are, of course, liberally provided for, and they show their gratitude by remaining awake all the winter, as if on purpose to consume their abundant provender. In the open field their food consists of corn and the seeds of grasses and other plants, but also to a considerable extent, of small insects.

In its movements the harvest mouse is wonderfully agile. On the ground it runs very rapidly; and it climbs upon shrubs and plants as cleverly as a monkey, running out upon the thinnest twigs with the greatest confidence, and climbing up stalks of grass so thin that they bend nearly to the ground with its weight. In these operations the long slender tail comes into use, as its extremity is prehensile and can be twisted neatly round the small stalks and branches over which the little climber is making its way. From its lively habits, and the elegance of its form, the harvest mouse is a very interesting pet.

The harvest mouse breeds several times during the year, producing from five to eight or nine young at a birth, and provides for them one of the prettiest cradles formed by any mammal. It is placed, according to the locality, upon several grass leaves split and interwoven with the other materials, or suspended at a height of from eighteen inches to three feet above the ground, upon the twigs of some shrub or between several stalks of corn or strong grasses. It is egg-shaped, or nearly round, about the size of the egg of a goose, and is composed externally of slit leaves of the reeds or grasses among which it is formed, each

leaf being carefully divided longitudinally by the sharp teeth of the little architect into six or eight thread-like portions, which are then all woven together, so as to produce a firm structure. The interior is lined, or rather stuffed, with all sorts of soft vegetable substances, so that it has been a question with many observers how the mother could get at all the members of her family to suckle them, and how the nest could contain them all as they began to increase in bulk. The young usually remain in the nest until they can see; but as soon as they are able to provide for themselves, the mother takes them out, gives them some practical instructions in the art of living, and then leaves them to their own devices. According to Brehm, as these mice increase in age they improve in the art of nest building.

Besides these few species, a multitude of rats and mice, belonging to the same genus, occur as natives of nearly all parts of the world, but in their habits they agree in general. India harbors a considerable number, among which we may mention the Bandicoot rat, a large species which inhabits the Indian and Malayan peninsulas, and is very destructive in plantations; and the Tree rat, a native of Bengal, seven or eight inches in length, which lives partly on grain, of which it lays up stores in its nests, and partly on young cocoanuts, which constitute its favorite food, and in search of which it climbs the trees. This species builds a nest on cocoanut trees and bamboos, and occasionally makes predatory visits to the houses. The Striped mouse is remarkable for its coloration, its ground color being a bright yellowish brown or reddish yellow, adorned with several longitudinal blackish brown streaks. This elegant mouse inhabits North Africa, especially in stony places. It is very abundant in Algeria.

The White-footed, or Deer mouse is distributed all over the continent of North America. The fur shows various brownish or grayish tints above; and the lower surface, with the feet up to the wrist and ankle, is snow white. What Dr. Coues gives as the normal color of typical specimens is a rich fawn, with a darker streak along the back; but he says that this is shown by not more than one example in six. The tail is generally white beneath. The length of the head and body is about three inches; the tail varies considerably in length. The white-footed mouse is nocturnal in its habits, and feeds to a great extent upon corn, of which, with acorns and other nuts, it lays up stores for winter use. It lives a good deal upon trees, taking up its abode in the deserted nest of a squirrel or of some small bird. When it constructs its own nest the little fabric is placed in a bush at from five to fifteen feet from the ground, and is very neatly constructed, usually of fine moss and strips of bark. In some localities it burrows in the ground. The Golden or Red mouse, which resembles the preceding species in form and size, has the fur of the upper surface golden-cinnamon color, and the lower parts yellowish white. It inhabits the Central and Southern States. The Rice-field mouse is a larger species, sometimes attaining the size of a small rat. This is found in the Southern States, chiefly along the coast, and in rice-fields, where it is

exceedingly abundant, and does considerable damage. It is eminently aquatic in its habits. The American Harvest mouse closely resembles the preceding species. The American harvest mouse inhabits the Southern States, and extends northward as far as Iowa and Nebraska.

The Florida rat, or Wood rat, is a widely distributed species in the United States, inhabiting especially the southern portion, but extending northward as far as New York and Massachusetts. It measures from six to nine inches in length, with a tail from four to six inches long. In its coloration it presents a general resemblance to the common brown rat, but is brighter, especially on the sides; the lower surface is white. According to Audubon and Bachmann, the habits of this species vary considerably in different localities. These authors say that "in Florida they burrow under stones and the ruins of dilapidated buildings. In Georgia and South Carolina they prefer remaining in the woods. In some swampy situations, in the vicinity of sluggish streams, amid tangled vines interspersed with leaves and long moss, they gather a heap of dry sticks, which they pile up into a conical shape, and which, with grasses, mud, and dead leaves, mixed in by the wind and rain, form, as they proceed, a structure impervious to rain, and inaccessible to the wild cat, raccoon or fox. At other times their nest, composed of somewhat lighter materials, is placed in the fork of a tree." This species is very active and squirrel-like in its habits. It feeds on grain, seeds, and fruits, and sometimes makes a meal of a crayfish or a frog. There are from three to six young in each litter, and two litters in the year. The young animals in very early days continue to adhere to the teats of their mother, even when she is walking about outside the nest, and even at a later period they will cling to her sides and back, after the manner of some opossums. The female seems but little inconvenienced by this burden, and shows great affection for her family, defending them even at the risk of her own life.

THE HAMSTERS are very nearly related to the true mice and rats, but differ from them at the first glance by their possession of large internal cheek pouches, those organs being entirely wanting or very small in the Murinæ. The hamsters are confined to the Old World, and chiefly inhabit the temperate parts of Europe and Asia; two or three species occur in Africa. They live generally in corn fields, where they dig deep burrows with numerous chambers, into which they can retreat to take their repose, and in which they pass the winter, previously, however, taking care to lay up a good store of provisions in some of the chambers of their domicil.

The best known species is a rather pretty little beast, of about ten inches long, with bright, prominent, black eyes, short, membranous ears, and a tapering hairy tail, about two inches and a half in length. The fur, which is thick and somewhat lustrous, is usually of a light yellowish brown color above, with the snout, the neighborhood of the eyes, and a band on the neck reddish brown, and a yellow



THE MUSKRAT.

spot on each cheek; the lower surface, the greater part of the legs, and a band on the forehead are black, and the feet white. Many varieties occur. This hamster is widely distributed, ranging from the Rhine, through Europe and Siberia, to the Obi; and in most localities where it occurs it appears in great numbers, and causes great injury to the crops. Its burrows are exceedingly spacious, and consist of numerous passages and chambers. In its temper it is exceedingly irascible, and at the same time very courageous, defending itself bravely against its enemies, and standing boldly on the defensive the moment any danger appears to threaten it. Its diet is by no means of a purely vegetable nature, but it will destroy and devour all sorts of small animals that come in its way. Besides the corn, which forms its chief winter provender, green herbage, peas and beans, and roots and fruits of various kinds, are welcome articles of diet, and in confinement it will eat almost anything.

The hamsters pass the winter in their burrows in a torpid state, but waken up very early in the spring, generally in March, but frequently in February. At first they do not open the mouths of their burrows, but remain for a time sub-

sisting on the stores laid up during the preceding autumn. The old males make their appearance first, the females about a fortnight after them, the latter about the beginning of April. They then set about making their summer burrows, which are not so deep or so complicated as the winter dwelling; and shortly afterward the sexes pair. The young are produced twice in the year, in May and July; their number varies from six to eighteen. They have teeth when first born, and their development as babies is very rapid. Their eyes open in little more than a week after birth, and in another week they begin to burrow in the ground, and then their hard-hearted parent drives them off to take care of themselves.

THE VOLES, which, next to the true rats and mice, form the most important group of Muridæ, are represented in the northern parts of both hemispheres. These are mouse and rat-like rodents of a rather stout build, with the limbs and tail of moderate length, or short, and the latter more hairy than in the true Murinæ. The ears are short, often nearly concealed beneath the fur.

The true voles number about fifty known species. The most abundant North American species is the Meadow mouse, which is distributed, apparently, over the greater part of the continent, and takes the place of the English field vole.

Another American species is the Musk rat, which constitutes a genus distinguished from the true voles by having the tail compressed and nearly naked, the hinder toes united by short webs, and fringed with long hairs, and the enamel folds of the molars united by a line running down the middle of the tooth. The form of the animal is thickest, and in this respect, as in its aquatic habits, it resembles the beaver, to which it was formerly supposed to be nearly allied. The head is short and broad, the ears project very little beyond the fur, the hind limbs are longer than the fore legs, and terminate in five toes with strong claws, while the fore limbs have only four toes and a wart-like thumb; the fur is very thick and shiny, and the color is usually brown above and gray below, with the tail, which is nearly as long as the body, black. The fur is well known in commerce. The length of the head and body of a full-grown male is about twelve inches. The name muskrat, often given to this species, refers to the musky odor diffused by the secretion of a large gland situated in the inguinal region.

The Musquash, which may be described as a large water rat, inhabits all the suitable parts of North America, from the thirteenth to the sixty-ninth degree of north latitude, and is most abundant in the Canadian region, which offers it peculiarly favorable conditions of life in the multitude of rivers and lakes, upon the banks of which the musquash always takes up its abode. It is a nocturnal animal, passing the day in concealment, and coming forth with the twilight to seek its nourishment, and amuse itself with its fellows. In the water it displays wonderful activity, and, in many respects, presents much resemblance to the beaver. Curiously enough, the parallelism of habits holds good to a certain extent, even in the construction of their dwellings. The Musquash generally

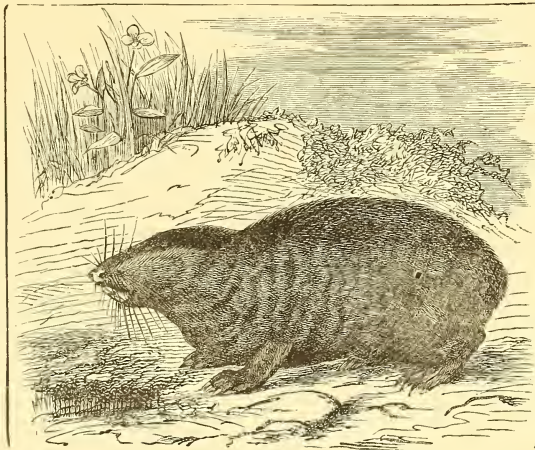
lives in a burrow dug out of the bank of the stream in which he disports himself, and consisting of a chamber with numerous passages, all of which open under the surface of the water. But, under certain conditions, especially in the north, he builds himself a house of a rounded or dome-like form, composed of sedges, grasses, and similar materials, plastered together with mud, and supported upon a mound of mud of sufficient height to raise it above the water. The house contains a single chamber from sixteen inches to two feet in diameter, and is entered by a passage which opens at the bottom of the water. Other passages are said to issue from this, and to lead down into the ground under the bottom of the water; these are made by the animal in his search for the roots of water-lilies and other aquatic plants, which constitute a great part of his nourishment. The musquash also seeks provisions on land, and in this way often does much mischief in gardens. Fresh-water mussels also form a part of its diet. It passes the winter in its house, which it then furnishes with a soft bed of leaves, grasses and sedges, and, according to Audubon, ventilates it by covering the middle of the dome only with a layer of similar materials, through which the air can pass. Of the propagation of the musquash very little seems to be known with certainty. They pair in April and May, and the female produces from three to six young at a birth; but whether this takes place once or several times in the course of the summer, is a matter of doubt. They are captured in fall-traps baited with apples, or by traps set at the mouth of their burrows. The Indians sometimes spear them in their houses.

THE LEMMING is one of the most remarkable of the Muridæ, on account of the great migrations which it performs, apparently with no special object. In Norway, where it is best known, they make their appearance in the cultivated districts in such enormous numbers, and so suddenly, that the peasants have always believed them to fall from the clouds. The lemming is a vole-like animal, about six inches long, of which the tail makes up about half an inch. It varies considerably in color, but is usually brownish yellow, with dark spots above, and with a yellow streak inclosing the eye on each side of the face; the under surface is yellowish. The ears are very short, scarcely projecting beyond the fur; the eyes are small, black, and beadlike; the soles of the feet are hairy, and the claws of the fore feet much stronger than those on the hinder extremities. The Norwegian lemmings live and breed among the peat mosses of the mountains. They are lively and active little creatures, both by day and night, and feed upon the scanty vegetation of their Alpine home—grasses, lichens, the catkins of the dwarf birch, and roots. They are active even through the winter, when they make passages for themselves under the thick covering of snow which then veils the whole country, and thus are enabled to go in search of their ordinary food. They also make their way up to the surface, upon which they may occasionally be seen running, even in the depth of winter. They breed in their burrows and under

stones, and must be very prolific, seeing that every predacious animal in the country destroys and devours them. The lemming is, in one sense, an exceedingly timid little creature, the slightest disturbance of its quietude, or even the passing overhead of a cloud, being sufficient to alarm it; but when attacked it displays the most dauntless courage, standing on the defensive against both men and animals, and biting very sharply at anything that comes within its reach. From time to time, from some unexplained cause, the lemmings start in vast swarms from their mountain fastnesses, and make their way in a straight line in some definite direction. Nothing seems to turn them from their course; they go straight on, over hill and dale, and, although said at other times to have an aversion to water, they now swim across any lakes or rivers that come in their way. In this operation many of them lose their lives, for they require smooth water for their navigation, and the least breeze ruffling the surface suffices to send hundreds of them to the bottom. In this way they make their way down to the cultivated regions, where they do so much damage to vegetation, that in olden times a special form of prayer and exorcism was in use against them. Their march is accompanied by great numbers of carnivorous beasts and birds of all sorts. Wolves, foxes, and wild cats, and the smaller quadrupeds of the family *Mustelidæ*, eagles, hawks, and owls, all prey upon them with avidity—even the reindeer is said to stamp them to death; and the story of his eating them, long discredited, has lately been confirmed on good authority, while man, with his dogs and cats, is not behindhand in the work of destruction. Nevertheless, a great multitude survives all these dangers, and strange to say, the termination of this painful migration is always the sea, into which the survivors of the march plunge, and, apparently, voluntarily commit suicide. Mr. Crotch, who has published two or three papers on the lemming and its migrations, says that in Norway these animals always proceed from the central backbone of the country in an east or west direction, and in either case the survivors of the march drown themselves, those that go westward in the Atlantic, those that go eastward in the Gulf of Bothnia. His notion is that the migration is in obedience to an inherited instinct acquired at a time when there was land where the sea now rolls; but there are many difficulties in the way of such a hypothesis.

THE MOLE RAT, which inhabits the southeast of Europe generally, has the eyes rudimentary and covered by the skin, so that the animal is quite blind, and the tail reduced to a sort of wart. The toes, especially those of the fore feet, are furnished with very powerful claws, which are vigorously employed by the animal in digging. The general covering of the body is a soft fur of a yellowish brown color, tinged with ashy-gray; the head lighter, but becoming brownish behind; and the lower surface ashy-gray, with some white streaks and spots. The muzzle, chin, and feet are whitish, and along each side of the face there runs a sort of ridge of stiff, bristle-like hairs.

In their mode of life, as in their form and the condition of the organs of sight and hearing, these animals present a considerable resemblance to the moles; but as their food is exclusively of a vegetable nature, the object of their burrowing is not exactly the same. They all inhabit the Eastern hemisphere, and are generally met with in dry, sandy plains, the soil of which lends itself readily to mining operations. They seldom quit their burrows, and usually work in these only at night, when they make their way rapidly through the ground, and like the mole, can run either backward or forward in their subterranean galleries with equal facility. They feed chiefly on roots, and especially on the bulbs and tubers which



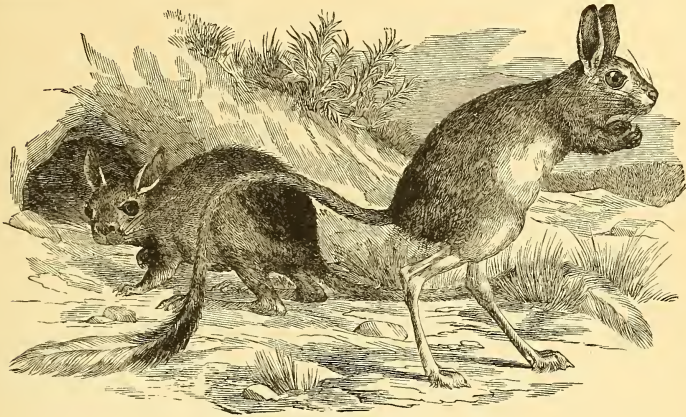
THE MOLE RAT.

so many plants possess in the dry districts which they frequent; but some of them also eat nuts, seeds, the young bark of trees, and herbage. None of them fall into a state of torpidity during the winter—indeed, only two species inhabit northern regions; but these, although active in the winter season, are said not to take the precaution to lay up a store of provisions.

THE JERBOAS are an extensive and widely distributed family of hopping rodents. In these we find the organization for jumping brought to greater perfection than in any other group. The body is light and slender, the hind limbs much elongated, the fore limbs very small, and the tail long and usually tufted at the end.

THE AMERICAN JUMPING MOUSE has a wide range, extending across the continent from sea to sea, and from Labrador, Hudson's Bay, and the Great Slave Lake in the North, to Virginia and the elevated portions of Arizona and New Mexico in the South. It is an elegant little mouse-like creature, rather more than three inches long, and furnished with a cylindrical tail, which exceeds the head and body in length by about two inches. Its hind limbs are not quite so disproportionately developed as in the other members of the family. Its fur in summer is of a brown color above, becoming yellowish on the sides, and white below; in the winter the brown tint covers the whole surface. The ears, which are not very large, are black, with a light-colored rim; the hind feet are grayish, and the fore feet whitish on the upper surface; and the tail, which tapers to an exceedingly fine point, where there is a fine pencil of hairs, is ringed, and nearly naked. It is found in meadows in the neighborhood of woods and copses. It is nocturnal in its activity, sleeping during the day in its burrow, which is usually about two feet deep, and coming forth at night. It is sociable in its habits, and exceedingly active, covering from three to five feet of ground at each leap, so that it is a matter of no little difficulty to capture a specimen in the open. In the woods it is worse, as the little creature will bound over bushes, and get out of sight in a moment. Its food consists of seeds of various kinds, and it is exceedingly fond of beech mast. For protection from the cold of winter the jumping mouse makes a little hollow clay ball, within which it coils itself up and goes comfortably to sleep. The nest is made about six inches under the surface of the ground, and is composed of fine grass, sometimes mixed with feathers, wool and hair, and in this the female produces from two to four young, probably several times in the course of the summer, as the nests and young are to be found from May to August.

THE JERBOA is a most lively and active little creature, which inhabits the deserts of Northeastern Africa as far south as Nubia, and extends its range into Arabia and Southwestern Asia. On these arid plains, so scantily clothed with a few grasses and dry shrubs that it is difficult to conceive how any animal can find a living on them, the jerboa lives, often in numerous societies, and in company with the birds and lizards which enliven the wilderness. These animals dwell in subterranean abodes consisting of many branched galleries, which they dig out in the hard soil not far from the surface. The Arabs assert that these habitations are produced by the joint labor of the whole society. They retreat into their burrows at the least alarm. When going along quietly, the jerboa walks and runs by alternate steps of the hind feet, but when there is occasion for rapid motion it springs from both feet at the same time, covering so much ground at each leap, and touching the ground so momentarily between them that its motion is more like that of a bird skimming close to the surface of the ground than that of a four-footed beast. The Jerboa is about six inches long, with a tail about eight inches in length, exclusive of the tuft with which its tip is adorned. Its upper surface is

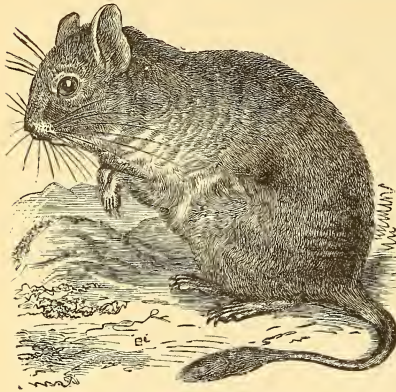


THE ALACTAGA.

of a grayish sand color, like that of many desert animals. The lower surface is white, and the tail pale yellowish above and white beneath, with the tuft white, with an arrow-shaped black mark on its upper surface.

Several other species of jerboas are known, some from the deserts of North Africa, others from the steppes of Central Asia. The latter region harbors some forms which differ from the preceding, among other characters, by having five toes on the hind feet, whereas the true jerboas have only three, but of the five toes only three are sufficiently developed to take part in the animal's progression. The best known of them is the Alactaga, a rather larger species than the jerboa, and with a still longer tail, reddish yellow with a grayish tinge above, white beneath, and on the hind legs. Its range extends from the Crimea and the steppes of the Don across Central Asia to the borders of China. It walks upon all fours and when advancing quickly springs along after the fashion of the jerboa. Its food consists of all sorts of vegetable substances, but it is especially fond of the bulbs of plants, and does not refuse occasionally to eat insects, or even the eggs and young of the birds which inhabit the steppes with it. The alactagas live in very complicated burrows, with many passages and branches, and they are said always to make one passage from the central chamber of their residence, which terminates close to the surface of the earth at some distance, but is only opened in case of danger, when the inhabitants escape through it, the position of its intended aperture having been previously unrecognizable. In cold weather they sleep in their nests. The female produces from five or six to eight young, in a nest lined with her own hair.

SECTION III.—PORCUPINE LIKE RODENTS.



THE DEGU.

This first family of the porcupine alliance consists of a number of rat-like animals, nearly all of which are inhabitants of South America, three species only being peculiar to the large West Indian Islands, whilst, singularly enough, four more are known from different parts of the African continent.

THE DEGU, a very abundant species in Chili, which also extends into Peru, may be taken as a typical example of the whole family. The fur is soft, and the tail is short. The degu is a rat-like animal, rather smaller than the water vole, the head and body measuring from seven and

a half to eight inches in length, and the tail, exclusive of its terminal tuft, rather more than half that length. The general color of the animal is brownish yellow, penciled with black on the back. The lower surface is yellowish, the feet white, and the tail dusky above, whitish beneath, with the tufted tip dusky or blackish. In the central parts of Chili, according to various travelers, the degu is exceedingly abundant, living in large societies about hedges and thickets, and running about boldly, even on the high roads. The animals make their burrows in the hedge banks and similar places, and when alarmed rush into them with their tails elevated, very much after the manner of rabbits. As the burrows communicate freely with each other, the degu can easily escape pursuit, going in at one opening and coming out at another at some considerable distance. They sometimes climb up into the bushes among which they live. Their ordinary food consists of the herbage which grows about their dwelling places, but they also invade gardens and fields, where they may do considerable damage. In the winter they will feed upon the tender bark of certain trees, but they are said by some authors to lay up a store of food against this season. They do not become torpid. The female is believed to produce two broods in the year, each consisting of from four to six young.

THE PORCUPINES exhibit the conversion of the hairs into spines in perfection, the whole upper part of the body being in several instances completely covered with long, hollow, pointed quills, whilst in all cases great numbers of

spines and stiff bristles are mixed with the hair. The porcupines fall readily into two distinct groups, characterized by structure, habits, and geographical distribution. In the strictly terrestrial species, or true porcupines, which inhabit the warmer parts of the Eastern hemisphere, the skull is rather more elongated than the others. The upper lip is furrowed. The tail, which may be either long or short, is never prehensile. The soles of the feet are smooth. The arboreal species, which are all American, have the skull peculiarly short; the upper lip is not furrowed, the tail is moderate or long, and generally prehensile; the soles of the feet are covered with wart-like tubercles.



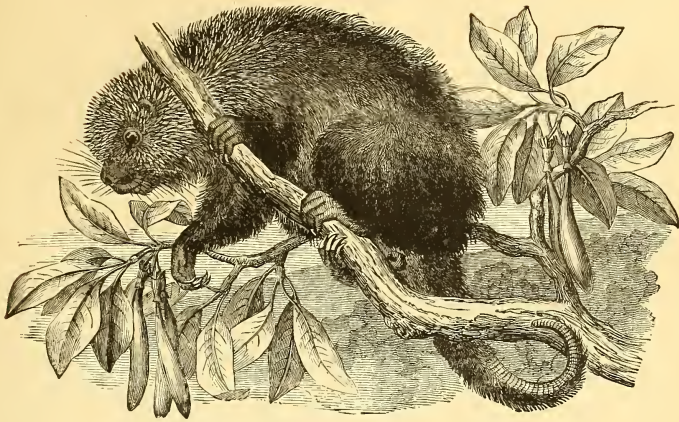
THE COMMON PORCUPINE.

THE COMMON PORCUPINE of the Old World may serve as a characteristic and well known example of the first of these two groups. It is an inhabitant of the Mediterranean region, occurring in most parts of North Africa, and extending as far southward as the Gambia and Soudan. In Southern Europe it is abundant in Italy, Sicily and Greece. It measures about twenty-seven or twenty-eight inches in length, to the roots of the tail, which is about four inches long. The head, shoulders, limbs, and under parts are clothed with short spines intermixed with hairs usually of a dusky or brownish black hue. The neck is marked with a whitish collar. From the back of the head and neck there rises a great crest of long bristles, many of them fifteen or sixteen inches in length, which can be elevated and depressed at the pleasure of the animal, are gently curved backward, and are either dusky with the extremities white, or whitish throughout. The hinder portion of the body is entirely covered by a great number of long, sharp

spines, ringed with black and white, but always having the extremities white. These spines vary considerably in size, some of them being very long (fifteen or sixteen inches), comparatively slender and flexible. Others shorter (from six to twelve inches), but much stouter. They are all hollow, or filled only with a sort of spongy tissue, but from their structure are exceedingly resistant, and when the animal erects them, which he is able to do by contracting the muscles of the skin in which the roots are embedded, they constitute a most formidable armature. They appear to be but loosely attached to the skin, and readily fall out, a circumstance which no doubt gave rise to the belief prevalent among the ancients (and many moderns) that the porcupine was able to shoot his spines at an approaching enemy, or even to project them behind him at a pursuer when he was rushing away in search of a place of safety. The tail of the animal bears at its tip about twenty spines of very curious construction. They are about two inches long, hollow, open, and cut off square at the end, and about a quarter of an inch in diameter for the greater part of their length, but they are inserted into the skin by the extremity of a thin stalk half an inch long.

The porcupine lives in holes among the rocks, or in a burrow, which he makes for himself in ordinary ground. In this retreat he passes the day in sleep, coming forth in the evening in search of food, which consists of herbage of various kinds, fruits, roots, and the bark and leaves of trees and bushes. He is slow in his movements, and does not even display much activity in burrowing. His habits are solitary except during the pairing season, and during the winter he passes most of his time in his habitation, without, however, falling into a torpid state. The pairing takes place early in the year, but varies in this respect according to the climate of the locality, and in the spring or early summer the female produces from two to four young, in a nest carefully lined with leaves, grasses, roots, and other vegetable substances. The young porcupines are born with their eyes open, and their bodies are covered with short, soft spines, which are pressed closely to the body. These speedily harden and grow longer, and the young do not appear to remain very long with their mother. The flesh of the porcupine, like that of most purely vegetable-feeding rodents, is very good, and is eaten in the countries where the animal occurs. When pursued or irritated, he stands on the defensive, erects his formidable quills and crest, stamps on the ground with his hind feet after the manner of a hare, jerks himself toward the object of his dread, as if to wound it with his spines, and at the same time produces a curious noise by rattling the open quills of the tip of his tail. But all these manœuvres are generally in vain, and the porcupine, in spite of his defensive armor, is pretty easily captured by those who know how to set about it. The leopard is said to manage the business at once by a single blow of his paw on the head.

THE TREE PORCUPINES, forming the second group, several species with prehensile tails, range over the continent of South America, east of the



THE TREE PORCUPINE.

Andes, and one of them, the Mexican Tree porcupine, is found as far north as Guatemala and Southern Mexico. The most abundant and widely distributed species in the Brazilian region are the Couendou and the Couiy, inhabiting Guiana, Brazil and Bolivia, the latter being found throughout the forest region of Brazil, and as far south as Paraguay.

These animals are of considerable size, usually measuring from sixteen to twenty inches in length without the tail, which is about one-third the length of the head and body. By the aid of the prehensile tip of this organ they climb with great facility and security upon the branches of the trees, but their feet are also specially adapted for this particular mode of activity, and they are said even to climb the palm trees in order to feed upon their fruit. They are nocturnal in their habits, passing the day in sleep concealed in the fork of a branch, and going abroad at night in search of their food, which consists of fruits of various kinds, and the buds, leaves, and even flowers, of the trees on which they live. Roots also form a part of their nourishment, probably when they reside rather among thickets than in the high forest. Their spines, although short when compared with those of the common porcupine, are formidable defensive weapons when the animal erects them; in some species, as especially in the Couiy, they are concealed, when depressed, by the long hair, and according to Hensel, this serves as a protection to the animal from rapacious birds, for, when it sits in a heap, sleeping away the daylight, these soft gray hairs give it a most deceptive resemblance to a mass of the beard-moss which so commonly grows on the trees in the Brazilian forests.

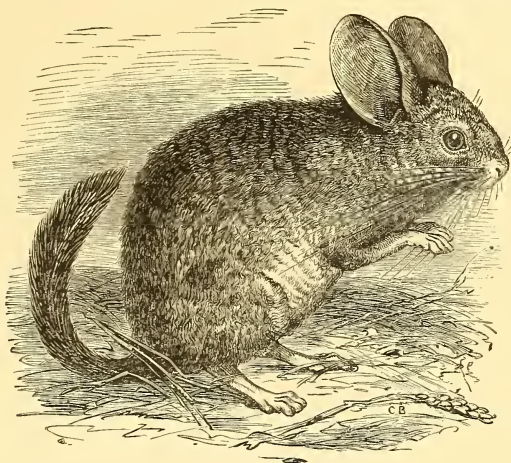
THE CANADA PORCUPINE, or *Urson*, the only North American species of the family, is about two feet or more in length when full grown, and is covered with woolly hair, and with long coarse hair of a dark brown color, with the points white or yellowish. The spines are white, with the points usually dusky or brown. The Canada porcupine is distributed through the whole of the United States, except on the seaboard, from New York to Virginia, and north of the States through Canada, as far as the limit of trees.

Although a heavy and clumsy-looking beast, and destitute of the prehensile tail of its South American cousins, this porcupine is a good climber, and passes nearly the whole of its life upon trees; nevertheless, according to Mr. Allen, it may be met with traveling upon the prairies, probably on its way from one suitable residence to another. On the ground it moves slowly, but its armature of spines is a protection against most of its enemies, and it has the art of striking very forcible and judicious blows with its spiny tail. Audubon and Bachmann mention many cases in which dogs, wolves, and even a puma were found dead or dying in consequence of the severe inflammation caused by the spines of this animal sticking about their mouths; and the former gives an interesting account of a lesson in urbanity given by a captive urson to a mastiff that attacked him. The food of the urson consists of various vegetable substances, fruits, buds, and the young shoots and leaves of trees. In the winter it subsists chiefly upon the bark, which it strips off the upper branches of the trees, and when it has taken up its abode upon a tree it stays there until the suitable bark has been consumed. As it prefers young trees this operation is generally effected pretty quickly, and in this way it is estimated that a single porcupine may destroy hundreds of trees in the course of a winter. The urson resides in the holes of trees, and in such situations, or in crevices among the rocks, the female prepares her nest, in which she brings forth usually two, but occasionally three or four, young in April or May.

THE COMMON CHINCHILLA, the skins of which are well known as fur, is a squirrel-like animal, nine or ten inches long, with a tail more than half this length. It has large rounded ears; its fore feet have five, and its hind four, toes. Its fur on the upper part is gray, elegantly marbled with dusky or black, on the lower surface yellowish white; the tail is black above, and dirty white at the sides and beneath. The incisors are of a bright orange color in front. The Short-tailed chinchilla, a larger species, has the tail only three inches long. Its fur is of a general silvery-gray hue, tinged with black, especially along the back, and the tail has two dark bands on its upper surface. Both these animals inhabit Peru, and the former is also found in Bolivia and Chili. They are exceedingly abundant, notwithstanding the constant persecution to which they are subjected for the sake of their skins. They come out of their holes even in the daytime, but they always keep on the shady side of the rocks. Their activity is described as wonderful, and they will run with great rapidity up perpendicular walls of rock which seem to

offer no hold for their feet. On the ground they are said to run very much after the fashion of our common mice.

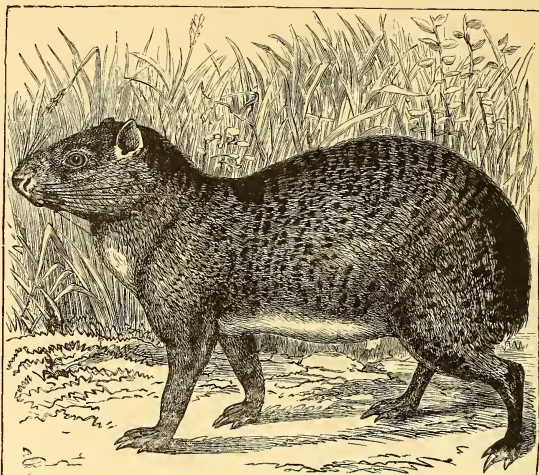
THE AGOUTI is found chiefly in Guiana, Brazil, and Eastern Peru, where it is to be found plentifully in the primeval forests. Like the other true Agoutis, it has only three toes on the hind foot; its ears are of moderate size and rounded; its form compact, and supported upon slender limbs; its tail rudimentary; and the hair of its back is coarse and harsh, and longer toward the hinder parts, which



THE CHINCHILLA.

thus obtain a somewhat truncated appearance. Its general color is olive brown, produced by a mixture of black and yellow; but the long hairs covering the hinder portion of the back are usually of an orange color, and the middle line of the abdomen is whitish or yellow. This animal is from eighteen to twenty inches long.

Although inhabiting the forests, the agouti is not infrequently seen on the neighboring grassy plains, but its residence is among the trees, in the hollows of which, or in cavities at their roots, it takes up its abode, generally lying concealed in its retreat during the day. It is very quick in its movements, runs well, and springs with almost the agility of an antelope. The food of the agouti consists of almost any vegetable substances that come in its way. It will eat grass and herbage, the roots of plants, their flowers and fruit, and when it lives in the



AZARA'S AGOUTI.

neighborhood of sugar plantations and gardens its inroads may give rise to considerable injury. The animal is, however, rather solitary in its habits, living by itself in its cell, in its departure from and return to which it appears generally to follow exactly the same roads, by which means a narrow but very distinct footpath is in course of time produced. This naturally often leads to the discovery and capture of the little recluse.

THE PACA differs generically from the agouti by having five toes on the hind feet. It has a broader head and a blunter muzzle, and is altogether a rather stouter animal than the agouti; but, like most of them, it has a mere tubercle instead of a tail.

The paca, which inhabits Central and South America from Guatemala to Paraguay, is about two feet long, and is clothed with short, rather coarse hair of a brown or yellowish brown color above, white beneath, with from three to five bands of white streaks and spots upon each side of the body. In its habits the paca very much resembles the agouti. It usually lives singly, or sometimes in pairs, on the borders of the forests, or near the banks of rivers, taking up its abode during the day either in a hole at the root of some tree, or in a burrow excavated by its labor, and which is generally carried to a depth of four or five feet. Its food consists of the leaves, fruits and flowers of various plants, and, like the

agouti, it occasionally does mischief in the corn fields and gardens. The female produces only one, or at most two, young at a birth. The paca swims well, and can cross even a broad river in this way. Its flesh, like that of the agouti, is very well flavored, and is consumed both by natives and Europeans.

THE DINOMYS in its external appearance closely resembles the paca. The ears are short and rounded; the upper lip deeply cleft; the incisors very broad; and the tail of moderate length and well clothed with hair. The animal, which inhabits the high mountain regions of Peru, is of the size of the paca, or about



THE DYNAMYS.

two feet long, exclusive of the tail, which measures rather more than nine inches. Its general color is gray, produced by the sprinkling of white among nearly black hairs, and on each side of the body are numerous large white spots, of which the upper ones nearly run together, so as to form two longitudinal bands. The extremity of the tail is black.

The only known example of this rodent was obtained in Peru, having been found at daybreak walking about the yard. It showed no fear of man, and was easily killed by a sword cut or two on the head. The species would appear to be rare, as the inhabitants of the neighborhood were not acquainted with it. Of course nothing is known of its habits.



THE GUINEA PIG.

THE CAVIES, the last of the simple toothed rodents, includes a small number of species, of which the common Guinea pig may serve as a sort of type. The Guinea pig is, however, one of the smaller species of the family, and the tail is rudimentary or wanting. They are stout, more or less rabbit-like animals, with a soft coat, and the ears variable in length, and they are confined to the continent of South America, where they chiefly inhabit the plains.

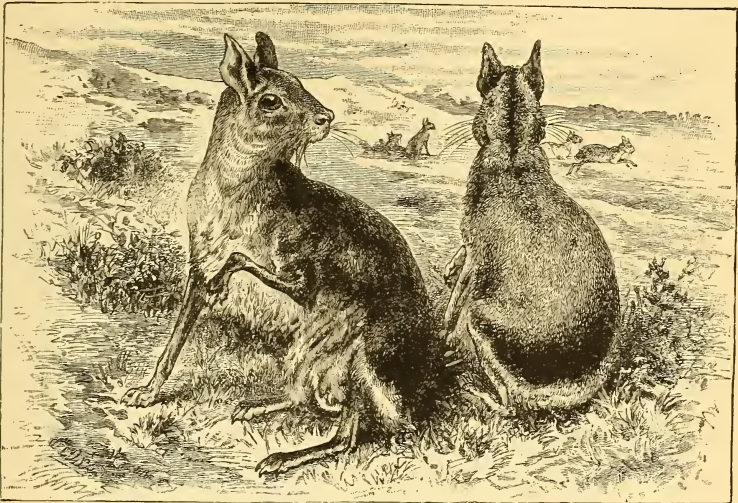
THE RESTLESS CAVY, which is commonly regarded as the wild original of the so-called Guinea pig, is abundant on the banks of the Rio de la Plata, and extends thence northward through Paraguay into Bolivia and Brazil. It is usually about nine inches long, with the fur of

the upper part and sides of the body composed of a mixture of black and dingy yellow hairs, the chest grayish brown, and the throat and belly pale dingy yellow or brownish gray. The incisor teeth are white. The genus to which this animal belongs may be at once distinguished by the shortness of the limbs. The ears also are short. The feet are naked beneath. The hind toes are not webbed, and the molar teeth are nearly equal in size, and each composed of two angular lobes.

The specific name of the restless cavy seems to be derived from its popular name in the country where it occurs. According to Mr. Darwin, it is very common about the banks of the La Plata, sometimes frequenting sandy hillocks, and the hedgerows formed of the agave and the prickly pear, but apparently preferring marshy places covered with aquatic plants. In dry places it makes a burrow; but when it frequents wet localities contents itself with the concealment afforded to it by the herbage. Rengger describes it also as generally haunting moist situations in Paraguay, and he adds that it keeps near the borders of forests, but is never found in the forests or in the open fields. It lives in small societies of from six to fifteen individuals, in the impenetrable thickets of Bromelias, where its presence is revealed by the numerous beaten paths which it produces by going to

and fro. In Bolivia, according to Mr. Bridges, it is peculiar to the lowlands, and there takes shelter among the loose stones of the walls inclosing the fields. It is active in search of food early in the morning and in the evening, but will also come forth on gloomy days.

THE PATAGONIAN CAVY, or *Mara*, is an animal which somewhat resembles the agouti in the length and comparative slenderness of its legs, and differs from all other cavies in having tolerably long, pointed ears. It also pos-



PATAGONIAN CAVY.

sesses a very short tail. The animal is somewhat harelike in its appearance, and has been mistaken for a hare by superficial observers. It is, however, a much larger animal, measuring from thirty to thirty-six inches in length, and weighing from twenty to thirty-six pounds.

The Patagonian cavy is clothed with a dense crisp fur of a gray color on the upper part of the head and body, rusty yellow on the flanks, and white on the chin, throat and belly. The rump is black, with a broad white band crossing it immediately above the tail. It inhabits Patagonia, and extends northward into the La Plata territory as far as Mendoza. It is found only in the sterile desert part of the country, where the gravelly plains are thinly covered with a few

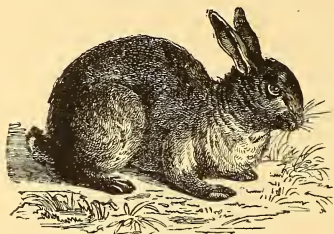
stunted thorn bushes and a scanty herbage. The northern limit of the species, according to Mr. Darwin, is at the point where the vegetation of the plains becomes rather more luxuriant. The Patagonian cavy usually burrows in the ground, but where it lives in the same region as the Viscacha, it will take advantage of the excavations made by that animal. It wanders to considerable distances from its home, and on these excursions two or three are usually seen together. Mr. Darwin says: "It is a common feature in the landscape of Patagonia to see in the distance two or three of these covies hopping one after the other over the gravelly plains." Their mode of running, on the same authority, more nearly resembles that of the rabbit than of the hare. Though their limbs are long, they do not run very fast. They rarely squat like a hare, but are very shy and watchful, and feed by day, in connection with which it is to be observed that the eyes are defended from the direct rays of the sun by well-developed eyelashes, which do not occur in the other covies. The female produces generally two young at a birth, which are brought forth and suckled in the burrow.

THE COMMON HARES. The general appearance of these animals hardly needs to be described. The representatives of this family occur in nearly all parts of the world, but chiefly in the Northern hemisphere, and the few species which pass down within the tropics are generally found only in mountainous regions. In the North they reach the Arctic regions in both continents. It is distinguished from the rabbit by the redder hue of its fur, the great proportionate length of its black-tipped ears, which are nearly an inch longer than the head; by its very long hind legs, and its large and prominent eyes. The color of the common hare is grayish brown on the upper portions of the body, mixed with a dash of yellow. The abdomen is white, and the neck and breast yellowish white. The tail is black on the upper surface and white underneath, so that when the creature runs it exhibits the white tail at every leap. Sometimes the color of the hare deepens into black, and there are many examples of Albino specimens of this animal.

The hare does not live in burrows like the rabbit, but only makes a slight depression in the ground, in which she lies so flatly pressed to the earth that she can hardly be distinguished from the soil and dried herbage among which she has taken up her abode. In countries where the snow lies deep in winter, the hare lies very comfortably under the white mantle which envelopes the earth, in a little cave of her own construction. She does not attempt to leave her "form" as the snow falls heavily around her, but only presses it backward and forward by the movement of her body, so as to leave a small space between herself and the snow. By degrees the feathery flakes are formed into a kind of domed chamber, with the exception of a little round hole which serves as a ventilating aperture. This airhole is often the means of her destruction as well as of her safety, for the scent which issues from the aperture betrays her presence.



RABBITS AT HOME.



WILD RABBIT.

The hare is by no means a timid animal. It fights desperately with its own species, and in defence of its young will attack even man. In England the hare is shot, and hunted either with grayhounds or a pack of hunters. Its long and powerful limbs enable it to make prodigious bounds, and it has been known to leap over a wall eight feet high.

It is a wonderfully cunning animal, and is said by many who have closely studied its habits to surpass the fox in ready ingenuity. Sometimes it will run forward for a considerable distance, and then, after returning for a few hundred yards on the same track, will make a great leap at right angles to its former course, and lie quietly hidden while the hounds run past its spot of concealment. It then jumps back again to its track, and steals quietly out of sight in one direction, while the hounds are going in the other.

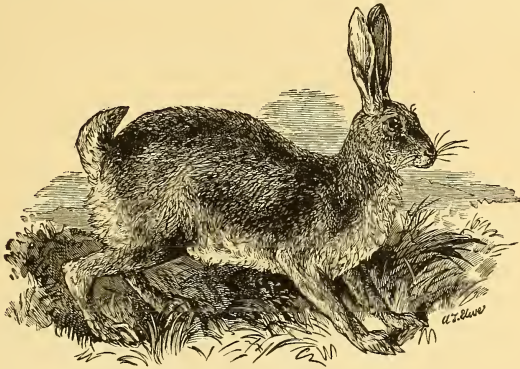
The hare also displays great ingenuity in running over the kind of soil that will best suit the formation of her feet, and has been known on more than one occasion to break the line of scent most effectually by leaping into some lake or stream, and swimming for a considerable distance before she takes to the land again.

In pursuing the hare with grayhounds, the dogs are held in couples in a leash, and are let loose when a hare is seen. This is the method adopted in coursing matches. In this sport a judge rides after the dogs, and makes note of their performance; the number of turns, and the like, which each of the contestants successfully achieve, and not the mere seizing of the hare, decide the victory.

The hare has been often tamed. The poet Cowper amused his solitude with his tame hares, and celebrated them in his verse. Dr. Franklin had a hare that used to sit between a cat and a grayhound before the fire, and lived on the best terms with them, and they have been taught various tricks, such as beating drums, firing pistols, and dancing.

THE RABBIT is distinguished from the hare by its smaller dimensions, its grayish color, and its shorter ears, as well as by its habits. It has been extensively acclimatized in America. It exists in great numbers in Sable Island, Nova Scotia, and on Rabbit Key, near Key West. It is found everywhere in Europe, and is supposed to have spread northward from Africa.

The rabbit is one of the most familiar of American quadrupeds, having taken firm possession of the soil into which it has been imported, and multiplied to so great an extent that its numbers can hardly be kept within proper bounds without annual and wholesale massacres. As it is more tameable than the hare, it has



EGYPTIAN HARE.

long been ranked among the chief of domestic pets, and has been so modified by careful management that it has developed itself into many permanent varieties, which would be considered as different species by one who saw them for the first time. The little brown, short-furred wild rabbit of the warren bears hardly less resemblance to the long-haired, silken-furred, Angola variety, than the Angola to the pure lop-eared variety with its enormously lengthened ears and its heavy dewlap.

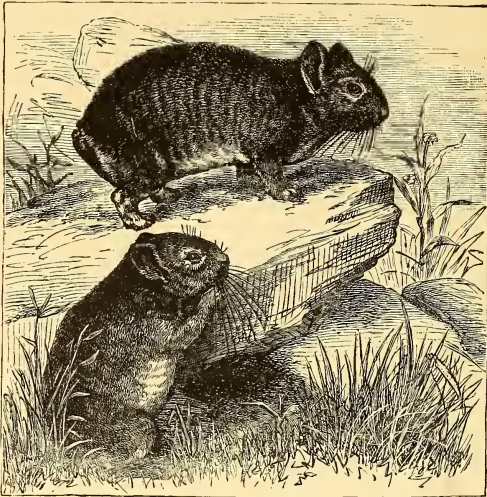
In its wild state the rabbit is an intelligent and amusing creature, full of odd little tricks, and given to playing the most ludicrous antics as it gambols about the warren in all the unrestrained joyousness of habitual freedom. No one can form any true conception of the rabbit nature until he has observed the little creatures in their native home; and when he has once done so, he will seize the earliest opportunity of resuming his acquaintance with the droll little creatures.

The female rabbit is exceedingly prolific, and has seven or eight litters a year, with from four to eight in each. Some days before bringing forth, the rabbit excavates a chamber which is specially destined for its progeny. This burrow, which is straight or crooked, as the case may be, invariably terminates in a circular apartment, furnished with a bed of dry herbage, which again is covered with a layer of down, that the mother has torn from the lower portion of her body. On this bed the young are deposited.

THE JACKASS RABBIT has very large ears, more than one-third longer than the head. A dark brown stripe is seen on the top of the neck, and a black stripe from the rump extends to the root of the tail, and along its upper surface to

the tip. The upper surface of the body is mottled deep buff and black, the throat and belly white, the under side of the neck dull rufous.

It received its name from the troops in the Mexican war, who found it very good eating, and it formed an important article of provisions for J. W. Audubon during his travels in Mexico. It inhabits the southern parts of New Mexico, the western parts of Texas, and the elevated lands westward of the coast lands of Mexico. On the Pacific coast it is replaced by the California Hare.

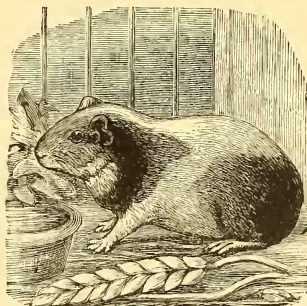


THE ALPINE PIKA.

THE ALPINE PIKA, which inhabits Siberia from the Irtisch eastward into Kamtschatka, is a little animal from nine to nine and a half inches long, of a grayish brown color above, yellowish gray beneath; the feet are pale, and the ears dirty yellowish white within, becoming dusky toward the margin, which is white. This animal occurs in considerable numbers in the Alpine and sub-Alpine parts of Siberia, where it either burrows in the ground, or shelters itself in crevices of rocks, or among loose stones. The Pikas generally come out only at night, although they sometimes venture forth on a cloudy day. Their food consists of the scanty herbage to be found in their elevated abode, and as this would be impossible to procure during the winter when the ground is thickly covered with snow, the Pikas take care in the autumn to collect a large supply of dried grasses

and other herbage, which they pile up near their habitations like little haystacks. They are, however, sometimes deprived of the fruits of their labor by the sable hunters, who plunder the pikas' stacks to feed their horses. The female produces about six naked young early in the summer.

THE ROCKY MOUNTAIN PIKA is a small species from six inches to seven and a half inches long, of a grayish brown color above, yellowish brown on the sides, and grayish below. It received its specific name from its discoverer, Sir J. Richardson, in allusion to the name of "Little Chief Hare" given to it by the Indians. It inhabits the summits of the Rocky Mountains from Colorado northward far within British America, and also occurs in the mountains of Utah, California and Oregon. Mr. Allen describes its habits as follows: "The animals are everywhere found in communities, living among the loose rocks from a little below timber line nearly up to the snow line. They appear to rarely wander many yards from their homes; are timid, yet easily become familiar. Though retreating to their homes when first alarmed, they soon come cautiously out one after another, till one may hear their sharp little cries in every direction. Their color so nearly resembles that of the rocks they live among, that they are not easily seen, and their cry is of such a character as easily to mislead one in respect to the point from which it proceeds, seeming to be far away when only a few feet distant. They sit erect, like little marmots. * * * They carry into fissures of the rocks large quantities of grass, which they lay up for winter consumption."



CHAPTER XX.

ORDER EDENTATA.—(ANIMALS WITHOUT FRONT TEETH.)

THE SLOTHS. When the forests of the northern parts of South America were explored by Europeans, it was observed that spider monkeys, howlers and their quadrumanous allies, were not the only climbing animals that frequented the trees. For every now and then, hunters came in sight of creatures about the size of a large monkey, but whose sluggish movements, long hair, short heads, small ears and tail, and very long claws, enabled them to be distinguished at once from their very lively companions. It was noticed that these new creatures, instead of climbing quickly and swinging from branch to branch and running along the boughs, moved very slowly, by hanging head and body downward, and grasping the branches with their long claws. During the daytime, these quiet animals were constantly found asleep, huddled up in the fork of a branch, and looking like great balls of tow, or else hanging by two legs, the rest of the body being curled up. Now and then, one was seen at the foot of a tree, and it appeared to run along the ground with great difficulty; for the arms were so long that it walked on the elbows, and the hind feet were turned in, so that it supported itself on the sides of its great hind claws. Naturally, the animal took its time in moving, and as it was never seen to be lively, it received the name of Sloth. Interesting from being so different in its habits from other arboreal animals, it became much more so, to naturalists, when its remarkable construction was ascertained; but still the hairy creature with a short face, small head, long neck, hardly any tail, and very long front limbs, retained its popular name.

Sloths are caught without much difficulty, and their habits, in captivity, have been observed in South America and elsewhere. Waterton writes on the subject:

“Some years ago I kept a sloth for several months. I often took him out of the house and placed him on the ground, in order to have an opportunity of observing its motions. If the ground were rough he would pull himself forward by means of his fore legs, at a pretty good pace, and he invariably shaped his course for the nearest tree; but if I put him upon a smooth and well-trodden part of the road, he appeared to be in trouble and distress. His favorite abode was the back of a chair, and often getting all his legs in a line upon the topmost part of it, he would hang there for hours together. The sloth, in its wild state, spends

its whole life upon trees, not upon the branches, but under them; he moves suspended, from the branch he rests suspended from it, and he sleeps suspended from it; hence his seemingly bungled conformation is at once accounted for. One day, crossing the Essequibo, I saw a large two-toed sloth on the ground upon the bank, and although the trees were not twenty yards from him, he could not make his way through the sand in time enough to make his escape before we landed. He threw himself on his back, and defended himself with his fore legs. I took a long stick and held it for him to hook on, and then conveyed him to a high and stately mora. He ascended with wonderful rapidity, and in about a minute he was almost at the top of the tree. He now went off in a side direction, and caught hold of the branch of a neighboring tree, and then proceeded toward the heart of the forest."



THE COLLARED SLOTH.

The sloth spends nearly the whole of its life in the trees, and travels along the branches body downward. It rarely comes to the ground, on which it walks with difficulty, and it occasionally takes to the water and swims. It looks slothful enough when asleep, for it then resembles a bunch of rough hair, and a jumble of limbs close together, hanging to a branch; but when awake, it is industrious in its search for nice twigs and leaves, and moves along the under side of the branches of the trees with some activity. It seizes the ends of adjoining branches, clinging to the leafy mass, and moves from tree to tree quickly enough, when it is requisite, and it has a very singular power of moving the head and neck backward in seeking food. When the atmosphere is still, the sloth keeps to its tree, feeding on the

leaves and twigs, but when there is wind, and the branches of neighboring trees come in contact, the opportunity is seized, and the animal moves along the forest, under the shady cover of the boughs. The Indians have a saying that "when the wind blows the sloths began to crawl," and the reason is thus evident enough—the animal cannot jump, but it can hang, swing, and crawl suspended. Mr. Waterton states, however, that "the sloth travels at a good round pace, and were you to see him passing from tree to tree you would never think of calling him a sloth. Being born up in a tree, living amongst the branches, feeding on the leaves, and finally dying amidst the foliage, and enjoying life as much as any other animal, its structure and conformation are, of course, admirably suited for this arboreal existence. Its power of grasp is great, and is assisted by the great bent claws as it hangs by its feet when asleep, and also often when it is dead. One which was much frightened by being taken from the forest had a pole placed near it at a distance from the ground on two supports. It clung directly to the pole and hung on. A dog was then made to attack the sloth, which seized it in its long claws, and did not let go until the enemy died."

THE COLLARED SLOTH. This sloth lives in the densest forests of Brazil, Peru, and Para, and is found not far from Rio Janeiro. It is a kind of the three-clawed sloths, in which there is little or no difference between the fur of the males and females. The neck is surrounded by a large collar of long black hair, and underneath this is a fur of a dark brown color. The face is naked, and is of a black color, and the hair of the body is not very flattened, but is withered looking to a certain extent. The forehead, temples, chin, throat and breast are covered with reddish or rust colored hair, slightly grizzled. On the crown of the head it is long and yellow, and pale orange on the rest of the body. This sloth produces one at a birth.

Like all the sloths, it has the power of long and sustained muscular action, and can cling on or grasp for a very long time without perceptible fatigue, and this gift is associated with a structure of the bloodvessels which supply the muscles, resembling that noticed in some of the lemurs.

THE AI. The word *Ai* is taken from the noise made by the animal. The true *Ai* inhabits Venezuela and Peru, and has very long flaccid gray hair mottled with white. There is an abundant under fur of a blackish brown color, which has white and black in spots and blotches.

There is a small spot between the shoulders on the back, where the fur is soft and woolly, and a broad, short, blackish streak there, with a white or orange ring around it. The claws are colored brown. The head has a curiously cut short and turned-up nose appearance, and is furnished with coarse shaggy hair, disposed on the crown in a diverging manner. The short hair of the face contrasts with the long, shaggy, shriveled, dry, hay-looking hair of the body. This hair is coarse

and flattened at the ends, but it is exceptionally fine at the roots, and it greatly resembles in color and texture some of the vegetation of the trees on which it lives. The eyes are bright, and are surrounded by a dark ring.



HOFFMANN'S SLOTH. (*From Life.*)

HOFFMANN'S SLOTH. This is a sloth with two clawed fingers on the fore, and with three claws on the hinder extremities. Living specimens are occasionally brought to the States, so that its general appearance may now and then be studied. If it be looked at there in the daytime, it certainly merits the name of sloth, for it resembles a bundle of long, light brown hair, fixed on the top of a bar

of wood close to an upright branch, or huddled up in a corner on the ground; but in the morning, and also late in the evening, the creature begins to move slowly, and to look out for the food put for its use on the floor of the den. All the Hoffmann's sloths have pale brown hair, whiter at the tips, and a white face, showing a broad band across the nose, extending to a ring around each eye. They have also a long and full crest of hair on the neck, and the hair on the limbs is darker than that of the rest of the animal. Dr. Peters, who discovered this sloth, examined the skeleton, and found only six vertebræ in the neck, and in this it differs from the *Choloepus* just noticed.

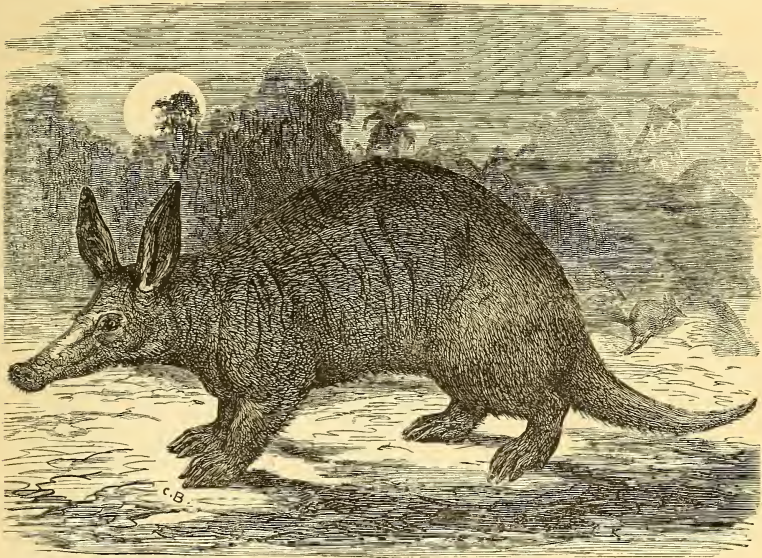
When its food, consisting of carrots and lettuce, and bread and milk, is put down in the morning it is soon in movement, and enjoys its meal hanging down from a bar with its hind legs, and resting its back on the floor of the cage. It seizes the food between the claws and the long straight palm of the fore foot, and passes it into its mouth, chewing actively with the molar teeth, especially with the first, which are sharp. It cares little for the spectators, and when it has finished slowly mounts up into a corner of its little den and settles down to sleep. In the evening it becomes lively, for it is, and, indeed, all sloths are nocturnal in habit. The hairless snout, of a light red tint, the absence of "smellers," the little eyes with a few hairs around them, and the broad forehead, give the animal a curious appearance. The hair is brushed back on the forehead, and comes around the very small ears on to the cheeks, and is whity brown, and this same tint is seen over the whole of the back in long slender hairs. But the under hair is light red or red brown. The long and slender hand, with its two claws, contrasts with the rather bulky upper part of the limbs, and the flesh colored palms are very remarkable.

The whole of the sloths lead very monotonous lives. Their food is ever within their reach, and it is abundant, and they do not appear to have to compete much or at all in the struggle for existence with other animals. Their enemies are snakes and the carnivora, but it is evident that they are much more readily preserved by their habits from the latter than from the former. Leading such an uneventful existence, there is no great call upon their nervous energies or intelligence, and these are at a low pitch. The brain consequently is very simple in convolutions, which are few in number and shallow.

THE CAPE ANT EATER, or *Aard-Vark*. In one of the cages in the house close to where the kangaroos are kept, in the Zoological Gardens of London, there is usually a heap of straw to be seen and an empty dish. Outside the cage is placed the name of an animal, "The Cape Ant-eater." People look and wait, and as neither the animal nor the ants it eats are to be seen, they go away, supposing that the absence of the last named insects has caused the destruction of the animal, whose straw alone remains. But in the evening, and sometimes in the morning, when the food is placed in the cage—not ants, however—a long pair of stuck-up

ears, looking like those of a gigantic hare with a white skin and little fur, may be seen poked up above the straw; and soon after, a long white muzzle, with small sharp eyes between it and the long ears, comes into view.

Then a very fat and rather short-bodied animal with a long head and short neck, low fore and large hind quarters, with a bowed back, comes forth, and finally a moderately long fleshy tail is seen. It is very pig-like in the look of its skin, which is light colored and has a few hairs on it. Moreover, the snout is somewhat like



THE CAPE ANT EATER. (*From Life*)

that of a pig, but the mouth has a small opening only, and to make the difference between the animals decided, out comes a worm-shaped long tongue covered with mucus. The animal has to content itself with other fare than ants in England, but it seems to thrive, and as it walks slowly on the flat of its feet and hands to its food, they are seen to be armed with very powerful claws.

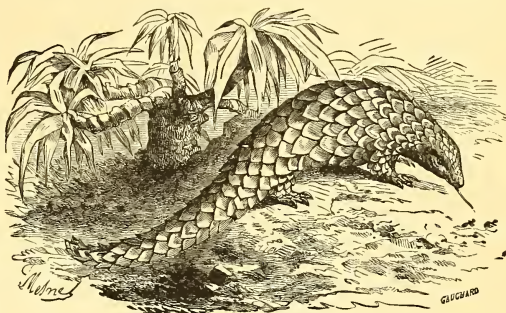
In Southern Africa, whence this animal came, it is as rarely seen by ordinary observers as in England, for there it burrows into the earth with its claws, and makes an underground place to live in, and is nocturnal in its habits, sleeping by day.

The orycteropus, which means digging up foot, is the deadly foe of the ants of all kinds, and especially of those which, like the white ants, live in large colonies and build nests.

These nest-building ants abound in certain districts, but not in the region of the downs or karoos, nor where it is very dry and woody. They choose the country which is covered with a poor and so-called "sour" grass, and there they dig galleries in the ground, fetch earth from far and wide, and erect large rounded mounds of an elliptical figure, and often from three to seven feet in height. Apparently fond of company, the ants congregate, and these gigantic hills of theirs are often crowded together and occupy the plains as far as the eye can reach. The nests, or hills, are solidly built, and contain innumerable ants. This is the favorite resort of the orycteropus, and the insects are his sole food then. Wherever anthills are found, there is a good chance of finding one of these aard-varks, or innagus, or ant bears, as the Dutch and natives call them, leading a sort of mole like life. But he is not easy to catch, if the stories told be true. It is stated that the long, strong, flattened claws and short extremities, worked by their strong muscles, enable the animal to burrow in the soft soil as quickly as the hunters can dig, and that in a few minutes it will get out of the way. Moreover, its strength is sufficient to resist the efforts of two or three men to drag it out of the hole. But when fairly caught, the ant eater does not resist much. It has no front teeth or eye teeth to do any harm with, and it can be killed easily by a blow on the head. The ant eater runs slowly, and never moves far from the entrance of its burrow, being seen to do so only at nighttime. The burrows are often two feet in diameter, and three or four feet deep before they branch off. Night is the time for ant eating, for the active and industrious insects are then all at home and within their solid nests. Then the orycteropus sallies forth, finds a fresh nest, sprawls over it, and scratches a hole in its side, using his strong claws, and then introduces his long snout. Having satisfied himself that there is no danger at hand, the animal protrudes its long slimy tongue into the galleries and body of the nest, and it is at once covered with enraged ants, which stick to it, and are finally returned with it into the mouth. This goes on over and over again, until the appetite is satisfied; and apparently the diet is excellent, for the ant eater is generally fat, and indeed, his hams are appreciated as a delicacy for their peculiar flavor, into which that of formic acid is said to enter.

Although without an armor to its body, and provided with only a thick skin and bristles, the orycteropus has a great resemblance in many points of its anatomy to the armadillos of America. It is more closely allied to them than to the other Edentata. The tongue is long, narrow, and flat, and can be protruded considerably beyond the mouth, but not so far as those of the other insect eating Edentata; and in order to keep up a supply of thick mucus, the glands under and at its side, or the sub-maxillary, are very large and active in their functions. The stomach is moderately bulky and not simple, for the portion toward the right has very thick

muscular walls, and the rest is thin. The claws of the *Orycteropus* and the limbs are admirably suited for its kind of life. There are five claws on the hind limbs and four on the front, and they are long, slightly curved, flat, and scooped out below. The burrowing is facilitated by the arrangement of the claws as regards length, and they diminish in size from within outward. There is a collar bone. The foot rests evenly on the ground, and not on the outside, and the body is supported either by the whole foot or by the palm surface of the claws. The fore arm can be rotated more or less, and the pronator quadratus muscle enables this necessary action to be carried out.



TEMMINCK PANGOLIN.

THE PANCOLINS, or Scaly Ant Eaters. An animal living in the same country, on the same kind of food, and having many of the habits of the Cape ant eater, especially as it belongs to the same order of the animal kingdom, might be expected to resemble it in shape and in most of the important parts of its construction. But the comparison between the ant eater, just described, and the scaly ant eater, shows that these animals have some very remarkable differences. The scaly ant eater is toothless, and covered with scales. They are small animals, of from two to nearly five feet in length, with long tails; and their body, limbs, and tail are covered with numerous large, somewhat angular, and sharp-edged scales, as with armor. The scales overlap each other like tiles, and the free part pointing backward is bluntly angular or rounded at the tip. When the animal is on its feet walking, they form a very close and impenetrable covering, being doubtless of great use to the creature, for it must trust entirely to its defences, having no weapon of offence. But when the scaly ant eater is alarmed or threatened with danger, or positively attacked, it rolls itself up like a ball, places the snout between the legs, and the tail underneath, and then sticks up its scales, offering their sharp edges to the enemy. There are several kinds of them, and one in particular was noticed by Dr. Smith, the African traveler, and was named after the zoologist Temminck. He observed that it was rarely seen, but that when it was discovered, instead of burrowing, it did not attempt to escape, but rolled itself up instantly in the shape of a ball, taking especial care of its head, which is the only part unarmored and likely to be injured. He states that ants form its

chief and favorite food, and that it secures them by extending its projectable tongue into holes which may exist in the habitations of those insects, or which it may itself form. The tongue having made an entry, it is soon covered with a multitude of insects, and as it is well lubricated with saliva, they are held fast, and when a full load is ready, the retracting muscles act on the tongue and the whole is carried back into the mouth, after which the ants are swallowed. The same traveler accounts for the scarcity of the scaly ant eaters, partly from the disinclination of the natives to discover them for strangers, and partly because they are environed with supernatural gifts in their eyes. They are carefully sought for by the natives, for their own use and supposed advantage, for they believe the animal to have some influence on cattle, and that certain treatment to which they are exposed produces this. Whenever a specimen is procured by the natives, it is submitted to fire in some cattle pen, apparently as a burnt offering for the increase of the health and fertility of all cattle which may henceforward enter the fold. "Here," writes Dr. Smith, "we have another cause for the obliteration of a species. Intolerance of their aggression has wrought up the shepherd or agriculturist to the destruction of some; but in this case, a species is probably dying out under the influence of a superstition."

They burrow even in rather hard ground, and feed at night time. It has been noticed that the mother sits upright when enticing the young to suckle.

This *Manis* has rather a short head, and a wide body, and the tail is as long as the trunk: it is rather less in width near the body, and does not diminish much near the end. In a specimen which is twenty-five and one-half inches long, the back of the animal is eight inches across, and the tail at its root is five inches broad. The scales are large, and are in about eleven rows. The body is of a pale yellowish brown color, the scales being lightest in tint near their points, and they are often streaked with yellow. Where the scales are wanting the skin is dusky brown. The eyes are reddish brown, and the muzzle is black. The nails of the fore feet are bent under, so that the animal walks on their upper part. The scales are composed of hairs placed side by side and agglutinated together, and when first formed, and for some little time after, they are soft. They cover the upper part of the fore and hind extremities besides the body, and are striated.

THE GREAT ANT BEAR. The habits of this animal, which has been named Great Ant Bear, have been described as follows:—"The habits of the Great Ant Bear are slothful and solitary; the greater part of his life is consumed in sleeping, notwithstanding which he is never fat, and rarely even in good condition. When about to sleep he lies on one side, conceals his long snout in the fur of his breast, locks the hind and fore claws into one another, so as to cover the head and belly, and turns his long, bushy tail over the whole body in such a manner as to protect it from the too powerful rays of the sun. The female bears but a single young one at a birth, which attaches itself to her back, and is carried

about with her wherever she goes, rarely quitting her, even for a year after it has acquired sufficient strength to walk and provide for itself. This unprolific constitution, and the tardy growth of the young, account for the comparative rarity of these animals, which are said to be seldom seen, even in their native regions. The female has only two mammæ, situated on the breast, like those of monkeys, apes, and bats. In his natural state the ant bear lives exclusively upon ants, to procure which he opens their hills with his powerful crooked claws, and at the moment that the insects, according to their nature, flock from all quarters to defend their dwellings, draws over them his long, flexible tongue covered with glutinous saliva,



ANT BEAR.

to which they consequently adhere; and so quickly does he repeat this operation, that we are assured he will thus exert his tongue and draw it in again covered with insects twice in a second. He never actually introduces it into the holes or breaches which he makes in the hills themselves, but only draws it lightly over the swarms of insects which will issue forth, alarmed by his attack. It seems almost incredible, that so robust and powerful an animal can procure sufficient sustenance from ants alone; but this circumstance has nothing strange in it to those who are acquainted with the tropical parts of America, and who have seen the enormous multitudes of these insects, which swarm in all parts of the country to that degree that their hills often almost touch one another for miles together. The same author informs us that domestic ant bears were occasionally kept by different persons in Paraguay, and that they had even been sent alive to Spain, being fed

upon bread and milk mixed with morsels of flesh minced very small. Like all animals which live upon insects, they are capable of sustaining a total deprivation of nourishment for an almost incredible time."

The Great Ant Bear is found in all the warm and tropical parts of South America, from Colombia to Paraguay, and from the shores of the Atlantic to the foot of the Andes. His favorite resorts are the low, swampy savannahs, along the banks of rivers and stagnant ponds. He is found also frequenting the humid forests, but never climbing trees, as falsely reported by Buffon, on the authority of La Borde. His pace is slow, heavy, and hesitating; his head is carried low, as if he smelled the ground at every step, whilst his long, shaggy tail, drooping behind him, sweeps the ground on either side, and readily indicates his path to the hunter; though, when hard pressed, he increases his pace to a slow gallop, yet his greatest velocity never half equals the ordinary running of a man. So great is his stupidity, that those who encounter him in the woods or plains may drive him before them by merely pushing him with a stick, so long, at least, as he is not compelled to proceed beyond a moderate gallop; but if pressed too hard, or urged to extremity, he turns obstinate, sits up on his hindquarters like a bear, and defends himself with his powerful claws. Like that animal his usual, and indeed, only mode of assault is by seizing his adversary with his fore paws, wrapping his arms around him, and endeavoring by this means to squeeze him to death. His great strength and powerful muscles would easily enable him to accomplish his purpose in this respect, even against the largest animals of his native forests, were it but guided by ordinary intelligence, or accompanied with a common degree of activity. But in these qualities there are few animals, indeed, which do not surpass the ant bear, so that the different stories handed down by writers on natural history from one to another, and copied, without question, into the histories and descriptions of this animal, may be regarded as pure fiction.

THE TWO-TOED ANT EATER. These little animals appear at first sight to resemble sloths with tails, and their round heads, furry bodies, and two claws on the fore limb add to the resemblance. They are essentially arboreal animals also, but they have long and useful tails, and live on insects. They hunt their insect prey in the forests of Costa Rica, Honduras, and Brazil. Their two-clawed hands are remarkable, for the rudiments of the thumb and little finger are hidden beneath the skin, and the claws are placed on the first and second digits. The third digit has no claw. There are four claws on the feet, so that in this arrangement the animal is peculiar amongst the ant eaters. It is not larger than a common squirrel. Its whole length, from the snout to the origin of the tail, is but six inches, and of the tail seven inches and a quarter. This is consequently rather larger than the body. It is thick at the root, and covered with short fur, but tapers suddenly toward the point, where it is naked, and strongly prehensile. The muzzle is not so long in proportion as in the other two species. The tongue also is shorter,

and has a flatter form. The mouth opens farther back in the jaws, and has a much larger gape, the eye being situated close to its posterior angle. The ears are short, rather drooping, and concealed among the long fur which covers the head and cheeks. The legs are short and stout, and the hair, very soft and fine to the touch, is three-quarters of an inch in length on the body, but much shorter on the



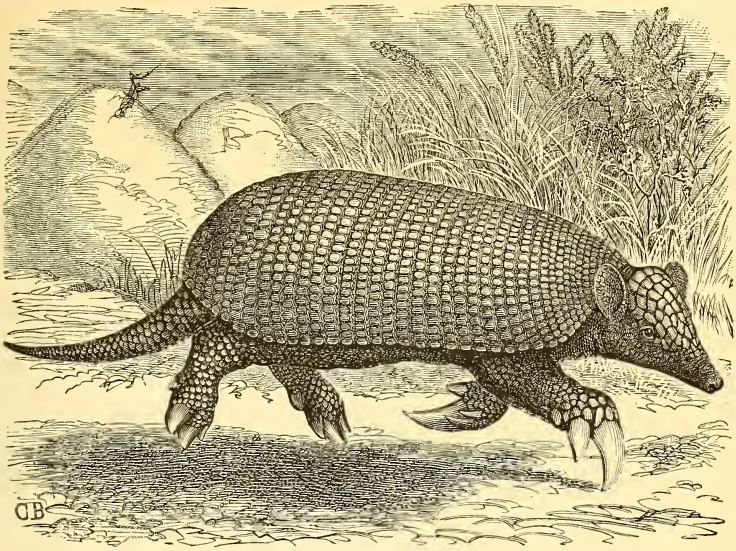
THE TWO-TOED ANT EATER.

head, legs and tail. The general color is that of straw, more or less tinged with maroon on the shoulders, and particularly along the median line of the back, which usually exhibits a deep line of this shade. The feet and tail are gray.

The habits and manners of this little animal, hitherto very imperfectly known to naturalists, are well described by Von Sack: "I have had two little ant eaters, which were not larger than a squirrel. One was of a bright yellow color, with a

brown stripe on the back; the other was a silvery gray, and darker on the back. The hair of each was very soft and silky, a little crisped. The head was small and round, the nose long, gradually bending downward to a point. It had no teeth, but a very long round tongue. The eyes were very small, round and black, the legs rather short. The fore feet had only two claws on each, the exterior being much larger and stronger than the interior, which exactly filled the curve or hollow of the large one. The hind feet had four claws of a moderate size. The tail was prehensile, longer than the body, thick at the base and tapering to the end, which, for some inches on the under side, was bare. This little animal is called in Surinam, 'Kissing-hand,' as the inhabitants pretend that it will never eat, at least when caught, but that it only licks its paws, in the same manner as the bear; that all trials to make it eat have proved in vain, and that it soon dies in confinement. When I got the first, I sent to the forest for a nest of ants, and during the interim I put into its cage some eggs, honey, milk and meat; but it refused to touch any of them. At length the ants' nest arrived, but the animal did not pay the slightest attention to it either. By the shape of its fore paws, which resemble nippers, and differ very much from those of all the other different species of ant eaters, I thought that this little creature might perhaps live on the nymphæ of wasps, etc. I therefore brought it a wasp's nest, and then it pulled out, with its nippers, the nymphæ from the nest, and began to eat them with the greatest eagerness, sitting in the posture of a squirrel. I showed this phenomenon to many of the inhabitants, who all assured me that it was the first time they had ever known that species of animal to take any nourishment. The ants which I tried it with were the large white termites upon which fowls are fed here. As the natural history of this pretty little animal is not much known, I thought of trying if they would breed in a cage; but when I returned from my excursion into the country I found them both dead, perhaps occasioned by the trouble given to procure the wasps' nests for them, though they are here very plentiful; wherefore I can give no further description of them, than that they slept all the day long, curled together, and fastened by their prehensile tails to one of the perches of the cage. When touched they erected themselves on their hind legs, and struck with the fore paws at the object which disturbed them, like the hammer of a clock striking the bell, with both paws at the same time, and with a great deal of strength. They never attempted to run away, but were always ready for defence when attacked. As soon as evening came they awoke, and with the greatest activity walked on the wire of the cage, though they never jumped, nor did I ever hear their voice."

THE ARMADILLOS. These South American animals are more or less covered with a hard bony crust, separated into shields and bands, which are more or less movable, owing to the presence of special skin muscles. In the most perfectly armored there are four distinct shields and a set of bands, a certain amount



THE GREAT ARMADILLO.

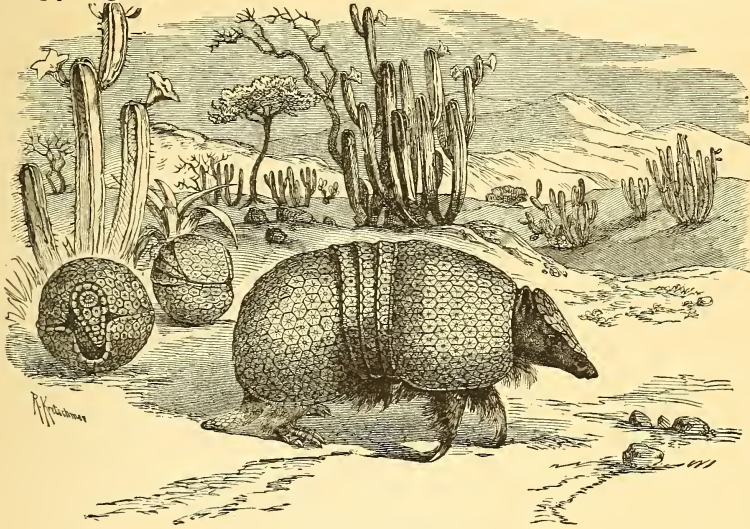
of motion being possible between their edges. Of the shields, one covers the head, another the back of the neck, a third protects the shoulders like a great cape, and the fourth arches over the rump like a half dome, and is, in some, attached by its deep structure, to the bones of the hip and haunch. The movable bands cover the back and loins, and are between the third and fourth shields. The tail may further be invested by incomplete bony rings, and scattered scales, and others are distributed over the limbs. This covering is, according to Professor Huxley, strictly comparable to part of the armor of the crocodile; and the armadillos are the only mammals possessing such structure. The shields and bands are formed of many scales or scutes, which are ossifications of the skin; and they may be of many kinds of shape—four or many sided—being united by sutures, and they are incapable of separate motion. The shields and bands, however, vary much in their number, size, and perfectness in the different animals, which, being armored, the Spaniards called armadillos; and, indeed, the number of bands in the back and loin division varies in individuals of the same species. These bands cover the flanks, and, with the shields fore and aft, protect the limbs, which are often more or less hidden by a growth of hair. The bands, more-

over, by being movable one on the other, enable the rest of the armor to accommodate itself to the motions of the body, so that some roll themselves up as in a ball shape. There may be few or many bands present, and the extreme numbers are three and thirteen. The armadillos are of different sizes, and whilst the smallest may be only ten inches in length without the tail, the largest are more than three feet long. The head is long, and broad at the neck, the ears are usually long, the neck is short, the body is long, round and low, and the length of tail varies much in different kinds. Where the head shield joins that of the shoulders, there is a space for the movement of the short neck; but this is protected by a backward projection from the head shield. The throat, under parts and thighs are not protected by armor, except here and there by small plates in the skin, or by a granulated state of it, and they are naked or hairy. Even between the bands on the back there are often long hairs, and the tail fits into a kind of notch in the last shield of the body, and its plates are close in almost all armadillos, but not united, so that much more motion is given to it and to the body than might be expected by the muscles during their action beneath the more or less soldered bony skin. The flat top to the head, and the long muzzle, are useful to the armadillos in their burrowing, and this is assisted by short and strong limbs armed with powerful claws. Some of the armadillos are even capable of running with some speed, and the little six-banded armadillo, or poyou, and the matico, are very restless and active in captivity.

THE GREAT ARMADILLO. This is an inhabitant of Brazil, and of the northern parts of Paraguay and of Surinam, and is a dweller in the forest, being never found far out on the plains. The head is seven inches and a half long, and the ears, usually pointed and laid backward, are not quite two inches in length. The head and body, without the tail, measure three feet and some inches, whilst the thickly rooted but rapidly tapering tail is about a foot and a half in length. Hence the head is small for the body in this armadillo, and the forehead is protuberant, and the face is very tubular and cylindrical looking. The shoulder and croup shields are not expanded and solid, but consist of nine and eighteen rows of plates respectively, and the intermediate part of the body has twelve or thirteen movable bands, each of which is made up of rectangular scales, or scutes, about half an inch square. The circumference of the root of the tail is upward of ten inches, and the organ is covered with plates, disposed in rings at the root, and not farther down, but forming spiral or crescent-shaped lines throughout the rest of its length.

The Great Armadillo is a persevering and most rapid burrower, and the fore limb and hand are singularly modified for the purpose of enabling rapid digging and removal of the soil. The olecranon process of the ulna is enormous, and the muscle of the deep flexor or tendon of the claws is ossified and turned into a hand bone. The metacarpal bones of the thumb and first finger are small, and so are

the slender digits, but that of the middle finger is irregularly rectangular, and is broader than long, and the digit which supports it is extraordinarily short, stout, strong, and broad. Its corresponding bones of the fourth finger are similarly formed, but are somewhat smaller, and the fifth finger is very small. The nail phalanx of the middle finger is large and strong, being curved *outward*, and having a large horny hood, or core, at its base, for the lodgment of the claw. There are five claws on the hands and feet, and the armadillo moves on the flat of its feet, being plantigrade. There is no doubt that, aided by these digging weapons, and



THE BALL ARMADILLO.

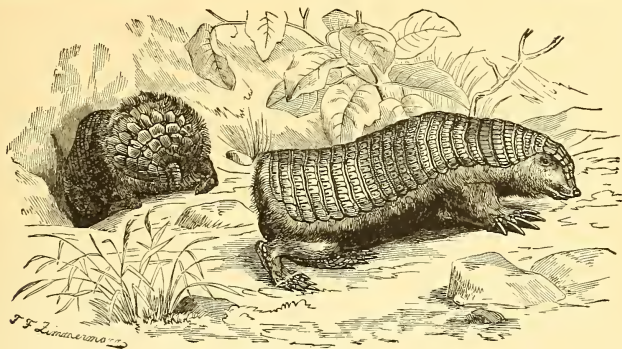
being of considerable stoutness, the animal makes long and deep burrows. It feeds on roots, fallen fruit, and insects, and there is a story that it seeks carrion, and it used to be said that the collectors of cinchona bark in the dense forests, when they lost a companion by death, were obliged to bury the body in a grave surrounded with a double row of stout planks, to prevent its being scratched up and devoured by the Great Armadillo. Planks must be scarce, however, in those localities, and difficult to carry; and probably there are other inhabitants of the woods besides the armadillos which would discover and drag out a corpse. To assist the scratching and digging, the soles of the feet are partly covered with flat scales.

THE BALL ARMADILLO. This is a small and very beautifully ornamented armadillo, which has three free central bands and a short tail, with large fore and aft shields. It rolls itself up on the slightest alarm, so that the great shoulder and croup shields meet, the head and tail fitting in exactly, in front, so as to close up the body very safely. The little animal, which is rarely more than fifteen inches long, and has a tail a couple of inches in length, is found in Brazil, Paraguay, and Buenos Ayres, and its walking on the long, stout claws of the fore legs gives it a very curious and unsteady appearance.

It is an active, sprightly, light-footed little thing, according to Dr. Murie, and is constantly on the move, going here and there with much vivacity. Poising itself on tiptoe, it trots backward and forward as if on some urgent errand. In captivity the food was raw meat, boiled eggs, and bread and milk. In the forest land, where it dwells along with its fellow-armored creatures, it has the advantage of being able to curl itself up, and to present no tangible part of its body to the host of mischievous monkeys of its locality. The other armadillos, when retiring to their holes, are often set upon by their lively quadrumanous neighbors, and are dragged out by the tail with great gusto; but the little *tolypeutes* curls himself up and laughs at the disappointed monkeys, who can find nothing to pull at about him.

The shoulder shield comes down like a flap, far in front, and the croup extends behind in the same way, and they and the bands have large scales, which are very pretty in shape and ornament. The shields are very stout, and so is the skeleton within. The fore foot has three large clawed toes, on the tips of which the animal walks. The thumb of the fore extremity is to be seen in the skeleton, but it is not always visible in the skin, and it is very small and high up; the index is long, and the claw also, and it is slightly bent, but sharp at the tip. The next claw is the largest and longest, and has a cutting edge at the back and outer part, and the point is sharp. The next digit is smaller. In the hind foot there are five toes, one being high up and rudimentary, and the second and third have broad, flat, curved, short nails, the third being the greatest. The fourth nail is smaller, and they are all placed more or less flatly on the ground.

The shell of this armadillo is blackish brown, and the skin between the central bands is bald and smooth. There are nine back teeth on each side in both jaws, and there are none in front. The muscles which enable this armadillo to bring its tail and nose together and to form a ball shape, are not simply expansions of the common muscular tissue, which exists deeply in the skin in so many animals, but are special structures. The most important are in relation to the position of the head, neck, limbs, tail, and the shields and bands, when the body is about to be and while it is being rolled up; and these roller-up muscles are so arranged as to permit of the large liver and other internal organs not suffering pressure during their natural or temporary displacement. On the other hand, the unrollers act when the body and bones are in the rolled-up condition. The muscles of the back

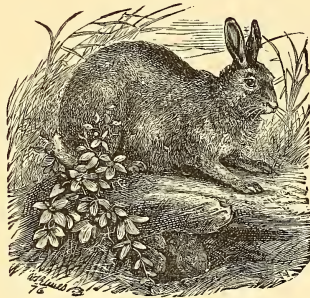


THE PICHICIAGO.

are very tendinous, and to a degree they unroll the animal, but this is also performed by muscles which are attached underneath the first movable band of armor, and to the front part of the spine of the blade bone. This will tend, when it contracts, to pull out the legs and protrude the fore part of the body, the center being still rigid. Another drawer-back of the blade bone assists in this action, and it is inserted into the front or chest shield. The rolling up is done by the action of muscles which draw the nose down, so as to make the long head at right angles to the neck. Then the fore legs and blade bones are drawn in and up. At the same time, the muscles which pull down the tail act on the hind shield, and draw it down and forward. The legs are pulled up, and then a great muscle, which is largely attached to the front and hind shields, and has a tendon like expansion in the middle of its course, beneath the movable bands, contracts and pulls front and stern together. The muscles of the loins, which in jumping animals bring the spine to a curve, do not act, and indeed are excessively small. The chief bend in the back is between the second and third lumbar vertebræ. (Murie.)

THE PICHICIAGO. This is an edentate animal, resembling the armadillos more than any others, and is about six inches in length. It has a conical shaped head, a large, full chest, short, clumsy, powerful fore limbs, with four great nails rising gradually one above the other, the external shortest and broadest, and the whole so arranged as to form a sharp cutting instrument, rather scooped, and very convenient for progression under ground. The back and croup are broad and high, and the tail is small. The hind legs are weak and short, the feet being long and narrow, and there is a well-defined heel. The foot is arched, the toes are separate, and the nails are strong. The whole surface of the body is covered with fine silk like hair, which covers over the limbs on to the palms. But the

most striking peculiarity is the long banded shell, which is loose as it were throughout, being attached to the back immediately above the spine by cellular tissue. It rests on two knobs on the frontal bones, and these are the great attachments of this important covering. There are twenty-four bands and no separate shields, and their consistence is somewhat more dense than leather of the same thickness. They are composed of scales or plates of geometrical form, and the bands are separated by skin. There is a notch in the last band for the tail, and the free inferior edges of the bands are everywhere fringed with silky hair. This elongated band structure is moved, to a certain extent, by two broad thin muscles, which are beneath it, on the back, and each of which divides, on the approaching shoulder, into two portions, one being attached to the blade bone, and the other to the occiput.



CHAPTER XXI.

ORDER XII.—MARSUPIALIA, MARSUPIAL OR POUCHED ANIMALS.



HE great circumnavigator, Captain Cook, in the year A. D. 1770, was on the coast of New South Wales repairing his ship, and a party of sailors were sent on land to procure food for the sick. They saw an animal whose description tempted Cook himself, and also Mr. Banks, to land and go in pursuit of it the next day. The animal was seen in company with others of its kind, and its short front limbs, great hind legs, and huge tail, and the tremendous hops it made in its fleet course, quite bore out the statements of the astonished crew. They had seen, for the first time, the great kangaroo in its wild condition and on its own ground.

Soon afterward a specimen was shot, and notes were made about the creature, and some skins were sent over to Europe. The animal has now become familiar to the civilized world.

THE GREAT KANGAROO. On looking at one of the great kangaroos in some menagerie or zoological garden, the first peculiarities that strike the eye are its small fore limbs, its very large and long hind ones, and the great and thick tail. The smallness of the head, which has rather long ears, and a long dusky brown muzzle, the length of the body, and the comfortable gray-brown, thick, shortish fur, are then noticed. But the principal fact which impresses all these things upon the visitor, is that the females may have a little kangaroo with its head poked out of a kind of pouch in the under part of the body. Sometimes the little one jumps out and gets in again if it is frightened; and the old one moves, hops and jumps about with its portable nursery with the greatest ease.

Sometimes the kangaroos are seen feeding, and then the awkwardness of their gait becomes evident, for the small fore legs and curious paws are on or close to the ground, whilst the back part of the body is raised up by the long hind legs, and, as it were, balanced by the great tail. These hind legs seem to do nearly all the running, or rather jumping, both being used together; and the tail is of use in supporting the long body when the animal suddenly raises itself up

THE GREAT KANGAROO. (*Male.*)

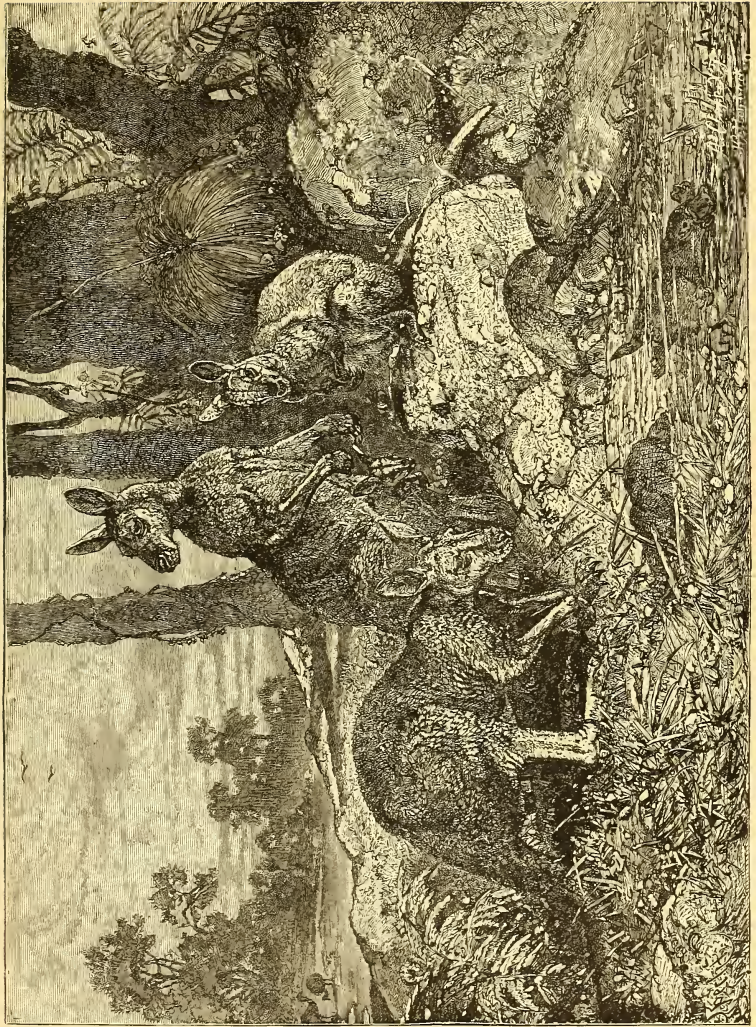
than to urge it to attack, for it is a feeder on herbs, leaves and grass, and often may be seen reclining and moving its jaws, as if it were chewing the cud after a fashion.

When moving with great velocity the kangaroo depends upon the hind legs alone, bounding along with great ease over ten, fifteen or more feet at a jump. Its body is then carried almost horizontally, and the tail is stuck out as if to balance it.

If the short fore limbs are examined, they will be found to be able to do a great deal in the way of holding, clasp- ing, and turning things about, and they are used in patting the little ones, and in embracing and cleaning them. The five digits, or fingers, have a very free movement, and the fore arm can turn and twist like that of the higher animals. But they and the fingers are often used for very different

straight, and squats on its hindquarters. The small fore legs then appear quite stunted, and the ears stick up, and the small head is held straight. But in slow walking the fore feet are placed on the ground, and the animal rests on them whilst it brings the long hindquarters forward and outside them. Evidently the senses of hearing and sight are very acute, but they are used to warn the animal of danger, rather

THE GREAT KANGAROO. (*Female.*)



KANGAROOS.

purposes, and they have, in the female, to open the curious pouch for the young ones, and to place them there. There is an evident relation between the arrangement of the bones of the wrist and this necessary office or function. The *marsupium*, or pouch, is a kind of inbending of the skin of the lower part of the belly, and is moist and naked inside. In it, in the females, are the nipples of the mammary glands, and to these the very young kangaroos hang on for a long time before they see the outer world. They are put in there by the mother when they are just born, and when very small and not perfectly formed. They grow there, and, after a while, leave the nipple when they think fit. As this pouch, with its contents, would drag upon the mother, it is kept from doing so, more or less, by two bones which are found amongst the muscles of the lower part of the body, and which are attached to the front or pubic bones of the pelvis. They are called marsupial bones. They exist also in the males, but they have no open pouch, for it is, as it were, turned outward, and contains part of the reproductive organs.

The head is long, and is remarkable for the long nose, and large, full eyes, with eyelashes, for the kangaroo is not nocturnal in his habits, like most of the marsupials. The upper lip is split, the end of the nose or muffle is naked or hairy according to the kind, and the brain case is small. The nostrils are at the side of



THE COMMON TREE KANGAROO.

the end of the muzzle, and are slit-like and oblique, and there are bristly "smellers" to the fleshy lips and chin. A slender tongue is sometimes seen for an instant whilst the kangaroo is feeding, and if the bones of the lower jaws be examined, the angle, or lower part of the back of the lower jaw will be found to be turned inward.

THE COMMON TREE KANGAROO. This is an inhabitant of New Guinea, and instead of frequenting the

brush and scrub, which are not physical features found in the island, or the rocks, it lives in the forests, and is no mean but rather a good climber of trees. There is a kangaroo look about the animal, even when it is seated on a thick branch, but the fur is very different to that of its fellows of Australia. The fur looks coarse and harsh, and is not very unlike a bear. There is no soft under fur, but all the hairs are long and resemble the long ones of the kangaroo, and the ears are quite clothed with it. Then, as the animal glides



THE KANGAROO RAT.

down the stem of a tree, the shortness of the hind legs becomes apparent. Moreover, the claws on the foot do not resemble those of the kangaroo. The feet are stout, but rather short, and the toes are more equal in size than other kangaroos. The claw of the outer toe is often on a line with the middle of the longest one (the fourth), whilst the nails of the double inner toe extend slightly beyond its base. The nail of this large fourth toe is about an inch in length. The fore limbs are nearly as large as the hind ones, and are very strongly made, and so are the hands, the claw of the middle finger being three-quarters of an inch in length. It has a clumsy looking head, with a high muzzle and small lower jaw. The upper lip is straight. It has a large face and small ears, and the color of the fur is brown-black and yellow-brown. The tail is very long, tapers slightly, and is of considerable use in steadying the climber, and is carried very much after the fashion of the other kangaroos when the animal has come down from its tree and hops off to its retreat. A specimen in the Zoological Gardens of London has grizzled gray fur, which is whiter underneath the jaws and on the neck and limbs, and the ears are wide apart, and the powerful fore limbs end in five claws. The tail tapers very little. This is probably a second species called the brown tree kangaroo.

THE KANGAROO RATS. These are also called potoroos, and are of small size, being about that of a hare or rabbit. They have a compact body, the neck being short, and the ears are rather rounded, so that their shape is unlike that of the great kangaroo, but it resembles that of the smaller kinds somewhat. They have a rat like shape, both hind feet like the kangaroos, a long tail, and peculiar teeth. The head is very like that of a rodent, and the incisor teeth in the upper jaw have the front ones the longest. The canine teeth exist in the upper jaw, and the pre-molar is large, and has numerous distinct vertical grooves on the outer and inner sides; and the front molars are the largest, the smallest being in the rear. The toes of the fore feet are unevenly developed; the three central ones are large, and those at the side are small. The nails are solid, broadest above, and much compressed. The foot is long, and the fourth toe and nail are greatly developed. The fifth toe is next in size, and the small second and third are coupled together by skin, and form a projection with two small nails, which are useful in combing and scratching the fur. The first toe is absent. The rufous kangaroo rat inhabits New South Wales, and is very common. Its nest is made up of grasses, and is frequently placed under the shelter of a fallen tree, or at the foot of some low shrub. During the day the little animal lies curled up in its nest, but it occasionally reposes in a "seat" like the hare kangaroo, but it never sits in the open plains. On being pursued it jumps like a jerboa, with great swiftness for a short distance, and seeks shelter

in hollow logs and holes.

Its food consists of roots and grasses. Another is a native of Van Diemen's Land, and keeps to the open, sandy, or stony forest land, rather than to the thick and humid bushes.



COMMON WOMBAT.

THE WOMBAT.

On looking at a picture of a wombat, the outside distinctions between it and all the kangaroos may be seen at a glance, and an examination of its anatomy affords still greater evidence of differences which, to a certain extent, relate to

the fact that the animal now under consideration is a burrower and gnawer. About two to three feet in length, the wombat has only a small stump of a tail, a low body, small feet, and strong limbs, ending in broad extremities, well provided with claws. It has moderately long and coarse fur of a gray-brown color, and there is some white about the short ears, and the feet are black. It is usually a plump animal, with a bare black muzzle, and feet naked beneath, and covered with little tubercles of flesh. The claws are large, and those of the fore feet (five in number) are solid and but little curved, whilst the four on the hind feet are curved and concave beneath. It has long moustache hairs, and plenty of them. Sir Everard Home had one, and he found that its principal desire was to get into the ground, and to do this it worked with great skill and rapidity, covering itself with earth with surprising quickness. It was very quiet during the day, but was in constant motion during the night; was very sensible of cold; ate all vegetables, and was perfectly fond of new hay, which it ate stalk by stalk, taking it into its mouth like a bear, in small bits at a time. It was not wanting in intelligence, and appeared attached to those to whom it was accustomed, and who were kind to it. When it saw them, it would put up its fore paws on their knees, and when taken up would sleep on the lap. It allowed children to pull and carry it about, and when it bit them it did not appear to do so in anger or with violence. When wild the wombat hides during the day, and quits its retreat at night to dig and get grass and roots. It is by no means an active animal, and shuffles along like a bear. The wombat has a slit-like, imperfect marsupium, and the special peculiarities of its order, such as marsupial bones, the inflected lower jaw, and double uterus. On the hind foot the innermost or first toe is very small, nailless, and placed at right angles to the foot, and the second, third and fourth toes are joined by skin, and have larger claws than the small fifth toe.

THE KOALA. The loftiest of the gum trees of the country from Moreton Bay to Port Philip, and even more widely than this, were often the familiar haunt of a small marsupial animal, not unlike a little bear, about two feet in length, and without a tail. It is a famous tree climber, and its stout body, small head, short limbs, and well developed feet, are all cased in an ash gray fur. It has moderate sized ears, which are hidden by the long hair of the head, and it has a short and nearly naked black muzzle. The eye is large, and without eyelashes. The natives climb up the trees after it, according to Mr. Gould, and with as much ease and expertness as a European would get up a long ladder, and having reached the branch, perhaps forty or fifty feet from the ground, they follow the animal to the extremity of the bough, and either kill it or take it alive. This animal is called the koala, and it feeds on the tender shoots of the blue gum in preference to those of any others, and it rests and feeds in the boughs. At night it descends and prowls about, scratching up the ground in search of some peculiar roots, and it



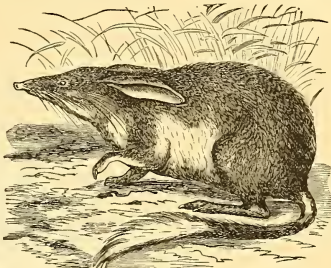
THE KOALA.

seems to creep rather than to walk. When angry it utters a long, shrill yell, and assumes a fierce and menacing look. They are found in pairs, and the young soon learn to perch on the mother's shoulders. Mr. Gould says that, unlike most quadrupeds, the koala does not flee upon the approach of man, and that it is very tenacious of life. Even when severely wounded it will not quit its hold upon the branch upon which it may be. The animal has a nice thick fur, which nearly hides the ears, and the pouch is large. A careful examination of the animal shows that it differs from the kangaroos and wombats. It is more like the latter than the former. The head is rather small and the face is short, the upper lip being cleft. The limbs are equal; the fore feet have five well made toes with compressed and curved claws; the hind feet have five toes, of which the first or inner one is large, nailless, and at right angles to the rest, and opposable to them. The second and third toes are shorter than the other, and are united in a common skin, and they have nails. The fourth and fifth toes are curved and have compressed claws. The name phalangistā is derived from this union by skin of the phalanges of the foot. The tail may be absent, or long, or more or less prehensile, but sometimes not.

THE SQUIRREL FLYING PHALANGER. This little creature, called the sugar squirrel by the colonists, is very generally dispersed over the whole of New South Wales, where, in common with other Phalangers, it inhabits the magnificent gum trees. Mr. Gould states that it is nocturnal in its habits, and that it conceals itself during the day in the hollows of trees, where it early falls a prey to the natives, who capture it both for the sake of its flesh and skin, which latter, in some parts of the colony, they dispose of to the colonists, who occasionally apply it to the same purposes as those to which the fur of the chinchilla and other animals is applied in Europe. At night it becomes extremely active in its motions. It prefers those forests which adorn the more open and grassy portions of the country rather than the thick brush near the coast. By expanding the membrane attached to the sides of its body it has the power of performing enormous leaps. They have the power of changing their course to a certain extent when descending, parachute-like, from a height. It is stated that a ship sailing off the coast had a squirrel *petaurus* on board which was permitted to roam at large. On one occasion it reached the mast-head, and as the sailor who was sent to bring it down approached, it made a spring from aloft to avoid him. At this moment the ship gave a lurch, which, if the original direction of the little creature's course had been continued, must have plunged it in the sea. All who witnessed the scene were in pain for its safety; but it suddenly appeared to check itself, and to so modify its

career that it alighted safely on deck. This kind is not more than eight or nine inches in length, and its bushy tail is as long as the body. The soft fur of the tail, like that of the body, is a delicate ashy gray. There is a long stripe of black fur from the naked tip of the nose to the root of the tail, and the cheeks are white with a black patch; the flank membrane is edged with white, and this is the color of the underneath part of the body; the ears are long, and of a brownish flesh color.

THE BANDICOOT. This animal is common in many parts of Van Diemen's Land. It is a burrower, and lives principally upon roots, and it likes the bulbs which are introduced from the Cape and elsewhere into gardens. It is about sixteen inches long, and has a slender muzzle, moderate sized ears, and the under parts of the body are white, the rest being gray, and penciled with black and yellow, except behind, where it is blacker. There are four broadish white bands on this part.



THE BANDICOOT

THE DOG-HEADED THYLACINUS. This is a dog-like, slim, narrow muzzled animal, with clean and very short limbs, a foxy head, and a tail about half as long as the body, which in males is forty-five inches in length. It is about the size of a jackal, and the fur is short, but rather woolly and grayish brown, faintly suffused with yellow in color. The fur on the back is deep brown near the skin, and yellowish brown toward the tip. It has from twelve to fourteen black bands on the body, and the tail has long hairs at the tip only. The eyes are keen, large and full, and they are black, and have a nictitating membrane. The animal walks half on its toes, and half on its soles or palms, and thus is a semi-plantigrade, the body being brought nearer the ground than that of the wolf in running. There is a marsupial pouch, but the bones are mere cartilages. The dog-headed thylacinus, or the zebra wolf of the colonists of Van Diemen's Land, thus described, has often been taken for one of the carnivora, and certainly there are great resemblances between it and the dogs.

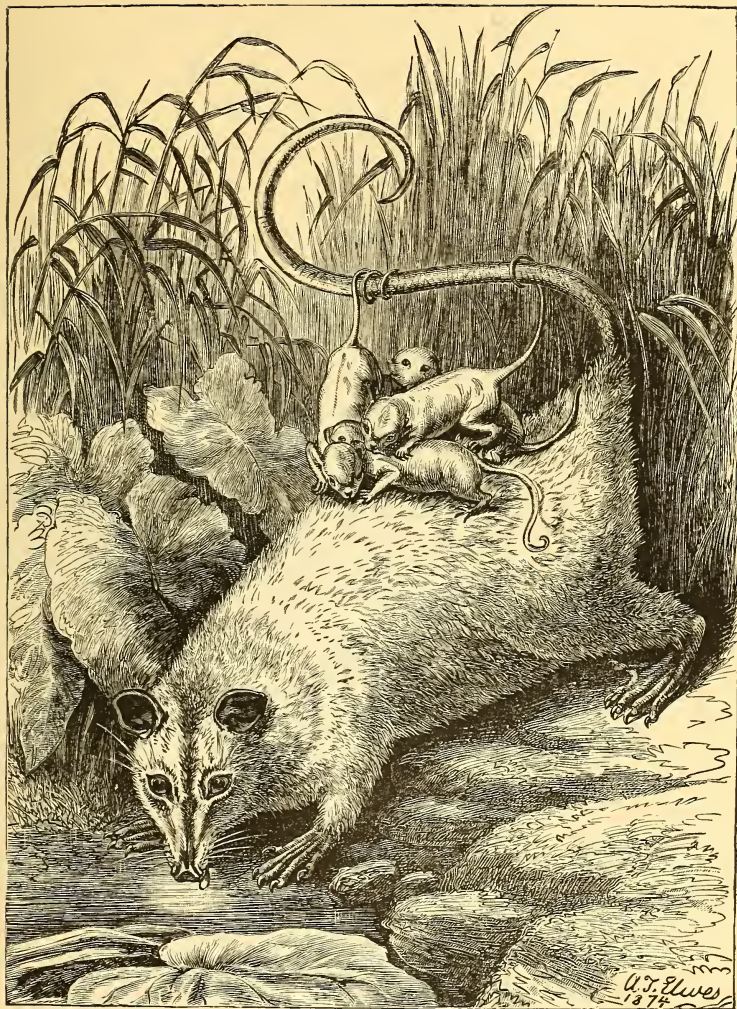
THE BRUSH-TAILED PHASCOCALE. This genus includes many species of small weasel or rat-like marsupials. They are small, insectivorous, and climb shrubs and trees in pursuit of their prey. The largest known is about the size of a common rat. The brush-tailed kind inhabits New South Wales, South Australia, and Western Australia, and is a pretty little animal, having a long and soft fur, of a gray color above and white or yellow white under the



THE DOG-HEADED THYLACINUS.

body. The eyes are encircled with black, and there is a pale spot above and below the eye, and the hairs are blackest along the middle of the head. The ears are rather large, and not furry. The tail is about equal to the body in length, or seven to nine inches, and there is a portion near its end of about two inches in length, which is clothed with short, stiff hairs, and the rest has long and glossy hairs, sometimes an inch or two long. An insectivorous little creature, its teeth are modified to meet its diet, and they are less carnivorous than the other dasyurids.

Another species, about six inches long, not including a tail of three inches—the freckled phascogale—lives in the Swan River district and at King George's Sound, being generally distributed over Western Australia. It has the fur freckled with black and white on the head and fore parts of the body. Mr. Gilbert found insect remains in its stomach, and he obtained a female specimen



OPOSSUM AND YOUNG.

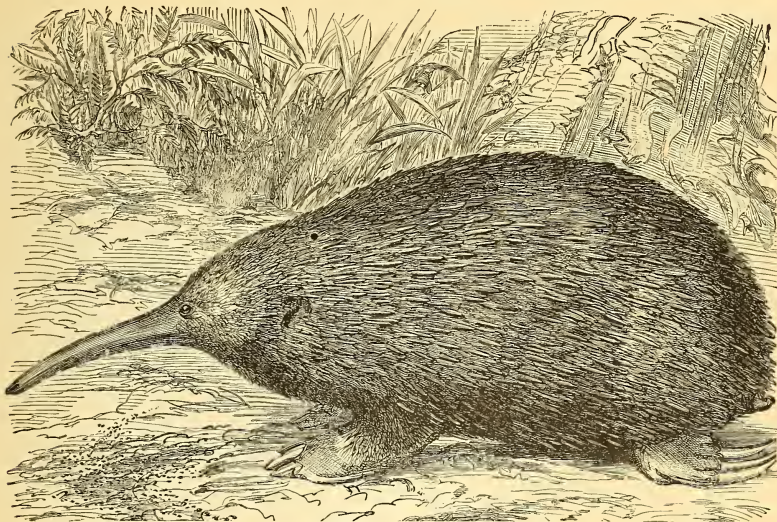
having seven young attached. They were little more than half an inch in length, and quite blind and naked. Above the teats of the mother is a very small fold of skin, from which the long hairs of the under surface spread downward, and effectually cover and protect the young. This fold is the only approximation to a pouch which has been found in any species of this genus. The young are very tenacious of life.

THE OPOSSUM FAMILY. The marsupial animals included in this family are not found in Australia or in Van Diemen's Land, or in any part of the natural history province to which those countries belong. They are numerous, however, and are now living on the American continent; but formerly some inhabited Europe during that geological period which is called the Eocene. The opossums are very rat-like in form, the largest species being about the size of a large cat, but they have the snout more elongated; and in some species in which the individuals are large the body is proportionately stout, and on most there is a comfortable fur, with short and long hair. The tail is almost always very long, nearly destitute of hairs, excepting at the root, and is covered with a scaly skin, there being a few scattered hairs. It is a useful organ, for the opossums hang by it, and it assists them in climbing and descending trees, and in holding on, when they are young, to their parent. The ears are rather large and round, the eyes are placed high up in the face, and the long muzzle ends in a naked snout. The legs look short for the body. The feet are naked beneath; there are five toes, and the great toe is more or less opposable to the foot, and acts like a grasping thumb. Each toe is furnished with moderate sized claws, excepting the inner toe of the hind foot, which is clawless.

The opossums are active, sly, and very intelligent in certain things, and their food consists of insects, small reptiles, birds and eggs. Living for the most part in trees, they secrete themselves in the hollows of the branches and trunks during the daytime and sally forth in the night. They have a moderate sized cæcum. It must be noticed that the great toe of the hind foot is well developed, has no nail, and enables the creature to grasp, and is thus very useful; and that they walk plantigrade.

THE COMMON OPOSSUM. This is a large kind, and is about the size of a common cat, and its long, large, pointed head, ending in a naked snout, and having eyes encircled in dusky brown fur amongst the white hair and fur of the head, gives it a very cunning and thoughtful appearance. The ears are black. The tail is long and prehensile, the end being white and the rest black, and the legs and feet are brownish. It is a great climber, and uses its tail almost as much as some of its monkey companions. Running along the branches, it will often suspend itself by its tail, and give a swing and let go, thus launching its body to a distance, and then it catches at the boughs with its feet and unclawed but prehensile hind toe thumb. In coming down trees it uses the tail to steady itself, and to

prevent too rapid a fall; and in climbing, the ever ready tail prevents mishaps, should the clawed toes not grasp sufficiently. The natural food of this opossum is probably vegetarian, but it is a great birds' nester. It will eat roots and fruits, but the early settlers found it very destructive to their poultry, for it catches the birds and sucks their blood, not eating the flesh; consequently, it has been much hunted, and as the fur and skin are sometimes used, the destruction of the opossum has been great. It is a curious creature, and seems to have gained experience in its struggle with man, and as many stories are told about its clev-



THE PORCUPINE ECHIDNA.

erness as there are about Reynard the fox and the Indian jackal. It will sham death in the most persevering manner, and it is at the same time very tenacious of life. This is essentially a North American animal, and is found from Mexico to the Southern States inclusive.

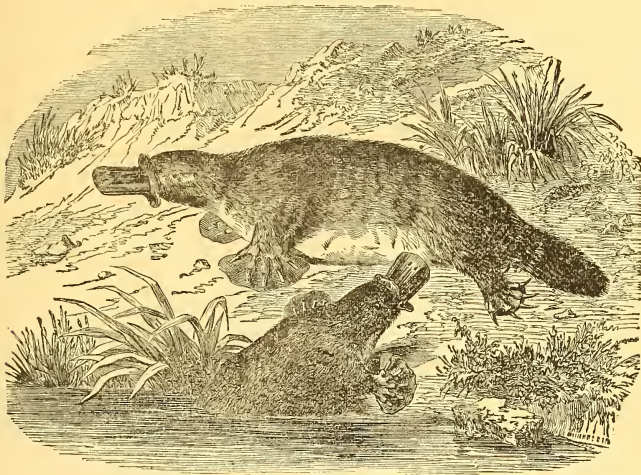
ORDER XIII.—MONOTREMATA.

THE LONG-SPINED ECHIDNA. This creature greatly resembles a hedgehog with a very long snout, at first sight, but a slight examination will show that it differs much from the insect eating and spiny little hystrix. The echidna is about a foot in length, and the upper part of its stout body is covered with strong spines,

and the rest is hairy, the front of the head, and the long, slender, and tapering snout being naked. The legs are short and strong, and the five toes of the fore leg have large and strong claws. This is in order to permit the creature to bury itself in sand and soft earth quickly, and this operation is assisted by a broad and rounded nail in the inner toe of the hind foot and by large claws on the other toes, and especially by a long nail to the second toe. A very long and flexible tongue enables the creature to catch prey. There are no teeth. The skull, when the skin and flesh have been removed, has a very pear-like appearance. It is a great burrower, and manages to get out of the way of observers as soon as is possible, for working actively with its strong limbs and claws, it pokes its snout into the earth and soon gets out of view. Ants are its favorite food, and they are captured in the same way as by the great ant eaters belonging to the Edentata; for in both there is a long slimy tongue, which can be poked far out of the mouth into ants' nests. The saliva required to make the tongue sticky comes from large glands under the lower jaw from the ear on to the fore part of the chest. When the ants have collected on the sticky tongue it is taken into the mouth, and they are swallowed. The absence of teeth is made up by the presence of horny spines on the palate and tongue, which look backward, and these crush and direct the food to the throat. It is an apathetic and stupid animal, and usually tries to get out of the light, and it will lie and roll itself up, but not so successfully as a hedgehog. One of the first which was seen was attacked by the dogs of two of the travelers, Bass and Flinders, whose names are so familiar from places having been named after them in Australia. The dogs did not come off victorious, for the new animal burrowed in the loose sand, but not head foremost. It sank itself directly downward, and left its prickly back just on a level with the surface.

An echidna was watched, so that the manner in which it could use its tongue was observed. Ants could not be had, but a diet of chopped up eggs, liver and meat was readily received, and it was noticed that the tongue was used in the same manner as that of the chameleon, by simple protrusion and bringing in, and also as a mower moves his scythe, it being curved sideways, and the food swept into the mouth. The echidna is fond of water and milk, which are licked up by a rapid putting out and drawing in of the long tongue.

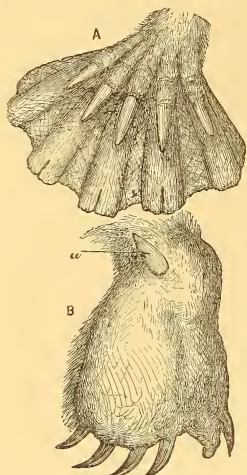
THE DUCK-BILLED PLATYPUS. Like most of the other objects of natural history found in Australia and the neighboring islands, this animal is very singular in its construction, nature and habits. It is of all animals that suckle their young the most like a bird, and it really deserves the title, from its external appearance, of half beast, half bird. As its shape and method of life are peculiar, it has received several names, such as the water mole, flat-footed, duck-billed platypus, the bird-beaked quadruped, and the paradoxical, bird-beaked animal. It is very fond of the water and also of burrowing in the ground, and of course, is admirably adapted for these pursuits. Hence its construction relates to them



THE DUCK-BILLED PLATYPUS.

to a certain extent, and also to that of the animals of which it was, as it were, a continuation in the scheme of nature.

The ornithorhynchus anatinus has a rather flat body of about eighteen inches in length, and the head and snout greatly resemble those of a duck, whilst the tail is short, broad and flat, and resembles that of a small beaver, but is shorter. The feet are webbed and flat, and the greater part of the creature is covered with a short, dense fur of a dusky brown color, darker on the upper and paler on the under parts of the body. A slight examination of the habits of the animal will explain the necessity for observing it a little more closely. Mr. Bennett describes his first interview with one shortly after his arrival in Australia. He writes: "We soon came to a tranquil part of the river, such as the colonists call a 'pond,' on the surface of which numerous aquatic plants grew. It is in places of this description that the water moles are most commonly seen, seeking their food among the aquatic plants, whilst the steep and shaded banks afford them excellent situations for excavating their burrows. We remained stationary on the banks, waiting their appearance with some degree of impatience, and it was not long before my companion quietly directed my attention to one of these animals, paddling on the surface of the water, not far distant from the bank on which we were then standing. In such circumstances they may be readily recognized by their dark bodies, just seen level with the surface, above which the head is slightly raised, and by the circles made



FORE (A) AND HIND (B) FOOT
OF THE DUCK-LILLED
PLATYPUS

in the water round them by their paddling action. On seeing them, the spectator must remain perfectly stationary, as the slightest noise or movement of his body would cause their instant disappearance, so acute are they in sight or hearing, or perhaps both; and they seldom appear when they have been frightened." On ordinary occasions they do not remain more than a minute or two at a time on the surface of the water.

A burrow of an ornithorhynchus, which Mr. Bennett opened, had its entrance on a steep part of a bank, situated about one foot from the water's edge, and concealed among the long grass and other plants. "This burrow ran up the bank in a serpentine course, approaching nearer the surface of the earth toward its termination, at which part the nest is situated. No nest had yet been made in the termination of the burrow, for that appears to be formed about the time of bringing forth the young, and consists merely of dried grass, weeds, etc., strewed over the floor of this part of the habitation." The expanded termination measured one foot in length and six inches in breadth, and the whole length of the burrow was twenty feet. Beside the entrance before alluded to, it appears there is usually a second opening into the burrows below the surface of the water, communicating with the interior, just within the upper aperture. A burrow subsequently examined by Mr. Bennett terminated at a distance of thirty-five feet from the entrance; and that gentleman stated that they have been found fifty feet in length.

From the burrow first opened by Mr. Bennett a living female was taken, and placed in a cask, with grass, mud, water, etc., and in this situation it soon became tranquil, and apparently reconciled to its confinement. On his return home to Sydney, Mr. Bennett determined to indulge it with a bath; and with this view, when he arrived in the vicinity of some ponds, he tied a long cord to its leg. "When placed on the bank, it soon found its way into the water, and traveled up the stream, apparently delighting in those places which most abounded in aquatic weeds. When diving in deep and clear water, its motions were distinctly seen; it sank speedily to the bottom, swam there for a short distance, and then rose again to the surface. It appeared, however, to prefer keeping close to the bank, occasionally thrusting its beak into the mud, from whence it evidently procured food, as, on raising the head, after withdrawing the beak, the mandibles were seen in lateral motion, as is usual when the animal masticates. The motions of the mandibles were similar to those of a duck under the same circumstances. After



THE DUCK-BILLED PLATYPUS.

feeding, it would lie sometimes on the grassy bank, and at others partly in and partly out of the water, combing and cleaning its coat with the claws of the hind feet. This process occupied a considerable time, and greatly improved its sleek and glossy appearance."

The ornithorhynchus is captured by the natives when in its burrow. They first examine the neighborhood of the burrow, to ascertain by the presence of recent footmarks on the soil, whether it is inhabited, and if the examination proves satisfactory, they proceed to dig holes with pieces of sticks from the surface of the

ground into the burrow, at distances from each other, until they discover its termination, when the Australians consider themselves exceedingly fortunate should they find the young, since they are regarded as a great delicacy.

The young have been found in their nests by Mr. Bennett about one inch and seven-eighths in length, in the early part of December, and near the end of the same month he found young water moles of ten inches in length. These latter were kept alive for nearly five weeks, and their habits whilst in captivity are described in detail in his paper, which is illustrated by some admirable figures, showing their various attitudes, etc. The young were allowed to run about the room; but an old ornithorhynchus in the possession of our author was so restless, and damaged the walls of the room so much by her attempts at burrowing, that it was found necessary to confine her to the box. "During the day she would remain quiet, huddled up with her young ones; but at night she became very restless, and eager to escape. The little ones were as frolicsome as puppies, and apparently as fond of play; and many of their actions were not a little ludicrous. During the day they seemed to prefer a dark corner for repose, and generally resorted to the spot to which they had been accustomed, although they would change it on a sudden, apparently from mere caprice. They did not appear to like deep water, but enjoyed exceedingly a bath in shallow water, with a turf of grass placed in one corner of the pan; they seldom remained longer than ten or fifteen minutes in the water at one time. Though apparently nocturnal, or at least preferring the cool and dusky evening to the glare and heat of noon, their movements in this respect were so irregular as to furnish no grounds for a definite conclusion. They slept much; and it frequently happened that one slept whilst the other was running about; and this occurred at almost all periods of the day. They climbed with great readiness to the summit of a bookcase, and thus, by means of their strong cutaneous muscles and of their claws, mounting with much expedition to the top. Their food consisted of bread soaked in water, chopped eggs, and meat minced very small, and they did not seem to prefer milk to water."

Mr. Foulerton states that the natives are seldom successful in catching the water moles alive, although in some places in the rivers and creeks of New England they are so numerous that from fifteen to eighteen have been shot in an afternoon. In the dark, rocky, shady rivers they may be seen at any time of the day, but in more open places seldom before sunset. He failed to see any young ones, and believes that they keep them concealed until near their maturity. They are very active in the water, and are more frequently under than above the surface. He never saw one leave the water, and states that they made poor progress on land. As a rule they are to be found in good fellowship with the Australian water rat.

The young water moles are naked, and have a short beak with fleshy and smooth edges, and this conformation enables them to seize the space on the

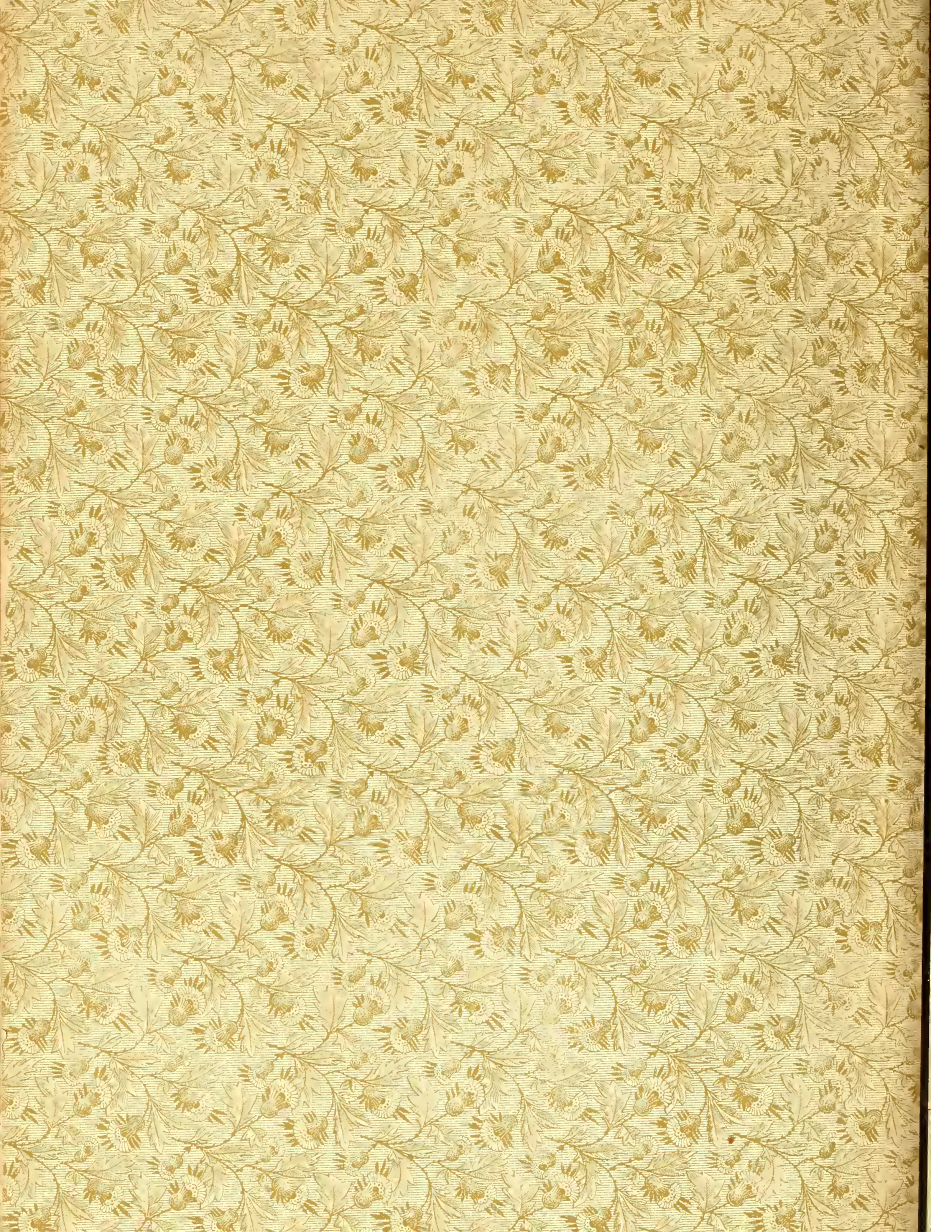
mother whence the milk comes, for there are no nipples. Their tongue is large and assists in the suckling also.

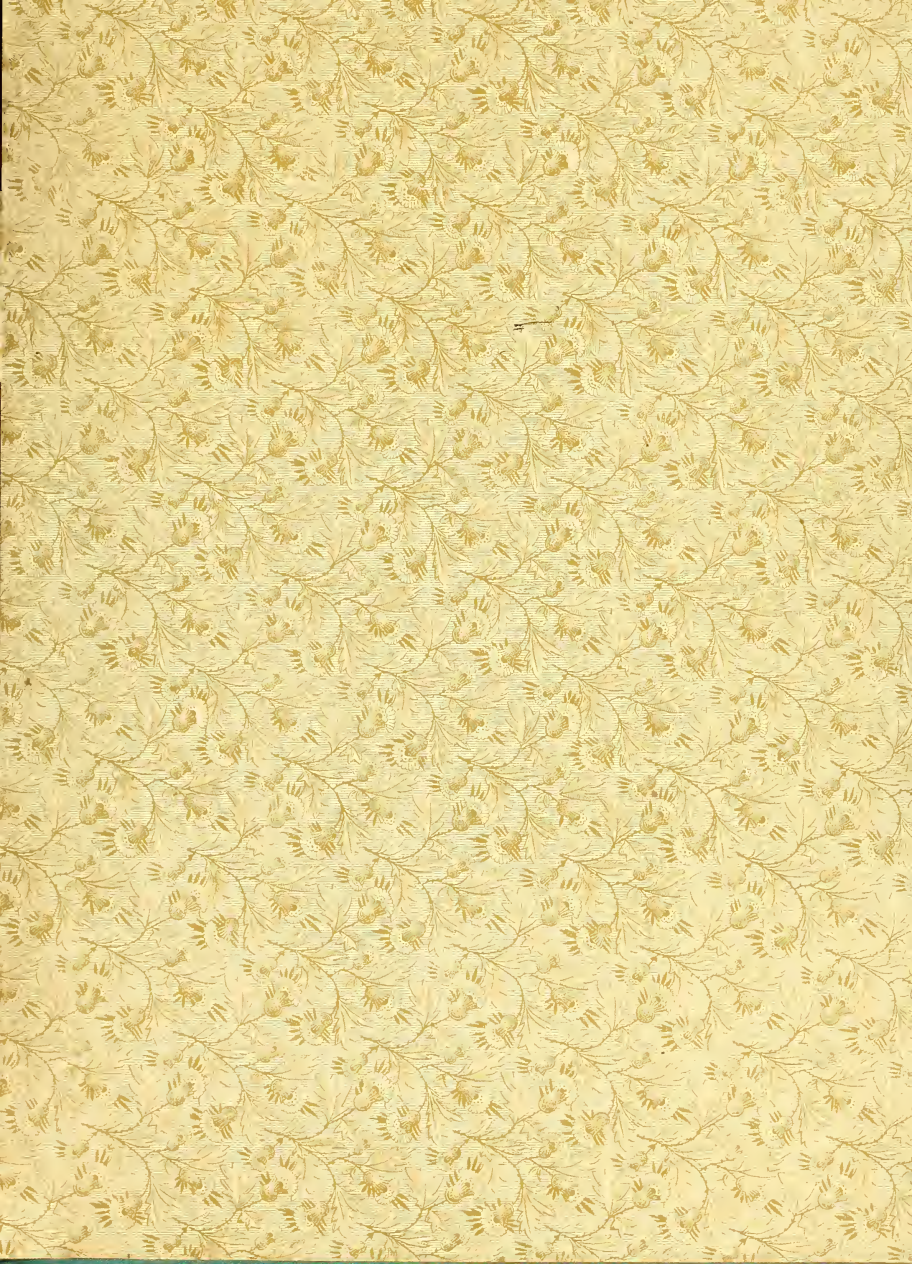
The most curious feature in the ornithorhynchus is the snout in the form of a beak. This is flat and broadest in front, where it is rounded. It is hard, and is covered with a skin full of pores, and on either side this skin overlaps the sides to form a kind of fringe or flexible cheek, and this free membrane is carried round the front. Where this skin comes to the head, it forms a wide fold, which flaps over the front of the head and throat, and is a capital protection when the creature is grubbing in the wet banks or burrowing, and evidently protects the face and the eyes from injury. The nostrils are close to the extremity of the snout. In the lower jaw, or part of the beak-like snout, there are some ridges, which mark it crosswise from the mouth to the outside, and corresponding structures may be noticed in a duck, their use being to provide grooves or spaces through which water may pour out of the mouth when the creature is feeding on soft mud and wet substances. Inside the mouth there is a pouch in the cheek, one on either side, and this is to retain food. It has four teeth in the upper and four in the lower jaw, but they are horny and made up of tubes; the front ones are long and narrow, and the others are oblong and oval in form, with a hollow crown. Moreover, the tongue, as in some reptiles, has horny teeth on it. The eyes of the creature are small and brown, and are situated close to the beak, and they look upward. The ear is hidden by the fur, but it is none the less sharp of hearing. As may be gleaned from the notice of its habits, the animal has great power of swimming but not much of running, although the limbs are short. The fore feet have five toes, nearly equal in length, the first being rather the shortest, and all have solid and rounded claws. The toes are webbed, and the fold of skin even extends in front of the claws when swimming is going on, but is folded back in digging. In the hind feet the web does not extend farther than the base of the claws, and there is a spur on the heel, which is movable and sharp. It is found on the adult males in perfection, and it may be useful as well as ornamental. On carefully examining the under and lower part of the body, the milk or mammary glands are to be seen, and there is no proper nipple; but when suckling, the swelling of the gland produces an eminence, which can be grasped by the wide, open, and soft beak of the young. It was, of course, thought at first that this very bird-like creature laid eggs, but it does not. The young are brought forth living.











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