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A
NATURAL HISTORY
OF
BEASTS, BIRDS, AND FISHES.





A
NATURAL HISTORY
OF
BEASTS, BIRDS, & FISHES:
OR
STORIES OF ANIMATED NATURE.

By JAMES AIKMAN, Esq.

AUTHOR OF "THE HISTORY OF SCOTLAND," "MORAVIANS IN GREENLAND," &c.

One hundred Engravings.

THOMAS NELSON, EDINBURGH;
AND XXIX PATERNOSTER ROW,
LONDON.

MDCCLXVII.



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A
NATURAL HISTORY
OF
BEASTS, BIRDS, & FISHES.

MAMMALIA.

MAMMALIA, from *mamma*, breasts or teats, is that grand department of the Animal Kingdom comprising all those that give suck to their young, and is now arranged into four general divisions,—The Bimana, two-handed; Quadrumana, four-handed; Quadrupedes, four-footed; and Cetacea, the whale tribe. At the head of these stands the BIMANA. This order includes but one *genus*, and that *genus* but one *species*—MAN,—alone capable of knowing, adoring, serving, and enjoying his Maker—alone created for eternity!

“When this great globe itself shall be dissolved,
And, like the baseless fabric of a vision,
Leave not a wreck behind,”

HE shall remain imperishable amid the ruin. But his immortal destinies are too awfully solemn to be slightly intermingled with his natural history; because, although it be always dangerous for such frail beings to forget them, it would be impertinent to discuss or dilate upon them in a work like this.

Man is formed for an erect position, to lift his front to heaven,—a position admirably adapted to permit the free use of his two arms, to which hands are affixed, of exquisite structure, as instruments that, directed by his mental powers, give him a superiority over all the other inhabitants of the earth, and, connected with the capacity of communicating his ideas to his fellows by the variations of sound, for which his organ of voice is consummately formed, place him at an immeasurable distance above them. His constitution also adapts itself to every climate, and he is found the same superior being wherever he exists. Yet man is in himself a defenceless, helpless creature. No other animal is so destitute of instinct, no other remains so long in a state of infantile weakness: his powers begin but to develop when his reason and observation begin to act, and that only after years of maternal care. Without any natural instruments of aggression or defence,—having neither the strength of the lion, the claws of the tiger, nor the fleetness of the hind—having neither hair nor feathers to shield him from the inclemency of the seasons,—his very wants force him to social combination, and to seek in united ingenuity what nature has denied to insulated exertion. Having the exclusive use of fire, when he has brought from the bowels of the earth instruments of iron, he becomes the lord, if not the tyrant of the creation.

His brain is larger than that of any other animal, and his external sensations, when exercised, are more delicate and acute, as is demonstrated by the peculiar niceness of the senses of seeing, smelling, and hearing, in the native Americans, and that of touch in all the race. The head of man is supported by a column consisting of thirty-two vertebrae, and each jaw is furnished with sixteen teeth: in the middle,

four cutting incisors, two canines at the corners, sharp and pointed, and five molares or grinders. His food consists of animal and vegetable productions of almost every description, but in general they must be dressed before they are used.

Like all other animals, perhaps even in a greater degree, man is affected by climate, food, and the nature of his occupations; and though varying in every difference of size and shade of colour, yet all are so similar as to indicate their common origin from one primitive stock, whether they inhabit the aboriginal forests of richer soils, or roam the treeless wastes of the frozen regions. But the grand distinction, even in the external appearance of man, is where civilization has introduced agriculture to multiply the fruits of the earth, and the arts and sciences have improved with the facilities of procuring subsistence. On these subjects, however, our limits forbid us to enlarge. We therefore pass to the *QUADRUMANA*.

QUADRUMANOUS ANIMALS.

SECT. I. — SIMIÆ, or Apes.

AMONG the inferior animals, Monkeys naturally claim to be placed first in order, from their similarity in form to the human race: that they belong to the same species, however, is a supposition that hardly requires refutation, though it has been advanced by some writers of high name, who, forgetting that God made man in his own likeness, and breathed into his nostrils a rational and an immortal soul, would degrade him in the ranks of creation, and place him only foremost among the beasts. The human countenance alone, that expressive index of the mind, would distinguish its owner from the lower forms of life; and if to this we add the power of speech, it will almost be needless to seek for farther proof in the anatomical structure of the brute, though this also has been amply given by those who have dissected the orang-outang, the chief of that tribe which approximates most nearly in appearance to man, yet which differs most widely from him in physical organization, particularly in that of the lower extremity, which, both in the shape of the bones and in the muscles attached to them, points out that the upright position which distinguishes man is not that which is natural to the monkey.

This family has been divided by the older naturalists into four classes,—The Apes, which have no tails; the Baboons, which have short tails; the Monkeys, which have long tails; and the Sapajous, which have prehensile tails. Modern zoologists have denominated the whole Quadrumanous, or four-handed, from the capacity of grasping any object firmly either with fore or hind limbs. Cunning, inquisitiveness, and a strong propensity to imitate, are the most marked



OURANG OUTANG.



BABOON.

B



features in their character; but these some of the species possess in so high a degree as nearly to resemble a reasoning faculty. They are almost all gregarious, and are chiefly natives of the immeasurable forests under the tropics, except the few which inhabit the neighbourhood of the Cape of Good Hope, Barbary, and the precipices about Gibraltar. Their food is almost entirely vegetable, though they have no objections to insects, wild honey, eggs, or occasionally the young of birds. They are also said to delight in crabs and oysters; and when they find the latter open, they insert a stone to prevent the shells closing until they extract the fish.

The ORANGS* have been divided into three genera,—
I. The TROGLODYTES, of which only one species is known, the BLACK ORANG-OUTANG, *T. niger*, called also the CHIMPANZEE. It is a native of Africa, found on the eastern coast, particularly in Angola and Congo. It reaches the height of five or six feet, and attains to a considerable age. In bands, it is a formidable antagonist to the elephant, the lion and other beasts of prey, which it fears not to attack with clubs and stones. Solitary human individuals cannot with safety travel through woods haunted by this animal; and instances are related of negro girls being carried off by these creatures, who have sometimes escaped to human society, after having been for years detained by them in a frightful captivity.

Mr. May, a captain in the Dutch naval service, stationed at Surinam, brought a specimen thither from Guinea, nearly five feet and a half high, and very strong and powerful. Mr. May had seen him take up his master, a stout man, by the middle, and in sport fling him from him a pace or two; and one day he seized a soldier who happened to pass carelessly near the tree to which he was chained, and if his

* *Orang* is a Malay word, signifying a reasonable being, which is applied to man. *Outang*, in the same language, signifies wild; hence Orang-outang, a wild man.

master had not been present, he would actually have carried the man into the tree. When General Dundas was governor at the Cape of Good Hope, there was an orang-outang kept in the family, so tame that he was allowed to go free, and would follow the servants in their walks. On one occasion, when the General's lady was taking an airing, accompanied by her nursery-maid with an infant, the creature suddenly snatched the child from the girl, and, to the terror of the mother, carried her baby to the top of a very high tree, where, after fondling him for some time, he descended of his own accord cautiously with him, and delivered him safely up to his keeper; but whether this was the African or the Asiatic Orang my informant could not say. About thirty years ago, the Duke of Buccleuch kept one of these animals at Dalkeith Palace, but he grew so mischievous that it became necessary to put him to death.

The most accurate account we have of any one of this species, is, of a young female, brought by Captain Payne from the Isle of Paras, in the gulf of Guinea, and afterwards shown in Liverpool. "When first our animal came on board," says the Captain, "it shook hands with some of the sailors, but refused its hands with marks of anger to others, without any apparent cause. It speedily, however, became familiar with the crew, except one boy, to whom it never was reconciled. When the seamen's mess was brought on deck, it was a constant attendant, would go round and embrace each person, while it uttered loud yells, and then seat itself among them to share the repast. When angry, it would sometimes make a barking noise like a dog; at other times it would cry like a pettish child. In the colder latitudes, it would roll itself carefully up in a blanket when it retired to rest. It generally walked upon all-fours, but never placed the palm of the hands of its fore extremities to the ground; it closed its fists, and rested on the knuckles; nor did it seem fond of the erect position, though it could run nimbly on two feet for a short

distance. It learned to feed itself with a spoon, and to drink out of a glass. It once stole a hottle of wine, which it uncorked with its teeth and began to drink. It showed a predilection for coffee, and was immoderately fond of sweet articles of food. It was attracted by bright metals, seemed to take a pride in clothing, and often put a cocked hat on its head. It was dirty in its habits, and appeared timid. The height of this animal was about thirty inches: it was thinly covered with fine black hair on the front, but considerably more hairy behind; the face was whitish, with only a few hairs on the lips; the nose was quite flat, and the nostrils open upwards; the projection of the jaws excessive; the mouth wide; the arms descended below the knees three inches; the hand differed from the human, in having the thumb by far the smallest of the fingers, but so strong were the other four, that it would swing by them on a rope for an hour at a time; the thumb of the foot was very long and powerful; the calves of the legs continued of equal thickness to the heel."

II. PITHECUS. — The RED OR ASIATIC ORANG-OUTANG, *P. satyrus*, called also JOCKO and PONGO. It is of gigantic size, and inhabits the forests of the islands of Borneo, Sumatra, and the peninsula of Malacca. The hair is of a brownish-red colour. Like the former, he is incapable of walking in a perfectly erect posture; his progressive motion on a flat surface is accomplished by placing his bent fists upon the ground, and drawing his body between his arms, like a person decrepit in the legs walking on stilts. In a state of nature, he seldom moves along the ground, but bounds from tree to tree, or branch to branch, with a facility for which the whole external configuration of his body is peculiarly adapted. A young specimen of this animal was procured by Captain Methuen at Borneo, and brought to England. During the voyage, he would climb the rigging, and swing himself from rope to rope, if chased, with an adroitness which baffled all pursuit. He commonly slept at

the mast-head, wrapped in a sail; and if they all happened to be set, would steal one of the sailor's jackets or shirts if hung out to dry, or empty some hammock of its blankets. He suffered much from a low temperature, especially in the morning, when he would descend from the mast shuddering with cold, and running up to any of his friends, climb into their arms, and clasping them closely, derive warmth from their persons. His diet was of no definite kind: he ate readily of all kinds, especially raw meat; was very fond of bread, but always preferred fruits when he could get them. His drink was as diversified as his food; and he exemplified his liking to ardent spirits by stealing the captain's brandy bottle. He soon became strongly attached to those who used him kindly. The boatswain, who shared his meals with him, was his chief favourite, although he sometimes purloined the grog and hiscuit of his benefactor. From him he learned to eat with a spoon; and might often be seen sitting at the cabin door enjoying his coffee, with a grotesque and sober air, that seemed a caricature upon human nature. He was gentle in common, but when excited became exceedingly violent; and once or twice, on being repeatedly refused an orange, he burlesqued an attempt at suicide, by suddenly rising up and throwing himself over the side of the ship; but when, from his sudden disappearance, all thought he had perished in the ocean, after a while he was found snugly concealed under the chains. He took little notice of some small monkeys which were on board, whilst under observation; but once, when he thought himself unnoticed, he slyly attempted to throw a small cage containing three of them overboard. Yet sometimes he would condescend to mix in their gambols. A full-grown animal, upwards of seven feet in height, was shot on the north-west coast of Sumatra by a party of English sailors, and its remains were deposited in the Asiatic Society's museum, of which Dr Abel has given a measurement, which fully confirms its gigantic stature.

III. HYLOBATES, or LONG-ARMED APE, called also the GIBBON.—They are natives of India and her islands: are marked by very long arms, reaching to the ground when the animal is placed in an erect position. Their height scarcely exceeds four feet, and they are mild in their dispositions. This genus contains several species, the principal of which are,—The HOOLOCK, *Simia Hoolock*, which inhabits the Garrow Hills, near Goalpara.* The hair is a deep chocolate brown, and the face is surrounded with a pale circle, most distinct on the forehead. They walk erect; and when placed upon a floor or in an open field, balance themselves very prettily by raising their hands over their heads, and slightly bending their arm at the wrist and elbow, and then run tolerably fast, rocking from side to side. If urged to greater speed, they let fall their hands to the ground, and assist themselves forward, rather jumping than running; and should they reach a grove of trees, they then swing with such astonishing rapidity from tree to tree, and from branch to branch, that they are soon lost in the jungle or forest. An individual of this species which belonged to Dr. Harlan, became so tame in a month, that he would take hold of the Doctor's hand and walk with him; would come at his call, seat himself on a chair by his side, and help himself to an egg or the wing of a chicken from his plate, without endangering any of the table furniture. He would lie down and allow the Doctor to comb his head and brush the long hair on his arms, and seemed delighted with the tickling sensation it produced; and when he attempted to go away, would catch hold of his arm or coat-tail, and pull him back again, to renew the little attentions he daily bestowed on him. They live to the age of twenty-five or thirty years.

* Goalpara is situated on the Burrampooter River, in Assam. This district of country was formerly attached to the Burmese empire, but at present is in possession of the East India Company, and constitutes the north-eastern limits of their territory in this quarter.

The SIAMANG, *H. syndactyla*, was discovered by Sir Stamford Raffles in Sumatra. It is about three feet in height, and is entirely of a jet black colour. The mouth is large, extending from cheek to cheek; the throat is very broad, and has a swollen appearance, from the large guttural sac, which appears inflated when the animal cries; the feet have the first and second toes united as far as the middle of the second phalax. At daybreak and twilight they assemble in numerous troops, and make the forests resound with their howling; but during the day, they remain silent and inactive. In their general habits, they are sluggish, inactive, and cowardly, except in the case of a mother, who will rather be taken than leave her wounded young, to which she is particularly attentive. They have been seen to carry their little ones to the banks of a stream and wash them, notwithstanding their cries, and wipe and dry them in the most careful manner.

The ACTIVE GIBBON, or the Wow-wow, *H. agilis*, inhabits the forests of Sumatra. The face is naked, and of a bluish-black; the body of a clear chocolate colour, except the lower part of the back and the fore part of the thighs, which are of a yellowish-brown; height, generally about two feet seven or eight inches. They are possessed of surprising agility, and will throw themselves from one tree to another to a distance of forty feet, with a rapidity which defies pursuit. From the long-armed, we pass to

The BARBARY APE, or the MAGOT, *Simia inuus*, Linn., remarkable as being the only quadrumanous animal found in the European Continent. It is distributed over Barbary, Egypt, and the southern districts of Spain, but its most noted residence is the precipitous sides of the rock of Gibraltar, where it has become extremely numerous. On the upper part of the body and outsides of the limbs, it is of a light yellowish-brown; the under parts are dullish yellow-white; the face, ears, hands, and callosities, are flesh-coloured; the fingers are moderately long, the ears

small, and the muzzle prominent, broad, and flat. In captivity, it is, in youth, lively, intelligent, and good-natured, and has the misfortune, on this account, to be selected to follow the strolling hands in our country; but these qualities wear off with age or ill usage, and in the end it becomes sullen, malicious, and often dangerous.

The BLACK APE, *Macacus niger*, another tail-less species, which connects the Apes with the Baboons, is a native of the Indian Archipelago. Its face is broad, rather prominent, slightly narrowing at the muzzle, and abruptly truncate, with the nostrils placed obliquely on the upper surface; has large cheek-pouches. The expression of its physiognomy is peculiarly cunning. The specimen in the menagerie of the Zoological Gardens "seems," says Mr Bennett, "to be rather violent in its temper, and tyrannizes not a little over the quiet grey gibbon, which is at present confined in the same cage."

The BABOON Genus, or *Cynocephalus*, are natives of the warmer parts of Africa and India. They have been divided by modern naturalists into two classes: one with a considerable length of tail, the other where the tail is a mere tubercle. They are all of a large size, and combine fierceness with activity, and strength with intelligence; susceptible of instruction when young, but obstinate and intractable as they advance in years. Their general characters are,—pouch on each side of the cheeks; callosities behind naked and red; snout like a dog; ears naked; body and limbs strong, thick, and short; from three to four feet high, and walks oftener on all-fours than upright; yet still arboreal in their habits, possessing all the power of grasping and swinging which belongs to the monkey tribe. We select a specimen of each.

The CHACMA, *Papio sylvanus*, from the neighbourhood of the Cape of Good Hope. His colour is greenish or greyish-black, and the neck is clothed with long hair in the

form of a mane. An animal of this kind, kept in the Jardin du Roi at Paris, having made his escape, his keeper threatened him with a stick, which so enraged the creature, that he flew at him and wounded him severely; nor could he be prevailed upon to return to his cage, till the keeper's daughter, who often fed him, and was a great favourite, placed herself at a door opposite that of the cage through which he had to pass, and a stranger appearing to caress her, the animal sprung forward in rage, when he was caught in the snare and secured.

The **RIB-NOSE BABOON**, or **MANDRILL**, *P. mormon*, is a native of the Gold and Guinea Coast, Africa, and is the fiercest and most powerful of his race. He is equally remarkable for his variety of tint and singularity of appearance. The elongated muzzle is ridged, of a brilliant blue colour; the nose and lips of a bright red; his eyes small, vivid, and near each other; the fur of the body is yellowish-olive, tinged with grey above, but white beneath. When standing upright, the mandrill is from three feet and a half to five feet high; has no tail, but only a tubercle. His voice bears some resemblance to the roaring of a lion. His food is chiefly vegetables, though, in confinement, he has been known to eat animal food when cooked, and to discuss with great glee a goblet of gin and water. He seemed also to relish a pipe of tobacco when presented lighted, with the smoke of which he first inflated his large cheek pouches, and then sent it forth in a cloud from mouth, nose, and even the ears.

The **DRILL**, *P. leucophæus*, is similar to the former, and has sometimes been confounded with it; but it wants the furrowed muzzle and bright colouring which distinguishes the mandrill.—The **LION-TAILED BABOON**, or **WANDEROO MONKEY**, is rather less than the former, and has a tail from seven to eight inches long, ending with a tuft. Its distinguishing mark is a long white head of hair, a black face, and great white beard reaching from ear to ear, more cou-

spicuous from the fur of the body being black or dark grey. They are less mischievous and more easily tamed than the others. The woods of Ceylon are their chief resort.

The COMMON, or LONG-TAILED MONKEYS, *Guenons*.—These are the most numerous, as well as the most agreeable of the monkey tribes. Among them will be found a great variety of size and shape, with furs of the brightest hue, and forms of the most airy motion. With dispositions mild and affectionate, they are playful yet mischievous; but their tricks are more amusing than malevolent. They are easily tamed, and, when young, are susceptible of being trained to perform a variety of entertaining feats. They are gregarious in their wild state, associating in large companies, and lodging in the trees, where they greedily prey upon the small birds or their eggs; but their chief food is fruits, the buds of trees, or succulent roots or plants. They are particularly fond of the palm-tree and the sugar-cane.

“Destructive on the upland sugar-groves
The monkey nation preys. From rocky heights
In silent parties they descend by night,
And posting watchful sentinels to warn
From hostile steps’ approach, with gambols they
Pour o’er the cane-grove.” GRAINGER.

These are ranged in two grand geographical divisions,—the Monkeys of the Old and of the New World. The first have been classed in two sections:

I. *Semnopithec*i—distinguished by flatness of face, small cheek-pouches, length of body, and slenderness of the extremities, great length of tail, and little bare space upon the hips,—including the SIMPAL, *S. melalophos*, a native of Java and Sumatra. It has a blue face, with a black band of long hairs in the form of a tuft or crest on the forehead; the hair on the upper parts is clear nut-brown; beneath, and in the inside of the limbs tawny and white. The length

of the adult animal, to the insertion of the tail, is about one foot six inches; the tail two or three feet. Little is known of its habits.—The ENTELLUS MONKEY, *S. entellus*, found generally in the Indian Archipelago, and some parts of the Continent. Its colour is ashy-grey on the upper parts, yellowish-white beneath; the face is black, with somewhat of a yellowish tinge, and the eyebrows are surmounted by a line of long stiff black hairs; the chin is margined by a beard of greyish-white. Height, upwards of two feet; the tail, usually curled up in a single coil, measures about three. In disposition, they are playful when young; as they advance to maturity they become suspicious, mischievous, and even dangerous, though generally calm and circumspect in their motions. Somewhat similar is the NEGRO MONKEY, or BUDENG, *S. Maurus*, also a native of Java and Sumatra. Its covering is intensely black on every part, except the breast, belly, inner side of the extremities, and root of the tail, which are grey; the orbits of the eyes are rather prominent; the nose is angular, and considerably elevated, the nostrils are large; the lips are thin and small, and the chin short; the trunk is of great length, broad about the shoulders, smaller towards the loins; the tail is as long as body and head taken together, and is terminated by a kind of tuft. It generally associates in troops of more than fifty, which are most prudently reconnoitred at a respectful distance, as the branches of the trees on which they delight to sport are not unfrequently detached and precipitated on the spectators. They are often chased by the natives for their fur, which, covered with long silky hairs, is manufactured into riding equipages and military decorations. Another Javanese monkey, the LUTUNG, is a red species, and, on account of its comparative beauty, is a great favourite among the natives, who treat it with great kindness, and domesticate it, and associate it with the horse. In every stable, from that of a prince to that of a manty or chief of a village, one of these animals is found.

II. This division contains the genera *Cercopithecus* and *Cercocebus*. The first genus is marked by the rounded heads, short muzzles, flat noses, and long posterior extremities, cheek pouches and callosities; of which the VARIED MONKEY, *C. mona*,* affords a beautiful specimen. Its native country is said to be Barbary and the North of Africa. The upper part of the body is a deep chesnut-brown, the under surface and inside of the limbs of a pure and delicate white; above the eyebrows is a transverse black band, reaching from ear to ear; on the sides of the face are large bushy whiskers of a straw colour; the ears, hands, and chin are of a livid fleshy hue; the tail has a slate tinge, with a remarkable white spot on each side of the base. Its mildness and sagacity, according to M. Cuvier, equal its beauty; nor does age alter these traits of its character. It is playful and gentle, but remarkably cunning withal. It will open a chest or drawer by turning the key in the lock, untie knots, undo the rings of a chain, and search one's pockets with a delicacy of touch which cannot be felt, and a stranger seldom escapes without being rifled. Mr. Bennett, however, says that the specimen in the menagerie of the Zoological Society by no means merited so good a character, but appeared occasionally as capricious and savage as any of the tribe.—The DIANA MONKEY, *C. Diana*, so named by Linnaeus from the crescent-shaped line of long white hairs surmounting a less obvious one of black which runs across the forehead, and which he fancifully imagined bore some resemblance to the poetical emblem of the Virgin Huntress. It is a native of Congo in Africa; about eighteen inches in length, and a tail of about two feet. Its general colour is a mixture of black and white, in which the former greatly

* The name of *Mona* appears to be of Arabian origin, and is indiscriminately applied, under various modifications, by the Moors of northern Africa, to all the long-tailed monkeys without exception. From the language of the Moors it has passed into those of Spain and Portugal, in both of which it has precisely the same signification.

predominates, giving to the whole surface a slightly grizzled appearance. The face is triangular, and the ears intensely black; the sides of the face are ornamented with broad tufts of white hair, which terminate on the chin in a thin flat beard, two or three inches in length. It has small but distinct callosities, and small cheek-pouches. It is one of the most graceful and good-tempered of the tribe; but, like the others, more compliant in youth than afterwards.—The RED MONKEY, or PATAS, *C. ruber*, is a native of Senegal; about sixteen inches in length, with a tail nearly equal. The upper surface of the head, which is flat, with the back and outer sides of the limbs, is of a bright red; the face is of a flesh colour, and the ears blackish; the under surface of the body and inner sides of the limbs are light grey. The specimen in the Zoological Menagerie is lively and active, but somewhat irascible if handled. When pleased, it dances on all-fours in a peculiar and measured step, which is far from being ungraceful, although after a time it becomes ludicrous from its regular monotony.

There are, besides, the GOLDEN MONKEY, *C. auratus*, so called from the golden yellow of its upper surface, a native of India and Molucca.—The PURPLE-FACED BEARDED MONKEY, *C. latibarbus*, a native of Guinea, whose fur is of a greenish, and sometimes a reddish-brown.—The BONNETTED MONKEY, *C. pileatus*, so named from a tuft of long hairs that adorns its forehead: country unknown.—The WHITE-NOSED MONKEY, *C. nictitans*, from a white patch which occupies the extremity of that member: its colour is black, sprinkled with greenish-grey.—And the LESSER WHITE-NOSED MONKEY, *C. petaurista*, from ten to twelve inches, tail about eighteen. Both these are inhabitants of the Guinea Coast, and distinguished alike by the singular white spot; but the nose of the former is prominent, and of the latter flat. The hair above is brownish, below grey. It is active, but does not easily become familiar. The specimen in the Zoological Menagerie appeared to be particularly

anxious to conceal its face, crying out and kicking whenever it was attempted to be inspected.

The second genus, *Cercocebus*, has a more lengthened muzzle, larger cheek-pouches and callosities, and the tail longer than the body.—The first is the GREEN MONKEY, *C. sabæus*, placed, however, by Mr. Bennett among the *Cercopithecæ*. It is one of the most abundant of the group, and is found in the Cape de Verd islands, the Continent of Africa, and the Mauritius. Above, the colour is greenish-yellow; the neck and chest are white; the under parts of the body have a yellowish tinge, and the inside of the limbs is grey; the face, ears, and hands are jet black; the length of the head and body are eighteen inches, the tail somewhat more. They are frequently seen in a state of captivity. It is active and tricky, but captious and malicious in disposition.—The WHITE-EYELID MONKEY, or MANGABEY, *C. fuliginosus*, appropriately named from the dead white hue of the eyelids, is supposed to belong to the west coast of Africa. The whole upper surface of the body and outsides of the limbs are of one uniform sooty-black, the under surface and inside of the limbs light grey; the face is livid, and the tail thick and cylindrical. It is generally good-tempered, and cleanly in its habits; remarkably active, and excels in the variety of attitude and ludicrous grimace, which it exhibits, says Mr. Bennett of his specimen, “with laudable perseverance and unwearied zeal.”—The COLLARED WHITE-EYELID MONKEY, *C. æthiops*, is found on the east coast of Africa and in Ethiopia. It differs from the former principally in the deep chesnut-brown of the upper part of the head, and in having a collar of the purest white, which surrounds the neck. In its manner, it is more quiet, and less disposed to make faces. There are reckoned in both the above genera several other species, but the differences, referring chiefly to trifling variations, are not of much importance.

Only two singular animals of this tribe, but of uncertain

classes, remain to be noticed. The PROBOSCIS MONKEY, or KAHAU, *Nasalis larvatus*, a native of Borneo; about three feet high when erect: remarkable for its extraordinary length of nose, its thick body, and protuberance of belly. The arms and tail are long. It has a large guttural sac, cheek-pouches, and naked callosities. Its fur is reddish-brown, with light-coloured markings on the back. In disposition it is fierce and active. The COCHIN-CHINA MONKEY, or DOUC, *Simia nemæus*, Linn., a native of Cochin-China. In point of size it is as large as the baboon, but has a long tail and flat face like the monkey. The colours of its fur are brilliant and varied; a frontal band and the lower limbs are of a deep chesnut, and the fore-arms of a light flesh colour; the fingers of both extremities black. It has no callosities, and has been considered as forming the shade between the monkeys of the Old World and those of the New—a few of the most remarkable of which we shall now notice.

The MONKEYS OF THE NEW WORLD are very numerous, nor have they yet been all fully known to the naturalists of either America or Europe. They differ from the monkeys of the Old World in being smaller, and in general more gentle and timid; in having no cheek-pouches, and no callosities; in their dentition, having thirty-six teeth instead of thirty-two; in the structure of the larynx, which is ventricose, and appears outside as a swelling; and in several of them having prehensile or grasping tails, which supply the want of thumbs, and are used as a fifth hand.—The HOWLERS, *Mycetes*, the largest of the tribe, and the fiercest, which have been compared to our baboons, are found throughout almost the whole Southern Continent. They derive their name from the mournful sounds they send forth, especially before a storm. Their eye, voice, and gait denote melancholy.—The ARAGUATO, *M. ursinus*, named from its resemblance to a young bear, is about three feet long, exclusive of the tail. The fur is wholly of a reddish-brown; the face bluish-black; it is covered with

hair on every part, has a respectable beard, and a thick tail. They feed on fruits: are numerous and social. Humboldt counted above forty on one tree, and computed that a square league in the wilderness might contain about two thousand. He heard their doleful wailings at the distance of half a league.—Of the same genus are the RED HOWLER, or *Mono Colorado*, and the BLACK HOWLER, or *Caraya*,—distinguished the one by the bright red, the other by the shining black of their skins; besides some other species indicated by variety of colour. Their tails are all prehensile, and naked at the extremity on the under side. The remainder of the monkey family, which has received great additions from late travellers, especially Humboldt and Bonpland, have been distributed by F. Cuvier, Geoffrey St. Hilaire, and other French zoologists, into numerous genera, with a great multiplicity of species. As this arrangement does not yet appear finally completed, I shall content myself with the old division into Sapajous, those of a lesser size, who have prehensile tails; and Sagoins, those which are without; giving a few of the most remarkable specimens of each.

SAPAJOUS.—The COAITA, *Simia paniscus*, Linn. are met with in Guiana and Brazil. The fore-paws want the thumb. It is about eighteen inches in length, head and body together. It is covered with long black silky hair on the body; has a long prehensile tail, with which it regulates its movements, always attaching itself by it to some branch or other projection for support, till it gets its feet fairly fixed, when it throws itself forward to another to aid its progression. It is of an affectionate but sluggish disposition.—The MARIMONDA inhabits the banks of the Oroonoko. The hair is long and shining, of a black colour on the upper part of the body, the under parts yellowish-white or red; it forms a curious tuft on the head. Its tail is perhaps the most perfect of the prehensibles. The animal can introduce it readily into narrow fissures, and thence abstract

insects or any small object: the natives assert that it also fishes with it. They assemble in the forests in vast numbers; and when they are unable singly to leap from one tree to another on account of the distance, the whole group form a kind of chain, locking tail in tail or hand in hand, and one of them holding by the branch above, the rest swing down, halancing to and fro like a pendulum, until the undermost is able to catch the lower branch; when he is fixed, the uppermost monkey lets go, and becoming undermost in his turn, swings to the same tree, which they all take possession of without ever touching the ground. These two belong to the *Ateles* genus of the new nomenclature; the following to the *Cebus*, which have the forehands perfectly formed.

The WHITE-FACED SAPAJOU, or *C. albifrons* of Xerleben; grey on the upper, and whiter on the under parts of the body. In disposition it is mild and active. Humboldt met a tame one kept by an Indian, which amused itself every morning by catching a pig, on which it continued seated during the whole day; and another, in the house of a missionary, would often use similar freedom with a cat which had been reared along with it.—The HORNED SAPAJOU, *C. fatuellus*, one of the largest of the family, derives this appellation from the crescent form of the hair of the front, which has the appearance of two horns.—The SIAMIRI, (genus *Callithrix*), *Callithrix sciureus*, was considered as the link between the Sapajous and the Sagoins. This beautiful little creature, which is about seven to nine inches in length, having a tail about thirteen or fourteen, only semi-prehensile, aiding it to climb but not to hold firmly: on the upper part of the body is greenish-yellow, on the lower white, with the extremities red; the nails, with the exception of the thumb, are more properly claws. Stedman mentions, that he daily saw troops of these creatures passing along the sides of the river Surinam in regular order, the females with their young on their backs like small

knapsacks, and even thus encumbered would follow their leader, taking the most surprising leaps from tree to tree.

SAGOINS.—The DOUBROUCOULI, *Aotes trivirgatus*, Humb., a monkey of the Oronooko, about nine inches in length, with a tail about fourteen, bushy and soft; is greyish-white on the upper part of the body, with a stripe of brown on the ridge of the back, and reddish-yellow on the belly and inner part of the legs; the face, which is somewhat like a cat's, is marked with three dark longitudinal stripes on the forehead. Its habits are nocturnal, sleeping during the day, and restless during the night. Its favourite food is flies and insects, but is not averse to vegetables: it drinks little. Humboldt's specimen would sometimes pass twenty or thirty days without tasting a liquid. It is irritable and difficult to tame: it lives in pairs only.—The FOX-TAILED MONKEY includes several species, with tails like the last, bushy and soft.—The COUXIO, *Pithecia satanas*, found in the forests of Brazil: from the muzzle to the tip of the tail about two feet nine inches long. The hair is of a brownish-black colour above; the belly and breast are nearly hairless. Its nails are like claws, and its habits are nocturnal.—The STRIATED MONKEY, or OUISTITI, *Simia Jacchus*, Linn., about eight inches long, with a tail nearly a foot. The fur is of a deep olive-grey shade on the head and shoulders, lower part of the body and tail ringed with circles of a lighter hue; the face is flesh-coloured, and two spreading tufts of long whitish hair surmount the ears. One in confinement fed upon biscuit, fruits, vegetables, and insects; but being left at liberty, it darted upon a gold-fish in a crystal vase, which it seized and devoured. Afterwards, some eels being placed before it, he was startled when they twisted themselves round his neck, but he soon mastered and devoured them. A pair in France produced young, three at a birth. The female immediately ate the head of one; but the others beginning to suck, she

treated them with maternal affection. When tired with carrying them on her back, she would approach the male with a shrill cry, who instantly relieved her by placing them on his own.—The **MARIKINA**, or **SILKY TAMARIN**, *Simia rosalia*, known commonly by the name of the Lion Monkey, from a mane upon the neck, is about eight inches long, of a bright golden yellow, varying to a redder tinge. It is gentle in its manner, and mild in its temper, but extremely delicate. In their mode of living they are said to resemble squirrels, and never attempt to stand on their hinder extremities.—The last I shall notice is the **LEONCITO**, or **LEONINE TAMARIN**, *Midas leonina*, the smallest monkey known, inhabiting the plains which border the eastern slope of the Cordilleras. It is about seven inches in length, and its tail is of equal dimensions. Its fur is brownish-black, with a mane on the neck of the same colour, which it bristles up when angry, and thus appears like a little lion. It is playful in its disposition, but easily irritated.

SECT. II.—LEMURES,* or Nocturnals.

The **SLOW-PACED LEMUR**, or **LORIS**, *Loris tardigradus*, is widely spread through India and her islands, being found in Bengal, Ceylon, Penang, and Java. Its size is about that of a cat; its proportions are short and thickset; its head is flat, with large orbicular eyes, and pointed nose; the hinder limbs are considerably longer than the fore, and the tail is short. It is of a greyish-brown colour, darker round the eyes; the whole body is covered with fur, except the hands and the muzzle. "The habits of this singular animal," says Mr. Bennett of a specimen in the Zoological

* A word signifying Ghosts.

Gardens, " are perfectly nocturnal. It sleeps throughout the whole day, unless when disturbed, either rolled up on the floor of its cage, or more commonly suspended by its paws from the bars, with its body drawn together, and its head folded in upon the breast. Towards evening, it rouses itself by degrees, and remains watchful during the night. Its first care on awaking is to make itself clean, by licking its fur like a cat; and next, to satisfy its appetite. Its natural food appears to consist of a mixture of animal and vegetable substances. The latter, especially the sweeter fruits, and sopped bread sprinkled with sugar, have usually formed the principal part of its diet; but the smaller animals, whether mice, birds, or insects, appear to be more peculiarly acceptable. In its motions it is exceedingly slow. On the ground, they appear constrained and unnatural; but on a tree, or mounting the bars of its cage, it seems more at its ease, but still moves with cautious regularity. It is a timid and gentle animal, except when offended or hastily disturbed from its slumbers, when it will bite with considerable fierceness, especially in cold weather. It easily becomes familiar.

The RED LEMUR, *L. ruber*, one of the most beautiful and rarest of the species; distinguished from the former by the face being lengthened, the tail long and bushy, and all its limbs being nearly equal. The colour, as indicated by the name, is of a bright reddish-yellow on the upper parts of the body and all the outer sides of the limbs. A number of other species, denominated the true Lemurs, have been described by naturalists, but the distinctions are extremely insignificant, and do not appear to be well ascertained. These are all natives of Madagascar, and of one or two smaller islands in its neighbourhood; and are all similar in habits to the loris. They form the link between the *Quadrumanus* and the *Quadrupedes*.

QUADRUPEDS.

SECT. I. — CARNIVOROUS.

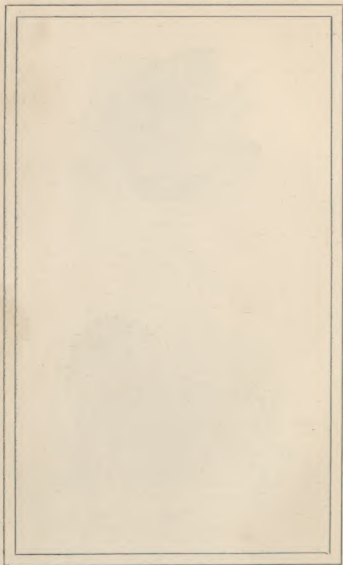
THE CATS, *Felis*, are the most formidable, fierce, and cunning of the Carnivorous Animals. With the exception of New Holland and the Polynesian isles, so far as we yet know, they are spread over every quarter of our globe; but the most terrible and ferocious are found in the tropical regions, or the burning deserts of Arabia and the sultry plains of Hindostan. Their natural habitations seem the recesses of the forest, though they are likewise found in the open waste, or in the neighbourhood of the human dwelling. Their food is living prey, generally sought in obscurity in the dusk or in the night; for procuring which the mechanism of their bodies is wonderfully adapted. Their head is large and round, and the pupil of the eye is often oblong, and capable of great dilatation in the dark; their upper lip has stout sensitive whiskers; their teeth, twenty-three in number, are keen and strong, formed for tearing and cutting rather than mastication; their tongue, rough as a file, aids the process: their whole muscular system is immensely powerful, particularly the fibres connected with the jaws, neck, and fore-limbs, a blow from which generally stuns the victim before it is torn; the fore-feet have five toes, the hindmost four, armed with sharp and hard claws, protected in a sheath when walking, or when not exerted to destroy. Yet with all these qualifications for open warfare, their usual mode of attack is by ambuscade: prowling in some covert near where the beasts usually pass, or lurking by some spring, river, or watering-place, for their approach to drink, it bounds upon them, when unsuspecting and off their guard, with an appalling roar, knocks them down,



LEMUR.



LION.



and bears them away to where they can be devoured without disturbance. If unsuccessful in their first spring, it has been said that they will not repeat the attack; and this has been attributed to cowardice. This is not altogether correct: in some cases they do repeat the attack, and where they do not, the real cause seems to be the exhaustion produced by the effort; they require a short repose till their muscles regain their elasticity.

At the head of this tribe stands the LION,* *F. leo*, of which there are reckoned three different species,—I. The AFRICAN LION. This animal, now driven from the coast, is scattered over the interior. He measures from seven to nine feet in length, with a tail about four, tufted at the point; the height at the shoulder from three to five; but when newly whelped, his size does not exceed that of a pup dog, and it requires four, or according to some writers, six years, till he attains his full stature. He lives to a great but uncertain age; one in the Tower reached upwards of seventy years. There are three varieties described: one of a deep yellowish-brown; the other of a lighter shade; and the Cape Lion, of which the mane is nearly black. The appearance of the lion, from which he has derived the title of King of the beasts, is majestic when at rest, but terrible when roused. He has a broad face, surrounded with long shaggy hair, and a flowing mane, increasing in length as his years advance, adorns his neck. If provoked, this bristles

* Some naturalists have proposed to place the Lion in a group (*Leones*) by themselves, which might perhaps be proper, as they have many features distinguishing them from the other Felinæ, with whom they are usually classed. Their habitations, too, are more in the plain, among the thick brushwood or the rushes by the river side. The banks of Jordan seem to have been at one time so much infested by them, that their flight at its periodical rise afforded the prophet Jeremiah a beautiful simile to illustrate the terror of the Babylonish monarch at the approach of Cyrus: "Behold, he shall come up like a lion from the swelling of Jordan unto the habitation of the strong; he shall flee from the victorious invaders to his city, as the lion from the overflowing waters to some place of safety."

up erect, his eyes gleam with fire, and his whole countenance becomes wildly expressive of rage; his deep roar is broken into short surly growls, his lips contracting discover his teeth, and his claws are protruded beyond their velvet covering. When pressed by hunger, he attacks furiously whatever animal crosses his path, and even breaks into the settlements and seizes the cattle. His prey is generally thrown upon the shoulder, and carried thus to some sequestered spot. A late traveller in South Africa (Thompson) saw a very young lion bear away a horse a mile from the place where he had killed him; and another having fled with a heifer two years old, was pursued fully five hours by a party on horseback, and throughout the whole distance the heifer was only once or twice discovered to have touched the ground. If he meet men and animals together, it is generally the latter he pitches upon. His common prey is the deer and antelope, the zebra, quagga, and occasionally the buffalo, though the formidable horns and not unequal strength of the latter make him generally rue the combat. The tiger, rhinoceros, and the elephant, are also equal or superior antagonists. He is said to be fond of the young of the latter, which he eagerly lies in wait for, and easily masters, unless the old ones be at hand to effect a rescue.

He has been celebrated for his generosity and forbearance, but these, it has been observed, are only exercised when he is satiated, and has no immediate cause of irritation; yet instances have occurred where such qualities have been exercised by him, in a state of confinement, towards smaller animals, such as dogs, who have been thrown into his den, whom he has not only spared, but become attached to, and suffered them to tease him without showing any resentment. His courage, for which he was also formerly famed, has latterly been ranked lower; and from several well authenticated facts, it seems now pretty well ascertained that he will not stand the steady gaze of the human eye, when persons have possessed the intrepid coolness to front

him without shrinking, though this is perhaps a position in which few would voluntarily wish to place themselves. He generally attacks a man behind; but he has carried off his victim from amid his companions seated around and near a large watch-fire; and he snatched away a sentinel from the tent door of a party in South Africa, and walked deliberately up a hill with the unfortunate soldier in his mouth, although about forty shots were fired after him. In the same district, a boor, galloping across an open plain about daybreak, was pursued by a lion, which with one spring brought down the rider and his horse; but the man escaped, the beast preferring the flesh of the animal. When taken young he is easily tamed, and when well treated discovers great attachment to his keepers, who use the greatest liberties with him, sometimes venturing to ride on his back, or even put their heads into his mouth.

The LIONESS has no mane, and is more slender in shape and of smaller size than the lion. Her temper is rather milder, till she becomes a mother, when she exhibits the beautiful but appalling picture of maternal tenderness combined with savage ferocity, each in their utmost intensity. At such a time, wo to the wretched intruder who may unwarily approach her sanctuary. She goes about four or five months with young, and brings forth from three to four at a litter.

II. The ASIATIC LION, called also the *Lion of Persia*, is somewhat less in size and fierceness, has a thinner mane, and in colour approaches almost to the faun.

III. MANELESS LION, (*vide Zool. Trans. 1834-5.*) The Lion of the New World, the PUMA, or COUGUAR, *F. concolor*, differs widely from the Lion of the Old. He ranges the Continents of South and North America; is from four to four and a half feet in length, with a tail from two to two and a half, but without tuft; has a small rounded head, and no mane. The colour is reddish-brown, shading to white on the belly and inside of the limbs. He is active

in climbing; cowardly and blood-thirsty in his habits. If he meet a flock of sheep unprotected, he will destroy the whole, merely sucking a little of the blood of each. In Chili, where the horses are tethered in pairs, the puma kills one, which he drags away, and compels the other to follow; but the free asses defend themselves with their heels, and are often victorious; and cows, forming a circle round their calves, not unfrequently destroy the assailant. He commonly flees from man; but if wounded slightly, or cut off from a retreat, will turn on the hunter and his dogs with destructive fury. He has, however, been tamed, and discovered a gentle and playful disposition towards those to whom he had been accustomed. At Buenos Ayres he is frequently chained as a house-dog, and becomes apparently as familiar.

The TIGER, *F. tigris*: his roamings are confined chiefly to the southern parts of Asia and the larger East Indian islands. His usual size is about six feet in length, and three in height; though some of the largest kind, called the Royal Tiger, have been seen nearly ten feet, exclusive of the tail. He is more slender in shape than the lion; is swifter, and more agile; in strength he is nearly equal, and in combat is sometimes the victor. His colour is yellow, beautifully striped with black bands on the body, and continued in the form of rings on the tail. Cruel and ravenous, the tiger kind will destroy each other, and the female has been known to eat her own cubs; a revolting appetite, however, not peculiar to this species. He commonly reposes indolently in his den till stimulated by appetite; then he seeks some covert amid the under-wood of the forest, where he lurks concealed till his prey approach, when he darts forth with an irresistible spring, and fells and bears it away. With a single stroke of his claws he will rip open the belly of the largest animal, and will carry off a buffalo or a horse in his tremendous jaws without relaxing his speed. When pressed by hunger, he

prowls abroad among the villages at night, but will sometimes even attack a man in open day; and if unsuccessful, will not, like the lion, turn away, but repeat his assaults. He is still the scourge of some portions of India, though the Europeans, with whom a tiger hunt is a favourite amusement, have thinned the race. In this sport, as horses possess an instinctive dread of the tiger, elephants are usually employed.

He is easily terrified by any opposition from mankind. A party of pleasure in the country in India were once saved by the presence of mind of a lady, who boldly unfurled her umbrella in the face of one she saw about to spring, on which the terrified brute shrunk back and took to the forest. Nor can he, more than the lion, stand the human eye. An officer in India rambling in a jungle, came suddenly upon a large Bengal Tiger. This unexpected rencontre brought both sides to a dead halt: for some time they stood gazing at each other, till the officer fairly stared the animal out of countenance, who betook himself to the thicket, leaving his antagonist to march back to his tent, which he did in double quick time, not desiring a second interview. He is, when young, as easily tamed as the lion, and is fond of being caressed; and, like the cat, arches his broad back to the hand that caresses him, and purrs in the same mild and expressive manner when he is pleased. They follow the Fakirs in India, by whom they are trained to perform a number of tricks, and exhibited like dancing-dogs for the amusement of the crowd. In the year 1790, a beautiful young tiger was brought to London in the Pitt East Indiaman, who admitted every familiarity from the people on board; was harmless and playful as a kitten; frequently slept with the sailors in their hammocks, and would suffer two or three of them to repose their heads on its back as on a pillow, while it lay stretched upon the deck. It was afterwards deposited in the Tower, where it continued perfectly good natured; and when a small rough black terrier puppy

was put into his den, not only did it no injury, but seemed unhappy when it was taken away, and invariably expressed the greatest symptoms of delight on its return, by gently licking over every part of its body.—The TIGRESS is less than the male. She brings forth four or five at a litter, and, like the lioness, breeds in captivity.

The LEOPARD, *F. leopardus*, is an inhabitant of the woods of Africa and Southern Asia. The usual length of his body is three feet, of his tail two feet three inches, and his height somewhat more than two feet. He is distinguished from all other species by his gracefulness and elegance; by the vividness of his colouring, yellow on the upper parts, white on the breast, belly, and inside of the limbs; and the beauty of his markings, which consist of numerous rows of large rose-like spots passing along the sides, each formed of the confluence of several smaller black spots into an irregular circle enclosing a fawn-coloured centre: his whiskers are long and white. His prey consists of antelopes, hares, and monkeys, which last he pursues up the trees. When famished, he will attack, but by stealth, the human race. He may be tamed, but can never be entirely trusted. A female leopard in the Tower, 1829, allowed herself to be patted by her keepers, but discovered a strange propensity for snatching umbrellas, parasols, hats, muffs, and other articles of dress, and tearing them in pieces, to the great astonishment of the plundered visitors. The male was sullen and savage.—The PANTHER, *F. pardus*, is classed with the leopard; but as yet it is not decided by naturalists whether it is to be considered a distinct species, or only a larger variety of the same, though the former opinion appears to predominate. The panther is found chiefly if not solely in Africa; is more than six feet in length, independent of the tail, which is about three. Major Denham killed one that measured more than ten. He is spotted like the leopard, but the colours of his skin are not so brilliant. His habits are similar to those of the tiger.



TIGER.



LEOPARD.



JAGUAR.



THE AMERICAN PANTHER, or JAGUAR, *F. onca*, an inhabitant of Paraguay and the Brazils, is one of the strongest of the cat tribe next to the tiger. More thick and compact in his limbs and form than the leopard, he measures five or six feet from the nose to the insertion of the tail, and stands two feet two to two feet ten inches at the shoulder: his markings vary from a very deep chocolate-brown upon a rich yellow ground, to rings without spots, or where the rings can scarcely be traced at all. He is an excellent climber, and equally expert at swimming. Sonnini says he has seen the prints left by the claws of the jaguar on the smooth bark of a tree forty or fifty feet in length, where he has ascended after monkeys; and he has been known to swim, with the body of a horse that he had killed, across a broad and deep river. He is said to seize the fish on the shallows, and to pursue the turtle into the sea; or if he surprises them sleeping on the sand, he turns a number on their backs, so that they cannot rise, and afterwards devours them at his leisure, unless when the Indians perceive his operations, and deprive him of his store. He is fierce and sanguinary, but cowardly; and if he venture to attack a man, it is always by surprise.

The OUNCE, *F. uncia*, a native of India and Africa, seldom exceeds three feet and a half in length, with a tail as long as his body. His legs are stout and short: he is of a greyish-white below, yellowish above, and marked with irregular black spots. The hair on the back is an inch and a half long, that on the belly more than two inches.

The HUNTING LEOPARD, or CHETAH, *F. jubata*, is also common both to Africa and India. In size he is intermediate between the leopard and the hound; has a more slender body and longer legs than the former, but wants the graceful form and elongated head of the latter. He is yellow above, with black spots, white below, unspotted; along the back of the neck and anterior of the spine has a mane of upright hairs; his claws are capable of a very

limited retraction within the skin. In India he is trained to the chase, and is so gentle as to be led about like a greyhound. He is carried to the field on a cart hooded, and as soon as game (deer or antelope) come in sight, he is loosed, when, dropping from the opposite side, he creeps softly along till within a short distance of the poor unsuspecting animals, and then with a few bounds into the midst of them, with one blow he brings his victim down, and is instantly at his throat. When his keeper takes him off, he must be rewarded with a portion of the blood and a share of the flesh.

The MEXICAN TIGER, or OCELOT, *F. pardalis*, is extensively spread over the South American Continent. Its body, when grown, is nearly three feet in length, and its tail more than one; its medium height is about eighteen inches; the ground colour of its fur is gray, mingled with a slight tinge of reddish-yellow, darker on the back, elegantly marked with longitudinal bands, consisting for the most part of a series of elongated spots, fawn in the centre, with black margins; its under parts are white: but the colours vary in different specimens. It climbs trees expertly in search of its prey, which consists of birds and small animals. It is nevertheless exceedingly powerful, but is easily tamed, and when domesticated, becomes mild, gentle, and playful. There is a considerable variety of the spotted cats besides the Ocelot; the Margay, the Sumatran, Javanese, Bengal, &c., which differ in their sizes, colours, and markings, but are similar in their figures and habits. I shall, therefore, proceed to notice

The EGYPTIAN CAT, *F. maniculata*, or the Cat of Nubia domesticated, from which it is supposed our common cat has sprung. This animal's size is that of a middle-sized domestic cat, but the tail is longer: the total length measures two feet five inches, including a tail of nine inches; height at the shoulder, nine and a half inches. The colour is dirty ochre, with a stripe of black from the head to near the point of the tail, the belly and under part of the tail



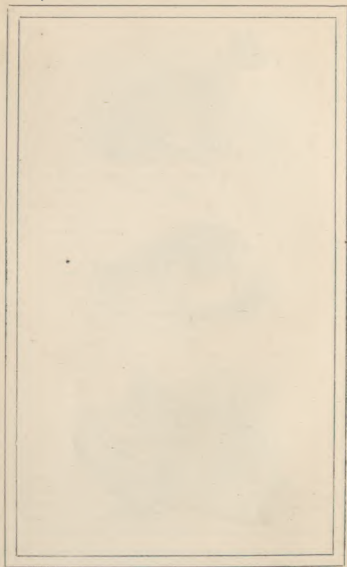
OCFLOT.



CAT.



LYNX



being white; it has several dark streaks on the legs, with yellowish lines on the face and neck. In its wild state, its abode is in rocky and bushy regions, and its food, like that of other cats, consists of birds and the smaller animals, such as hares, rabbits, and mice.

The EUROPEAN WILD CAT, *F. catus ferus*, is rather larger than the former. Its usual length is about three feet, including a thick tail of eleven inches. Its colours vary, but the most frequent are yellowish or blackish-grey, and the sides brindled with dark bands. They abound in the wild districts of the north of Scotland and Ireland, and are hence termed the British Tiger. They breed in the woods; are excellent climbers, and frequently surprise the birds upon the trees: there are even instances where they have brought forth their young in the deserted nests of large birds. It was formerly believed that this last was the parent of our house cat, but a more accurate examination has placed it in a different species, of which the shortness of the legs, and shortness and thickness of the tail, are the distinctive marks.

The DOMESTIC CAT, *F. catus*, is handsome, light, and cleanly; of almost every variety of colour. They are fond of warmth, and generally averse to cold, or even to wetting their feet; yet such is their fondness for fish, that they will occasionally venture into a shallow stream to catch them. Gray has celebrated this propensity, in the case of a favourite drowned in attempting to seize a gold-fish in a crystal vase. The playfulness of a kitten is proverbial, but their temper is inconstant, though they are capable of great attachment to those who are kind to them. They are partial to perfumes, and the scent of valerian particularly delights them: their skin, when dry and rubbed in the dark, emits electric sparks. A singular breed is met with in Cornwall and the Isle of Man, which has no tail; and another in the Malayan Archipelago and Madagascar, with a twisted or knotted tail.

The **LYNX**, *F. Lynx*, abounds in the southern parts of Europe, and northern of Asia and America; has bright eyes, a mild aspect, and upon the whole a lively and agreeable appearance: he is about the size of the ounce. His ears are erect, with tufts of black hair at the tips; his tail is short, and also tipped black; his fur is extremely valuable, of a pale grey colour, sometimes with a reddish tinge, obscurely marked with small dusky spots on the upper parts of the body; the under parts are white. He advances by leaping and bounding, and will scale the loftiest trees, so that neither the wild cat nor squirrel are more secure than the stag or the hare. He always fixes on the throat of the animal, and when it has sucked the blood, leaves the carcase; thus revelling in destruction, and doing immense mischief among the weaker or more harmless inhabitants of the forest. He is extremely difficult, if not impossible to tame.—The **CARACAL**, *F. caracal*, or lynx of the ancients, is common in Barbary, Arabia, and Southern Asia. He is nearly three feet in length, including a tail of about ten inches; in height is about fourteen inches: his ears are black and tufted; the fur on the upper part of the body is of a reddish-brown, the under part and inside of the legs white. He follows (it is said) the lion, and feeds on the left fragments of his spoil; but his common fare is small animals and birds. The kindest usage cannot always overcome his native fierceness, but like the former, he will sometimes even turn upon the hand that feeds him.

The **CANADA LYNX**, *F. Canadensis*. He is the only species of the genus which exists north of the great lakes, and eastward of the rocky mountains, in the woody districts of the interior, whence seven to nine thousand skins are annually procured by the Hudson's Bay Company. In length it is about three feet five inches, with a tail four inches; of a brownish-grey colour on the back, changing to pure white on the lower parts. It is a timid creature, and preys chiefly on the American hare. It swims well,

but is not swift on land. It breeds once a year, and has two at a time. The natives eat its flesh, which is white and tender.

SECT. II.—RUMINANTIA, OR THE RUMINATING ANIMALS.

The OXEN, *Boves*, are those which chew the cud, that is, they possess a peculiar faculty of bringing up from their stomach their half masticated food, and making it undergo the process a second time, which, as they live entirely upon vegetables, seems necessary to assist digestion; and as the quantity of nourishment which this kind of food yields is small in proportion to its bulk, these animals are furnished with four stomachs, which enable them to extract every alimentary particle. The first, called the paunch, receives the food after it has been slightly chewed; thence it is passed into the second, called the honeycomb, vulgarly king's-hood, where it is moistened and returned to the mouth for the second mastication; after which it goes direct to the third, the manifolds, for farther comminution; and is then sent to the fourth, where the operation is completed. There is another peculiarity in the organization of the female: she has a larger udder and longer and thicker teats than the largest animal we are acquainted with; and they are four in number, while others of the same nature have but two. She goes nine months with young, and seldom produces more than one at a time. Ruminating animals have cutting teeth only in the lower jaw, generally eight in number: in the upper jaw, instead of teeth there is a callous pad. There are six grinders on each side of each jaw, between which and the incisors there is either an empty space, or one or two canine teeth or tusks. The four feet exhibit two toes

each, protected by a cover of hard horn, and appear as parted hoofs; the head is most frequently furnished with horns, sometimes common to both sexes, and sometimes confined to the male. As native or naturalized, they are spread over the whole world, and when domesticated, are the most valuable gifts of providence to man.

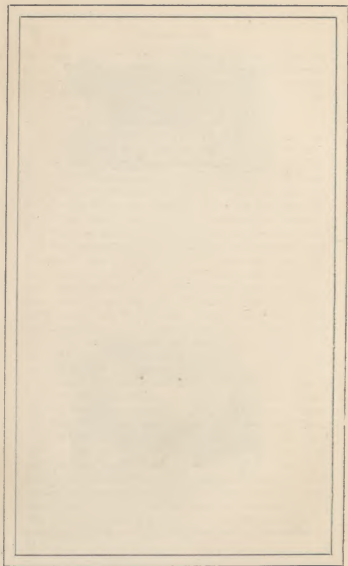
Of all the different genera of ruminants, those of the Bovine or Oxenic, the *Cow* kind, deserve the first rank, for their universal utility, living or dead. They bend to the yoke, and are employed as beasts of burden; less liable to disease, and more easily kept than the horse, for they improve the fields where they graze, which the other deteriorates; their milk is a most nourishing and pleasant beverage, besides producing butter and cheese; their flesh is one of our best and most substantial viands; their skins furnish us with leather, and their horns and hoofs are manufactured into various articles of ornament or of use; their very blood is not lost, it whitens our sugar, and forms the basis of a beautiful blue. Yet notwithstanding all the advantages we derive from this animal, there is none that is liable to be treated with greater cruelty, and that merely for a little brutal amusement.—The BULL, naturally fierce, possesses great strength, especially in his “horrid front and sinewy neck.” He is commonly larger, and his horns are stouter than those of the cow, so that, when furious, he can toss with ease animals or men of considerable weight; nor does he shun to attack the horse or other beasts larger than himself. His courage has provoked the savage pastimes of bull-baiting in England and bull-fighting in Spain, where gallant knights have mingled in the fray, and gentle ladies enjoyed the sport. In New Spain, where they run wild in the vast luxuriant plains, and are hunted for their skins, the horsemen show amazing dexterity in taking them with the *lasso*, a long leathern thong with a noose at the end. When the bull is preparing for an attack, he passes him at full speed, and throwing his string with unerring



COW.



BULL.



precision over his horns, he upsets and drags him along till he stupifies, and then easily masters him.

It were needless to inquire what was the primitive race which has stocked the world. We know that kine formed a great part of the wealth of the patriarchs, and were worshipped in Egypt upwards of 3500 years ago, but we have no record to enable us to distinguish the breed. I would, therefore, be inclined to subscribe to the opinion of Baron Cuvier, who considers our present cattle identical with a species no longer existing in a wild state, but which has by the exertions of man, as in the instance of the camel and dromedary, been for ages entirely subjected to his power.—There still, however, exists in this country a few of the ancient and peculiar WHITE URUS, believed to be the remains of the ancient breed of white cattle found wild in the woods when the Romans first visited the island. Of these there are two varieties —

I. The HAMILTON URUS, or WHITE SCOTTISH OX, *Urus Scoticus*, preserved with great care by the noble family of Hamilton. The chase, near Hamilton Palace, Lanarkshire, in which they browse, was formerly a park or forest attached to the royal castle of Cadzow, where the kings of Scotland used frequently to reside in days of yore. It is studded over with oaks, many of them of enormous size, and some of them, English oaks, are supposed to have been planted by King David, first Earl of Huntingdon, about A. D. 1140. The chase is of princely dimensions, amounting to upwards of 1300 Scottish acres. The number of white cattle was upwards of sixty last year. The colour of the body is dun-white; the inside of the ears, the muzzle, and the hoofs, black, and the fore part of the leg, from the knee downward, mottled with black. The cows seldom have horns: their bodies are thick and short; their limbs are stout. The size of the smaller cows does not exceed fifteen stones, tron weight; but some of the larger sort, especially the bulls, average from thirty-five to forty-five stones. The calves,

when not of the usual markings, are either entirely black or entirely white, or black and white, but never red or brown. Having been always exposed to the rigours of the climate, without any covering, and never subjected to man, they are exceedingly hardy, wild, and untractable. The affection of the females for their young is excessive. When dropt, they carefully conceal them among long grass or weeds, in some brushwood or thicket, and approach them cautiously twice or thrice a-day to suckle them. On these occasions it is dangerous to approach the place, as the cow, ever on the watch, would furiously attack any intruder, man or animal. These cattle seldom disperse themselves over the pasture, generally feeding together in a flock. Nor is it safe for a stranger to come near them. The only method of slaughtering them is by shooting; and when the keepers approach them for this purpose, they seem instinctively aware of their danger, and always gallop away at full speed in a dense mass, preserving a profound silence, and generally keeping by the sides of the fields and fences. The cows which have young, in the meantime forsake the flock, and repair to the places where their calves are concealed, where, with flaming eyeballs and palpitating hearts, they seem resolved to defend their post at all hazards. The shooters always take care to avoid these retreats. When the object of pursuit is one of the older bulls of the flock, the shooting of it is a very hazardous employment. Some of these have been known to receive as many as eleven bullets, without one of them piercing their skulls. When fretted in this manner, they often become furious, and owing to their great swiftness and prodigious strength, they are then regarded as objects of no ordinary dread. The above is extracted from an account furnished by Robert Brown, Esq. for that elegant work the Naturalist's Library, conducted by Sir William Jardine. The native haunts of these animals appear to have been the Caledonian forest, and at no very remote period some scattered herds in a wild

state were to be found, according to Lesley, as quoted by Dr. Fleming, in the wilds of Argyle and Ross; but these were distinguished as possessing a thick and flowing mane, like lions. They seem, however, to have vanished during the civil wars, for Sir Robert Sibbald, who published not more than twenty years after Lesley, mentions the Wild White Ox as being without mane.

II. The TANKERVILLE URUS, kept at Chillingham Park, Northumberland, an enclosure of between 1500 and 1800 acres. They are invariably white, with a black muzzle, the inside of the ear and part of the outside red; the horns are very fine, white, with black tips; the head and limbs slender. They also go in herds, and dislike strangers. When any one approaches, after standing to gaze, they wheel round him in a circle, which, if he is so imprudent as to remain, will be gradually narrowed till an attack is made. When pursued or baited, they become very fierce. From the colour and marks of several of our common cows, it is highly probable that they are the descendants of these supposed aboriginal species. But by great attention to their breed, and by a judicious mixture with those of other countries, the majority of British tame cattle have been brought to a degree of excellence which ranks them the finest in Europe; at the same time, they are the most varied in their subordinate features, and the most doubtful in their paternity. It is only necessary to notice

The *Short-horned Breed*, originally from Holstein, now chiefly reared in Lincolnshire, the eastern parts of Yorkshire, Durham, Northumberland, and Berwick. They are esteemed the most beautiful and lucrative, whether for the shambles or the dairy; they feed easily, and to a heavy weight, averaging from sixty to a hundred stone; their milk is abundant, and the butter it produces is in repute in the London market. The colours are red and white mixed, a great many entirely white, and numbers of them nearly so. Next comes the *Long-horned Breed*, and the

Middle-horned Breed, and the *Galloway Breed*, which have no horns; then the *Welsh Cattle*, which are of smaller size and black colour, with horns turned up; and lastly, the *Kyloe* possesses the whole of the Highlands and Western Islands of Scotland, of different sizes; the smallest are bred in Skye. They are not dissimilar to the Welsh; but perhaps they partake more of the wildness of their native pastures, where they graze without covert, their hair being rough and shaggy: their prevailing colour is black, with white horns. Great numbers are annually driven to England, where they are fattened; and when in good condition, their beef is much esteemed for its sweetness.

In the AUROCH there appears also to be preserved a remnant of the original wild oxen of Continental Europe. They roam the forest of Bialowiza in Poland in herds, under the superintendence of foresters appointed by the Emperor of Russia. They are about six feet high at the shoulder, with a convex forehead, and sharp and pointed horns. The fore parts are covered with long shaggy hair, which becomes shorter on the hinder quarters and the legs, whence it has derived the name of the European Bison; but it has no hump. The cows scarcely bring forth above once in four years, and the calves are suckled a whole year: they grow till their sixth, and live till about forty. They feed on various grasses, and the leaves and bark of young trees and brushwood; in autumn, they also browse on heath and the lichens which cover the bark of trees. Horses and domestic cattle scent them afar off, and immediately give great signs of dread and aversion.

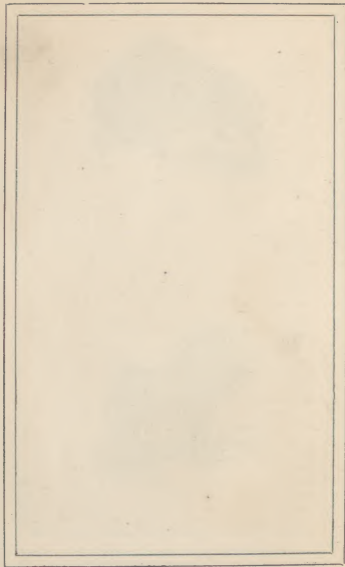
The ZEBU, or BARBARY COW, is spread over the whole of southern Asia and the eastern coast, India, and different parts of Africa. In size it varies from about that of a large dog to that of an ox, the wild being larger than the tame. Some have horns, and some are without. They are particularly remarkable for a fatty hump between the shoulders, which in some, Pennant says, weighs about fifty pounds.



BISON.



GNU.



Their general colour is ashy-grey, passing into a cream colour, with cream coloured legs and dewlap. In Africa, the larger kind supplies the place of the ox, both for labour and food; and in some places of India it is also rendered serviceable, being put in harness or used as a saddle-horse; but where the brahminical superstition prevails, it is considered sacred, their milk and their flesh must not be tasted even to preserve human life, and instead of a blessing thus becomes a curse. Though their children should starve, these "holy brutes" must be pampered; nor, though the hopes of the country were hanging upon gathering in perhaps a scanty harvest, is it allowable to beat them away, when destroying a valuable crop, or touch them when devouring the victual in the corn shops.

The AMERICAN BISON, *Bos Americanus*, retiring before the rapid advance of civilized life, are yet met with in immense herds throughout nearly the whole of the wild and almost uninhabited parts of North America, from the interior beyond Hudson's Bay, to Louisiana, New Mexico, and California. The bison attains a size superior to that of the ox: his height at the shoulder is about six feet, and they sometimes reach a weight of two thousand pounds. The fore parts of his body are large and strong, covered with long woolly hair, and he is maned on the neck and shoulders; the hinder are comparatively slender; his head is prone, and his small eyes, glancing from beneath his rugged locks, give him a fierce and sinister look; his horns are short, sharp, curvated, and point backward; his tail, little more than a foot in length, is nearly naked, except at the tip, which is terminated by a tuft of long black hairs. The hump between his shoulders is a fatty substance, esteemed a delicacy by gourmands: the flesh is juicy and well flavoured; it does not, however, consist merely of flesh and fat, but is supported by an actual elongation of the spinous processes of the vertebræ beneath. His colour is of a deep brown approaching to black. He is a fierce, yet

rather a shy animal when alone, flying from his enemy, whom his keen sense of smelling scents at a distance; but when assembled in numbers he gathers courage, and will trample down the hunters posted in his way. The bulls and cows live in separate herds for the greater part of the year; but at all seasons one or two old bulls generally accompany a large herd of cows. Captains Lewis and Clarke, American travellers, tell us, that such was the number of these animals they saw assembled on the banks of the Missouri, that "although the river, including an island over which they passed, was a mile in length, the multitude stretched, as thick as they could swim, completely from one side to the other." The rifle has made sad devastation among their ranks near the white man's residence. The favourite Indian method of killing them is by riding up on horseback to the fattest of a herd, and shooting it with an arrow; and where a large party of hunters are engaged in an open plain, the spectacle is very imposing; but it is dangerous to wound without killing, for then they become infuriate and fearless. The bison has been tamed, but never yet so thoroughly or in such numbers as to render this species any acquisition to the domestic economy of man; though the Canadians, from the skin when dressed, make excellent blankets, which sell high, and the wool has been manufactured in England into a fine cloth.

The YAK, *Bos grunniens*, is confined to the wooded valleys among the mountains which separate Thibet from Bootan. Their size varies, and they are sometimes with a hump and sometimes without it. They are heavy before, but not so light behind as the generality of bisons. The general colour is black, but the hair on the hump and mane, which is long and curled, is nearly white; that on the tail, long, fine, and silky, is almost always white: when cut off, dressed, and mounted in silver or ivory handles, they are used by the rich and luxurious inhabitants of the East as

fly-flappers for brushing away these troublesome insects. Their skins are used as a warm covering, and ropes are made of their hair by the Tartars, who have domesticated them, and use them in bearing burdens: they are docile and sure-footed.

The BUFFALO bears a strong resemblance to the ox in its appearance, yet no two animals are more distinct, or have greater antipathies. They refuse to breed together, and the buffalo goes three months longer with young than the cow; it is also affirmed that cows will not suckle buffalo calves, nor will a female buffalo allow a cow's calf to touch her udder. The buffalo is low in proportion to his bulk; his limbs are very solid; his head is bigger, with a higher forehead and longer muzzle. There are two species of this genus,—I. The CAPE BUFFALO, *Bos cafer*, found nowhere but in the extra-tropical climate of South Africa, is especially distinguished by its horns, which, unusually broad at the base, cover the whole forehead with a formidable helmet, then turn outwards and downwards, and their points are recurved upwards. Although not much higher, its bulk greatly exceeds that of the ox. Its tail is shorter; the hide is thicker: the colour is black, except the forehead and tip of the tail, which are dusky white. He is fierce and easily irritated, and when wounded or incautiously intruded on, rushes towards his object with blind fury, roaring terribly, and bearing down all before him; and when an attack is meditated upon a herd, a safe place of retreat is commonly secured before commencing. He has never yet been domesticated.

II. The INDIAN BUFFALO, *Bos bubalus*, on the contrary, has been tamed and trained to labour in India, Persia, North Africa, and the South of Europe, particularly in Italy, where they were brought from India in the sixth century. They are well adapted for agricultural purposes: they draw stoutly, but do not carry burdens, and two harnessed to a waggon are equal in power to four strong horses. They

are guided by a ring passed through the cartilage of the nose. The milk of the female is not so good as that of the cow, but it is yielded in greater quantity. This species delights in water: to roll in a swamp, or to plunge amid the deep verdure of the pool or marsh, and lie covered all but the eyes and the nostrils, seems to be the height of enjoyment to them; and frequently the passer along the banks of the Ganges is surprised to see a few black specks in the river start up into twenty or thirty huge animals. The buffalo is remarkable for courage: he will singly attack a group of elephants, and in combat with the tiger is usually the victor. Their flesh is coarse and disagreeable, but their tongues are more palatable. Their hides are valuable, light, and firm; they are wrought into belts, boots, and a variety of accoutrements.

The GNU, *Antelope Gnu*. This singular animal abounds in the arid plains of Central and Southern Africa. It has been placed among the Bovine race from the character of the head, the front being broad and flat, and the horns, nearly meeting at the base, large and flattened, then bending forward and downward, and suddenly turning upward, round and smooth; the hair on the brow and ridge of the face is long and shaggy: it has a full stiff mane, and a long hairy dewlap. The general colour is a light tawny in youth, which darkens with age. It is extremely swift and sportive, and has a cry somewhat like the hellow of a bull. In confinement it is mild and tractable.

The MUSK OX, *Bos muschatus*, has been considered as holding an intermediate station between the ox and the sheep; the horns and part of the form connecting it with the one, and the woolly hair allying it to the other. They belong to the treeless and barren lands of America, from 60° N. lat. to Melville Island. Their size is nearly that of a small Highland bullock, rather shorter in the legs, the head is large, and the horns, very broad, bending backward, and almost joined at the root, cover the brow and crown of the head; the



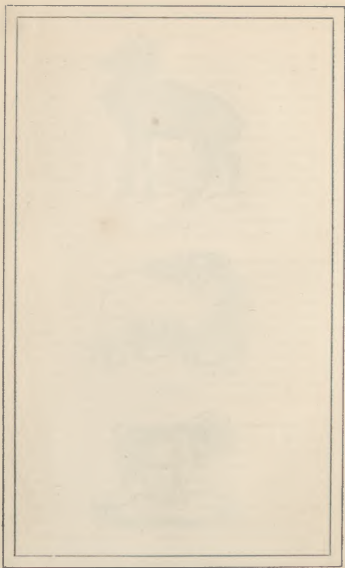
NYL-GHAG.



SHEEP.



GOAT.



upper lip and part of the lower is covered with short white hair; on the remainder of the head, and on the neck and between the shoulders, the hair is long and somewhat curled, of a brown colour; on the back and hips it is smooth, and on the shoulders, sides, and thighs, it is so long as to hang down to the middle of the legs; the hair on the throat and chest is very straight, and, together with the hair of the lower jaw, hangs down like a beard or dewlap; the tail is so short as to be concealed by the fur of the hips. The cow is less in size, and has shorter hair on the chest and throat. Their smell is exquisite, and warns them of danger before it can otherwise be perceived. Its temper is rather placid.

The NYL-GHAU, or BLUE COW, *Antelope picta*, named the White-footed Antelope by Pennant, appears to be confined to the north-western provinces of Hindostan, and the countries situated between them and Persia. The male is superior in stature to the stag; his head is large, with black horns seven or eight inches long; his neck long and maned, his shoulders are surmounted by a slight hump, and his fore are more elevated than his hinder quarters: the general colour of his body is slatey-grey, with patches of white. The female is less in size, of a pale brown, and without horns. In captivity it is gentle, and shows marks of pleasure when fed or fondled, but occasionally shows a capricious temper. When meditating an attack, it falls upon its fore knees, and shuffles forward to within a short distance of its object, when it darts forward with a powerful spring, and hurls in the most determined manner. A horse and his rider have been laid prostrate by his onset. The nyl-ghau unites the hull with the antelope.

The SHEEP, *Ovis*. — Next to the Cow, the Sheep conduces more perhaps than any other animal to the necessities and comforts of civilized life, and appears to have been as early domesticated. Its flesh is one of our most common and agreeable articles of food; and ewe-milk cheese, when

the flocks were smaller and regularly "huchted," was wont to eke out the shepherd's fare, and was not an unfrequent relish at the tables of the rich. Its wool furnishes us with warm winter clothing. Their fleece, however, accommodates itself wonderfully to climate; the thick close wool, which gives warmth to the sheep of cold and temperate latitudes, being supplanted by a coat of hair less oppressive when they are carried to tropical regions. Its manners are gentle, and its disposition timid. It is a simple and defenceless creature when under the protection of man, yet when properly attended to, it discovers both affection and submission to its keeper. In eastern countries, where they are regulated by the call, the sheep knows and can discern the voice of its shepherd, and a stranger's voice they will not follow. Young, in the *Annals of Agriculture*, gives a specimen of similar docility in the merino breed. When travelling on the Pyrenees, he desired a shepherd to catch him one of his rams, who just walked into the flock, and singling out a ram bid him follow him, which he did immediately. On the Alps, and in some provinces of France, they are guided by the sound of the pipe; and when called at sunset to be penned for the evening (to preserve them from the wolf,) they readily follow the arcadian strain. From the intermixture of breeds and the influence of climate, it would be a difficult question to settle the origin and specific identity of an animal whose varieties are so numerous and striking as those of the sheep; hut Mr. Bennett asserts, "that it has been proved almost to demonstration that the Moufflon of Corsica is the parent stock from which were derived most of the European breeds, and that the origin of the Asiatic races, as numerous as the European, from the Siberian Argali, is equally certain."* We shall, therefore, first attend to these two.

The MUSMON, or MOUFFLON OF CORSICA, *O. musmon*, still exists wild on the mountains of Corsica and Sardinia: a

* *Zool. Gardens*, vol. i. p. 262.

similar species is also scattered over European Turkey and some of the islands of the Archipelago. They are about the ordinary size of sheep, and breed with the domestic races. The head is long, with the muzzle compressed, the nose somewhat raised, and the forehead swollen; the horns of the male (the female is without) are large, long, and triangular, bending backward like a half circle, attenuated from the base to the tip, which is obtuse; the body is large and muscular, the tail short, and bare on the inside; the legs are pretty long, and the hoofs short. The colour of the body is a yellow-chesnut; the head ash-grey, whitish on the muzzle and about the eyes; the belly, inside of the thighs, and tip of the tail, is white: the fleece owes its tints to the long hair, which exceeds the wool. They wander in flocks of about a hundred, led by some old and courageous male. Their habits are like those of our own sheep, docile and gentle, though sometimes an amorous or a churlish old ram will butt down a child, a woman, or a man, who may happen to stand in his road, when the fit is upon him.—The SIBERIAN ARGALI, *O. ammon*, as its name denotes, is a native of Siberia, but it is also met with on the great chain of the Caucasus and the wilds of Tartary. It is a large animal; some stand three feet high at the shoulder, and weigh not less than two hundred pounds. Their horns are of immense size, weighing thirty pounds, and extending backward four feet: the fur is short, and reddish during summer; in winter it becomes fulvous-grey. The flesh is much esteemed, and in Russia the skins are still used as articles of dress.

The BEARDED ARGALI, or the AFRICAN MOUFFLON, is about a fifth larger than the Corsican, and is supposed to be the same as the Bearded Sheep of Pennant. It has a tail of about seven inches, terminating in a pencil of hairs; the horns, quadrangular at the base, are directed inwards, and terminate in a sharp point: the colour of the body is a fine reddish-yellow, the belly and inferior region of the legs

are whitish; but the most singular character which this species presents, and procured it the French name of *Moufflon à Manchettes*, the Ruffled Moufflon, is the long hairs which garnish the anterior parts of its body and legs. Three locks of hair, six to seven inches long, hang from the thighs of the fore legs as far as the middle of the shank, besides a tuft of three or four inches from each side near the angle of the jaw, below which commences a band of hairs upwards of a foot in length, continued from the lower part of the neck to the bend of the leg. — The **AMERICAN ARGALI**, or **ROCKY MOUNTAIN SHEEP**, are found in the rocky mountains of Arctic America. They collect in flocks of from three to thirty; the young rams and the females herding together during the winter and spring, while the old rams form separate flocks, except during the rutting season. When the ewes bring forth, they retire with their lambs to the most inaccessible heights. They are about the size of ordinary sheep, but their fleece is dissimilar, that on the fore part of the skin having all the apparent qualities of fine wool, on the back part much resembling cotton, the whole mixed with hairs, and where these are pendant there is little wool: the horns, uncommonly large, in the old rams attain to such a size, and curve so much forward and downward, as to prevent their feeding on level ground. The flesh is said to be quite delicious when in season. No domestic breeds are at present traced to these two.

DOMESTIC SHEEP have become so diversified and multiplied, that a very slight description of the numerous mixed breeds would far exceed the bounds of this small work. In Britain they have been chiefly sought after for the fineness of the wool or for the excellence of the flesh, and the perfection of the breed consists in having both these qualities combined. The merino sheep excels in its fleece, and the little black-faced highlander in the delicious flavour of its mutton. Some of the English breeds unite the greatest quantity of wool with the greatest weight of carcase, both

superior in their qualities, and are reckoned the most valuable. Of these, the *Leicester* is most extensively reared on the rich and low-lying pastures in England. It is white-faced, wants horns, has a straight broad flat back, is small in the bone, and has a disposition to fatten at an early age.—The ancient "*Black-faced Ram*" is bred chiefly in the Highlands and Western Islands of Scotland. It has a piercing eye; the horns large and convoluted; the face and slender legs black as jet, without any mixture of white. It is extremely active and hardy, well adapted to our northern and uncertain climate; a companion meet for the little kyloe, and its fit associate in our romantic scenery. Its mutton is in high estimation; but the wool is coarse, long, and shaggy, which has of late occasioned the introduction of the Cheviot breed in the north, whose fleece is more valuable, though the flesh be not so fine-flavoured. The number of sheep and lambs in England in 1825 were reckoned at upwards of twenty-six millions, those of Scotland at three and a half, of Ireland at two.—Among the curious varieties of domestic sheep is,—1st, The *Four-horned*, or *Icelandic Sheep*, which is common in the north of Europe. The two upper or additional horns are somewhat like those of the goat, and the under, or true horns, retain the spiral curve of the other sheep. 2d, The *Cretan*, whose horns stand upright, with a spiral turn. 3d, The *Parnassian* or *Wallachian Sheep*, distinguished by the large size, spiral twist, and lateral extension of its horns; its wool, too, is perfectly straight, close set, beautifully fine, and of great length, that which is derived from the middle of the back falling on either side of the animal almost to the ground. 4th, The *South African Broad-tailed Sheep*, reared about the Cape of Good Hope. It is below the middle size, and takes its name from a solid mass of fat on the rump, which falls over in the place of a tail, divided into two hemispheres like two hips, with a little button of a tail in the middle: these often reach a great weight, and being

esteemed a delicacy, a little carriage with wheels is sometimes attached to the tail, to bear them up and prevent their rubbing against the ground. The flocks of the hordes of Tartary, besides the fat tail, have four, and sometimes six horns. The wool in each species is short and soft. — The *Merino Breed*, *O. Hispanica*, are chiefly cultivated in Spain. The horns are large, ponderous, and convoluted laterally; the wool, which it has on the forehead and cheeks as well as the body, is fine, long, and silky. They are kept in mild districts in winter, and in summer are pastured on the sierras, and are often travelled to a great extent as the climate or the season varies. The Pyrenean breed are the most hardy. They are in general polled, but some have horns; they weigh, when fat, from about fifteen to eighteen pounds a-quarter; their legs are short, and their shapes good. They are kept the whole year in motion, moved from spot to spot, never housed or under cover: their wool is fine, and their flesh agreeable. The annual export of wool from Spain was near ten millions of pounds, a considerable portion of which came to Britain.

The GOAT, genus *Capra*. — From the earliest period of the world, the goat, as well as the ox and the sheep, has been the domesticated servant of man, and like them it has contributed its full share to the comforts of patriarchal life. Ever since that date, in common language as well as outward appearance and general habits, they have been ranked as animals distinct from the sheep. Instead of wool, the goat has long shaggy hair, and a long beard; the horns, which are common to both sexes, and rarely wanting in the female, are also different, being always directed with a gradual bend upwards or backwards, and their line of profile concave, while that of the other is convex; the tail is short, and naked at the base: the males are odorous in the goat, not odorous in the sheep. The female goes five months with young, and produces two or three at a birth.

They generally inhabit lofty and precipitous regions, approaching to perpetual snow, and are more intelligent, sprightly, and active: they are sure-footed, and climb with superior agility and safety. Yet in a wild state there are so many points of resemblance between them and the sheep, and as a mixed breed produce a race capable of reproducing, late naturalists have been led to infer that they cannot properly be said to form types of separate genera. The original and common mode of arrangement, however, in different classes, comes recommended by its simplicity.

The stock from which our naturalized species has sprung, is supposed to be the *ÆGAGRUS*, found on the Caucasian and other Asiatic ranges, with larger horns and longer hind legs, but in other respects similar to the COMMON GOAT, now so well known on our hills, and on those of England and Wales. The milk is reckoned medicinal, and easier of digestion for delicate constitutions or consumptive habits: it is also made into cheese, much liked by some connoisseurs, but rather too pungent for general taste, or the taste of those unaccustomed to it. The flesh of the old goat is reckoned rather strong, but that of the kid is esteemed equal to venison.—The CASHMERE GOAT is famous for its fleece, consisting of fine long hair of a silky appearance, from which the beautiful shawls are manufactured. The common colour is white, though some are found with patches of black about the neck: the ears are large, and the horns are not spirally twisted.

The CHAMOIS, or ALPINE GOAT, *Capra rupicapra*, formerly considered as the parent of the domestic breed, has by later naturalists been placed as a distinct species. In its general features, however, with the exception of the horns (which, of a beautiful black, rise between the eyes, bend backward, and terminate in hooks,) and the want of a beard, the chamois greatly resembles the tame goat. Its height is about two feet three or four inches: its hair is short like that of the doe, of an ash colour, varying to

blackish-brown. Its habitations are among the Alps, the Pyrenees, and the lofty mountains of Asia, bordering on the regions of everlasting ice and snow. It is agreeable, lively, and active beyond expression: its senses are amazingly acute, and by the scent, it is said, will discover the hunter at half a league's distance. They feed in flocks of nearly twenty or more; and those at the outskirts, or perhaps a single sentinel, when they perceive danger, give notice to the rest by a kind of hissing noise, shrill at the beginning, and deeper towards the close, during which they appear in the utmost agitation, striking the ground with their fore feet, bounding from rock to rock, turning, stopping, and looking, till the approach of the enemy is ascertained, when off the whole fly like the wind, and defy pursuit amid the awful chasms of the glaciers, or the stupendous precipices of the rocks; for their spring is astonishing, and they will throw themselves safely down an almost perpendicular height of twenty or thirty feet. It drinks little, and is rather fastidious in its feeding, picking out huds and flowers and the tenderest of the aromatic herbs, which gives to its flesh a delicious flavour. Hunting the chamois is dangerous in the extreme; yet the excitation is so fascinating, that no prospect of peril or fatigue can induce the young huntsman of the hills to forego the pursuit, though he knows that few escape a premature fate.

The IBEX, *C. ibex*, from which also the tame goat has been alleged to spring, is found in the same mountainous tracts as the chamois, but usually nearer the summits. They differ in the horns: those of the male ibex are longer and thicker, and arch backwards, ringed from the base, and sharp at the points. The hair rough, and of a dark brown, in summer becomes thicker, and turns greyish in winter; the under parts are white: it has a beard, and is larger in body than the former, and exceeds it in strength. When driven to desperation, it shows more courage, and will turn upon the incautious hunter who attempts to stop

its progress, and sometimes succeeds in butting him over a precipice.

The KOODOO, *Antelope strepsiceros*, combines many of the characters of the sheep, oxen, and antelopes. He is a large and beautiful animal, a native of the woodlands of Caffraria, the male standing four feet high, and from the insertion of the tail to the muzzle measuring about eight. The horns rise perpendicularly in large spiral whorls, three feet nine inches in length; a bristling of black hair runs along the ridge of the neck, and a line of the same colour hangs from the dewlap: the general colour is brown, fading into grey, with a dorsal stripe of white, and stripes of the same colour behind the shoulders and across the buttocks. They are fleet, but cannot run long.

Forming a link between the Goat and the Deer, but which Linnæus classed with the former, the ANTELOPE, family *Antelopes*, is now placed in a distinct group by themselves, subdivided by some naturalists into artificial sections, which others reject, at least for the present. More nearly allied to the Deer, from which they are distinguished by their horns being permanent and without antlers, but marked with circular elevated rings, which increase in size with their growth and years, one or two species alone exhibit a single short ramification. Horns are common to both sexes, but more frequently exist only in the male. The body, slightly and elegantly formed, is supported by long slender limbs, the anterior shorter than the posterior; the line of profile in most of the species is nearly straight, and commonly terminates in a moist naked muzzle; their ears are rather large, upright, pointed, open, and moveable, their eyes brilliant and prominent; their hair is short, close, and regular; they are rarely bearded, but a large proportion have broad tufts of long diverging hairs upon the knees; their hoofs are usually longer, slenderer, and more acute than those of the Deer. In manners they

are gentle and peaceable, but at the same time wild, timid, and easily scared: they are very nice in their food, and will not touch it if it has been much handled. They are chiefly natives of Africa and Southern Asia, only two or three, and these but imperfectly known, have hitherto been discovered in America. The number of species amount to fifty-two, and the catalogue is not yet completed, nor are the arrangements always satisfactory. We shall give a few specimens of the most marked, commencing with

The GAZELLE, *A. Dorcas*, of the Arabs,—the well known emblem of maiden beauty, in the elastic lightness of its bound, the graceful symmetry of its figure, and the soft lustre of its full hazel eye,—so celebrated by their poets, and not forgotten by our own:—

“ The wild gazelle on Judah’s hills
 Exulting yet may bound,
 And drink from all the living rills
 That gush on holy ground:
 Its airy step and glorious eye
 May glance in tameless transport by.”

The gazelles have horns, common to both sexes, entirely annulated at the base, which lessen into half rings towards the extremity, and are also furrowed longitudinally by small streaks. In size and shape they greatly resemble the roebuck. They are gregarious; scour the plains or grassy hills, but seldom approach the wooded country.

The INDIAN ANTELOPE, *A. cervicapra*, is common to the whole Peninsula of Hindostan and a part of Persia. They are distinguished from the gazelles by the horns being peculiar to the male, spirally twisted, and in full-grown animals nearly two feet long, forming three or four complete convolutions: the colour of their bodies is ash above and whitish beneath, becoming deeper with age, but lighter in the female than the male. They associate together in small herds, supposed of one family, as they are generally under the guidance of one old male. It is not easy to run them

down, for in speed they outstrip the fleetest dogs, but they are sometimes surprised by the chetah, (*vide* p. 32;) or if the male is to be caught, a tame one is turned out among the herd, having a rope with various loose knots fixed round his horns: immediately the head of the family resents the insult and attacks the intruder, and a battle ensuing, the horns of both become entangled, and the wild one is made a prize. The Indian antelopes are easily reconciled to captivity, and the few which have occasionally been brought to Europe do not appear to have suffered much from the change. A pair kept in the menagerie of the Prince of Orange near the Hague, lived there several years, bore the winter as well as the deer, and produced young. The male was shy, but the female was gentle and familiar. She would take bread from the hands of the visitors, raising herself on her hind legs for the purpose, and seemed to take pleasure in being noticed. The Zoological Society of London had a male in their gardens alive in 1835, which had borne the climate, notwithstanding the wetness of the season, for some months without detriment.

The SPRINGER, or SPRINGBOK, *A. euchore*, is one of the most beautiful antelopes of Southern Africa, and certainly one of the most numerous. It owes its name to the extraordinary springs which it takes in frolic or when pursued, clearing a height of eight feet at a bound. Its general colour is a yellowish-red above, and white beneath, distinctly separated by a dark band upon the flanks. By a peculiar conformation in the hinder quarter, two folds in the skin expand when the animal is in motion, and discover a large triangular spot of white upon the buttocks, that is concealed when it is at rest. So numerous were the herds on the banks of the Little Fish River when Mr. Pringle visited it, that he says they calculated they had sometimes in view not less than twenty thousand of these beautiful animals. During a time of protracted drought, they pour in incredible numbers from the interior upon the colonists.

in the neighbourhood of the Cape, and their progress is as destructive as that of the locust; the fields which in the evening smiled with luxuriant verdure, when afflicted by their visitation, present in the morning a barren melancholy surface. In return, they afford an ample harvest to the beasts of prey.

The TAKHAIITZE, *A. barbata*, is a native of the Borshuana country in the interior of South Africa: is from four and a half to five feet high; of a bluish colour. Both male and female have horns, pointing backward in a regular curve, and annulated to about a third from the point. They are generally found grazing in pairs, but sometimes in small parties of five or six. They are dangerous when wounded, and are therefore caught by the natives in pitfalls.—The PALLAH, *A. melampus*, found in the interior of Caffraria, is about three feet high, and in length about five: on the upper part of the body light brown, deeper along the back, white on the lower parts: its horns present the appearance of an ancient lyre. It is easily tamed, but excessively timid.—The least of this species is a beautiful creature, first noticed by the British consul in Abyssinia, and after him named SALT'S ANTELOPE, *A. Saltiana*. The height at the shoulder is only thirteen inches, and the whole form is of great delicacy; the male only has horns, about three inches long: the dorsal ridge is brown, the neck and sides grey, the breast fawn, and the belly pure white; the legs are brown, with white spots on the fore.—The last of this species is the one that approaches nearest to the Deer.

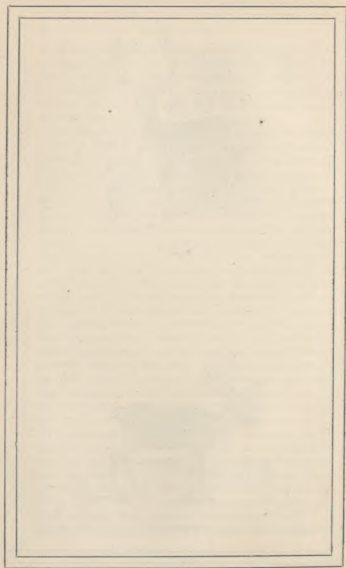
The PRONG-HORNED ANTELOPE, *A. furcifer*, a native of America, derives its name from a single strong prong jutting from the horn at the base. It is found in the north-west territory of the United States, on the plains lying betwixt the Saskatchewan and the Missouri, also on the plains of the Columbia. This animal has a graceful form, a slender head, large eyes, and long delicate limbs: the height is about three feet, length from the nose to the root



STAG.



REIN-DEER.



of the tail, four feet four inches: the horns are black, rise directly upward, and curve sharply towards each other at the points; on the lower half there are projections extending more than an inch. It has an erect mane of blackish-brown on the neck; the sides and back are yellowish, inclining to dark brown; white on the belly and upper part of the buttocks; the tail is four and a half inches, with a pale yellow mark at the root. It appears sometimes solitary, sometimes in herds of ten or twelve. Its senses of sight and smell are acute, and it is very swift; and the Indians, who cannot overtake it by running, ensnare it by its curiosity: they lie down on their backs, kick with their legs, and hold up a white rag, or dress themselves in a white shirt, which the prying creatures approaching to gaze at, are easily levelled.

The DEER, *Cervi*, differ from the Antelopes, in their horns being solid, composed of one homogenous bony substance, covered only with a soft velvety down which envelopes them during the progress of their growth, and disappears as soon as they have reached maturity; being more or less branched, and most commonly deciduous at certain periods, and are found in the male alone, with the single exception of the reindeer. In general form they resemble the antelopes very closely, but are usually more strongly made and of larger size; their limbs, though slender, have more muscularity, and their colours for the most part are less vivid. What the ox and the sheep are to civilized, the deer of his native woods is to uncultivated man: to all he is the object of the keenest chase; and whether food or sport be the aim, this harmless and lively creature enjoys an unenviable pre-eminence,—in the one case for the excellence of his flesh, in the other for the speed of his flight.

The EUROPEAN STAG, OR RED DEER, is a fine-looking animal, the tallest of the genera. The pride of the north,

he delights in the highest mountains and the thickest forests, and is famed for long life, though the natural term of his existence be often exaggerated, and which, when exposed to human observation, he has never yet been accurately known to reach. He comes to full growth at five years, when his horns send out as many antlers, and is called a hart, and the female a hind. Every year the male sheds his horns, and, conscious of his temporary weakness, hides himself till his new ones are hardened. His colour, as his name imports, is a bright reddish-brown, of a darker shade near the belly, which is white. When fatigued in the chase, he takes the water if near, and will cross with ease considerable and rapid streams: when wounded or taken, he sheds tears like a child; but though timid, when at bay he sometimes takes ample vengeance upon the hounds before he be subdued. When the game laws were in perfection in England, during the reigns of William Rufus and Henry I., it was less criminal to destroy one of the human species than a beast of chase; an absurdity not quite paralleled in our own country by imprisoning a man for shooting a hare.

The ROEBUCK, *Capreolus dorcus*, (Gesner,) the smallest and most elegant of our native deer, is still plentiful in the Scottish Highlands, and indeed everywhere in the woods and copses beyond the Forth; it also abounds in Westmoreland and Cumberland. His height is about two feet, his length three; his horns are eight or nine inches long, and divide into three small branches; his colour is of a brown shade on the back, his face partly black, partly ash colour, the chest, belly, and rump, white; the tail short. He is more courageous, cunning, and comparatively swifter than the stag. When pursued, he doubles and returns upon his track to confuse the scent, then, by a bound, springs to some distance on one side, and lies flat upon his belly till the dogs go past. Instead of promiscuous herding, they live in separate families, and the buck is said to be a pattern of

constancy, yet possessing an unnatural propensity to destroy the fawn at its birth. They delight in gentle acclivities, and are fond of the tender branches of young trees, which renders them very unprofitable neighbours to growing plantations; but it renders their venison delicious, and no unpleasant sight at the table. They never become familiar in confinement, and though subdued, can never be properly said to be tamed; for they are extremely capricious, and when least suspected, will lend a bystander a very disagreeable if not dangerous salute. Upon some occasions they appear as if intoxicated, stupid and wavering in their motions, when they are easily caught,—a distemper said to be produced by their food fermenting on their stomachs.

The WAPITI, OR CANADIAN STAG, *C. Wapiti*, is a native of Canada, frequenting the deep forests and rocky mountains, but found also in the savannahs of the interior, and among the clumps of wood that skirt the plains of the Saskatchewan. He is one of the most gigantic of the deer tribe, growing to the height of our tallest oxen. The horns are of immense development, measuring, it is said, about six feet; his colour is brown of different shades, yellowish on the sides, darker on the neck, which has black hairs hanging in front in the form of a dewlap; the hips are a clear French grey, and the tail yellowish, not three inches long. In America they are in some degree domesticated, and trained to sledges. They have been lately introduced into England, where it seems they breed and thrive. A number in the collection of George IV. at Windsor were, since his death, presented to the Zoological Society in London; and Lord Glenlyon is said to have had several descents from the pair exhibited at Charing-Cross in 1822. They feed on the shoots and tender branches of the fir, as well as on herbs. In summer, when tormented by flies, they seek refuge in the water, browsing on aquatic plants, and only raising their heads to breathe.—The GREAT RUSA, an Indian stag, about three feet in height, has the pecu-

liarity of a full flowing mane on the neck and shoulders, which gives it the appearance of a horse, and has obtained it the name of *Hippelaphus*. F. Cuvier supposes it the animal described by Aristotle. The hair on the Paris specimen was thick, dry, and frizzled; the colour a tawny brown upon the back and sides, the belly white.—The STAG OF TIMOR, another Indian species, is very similar, only the mane is wanting. But it is unnecessary to enumerate the number of subdivisions among the Deer, the difference in general being so small, and more evident in the appearance than interesting in the description.

The FALLOW-DEER, *Dama vulgaris*, may almost be termed a domesticated species. They are now rarely found wild, but are commonly reared in parks, both here and on the continent, for the diversion of the chase or the purposes of luxury. The marked distinction of this species is the form of their horns, round at the base and palmated at the top. The fallow deer has the tail longer and the hair lighter than the stag: its most common colour is fawn, marked with numerous pale spots, which give place in winter to one uniform brown; the buttocks are always white, and a dark line passes along the back. They congregate in herds, and one buck is generally the leader; an honour, however, seldom attained without some serious combats with the other males. At times the herds will divide, and furiously contest for the possession of the best pasture: these engagements are conducted with great regularity, and sometimes last for several days, till the weakest retire from the favourite spot. The doe goes with young upwards of eight months, and usually brings forth one at a birth, which comes to maturity at three, and lives to sixteen years. The flesh is highly esteemed for venison, their skins for leather, and their horns for various purposes.—The AXIS DEER is extremely similar to the fallow deer of Europe in size, form, and general distribution of its colours; so much so, that it is difficult to distinguish the

females in their summer dress. The horns of the buck, which rise vertically from the head, mark the difference: the stems and their branches are perfectly cylindrical throughout, and are never palmated, neither do their spots change in winter; it is also rather larger in size, and more elongated in the head. The axis is most frequent in Bengal and on the banks of the Ganges: they are singularly mild in their disposition, and have bred with the fallow deer. — The VIRGINIAN FALLOW-DEER belongs to a species, resembling our own in form, which inhabits the Continent of America, from Canada on the north, to the banks of the Oronooko on the south. In size it is somewhat superior. The colour of the fawn is a deep tawny, with white spots, which disappear in winter, when the hair grows thicker and whiter, and is said by the hunters to be in “the grey;” next summer its winter coat is cast, and a short brownish hair succeeds for three months, when it is said to be in “the red;” which again changing with the season, produces an autumnal mantle of a bluish tinge, when the deer is said to be in “the blue;” at which period its skin is reckoned the most valuable. During all these changes the belly and inside of the limbs remain white. It lives in numerous herds, and forms a common food for the beasts of prey and the inhabitants of the back settlements. The doe is remarkable for her strong maternal affection, and the hunters, by imitating the cry of the fawn, often turn this tender instinct into the means of the parent’s destruction.

The REIN-DEER, *Cervus tarandus*, is a native of the most northern regions of Europe, Asia, and America. Its range in Europe is from the Baltic to the Frozen Ocean, through Norway, Finmark, Sweden, and Lapland. In average height it is about four feet and a half, but varies in a manner unusual with other animals, diminishing in warmer climates, and increasing in the polar regions. The general colour of the upper parts is of a dark brown, all the hairs being more or less deeply tipped with that colour, while

greyish at the base; the lower parts are white, but towards winter the whole assumes a greyish hue; and the coating is so thick, that it is hardly possible, by separating the hairs in any way, to discern the least portion of the naked hide. Dr. Richardson affirms, that this skin is so impervious to the cold, that any one clothed in such a dress, with the addition of a blanket of the same material, may brave the most intense rigours of an arctic winter night. The hair is coarser at the neck, hanging down like an elongated beard. The horns are large, smooth, branching, and palmated, with which it shovels away the snow when searching for its food; the hoofs, broad and cloven, spread when the animal travels, and prevent its sinking among the snow. Its celerity is amazing: it can easily trot (its usual pace) ten miles an hour, and gallop twenty when put to the speed; but this it cannot continue. It has, however, been known to go one hundred and fifty miles in twenty-four hours. There are considerable herds of them still wild in the north, but they are daily diminishing, for the natives endeavour by every means to catch and domesticate them: their habits, however, in either state do not differ; they are easily tamed, and become exceedingly docile. Without them the Laplanders could not exist.

" The rein-deer form their riches. These their tents,
 Their robes, their beds, and all their homely wealth,
 Supply their wholesome fare and cheerful cups:
 Obsequious at their call, the docile tribe
 Yield to the sled their necks, and whirl them swift
 O'er hill and dale, heap'd into one expanse
 Of marbled snow." THOMSON.

Lapland families possess herds of from fifty to a thousand: they who hold the latter are reckoned wealthy, but they who have two thousand are enormously rich. The curd, cheese, and milk during summer, and their flesh during winter, being the chief support of the "frozen Laplander." Yoked to the sledge, or "pulk," as it is styled, they tra-

verse the snowy wastes with a rapidity which no other animal, the elk excepted, could match, equalling almost the velocity of steam. In summer they feed upon the mountains, on whose slopes the natives reside in small hamlets, browsing the herbage and shrubs, together with the tender shoots of the birch and willow. When the heat increases, they advance higher, or they migrate to the sea-coast for the sake of the breeze, as during that season they are dreadfully tormented with the gad-fly, especially at shedding time, when their horns are tender. In the depth of winter, they retire to the wooded districts, subsisting principally upon the succulent lichens, which hang in long filamentous tufts from the branches of the trees. In fine weather, or on the return of spring, it makes short excursions to the plains in search of the moss (rein-deer moss), which covers the earth as a carpet, and to get at which it breaks away the ice and snow with its hoofs. When on a journey, if halted, it will search for its nutriment; but such is its instinct, that if stopping upon a frozen pool, though the snow be so deep as to prevent its being distinguished from the land, it never makes any attempt at digging. Though a ruminating animal, it has the singular propensity of devouring the lemmings, a small animal about the size of a rat, which comes down from the mountains in myriads during the summer. This, however, only occurs occasionally.

In America, the rein-deer, under the name of the CARIBOU, roves from the latitude of Canada to the shores of the Arctic Sea. Of this, two varieties are said to exist: the one, small, inhabits the southern division, and is named the Woodland Caribou; the other, larger, seeks the northern regions, and is named the Barren-ground Caribou. The first is not yet sufficiently known; the other exactly coincides with the rein-deer of Europe and Asia, and is equally necessary for the support of the native tribes. They are never domesticated by the Indians, but hunted merely for their flesh, hide, and horns. Of the hide, dressed with the

fur, they make their tents and clothes; undressed, with merely the hair taken off, it is cut into thongs of various thickness, and is used as ropes; the sinews supply them with sewing thread; of the horns they form their fish spears and hooks, and their knives of the bones. A mixture of the flesh and fat of the animal forms pemmican, a composition containing much nourishment in small bulk, well fitted for extensive travels, as it keeps for three or four years. Attempts have been made to introduce the rein-deer into Britain, but without success. In the Gardens of the Zoological Society, a female had lived two seasons (1835) without suffering any apparent inconvenience,—the longest time any of the race have been preserved in this country.

The ELK, or MOOSE-DEER, *Cervus alces*, is common, like the rein-deer, to the northern regions of the Old and New World. It is the largest of the deer kind, standing as high as a horse. The males are said sometimes to weigh eleven or twelve hundred pounds. The head measures above two feet, narrow and clumsy, adorned with antlers, first simple, then forked and snagged, which in the fifth year assume the form of triangular blades, denticulated on the external edges, and attain the weight of fifty or sixty pounds; the neck is remarkably short and strong, and, together with the withers, is surmounted by a long mane, and from it a long coarse depending beard; the body is round, compact, and short, the tail not more than four inches long; the legs are very long in proportion, but clean and firm: it is higher at the shoulders than the croup, and moves with a shuffling gait, its joints cracking at every step. Its colour is brownish-black; the mane a bright, and the limbs a dull fawnish. The elk is not gregarious, seldom more than two being seen together, except at the breeding season. In summer they habitate on the borders of the lakes, and seek refuge from the mosquitoes on the cool banks or in the waters: in winter they dwell among

the woods. Unable, from the shortness of their necks and the length of their legs, to reach the grass standing, they kneel when they graze; but their most favourite food is the tops of the higher plants, low brushwood, and the foliage or shoots of the willow, birch, and red willow, which it is facilitated in pulling down by the formation of the upper lip. It is timid and wary, acute in hearing, and very watchful; but if closely pressed, it will turn upon its pursuers. It unites great swiftness with patient endurance of fatigue. In Sweden, during the reign of Charles IX., elks were employed to convey couriers, and, attached to a sledge, were capable of accomplishing about two hundred and thirty-four English miles in a day. The fossil remains of an immense animal of this species is preserved in the Edinburgh University Museum: it was found in marl in the Isle of Man. Its dimensions are—Six feet high, nine feet long; to the top of the right horn, nine feet

RUMINANTS WITHOUT HORNS.

The Musk, *Moschus moschiferus*, a ruminating animal, which produces the well-known perfume, is chiefly found in the Thibetian mountains. It is about the size of a small roehuck, of a deep brown colour, paler beneath, and inside of the limbs sometimes varied with white; the hair is long and curled; it has tusks, visible beyond the mouth about an inch; the hoofs are divided. In its habits it resembles the mountain goats; is active and gregarious, extremely shy, and easily alarmed. The musk, for which it is chiefly hunted, is contained in a small bag which protrudes from the belly, and is cut off when the animal is killed. When the perfume is pure, there should be no mixture, but the demand has caused it now to be much adulterated with coagulated blood, and in some cases counterfeited by mercantile avidity. The flesh is sometimes eaten, but its flavour is strong: the skin is esteemed as affording a warm

fur and a soft leather. — The NAPU MUSK, *M. Javanicus*, ranked as a congener, has no perfume, but resembles the genus in some of its characters. It is a pretty little animal, equal in size to a full-grown hare: its colour above is glossy ferruginous brown, the under parts and inside of the legs are pure white, as also the throat and chin; the fore part of the chest is dark, marked with three white stripes. The napu frequents thickets near the sea-shore, and feeds principally upon berries. When taken young, it is tamed with the greatest facility. In captivity, it appears perfectly at its ease, and quite indifferent to what is passing around it. Its full dark eye and placid air give it the appearance of a degree of intelligence it does not really possess, for the greater part of its existence is passed in eating, drinking, and sleeping. Its voice is scarcely more than might be produced by a deep but gentle expiration.

The CAMELEOPARD, or GIRAFFE, *Camelopardalis Giraffa*, forms a singular genus, uniting, say naturalists, in some respects the deer and the camel, yet to a common observer it appears widely different from either. It is a native of the African Continent, and is found, in small parties of five or six, in the depth of its forests, or amid the solitary wastes of its arid plains. Its most striking peculiarities are the extraordinary length of its neck, and the height of its fore contrasted with its hinder quarters; being in front, from the hoof to the horn, sixteen to twenty feet, while from the croup to the heel it will measure little more than a third. The head is beautiful, embellished with two slender elevations, usually denominated horns, covered with a velvety skin, and surmounted at the tip by strong bristly hair; the mouth is small, the eyes are brilliant and full; a bony protuberance rises above the nose and between the eyes. Like other ruminating animals, it has eight incisive teeth in the lower jaw, while the upper has none; its tongue is long, narrow, and rough, calculated to roll round the shoots or leaves it wishes to crop; its colour is pale



CAMELOPARD.



CAMEL.



yellow, with large fawn-coloured spots; the tail is a dun white, and tufted; the hoofs are cloven like those of the ox. Its food is either herbage or the foliage of trees, its admirable formation allowing it either to graze in the open champaigne, or reach the highest branches in the forest. Its pace is an amble, sufficiently quick, when urged, to keep a horse at the gallop. It is gentle in its temper, but when attacked, the rapid strokes of both fore and hind feet teach even the lion to beware of provoking it. One of these animals was sent as a present to George IV. in 1827 by the Pacha of Egypt, but did not live long after its arrival in this country.

The CAMEL and DROMEDARY, *Camelus*, are not two distinct animals, but only varieties of the same species, for they propagate together and continue the kind. It would be difficult among the lands of the East to point out distinctly the country of which it is strictly a native. It seems to have been among the first animals used by man as a beast of burthen, at least it is the first of which we have any authentic account, and that long before the Ishmaelites had peopled the desert; and now, though chiefly associated with the sands of Arabia, it is spread likewise over the southern parts of Africa, Persia, Tartary, and a great part of India. We distinguish by the name of *Camel* the animal which has two protuberances, formed of fatty matter, the one on the shoulder, the other near the rump, and is generally supposed to have originally been brought from Bactria, i. e. Turkistan. A full-grown camel stands between seven and eight feet to the top of the shoulder hunch. It travels slow; is patient, mild-tempered, and docile: it kneels to be loaded; but if tried with a greater burthen than it feels equal to carry—the average is 1200 pounds weight—it refuses to rise till lightened. So does its neighbour, the one-hunched animal, which we name the *Dromedary*. It is the Camel of Arabia, and although not capable of carrying so great a weight, is fit for enduring more protracted

fatigue. Both have a small head and simple countenance, a long and crooked neck, a short clumsy body, covered in general with coarse brown hair; lengthened shanks; feet soft, flat, and undivided in the sole, peculiarly adapted for traversing the arid sands, some at the rate of from seventy to one hundred and twenty miles in twenty-four hours; it has also a stomach equally fitted for the desert. The most temperate of animals, it can travel for days or even weeks without any food, except the thistles or stunted shrubs of the wilderness, and can carry a stock of water, which, besides refreshing itself, is often, in the hour of extremity, the only resource of its faint, withered, and dying owner. It forms part of the household of the Arabian, and is deemed, as it truly is, a sacred gift of heaven. Its milk is their food, its hair their clothing, and its fleetness their defence in a salt and dry land, where no other animal can pursue.

The LLAMAS, *Auchenia*, of the New are analogous to the camel of the Old World, but smaller in size, being only about four feet four inches high at the shoulder, while the dromedary is from five to seven. It is a native of the mountainous regions of South America. It has cloven, crooked hoofs, adapted for aiding its progress in hilly districts. It has no hump on the back, but has one on the breast. Its colour is a greyish-white, spotted. It is equally abstemious in its habits with the camel, and will travel four or even five days without seeking repose; but like the camel, it will not be forced to carry more or move faster than it chooses, and will rather kill itself, by striking its head on the ground, than be driven forward by harshness or blows. In a wild state it is gregarious, but is easily domesticated, and is still used as a beast of burden. In the Museum of the Edinburgh University there is a specimen of the llama, which stands about three feet high at the shoulders, and is of a vinous chocolate-brown colour.— The VICUGNA and GUANACA, inhabiting more elevated situations, are animals of the same species, but not suffi-



AFRICAN BLOODHOUND.



HIGHLAND GREYHOUND.



ciently known to be accurately discriminated. Their wool or hair is of a silky lustre, and is manufactured into elegant dresses: their milk is esteemed, and their flesh is good.

SECT. III.—CARNIVOROUS—*Caninadæ*.

DOGS, *Canes*.—This genus is distinguished from the former carnivora by flattened modifications of their cheek teeth, and a smoothness of their tongues, which indicate a diminution of the carnivorous principle; and their toes, five on the fore, and four on the hind feet, though armed with claws, yet these, being blunt and unretractile, are useless for seizing their prey, or for climbing like the Cats. But they are still more nobly distinguished by their faithfulness, affection, intelligence, and courage. The Dog has long been the companion of man in a domesticated state, and is the only animal that seems to prefer the company of his master to that of his own species: him he follows, obeys, and defends, nor is his attachment overcome by harsh or even cruel treatment. Instinctively he reads to man the sublime lesson of returning good for evil, and has often risked his life for the wretch who has barbarously sported with his torture. He hardly sweats when warm, but lolls out his tongue, and eagerly takes to the water. Before laying himself for repose, he turns frequently round; and often appears to dream, but is easily awakened. Though carnivorous, yet he does not decline farinaceous food, and drinks by lapping. The female goes with young sixty-three days, and brings forth from four to ten at a litter: the puppies remain blind for the first ten days, and begin to change their teeth at the fourth month. When sick, he eats grass to make him vomit and clear his intestines. He is subject to hydrophobia and the tape-worm.

The vast multiplicity of cross-breeds renders it vain to

inquire which was the original stock, or perhaps accurately to distinguish the different species of this extensive order; but we shall be guilty of no very serious offence should we be in error in admitting the supposition of Buffon, that

The SHEPHERD'S DOG is the parent stem. He is characterized by an elongated snout; has half-pricked ears, a bushy recurved tail, and is covered by a long, soft, loose black fur. Docile and sagacious in the highest degree, this invaluable companion of the shepherd will guide the flock according to his directions, collect them together, recall the stragglers, and protect them from every intruder. By his own natural sagacity, he becomes capable of tending them with a care almost human; nor does he but very rarely use any other method of coercion than his cry, which they understand much better than the voice of his master. This species is still found unmixed in many of the sheep districts of Scotland.—The BLOODHOUND, or SLEUTH-HOUND, *C. sanguinarius*, is a tall, beautiful, strongly-formed animal, with large pendant lips and ears, a blunt tail, and generally of a brown colour, with black spots. He possesses a very keen scent. This species was formerly in great repute in our island, especially in the Highlands and upon the borders between Scotland and England, where he was employed in tracing the footsteps of enemies, fugitives, robbers, or stolen cattle. He was likewise used for recovering any game that had escaped wounded from the hunter, or had been stolen out of the forest. The breed is now nearly extinct, except a few who are still employed to track deer-stealers. In the Spanish West India Islands, they are used, accompanied by officers called chasseurs, to hunt down runaway slaves or scent out criminals.

The GREYHOUND is an elegantly formed animal, has a deep chest, a slender curved body, an elongated visage, and a large mouth. He stands high upon his limbs, and has powerful sinews. He is the swiftest of the dog kind, and is easily trained for the chase, which he follows more by

the eye than the scent. — The SCOTTISH GREYHOUND, DEER-DOG, or RATSHE, is very large and strong, covered with a long wiry fur, and has the scent and sagacity of a bloodhound. He is not uncommon in the Highlands. — The IRISH GREYHOUND, or WOLF-DOG, is also large and powerful, but harmless and indolent: his fur is smooth and short. He was formerly employed in hunting wolves, and is still to be found in the sister island.

The SPANISH POINTER has been long naturalized in this country: his head and snout are thick, his fur short, smooth, and glossy. Though not so capable of enduring fatigue as the English, he is much more easily trained: he is chiefly used in finding partridges, pheasants, &c. — The SPANIEL is a handsome animal; has a narrow head and snout, with long pendant ears, and long, soft, waived hair. Its scent is keen, and it is extremely sagacious and docile; and is so much attached to its master, as to have been known to pine to death for his loss. It is employed in setting for partridges, quails, &c. — The WATER-SPANIEL, in the qualities of docility, sagacity, and attachment to man, is perhaps even superior to the former: he will fetch and carry at command, and will dive to the bottom for any little article thrown into the water, bring it out, and lay it at the feet of his master. Cowper, in his beautiful poem of the "Dog and water-lily," has immortalized the sagacity of his spaniel Beau. This creature hunts the otter, brings to shore water-fowl after being shot, and performs a variety of aquatic services. — The TERRIER is a small, thickset hound, with a bearded muzzle, and long wiry hair: it has erect ears, and strong jaws. Its sense of smell is acute, and it has an inveterate enmity to all sorts of vermin. It is expert at unkenning the fox, and does not shrink from an encounter with the badger. There is a small variety with pendent ears and soft fur; and another termed the *Otter Terrier*, a cross breed with the beagle.

The ENGLISH SETTER is a handsome and swift animal,

possessed of a keen scent and exquisite sagacity, and is esteemed the most valuable of our hunting dogs.—The **BEAGLE** is the smallest kind of dog used in the chase, chiefly in hare hunting, and is remarkable for the musical melody of its tone, and the keenness of its scent. There are two varieties, the *Rough* and the *Smooth*.—The **WATER-DOG** has pendant ears, a body covered thickly with long curled hair, a snout slightly recurved, and eyes almost concealed in the fur: it has an acute scent, is docile, sagacious, and swims well.

The **MASTIFF**, a species peculiar to Britain, is a strong and active animal, of large stature; has a big broad head, pendant ears, thick lips, and is altogether of a noble countenance. He is bold, trusty, and vigilant, and highly esteemed as a watch-dog. He seldom tears or wounds intruders, except in cases of resistance; but more frequently, when he has subdued his enemy, contents himself with keeping him in durance till relieved in due course by some known member of the family. The writer recollects an instance of a young man who, visiting a friend in the country, and entering his court-yard under cloud of night, was seized by the watch-dog (a mastiff,) laid prostrate and kept down, but unhurt, till his friend released him. The Roman emperors held the British dogs of this kind in high estimation for combats in the amphitheatre; and according to Strabo, they were trained by the Gauls for battle.—The **BULL-DOG** is lower than the mastiff, but more muscular; his head is round, his ears half pricked, his snout blunt, his neck thick and short, and his under jaw projecting. He is courageous, fierce, and obstinate; has a natural antipathy against the bull, and, without barking, will fly upon and seize the fiercest, run directly at his head, and pin him to the ground; nor can he, without the utmost difficulty, be made to quit his hold. He is used in the brutal sports of bull-baiting and bear-baiting: two are considered equal to a bull, and three more than overmatch for a bear. Four have successfully contested with the lion.

The NEWFOUNDLAND DOG, a native of the island whence it derives its name, is a large, stout animal; has pendant ears, loose lips, and long, thick, rough fur. There is something remarkably pleasing in his countenance; nor does his temper belie his physiognomy, he is exceedingly docile, gentle, and of great sagacity. His feet are more palmated than usual, and peculiarly fitted for his almost amphibious nature: he swims fast, dives easily, and will bring up any thing from the bottom of the water; and so prompt is he in lending assistance to persons who have accidentally fallen into the sea or into streams, that in innumerable instances he has been the means of rescuing from drowning those who must have perished but for him. In their native country they are used as beasts of burden; and three or four yoked to a sledge will draw almost as many hundred weight of wood for several miles, and, after being unloaded, return for another burden—all without the superintendence of a driver.—The ESQUIMAUX DOG is in size much about that of the former: his ears are short and erect, and his bushy tail curves elegantly over his back; he is well furnished with a thick hairy coat, peculiarly adapted to the climate. As a hunter, his scent can trace the seal or the rein-deer at a considerable distance, and he does not dread, when in packs, to attack even the white bear. His chief value, however, consists in his qualities as a draught animal: for this he is carefully trained from his infancy, and undergoes severe and frequent floggings to break him regularly into the team. He then becomes remarkably submissive, comes at his master's call, and allows himself quietly to be harnessed to the sledge. The teams vary from three to nine dogs, and the last number have been known to drag along the ice a weight of more than sixteen hundred pounds a-mile in nine minutes.

The HARE INDIAN DOG, or the Mackenzie River Dog, is of small size and slender make. Its muzzle long, narrow, and pointed; its ears erect and triangular, broad at the base

and pointed at the tip; its tail thick, bushy, and curved, and its body covered with long straight hairs. This species appears to be peculiar to the regions around the Mackenzie River, and the tribes that inhabit them. They are gentle and good-tempered, and soon become familiar with strangers. They are never known to bark, and, weak and timid, are unfit for pulling down any of the larger animals; but its broad feet and light make enable it to run over the snow without sinking, if the slightest crust is formed on it, and thus easily to overtake and tease the moose or rein-deer and keep them at bay until the hunters come up.

The THIBET DOG. The specimens of this dog in the Zoological Gardens were larger in size than any English mastiff: they had the broad, short, truncated muzzle of the mastiff, and lips still more deeply pendulous. These noble animals are the watch-dogs of the table-land of the Himalaya mountains about Thibet. Their masters, the Bhotas, are a singular race, of a ruddy copper colour. The men till the ground, keep the sheep, and at certain seasons come as far as Calcutta to trade. On these occasions the women remain at home with the dogs, and the encampment is watched by the latter, which have an irreconcilable aversion to Europeans, and in general fly ferociously at a white face. A warmer climate relaxes all their energies.—The HYÆNA DOG, *Hyæna venatica* (by some naturalists considered as a distinct genus) is a wild unreclaimed native of South Africa; smaller and slenderer than the wolf, of a fierce aspect, with large tufted ears, and a tail covered with long bushy hair. In colour it is of a reddish or yellowish brown, mottled with large patches of intermingled black and white. It is fierce and untameable, and dreadfully annoys the colonists at the Cape of Good Hope. It generally hunts in packs at night. Sheep it attacks without scruple, but never ventures on the horse or the ox till it finds them asleep. Its injuries are generally mortal, and to bite off the tail of the animal seems its great delight.

The Fox, *C. vulpes*, in great variety, is spread over every region except the torrid. In form it resembles the dog in general: it is rather more than two feet long, and one high: its countenance has an expression of great cunning, from the linear pupil of the eye, and a narrow pointed muzzle. The usual ground colour of the European fox is a dull reddish-fawn, with a strong tendency to blackish along the middle of the back, across the shoulders, on the sides of the muzzle, the backs of the ears, and fore parts of the limbs; the whole of the under parts of the body, and the tip of the tail, being commonly pure white; the tail is long and bushy, and is called the brush. In the fox, artifice supplies the place of strength. He feeds on lambs, hares, or rabbits, but is the greatest enemy to the poultry yard, which he often depopulates in one night; first killing a great number of the fowls, and then carrying them off by repeated excursions. Partly nocturnal in his habits, his depredations are most frequently committed during the night, and in the most silent manner; but when disappointed of better fare, he feeds upon mice, toads, or carrion. He has been likewise known to eat shell-fish in time of need, as also the hedgehog, which he teases till it unrolls itself, and then devours. In France and Italy, he does much damage to the vineyards, being very fond of grapes. His habitation is usually a hole in the earth, where his young is brought forth, and his superfluous provisions stored up. The female produces but once a-year, and seldom has more than four or five cubs at a litter, which come blind into the world. Like the dog, his life does not extend beyond fourteen or fifteen years. There are three varieties of this animal in Great Britain: the *Greyhound Fox*, the largest and boldest; the *Mastiff Fox*, less, but more strongly built, and of a dark brown colour; and the *Cur Fox*, the least of all, of a reddish-brown colour, with the tip of the tail black. — The AMERICAN RED FOX differs from the European in having long and very fine fur of the most brilliant colours, rounder

cheeks, a thicker, shorter, and more truncated nose: its eyes are nearer each other, and its ears are shorter; it has also a much finer brush, and is altogether a larger animal. The red foxes are so abundant in the wooded districts of the Fur Countries, that about eight thousand skins are annually imported thence into England. They burrow in the earth during summer, but prefer the shelter of a fallen tree in winter; thus with sagacious instinct avoiding the danger of being frozen up in their holes. The *Cross Fox* and the *Silver Fox* are merely varieties, differing in the beauty of their furs; which being scarcer, are more highly prized, particularly the latter, which, in its most perfect state, is entirely of a pure shining black, intermixed with spots of silver-tipped hairs on the fore part of the head, the sides of the face, the loins, and sometimes the breast.—The **ARCTIC FOX** resembles the other species in the form of its body and the length of its brush, but in the shape of his head and the position of his eyes is liker the dog, and thus in some measure connects the two. Its hair is soft, thick, tufted, and glossy, and, what is remarkable, changes its colour with the seasons, being one part of the year brown, and at the other perfectly white. It hurrows like the fox, and is singular in keeping its kennel clean. It is found only in the arctic regions, and in the islands of the frozen and eastern ocean.

The **WOLF**, *C. lupus*, is common both to the Old and New World, particularly in the immense forests and cold regions of the north. They have been extirpated from the British isles. Nothing is heard of them in England subsequently to the reign of Edward I.: the last was killed in Scotland by Sir Ewen Cameron of Lochiel, 1680. They were not extinct in Ireland till after 1710. In length he is about three and a half feet, and in height about two and a half. Both externally and internally he resembles the dog, only gaunt and emaciated, with a fiercer and more savage aspect. His common colour is a mixture of black, brown,





FOX.



WOLF.



HYENA.

and grey; but some incline to yellow, some are found quite black, and others altogether white: his hair is rough and hard, mixed towards the roots with a kind of ash-coloured fur; his eyes open slantingly upward, and the colour of the eyeballs is of a fiery green; his tail is nearly straight. He is strong and agile, but cruel, cunning, and cowardly. When pressed with hunger, however, he becomes daring and ferocious; approaches the dwellings of man, and carries away sheep, lambs, and even sometimes dogs, which he throws over his shoulder, and bears off without allowing their bodies to touch the ground; nor, if his necessities are severe, will he hesitate to attack women, children, or man himself. He is in general a solitary animal, and partly nocturnal in his habits, but frequently associates for the sake of plunder; and in winter, during day, a whole pack of wolves will attack a carriage in Poland while passing along. The horses are commonly the first victims; though an anecdote, which commemorates the generous resolution of a servant, proves that they occasionally give this uncoveted preference to men. A gentleman was travelling with his valet-de-chambre in a sledge through one of these dreary forests, when they were suddenly attacked by a number of wolves, who leaped furiously at the carriage. The servant, who instantly saw that one of them at least must perish, exclaimed, "Protect my wife and children," and instantly leaped into the midst of them. His master drove wildly on, and escaped. The she-wolf goes with young a hundred days, and brings forth five or six, or sometimes more, at a litter. The cubs come into the world with their eyes closed.

The CLOUDED BLACK WOLF, from the extreme northern regions of America, is much larger and more robust than the common species, measuring from the tip of the nose to the origin of the tail about four feet and a quarter; the ears are remarkably short, and the tail is not so long as in the other species: the hair is mottled, black, grey, and white, and it has a sort of ill-defined mane. It is very ferocious.

The JACKALL, *C. aureus*, is diffused all over southern Asia and Africa. It is about two feet and a half in length, and rather more than a foot in height: it exceeds the fox in size, but resembles him in appearance: its general colour is a sorrel or reddish-yellow. In the scale of being, it seems to rank between the wolf and the fox. These animals always hunt in large packs, from fifty to more than a hundred, and pursue like hounds in full cry; and although their common prey be the smaller animals, they do not then fear to attack the larger. They prowling about the villages, and follow their game even into the streets, where they often pay the penalty of their rashness. They ransack the sheepfold, the yard, and the stable, and, if they can find nothing else, devour the harness. If living prey cannot be found, they search for dead, and associating together, will dig up a buried carcase and devour it. Their howl is like the cry of a person in distress, which attracting the lion, he often comes upon them an unwelcome guest, when they have been successful in the chase, and after satiating himself with the game that they have caught, leaves them the fragments; whence they have been called the lion's-provider,—an office in the royal court unlike any among the princes of men, of much labour and small emolument.

The HYÆNA, *Hyæna vulgaris*, a native of the torrid zone, is found chiefly in Asia and Africa—sometimes in Europe. A foul and solitary animal, he seeks the most desolate regions, and resides in the caverns of mountains, the clefts of the rock, or in dens of the earth. He is nearly the size of the wolf, to whom he has some similitude, but his head is broader, and his nose not so pointed: his ears are longer, and his eyes like those of a dog. He holds his head low, and has an arched back, along which runs a bristly ridge. The legs are longer than those of the dog or wolf, and have only four toes on the front as well as on the hinder feet. He is covered with long, coarse, ash-coloured hair, marked with black stripes from the back downward: the tail is

short, and rather bushy. He is savage and untractable, and seems always as if enraged. When taking food, his eyes glisten, the bristles of his back stand erect, and his teeth appear. His howl is as that of a person moaning with pain. Like the jackall, he ravages the flocks and the herds, and cares little for the strength or watchfulness of dogs. When tormented with hunger, like him he approaches the villages, and violates the repositories of the dead. Courageous as voracious, he combats the panther, and even beats off the lion. From his impatient and irritable temper in confinement, he has generally been considered as untameable; yet Barrow says he has been domesticated in some parts of South Africa; and Bishop Heber tells us he saw a man in India that had a tame hyæna following him like a dog.

CARNIVOROUS—*Ursi*.

The BEARS, *Ursi*, afford the lowest type of the carnivora: the teeth, especially the grinders, are less sharp and cutting, the claws are blunt, and they have neither the agility of the cat, the intelligence of the dog, nor the insinuating slenderness of the weasel. Their figures are thick-set and clumsy; they have short limbs, and are plantigrade, *i. e.* walk on the soles of their feet; they have five toes on each foot, with strong, curved, unretractile claws: the form of their head is nearly round, with a broad projecting muzzle, large nostrils, and lips capable of considerable protrusion; the tongue is smooth and extensible, the ears moderate in size, the pupils of the eyes circular; the tail so small as to be scarcely visible: they are muscular, fat, and shaggy. The varieties at present are, eight recognized species, and five doubtful. Our limits forbid more than one or two specimens.

The BROWN BEAR, *Ursus arctos*, was formerly to be met with all over Europe, but he is no longer found native in the British Isles, France, or Germany: he is still, however,

common on the Alps, in the mountain forests of Bohemia, in Poland and Russia; spreads eastwards to Kamtschatka and Japan, and extends to the northern regions of America. He is covered with long, soft, woolly hair, of a deep brown in youth, which becomes yellowish-grey and grizzled in more advanced age: he is about four feet in length, and nearly two and a half in height: the length of the head is about a foot, the fore feet eight inches, the hinder rather more, and the claws two inches. He is most solitary in his habits; even with his female he only companies a short time, and retires to doze out the rest of his lethargic existence in the hollow of a tree, in some natural cavity of the earth, or the cleft of a rock, which he contrives to line comfortably with moss. Here he remains till the return of spring, subsisting upon the absorption of his fat, when he forsakes his lair. The female remains longer, till she has brought forth her young, when she sallies forth with her little family (two or three), hungry and ferocious. Unless provoked, they never attack man; but when they are, the assault is dangerous: rising upon their hind feet, they hug their opponent between their fore limbs, and he seldom survives their formidable embrace. They are excellent swimmers, and climb well. When tamed, they seem mild and obedient to their keepers, and are taught to dance and assume a variety of ludicrous attitudes to the sound of an instrument. In captivity, they have been kept alive nearly fifty years upon farinaceous and vegetable diet. Bears' grease is used for rheumatic complaints, and for promoting the growth of hair, and is said to preserve it from becoming grey: the skin is used as a dress by the inhabitants of the colder climates.

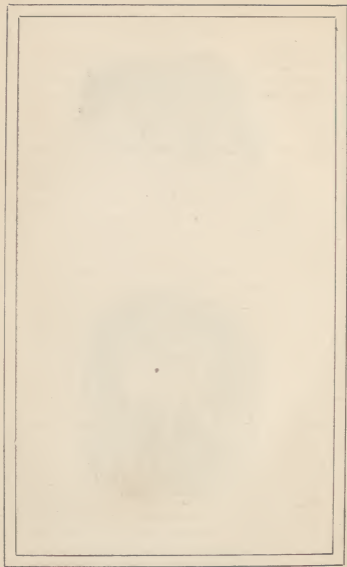
The POLAR BEAR, or SEA BEAR, *U. maritimus*, delights in those latitudes where the cold is most intense, and rarely migrate beyond the bounds of the arctic circle, though occasionally caught upon floating ice: they are propelled to the south, and sometimes wrecked upon the



BROWN BEAR.



POLAR BEAR.



shores of Iceland or Norway. They are found on the northern coast of America, on Hudson's Bay, Greenland, and Spitzbergen. The size of this animal, though large, was greatly exaggerated by the earlier voyagers: the authentic measurement, by later travellers and naturalists, fixes it rather under nine feet from the nose to the tail, and its height at little more than four. His head is narrower and more cylindrical than the former; his muzzle rather broader: his neck is nearly twice as long as his head, his legs also are longer; and the sole, almost entirely covered with hair, secures a firm footing on the ice. The fur is a dull silvery white, with a tinge of yellow. Their habitation is on the coast, where they seek shelter under the lee of an ice-rock, or they burrow amid the snow, where they dig for themselves a house in which to hibernate. Their principal food is the flesh of dead whales, seals, or other carcasses which they find floating; but during winter, they also watch the seals at their air-holes in the ice, and seize them when they come up to breathe. They are also expert at capturing salmon in the streams, and fare sumptuously upon the herrings and other fish, when they arrive in shoals in the creeks and inlets of the sea. As they emerge from their winter retreats they are lean and voracious, but at other times are neither so fierce nor formidable: the female is noted for a strong attachment to her cubs.

The AMERICAN BLACK BEAR, *U. Americanus*, perambulates the New World, from the isthmus of Panama to the north beyond Canada, whence, in 1803, twenty-five thousand skins were imported into England; a wholesale destruction which, with the progress of civilization, has greatly diminished the number of this species. He is rather smaller than the brown bear: his head is narrower, and his nose more pointed; his hair is smooth, straight, and of a deep glossy black. He is less carnivorous than the European, and commonly subsists on fruits and wild vegetables; yet when hungry, he not only devours the smaller quadrupeds,

but even pigs, calves, or sheep. He is fond of fish, and is said to be expert at catching herrings, sitting among the shoals when they come into the shallow waters, and "taking them up as fast as he can dip his paws into the sea:" he has likewise a great relish for honey. He vies with the polar bear himself in climbing and swimming. In the more northern latitudes, they hibernate during the frost; but in warmer climates, the male roams abroad, and the female only conceals herself during her pregnancy. Their winter dwellings are the hollow trunks of decayed trees, not unfrequently forty feet from the ground. Their flesh is reckoned good, their tongues and paws delicacies, and their hams not inferior to those of Westphalia. — The **GRIZZLY BEAR**, a native also of America, averages about seven feet in length, and four and a half in height. His forehead is slightly elevated, and his muzzle narrow, flat, and elongated: his feet are enormously large, the breadth of the fore foot exceeding nine inches; the length of the hind nearly twelve, and its breadth seven, exclusive of the talons, which measure more than six: his general colour is black-brown, grizzled with light grey. He cannot climb trees, but digs up the ground with great facility. He is the most formidable of all the bears in magnitude and ferocity, and reigns monarch amid the wooded plains and tangled copses in the neighbourhood of the Rocky Mountains. He pursues both men and the larger animals; and such is his strength, that he can overpower the bison, and drag his carcase to his den. His tenacity of life renders him extremely dangerous, for after having received several mortal wounds, he will still pursue with rapidity: a shot through the brain only can settle him at once.

There are, besides, the **LARGE-LIPPED BEAR**, a native of the interior of Bengal, remarkable for its long lips, which it can protrude in the most singular manner. It is covered with very long, black, shaggy hair. It is gentle and sluggish, burrows in the ground, and feeds chiefly on roots, fruit, and

honey, but does not refuse the flesh, or rather the fat, of animals. — The THIBET BEAR differs from the foregoing in the thickness of its neck, and the flatness of his head. — The BORNEAN BEAR, again, instead of a flattened head, has his nearly hemispherical, terminating in an attenuated nose. Its mouth is large, and it has a long narrow tongue, which it can thrust out nearly a foot beyond, and then curve spirally inwards; a curious process that it seems to delight in. The colour of its body is jet black, with a large orange patch on the back of the neck, and a yellowish muzzle. It is intelligent, but voracious. In confinement, it preferred farinaceous to other food; was very tame, and delighted in being patted and rubbed, even by strangers.

The RACCOON, *Procyon lotor*, is a native of North America and the West Indies, particularly the mountainous parts of Jamaica, whence it descends in destructive numbers on the sugar plantations. It is about two feet long, and one high; its head is like that of the fox, but its ears more rounded, and its nose shorter and sharper; its eyes are large; its tail, about as long as the body, thick at the insertion, tapers to a point, and is marked by black and white rings: his fur is fine, long, thick, and grey, dark on the surface, and lighter towards the roots, with two broad veins of black round the eyes, and a dusky line running down the middle of the face. Its favourite food is the sugar-cane, maize, and various fruits; but when they can get into a poultry-yard they commit sad devastation among the fowls, gorging themselves with their blood, and eating their heads, the only part they appear voluntarily to choose. They exhibit much cunning in procuring the meat of the oyster, and in catching crabs. When tamed they are good-natured and sportive, but as restless, inquisitive, and mischievous as the monkey. Their fur is considered next in value to the beaver, the skin is tanned, and made into shoes, and the negroes are very fond of their flesh.

The BROWN COATI, or COATIMONDI, *Viverra nasua*, in-

habiting the woods of South America, is smaller than the racoon, more slender in the body, and shorter in the legs: it has a face of a more elongated form, with the upper jaw projecting about an inch and a half over the lower, turned up at the point, and moveable like the trunk of the elephant. Its tail, which is ringed black and yellow, is naturally longer than its body, but is frequently shortened by the animal itself eating a considerable portion of the extremity. It destroys small animals and poultry, hunts for the nests of little birds, and devours their eggs.

The BADGER, *Meles vulgaris*, is found in almost all the temperate climates of Europe, Asia, and America; measures in general about two feet and a half from the snout to the insertion of the tail. The body is thick, the legs short and muscular, and the fore feet provided with claws; the superior part of the body is of a dirty greyish colour, the inferior black; the hair is long and rough on the back and sides, out shorter on the throat, breast, and belly. It secretes a fetid substance in an orifice under the tail, which gives it a very offensive smell. It is a solitary animal, and resides in woody places, in burrows which it digs deep in the earth, with long winding entrances, and keeps remarkably clean. It feeds upon young rabbits, frogs, birds and their eggs, and young; but seldom ventures far from its habitation, and that only at nightfall. If surprised by dogs in its excursions, it turns upon its back, combats with desperate resolution, and seldom dies unrevenged; nor is he easily conquered, for his skin is so thick and loose, that the teeth of a dog make but little impression. It is very torpid, especially in winter. The female brings forth once a-year, three or four at a time. When taken young, it is easily tamed, will play with the dogs, and follow its master about the house. Its flesh, when well and cleanly fed, makes excellent hams: those of the South American Badger were wont to be considered so delicious, that the sale of them was prohibited but to the viceroy, who sent an annual present to Madrid for the royal table.



BADGER.



PINE MARTEN.



CIVET.



CARNIVOROUS — *Mustelæ*.

WEASELS, *Mustelæ*, constitute one of the most strongly marked families of the carnivora, and are inferior in predatory character to the cats alone. Their forms are slender, having long cylindrical bodies supported on short muscular legs, with flattened heads, and necks of unusual length, and of nearly the same circumference with the rest of their bodies. Their ears are small and rounded; the pupils of their eyes vary, round or narrow; their muzzles glandular, with nostrils at the extremities; their tongues rough; they have five toes on each foot, pointed with sharp semi-retractile claws: their furs are sleek. Several of them emit an odorous, some a fœtid secretion. They are extremely agile, climb well, and are amazingly rapid in their motions among the branches of trees; their walk is digitigrade, *i. e.* chiefly on the toes. They are rather nocturnal in their habits, sleeping the greater part of the day, and prowling abroad at night in search of their prey, small animals and poultry. The animals of this family are so numerous, and are subdivided into so many species by very slight variations, that it is as impossible as it would be unsatisfactory, to enumerate the whole in bounds so limited as ours. A few of the most remarkable are noticed.

THE WHITE-CHEEKED MARTEN, *M. flavigula*, a native of Nepaul, is the largest of the group, the body being about two feet in length, with a tail of nearly equal extension. The upper parts of the body and head are of a deep shining black, the chin and lower jaw pure white, the throat is of a bright yellow, the belly brown; the tail is perfectly cylindrical. Only two living specimens of this animal appear to have reached Europe, one of which belongs to the Zoological Society, London; it is very tame, good tempered, and playful; its wild habits are not accurately known.

THE COMMON MARTEN, *M. foina*, is spread over most of the temperate climates of Europe and America: its size

is about eighteen inches long, with a bushy tail of about ten ; its countenance is sharp, its head small, its eye lively ; its general colour is chesnut brown, only the throat and breast are white. It forms a residence for itself in old buildings, hay-lofts, or the holes of walls. In its gait it leaps and bounds ; in its habits it is bloodthirsty and voracious ; it surprises birds in their nests on high trees, clambers into pigeon-houses with great facility, and devours both the pigeon and her eggs ; and it commits similar ravages in the hen-roost. Mice, rats, and moles, it follows into their holes, dislocates the neck, and divides the spinal marrow of the feebler by a single crush of its jaws ; the larger it seizes on the side of the neck behind the ear, and opens the main artery with anatomical precision. It does not live beyond ten years, but is very prolific. Its smell is agreeable, like diluted musk.

The PINE MARTEN, *M. abietum*, a native of the North, and an inhabitant of the pine forests, whence it derives its name, is abundant in Siberia and the northern portions of America, and is not uncommon among the wooded ravines in the wild mountainous districts of Scotland and Wales. It builds its habitation chiefly on the tops of the fir, or seizes on the already formed nest of the squirrel, or of some bird, whence it drives the owner, and enlarges for its own convenience. It is rather less than the former, but its fur is finer and darker, and the throat and breast yellow, instead of white. In summer they assume a lighter tinge, and their hair becomes shorter : in winter their toes are well protected by long wool, which drops off as the weather gets warm. Its habits are similar to the former, but more fierce ; it never meets the wild cat without a deadly encounter, and is sometimes victorious even over the golden eagle, when that bird pounces on it as its prey, seizing the aggressor by the throat, and bringing it lifeless to the ground. Before the Union, the fur of this species formed a lucrative article of export from Scotland ; at present immense quan-

tities are brought from Siberia, and in one year, the Hudson Bay Company alone sold fifteen thousand skins.

The SABLE, *M. zibellina*, inhabits the same countries in the North, and has sometimes been confounded with the former, which it strongly resembles in structure and habits; but Professor Pallas, who examined it on its native soil, has assigned it its place as a distinct species. It is somewhat larger in size than the pine marten; its head is rather more slightly depressed, and its muzzle rather more elongated; the soles of the feet more villous, and the tail, though longer than their hinder legs, is yet more abbreviated; and finally, the fur on its body is more beautiful, soft, long, black, and shining, and the hair turns with ease either way; the skin is consequently more valuable, and one of them, not exceeding four inches broad, has sometimes been valued as high as fifteen pounds. The tails are sold by the hundred, at from four to eight pounds sterling. The banished in Siberia are required to furnish a certain number of skins annually, from which the Russian government is said to derive a considerable revenue. The smell of the marten tribe is rather agreeable.

The POLECAT, FITCHET, or FOU MART, *Putorius communis*, ranges in Europe from Poland to Italy, and is also numbered among the few wild British carnivora. The length of its body is about seventeen inches, and the tail six: its colour is a deep chocolate, and its short ears are tipped with white. In summer it frequents the woods and rabbit-warrens, and in winter haunts barns, outhouses, and the poultry yard. It emits a strong fetid smell, intolerable when enraged. It is very destructive to young game of all kinds, to poultry and to pigeon-houses, killing and sucking the blood of its victims; rabbits, however, are their favourite prey. They are fond of honey, and in winter will even attack the hives. They will also catch and eat fish. — The FERRER is merely an albino of this species, according to Dr. Fleming. According to Buffon, it forms a

different species, originally imported from Africa to Spain. It has white fur and red eyes, but breeds freely with dark individuals: it is easily tamed, and when muzzled, is made use of to drive the rabbits from their burrows.

The COMMON WEASEL, *Putorius vulgaris*, is the smallest of the group, about seven inches in length, with a tail two and a half, not bushy: its colour is yellowish-brown above, and dingy white beneath; it is whiskered like a cat; lodges in old walls. When it enters a hen-roost it never meddles with the cocks or old hens, but makes choice of the pullets, and these it kills with a single stroke on the head, and carries away one after another. Of eggs it is incredibly voracious, and making a small hole at one end, sucks out the contents. It also hunts rats and mice with great success, its slender form allowing it to follow them into their holes. Like the polecat, its smell is extremely fetid. It is said weazels were first introduced into Zetland by the king's falconer, in revenge for some of the inhabitants having refused him rabbits for his hawks.

The ERMINE or STOAT, *Putorius erminea*, common to both the Old and New World, is ten inches in length of body, with a bushy tail of six, tipped with black. Its summer dress, when it has the name of stoat, is a reddish-yellow above, and a yellowish white beneath the edges of its ears, and the extremities of its feet white. In winter the fur assumes a beautiful white colour, and is then of high value; but it attains its greatest perfection only in the more northern regions from Norway to Siberia, where it forms a considerable article of commerce. The Norwegians either shoot them with blunt arrows, or take them in traps; in Siberia they are caught in traps baited with flesh.

The ICHNEUMON, *Herpestes Pharaonis*, *J.*, at the head of the weasel tribe for utility, abounds in all the southern parts of Asia, from Egypt to Java, and is also found in Africa, particularly about the Cape of Good Hope. Its usual size and appearance is that of the marten, only the

hair, which is of a grizzly black, is rougher, nor is the tail so bushy at the end; but having been long domesticated, there are many varieties both of size and colour. It is an active, strong, and courageous animal; it attacks every living thing that it is able to overcome; it fears neither the open force of the dog, nor the insidious strength of the cat, the claws of the vulture, nor the poison of the viper, and as indiscriminately preys upon all kinds of flesh, rats, mice, serpents or lizards. While eating, it sits upright, and uses its fore-feet to bring its food to its mouth. Its peculiar value to the Egyptians, however, consists in its being the determined persevering enemy of the crocodile, whose eggs it searches out and destroys, and whose young it kills ere they reach the water, for which it was deified and worshipped by the "wise" Egyptians.

The CIVET, *Viverra civetta*, a native of the warmest climates of Africa and Asia, can yet subsist in more temperate latitudes: it is upwards of two feet in length, exclusive of the tail, which is more than one foot, and tapering. It stands from ten to twelve inches high; has a lengthened muzzle like a fox, straight ears and whiskers like a cat, with bright eyes. Their fur is of a brownish-grey colour, diversified with numerous stripes and irregular spots of black; along the dorsal ridge runs a kind of mane formed of black hairs, which the animal can raise or depress at pleasure. It is a fierce creature, and though tamed, is yet never thoroughly familiar; its food, like that of the rest of the family, is birds and small animals. The perfume, for which it is particularly valued, is very strong, and is found, of the colour and consistence of pomatum, in a pouch under the anus. Great numbers were wont to be bred in Holland, where no small emolument was derived from this luxury. The quantity which a single animal affords, depends upon its health and nourishment: in confinement, its favourite food is raw flesh cut small, eggs, rice, fowl, and fish. The perfume is collected twice or thrice a-week, and is said to be more

plentiful if the animal be irritated. That of Amsterdam is recorded the best, being generally the purest, though that brought from Guinea would exceed it, could it be procured free from adulteration. — The JAVANESE CIVET is not more than from fifteen to eighteen inches long: the muzzle is narrow, the ears short, the back strongly arched, and the tail is as long as the body. The ground colour of the fur is of a much brighter grey than that of the common civet, surmounted with a broad dorsal line of black, and on each side two or three narrower black lines of confluent spots. Over the rest of the body these spots are thickly but irregularly scattered. The head is greyish, and has no spots; and the legs are externally black. They live on animal and vegetable food, and are said to be revengeful and savage. — The GENET, *V. genetta*, a native of Spain, Africa, and the South of Asia, is smaller than the civet, and somewhat longer than the marten, but in its leading characters resembles the former: it secretes also a perfume similar to the civet, but less strong, and therefore more agreeable: it is easily tamed, is very cleanly, and keeps houses perfectly free from rats and mice.

Opposed to these sweet-smelling weasels, at the extremest point is, the SKUNK, *Mephitis Americana*, peculiar to North America: in length it is about eighteen inches; its legs are short, and its body broad and flat; scarcely two of them are coloured alike, but they generally are black or brown, with white spots or stripes. In its appetite for petty carnages, it emulates any of the tribe; but what renders it chiefly remarkable, is the fetid odour which it discharges upon its assailants when attacked, who, be they men or dogs, as soon as they find this extraordinary battery played off against them, instantly turn tail and leave the animal undisputed master of the field, glad to escape from the intolerable stench, perhaps smarting with pain, if the approach be too near, so as to allow a drop of the pestilent fluid to strike the eye.

The GLUTTON, *Gulo arcticus*, is common in Lapland, Siberia, and the countries bordering on the northern sea: in length it is about three feet, with a tail fully one; in height about a foot and a half; the comparative size and shape of the head are similar to the weasel: its teeth are very strong; and the shortness of its legs is compensated by claws, admirably adapted for climbing: it is of a shining black colour on the top of the head, and along the dorsal ridge, and of a dark brown on the other parts of the body; the paws are white. It preys on deer, beavers, and whatever animal it can master, deriving its name from its voracious and insatiable appetite. As its pace is slow, it commonly seizes its victims by surprise: ascending a tree, it will there wait till some unfortunate deer approach, when it darts down and fastens itself so firmly on the shoulders or loins of the animal, that all his efforts to get rid of his troublesome rider are vain; in vain he tries his utmost speed, in vain he rubs himself against rocks or trees: the glutton, fixed in his seat, tears his flesh and sucks his blood, till he fall faint and exhausted, and his tormentor then devours him at leisure. The glutton sometimes searches out snares laid for other animals, and feeds upon the game they may have caught. When deprived of living food, it will scratch open the graves, and gorge itself with the carcasses of the dead. Yet if taken young, it may be tamed and taught many amusing tricks, although, from the extent of its stomach, it must be an expensive pet. The fur is esteemed next, if not equal, to the sable.—The WOLVERINE, or AMERICAN GLUTTON, is rather larger and stronger, but in other respects resembles his detestable namesake.

CARNIVOROUS — *Glires*.

RATS, *Sorex*.—Descending in the scale, we shall close our notices of the carnivora with the Rat, *Sorex*, perhaps the most universally detested of the tribe. This pestilent crea-

ture is now so generally diffused over the world, that it would be useless to attempt ascertaining the place of its original nativity; it appears, however, to have been carried from Europe to America and the East Indies. It has a great degree of cunning, and will empty a wine bottle, by destroying the cork, and then inserting its tail and sucking it. They have been known likewise to lead an old blind one when emigrating, by giving it a straw in its mouth, and putting it under the care of two, one on each side, who could see. Those common in this country are —

The **BLACK RAT**, alleged to be indigenous; about eight inches in length of body, with a tail of about nine; its colour is greyish-black above, paler beneath. The females bring forth several times in the year; and Dr. Fleming states, that he has evidence of their producing eleven young at a litter, and of their pulling off the hair from the necks of cows to line their nests. It is a voracious animal, and infests houses, barns, stack-yards, and granaries, devouring, and destroying more than it can devour: besides poultry, rabbits, and smaller animals, it consumes grain and provisions of every description, and gnaws wood, wool, and furniture of all kinds. The enemies of this creature, besides man, are the cat, the dog, and the weasel; yet so prolific is it, that it would soon become an intolerable plague, were it not that it wars upon and eats its own kind. This species is said to be nearly extirpated by the brown rat; but Dr. Fleming mentions, as a fact consistent with his knowledge, that it has lived for years in the same house with the other, burrowing in the roof, whence its Scottish name of the *roof-rotten*; and the brown rat burrows in holes in the floor.

The **BROWN RAT**; about nine inches in length of body, with a tail equally long; its fur is a yellowish-brown above, greyish beneath. It is not so nimble as the former, but is stronger and bolder, and when hard pushed will turn on



WATER RAT



SQUIRREL



HARVEST MOUSE.



its pursuer and inflict both painful and ill-healing wounds: it burrows under the foundation of houses, but prefers being near drains of foul water; it is known in Scotland as the *grund-rotten*. It swims with great ease, and swarms about ships and harbours: it litters as many as nineteen at a time. It was imported into Britain about the middle of the last century from Norway, as was supposed, whence it had the name of the Norway Rat, but it is now generally believed to have been brought from the Levant.

The WATER RAT, the *Mus amphibius* of Linnæus, is seven inches length in body, with a tail round and hairy about three inches; its head is shorter and its nose broader than the land rat's; along the dorsal region it is raven black; the under part white, with a black line along the middle. It is found on the borders of rivers, rivulets, and ponds, never either in houses or barns. Its habits, Buffon says, resemble rather these of the otter, as it feeds chiefly upon fish, though sometimes on frogs and water insects. Dr. Fleming doubts this, and thinks they feed exclusively on the roots of aquatic plants; and on turning up its nest, the food deposited there for its winter stock consisted of potatoes. — Brit. An. p. 23. Its flesh is not pleasant, but in Popish countries the peasants eat it as they do the otter during Lent. — The POUCHED RAT seems peculiar to America, especially Florida, Georgia, and the Missouri, where it is found in great numbers; it derives its name from cheek-pouches on the exterior of the mouth: its colour is brown, and it lives in burrows in the ground.

SECT. IV.—RODENT, OR RODENTIA—GNAWING ANIMALS.

The RODENTIA (Gnawers of Cuvier), synonymous to the *Glires* (Dormice of Linnæus), compose a very extensive group; in general herbivorous, of inoffensive and rather

timid habits, and of different sizes, from the Beaver (*Castor*) to the Harvest Mouse (*Mus messorius*), the smallest of all the mammalia. They derive their denomination from their teeth (incisors and molars), which, possessing only the power of a projectile friction, *gnaw* without *cutting* their food. They are in general more slender in their anterior than their posterior quarters, and their hinder are longer than their fore legs: their furs, with a few exceptions, are soft, beautiful, and of request in commerce.

The first of this order, the SQUIRREL FAMILY, *Sciuri*, comprehends a great variety of branches, which, with the exception of New Holland, are found in every region of the habitable globe. They are remarkable for elegance of form, beauty of fur, the ease and elasticity of their motions, the gentleness of their dispositions, and the lively contented tempers they exhibit in confinement, — a state so different from their natural habitats, where, nestling among the topmost branches of the trees, and bounding from bough to bough with an almost viewless velocity, they revel in an unrestrained exuberance of freedom. They have been divided into four genera: the Tree Squirrels, the Ground Squirrels, the Flying Squirrels, and the Guerlinguets. Their dentition is similar, the lower incisors being long and slender, and the upper curved; the molars of the upper jaw have tubercles, those of the under, central corresponding depressions. Their heads are broad and short, their eyes large and lively, their ears middle-sized, and their hinder limbs much longer than the fore; their toes are four in number, with the rudiment of a thumb, on the former, and five on the latter, furnished with slender sharp claws; their tails most commonly are nearly equal in length to their entire body, and sometimes exceed it, and in general are distichous, *i. e.* bushy, the hairs diverging on either side from a longitudinal line, and usually erect, or curled over the back. The female goes six weeks with young, and produces only once a-year, about four or five at a birth. When

they eat, they sit erect, and use their fore feet as hands to convey their food to their mouth.

The TREE SQUIRREL, *S. vulgaris*, our COMMON SQUIRREL, is in length about eighteen inches: its colour is brownish-red above, and white beneath; its ears are tufted with long hairs. It usually lives in woods, in the midst of the tallest trees, and makes its nest of moss or dry leaves, at the roots of the branches, and near the hollows where they have begun to decay, that it may have a storehouse, separate from its nest, but near at hand, in which to deposit its winter's provision of nuts, acorns, &c., which, with sagacious instinct, it never touches till it can find food nowhere else. In spring, it feeds on buds and the young shoots, and in summer on the ripening fruits: it is partial to the cones of the pine and fir. It is extremely watchful, and if the tree on which it resides be but touched at the bottom, it springs to another, and skims along the top of the forest till it feels itself secure, at perhaps some miles distant from home. In Lapland and the extensive northern forests, they migrate in immense numbers from place to place, and when a river or lake obstructs their march, each procures a piece of bark, and the whole fleet is wafted across, their tails answering both for the rudder and canvass; but should they encounter a gale, the whole are shipwrecked, and the Laplanders reap a rich spoil, in their flesh for food, and their skins for merchandize. Though naturally wild and timid, it is easily tamed, and soon becomes familiar. Of this genus there is an extensive group; but we shall only notice two: the *Grey Squirrel*, which abounds in the higher latitudes of the Old Continent, and is chiefly distinguished by the colour of its fur, of a fine dark grey, changing in winter to a whiter coat; and the *American Grey Squirrel*, inhabiting the whole of the United States, but abounding most in Pennsylvania and the Carolinas. It is commonly of a fine bluish-grey, mingled with a slight golden hue: it builds its nest in summer on the extreme branches

of the trees, and in winter retires to its storehouse in the hollow trunks. By some naturalists this is considered as only a variety of the former, by others a distinct species.

The largest of the tribe, the MALABAR SQUIRREL, measures fifteen or sixteen inches from the nose to the root of the tail, which is rather longer than the body, and it stands eight or nine inches in height: its ears are short, covered with long tufted hairs, and its whiskers are few, long, and black; all the claws are strong, and incurved; the upper part of the body is of a bright chocolate-brown, abruptly changing into a paler shade below. It inhabits palm-trees, and feeds on cocoa-nuts and their milk.—The PALM SQUIRREL, *S. palmarum*, a native of the south-eastern part of the Asiatic Continent, is about six inches long, with a tail of the same dimensions. It differs from the others in the narrowness and elongation of its face, but its formation in other respects is similar. It is of a blackish-brown colour above, and white below, with three whitish stripes, one along the dorsal ridge, and two lateral. They are social even in their wild state, delighting in towns and villages, where they take up their abode in the roofs of houses, and in the cavities of old walls, but sport among the palm-trees in the vicinity; whence their name. They commit great devastations in the orchards; yet notwithstanding, their good-tempered familiarity renders them general favourites. — The GROUND SQUIRREL, or TAMIA, *S. striatus*, abounds in the forests of Northern Asia and North America: it burrows in the ground, and only ascends the trees in cases of emergency. The colour is reddish-brown above, and white below, marked with a stripe of black running along the central line of the back, and on each side one or more of yellow, bordered with black. It has two entrances to its hole, from which diverge several branches, where it deposits its winter food, acorns, nuts, maize, or chesnuts, each kind by itself. They seldom stir abroad during winter, except their provision fails, when

they sometimes find their way to the depositories of apples or maize, and make great havoc. — The GUERLINGUETS compose a species, distinguished by long and almost round tails, found in both continents.

The FLYING SQUIRREL, (*Pteromys*, *Cuv.*) is found in the Asiatic Islands, Siberia, and North America, and is principally distinguished from the common squirrel by that peculiar membrane which enables it to take those astonishing leaps that almost resemble flying. This consists of an extension of the skin from the fore limbs along the body to the posterior ones: it does not possess muscular power sufficient to elevate the body, but, when expanded, gives the animal a buoyancy in descending, so that it can skim obliquely through the air to an incredible distance, and with surpassing velocity. These animals have been divided into two sections, those of the Old and those of the New World; the former being similar in colour to the grey squirrel, the latter to that of the common, with a tapering instead of a bushy tail. They are torpid during winter, and nocturnal in their habits. One beautiful variety deserves notice, the LESSER AMERICAN FLYING SQUIRREL, *P. volucella*, *Cuv.*, little more than half as large as the northern species, with a tail measuring three-fourths of the length of the body. On the upper surface of a bright mouse-colour, with a tinge of fawn; the under surface nearly pure white. "It would be difficult," says Mr. Bennett, "to find, in the entire class of quadrupeds, a more graceful little creature, or one better fitted for a lady's pet, than this elegant animal. Its diminutive size (never exceeding five inches in length, head and body), the singularity of its form, the expression of its physiognomy, the vivacity of its motions, and the gentleness of its disposition, all combine to render it one of the most interesting, as well as most beautiful of an interesting tribe." Like the rest, they seldom stir abroad during the day, but become lively during the night, when they forage abroad in parties of ten or twelve.

The BARBARY MOUSE, *M. Barbarus*, whose locality is indicated by the name, is styled by Mr. Bennett "by far the most elegant of the troublesome and frequently destructive group to which they belong." They are of small size, none exceeding three inches in length, nor weighing more than the eighth part of an ounce. They have five or six yellowish stripes on a dark ground on each side, inclining to white on the under part of the body: they live chiefly on vegetable substances, but do not refuse animal, and in times of scarcity have been known to feed on each other. Their habits are subterraneous, burrowing together in extensive colonies around the habitations of man, and rendering themselves equally obnoxious to the good housewife and the industrious farmer. The plague of their fecundity is counteracted by the numerous enemies, feathered and four-footed, ever on the watch for their destruction when they venture to quit their nests.

The MARMOTS (*Arctomys*, Bear-Rat) are placed in the same group with the squirrels, on account of a similarity in their dentition and feet, but in other respects they are nearly the reverse of the squirrels, having short legs, middle-sized or short hairy tails, and large flat heads. Their motions are slow; they live in families, burrow deep in the earth, and hibernate, *i. e.* pass the winter in a state of torpor.

The ALPINE MARMOT, *A. Alpinus*, inhabits the Alps, Pyrenees, and other high mountains immediately below the region of perpetual snow. It is about the size of a hare, of a yellowish-grey colour, tinted with an ashen hue about the head: the upper lip is cleft and whiskered. It lives in families, who mutually aid each other in excavating a common dwelling,—a chamber lined with dried grass, at the end of a passage, six or eight feet, in the form of the letter Y, one of the branches serving as an entrance, the other as a sewer. During winter, the mouth is closed by earth. They feed in company, but always place a sentinel,

who, on the first appearance of danger, utters a shrill cry, when the whole retreat.—The BOBAC MARMOT inhabits the low hills of Poland and Kamtschatka, and is tinted with red about the head. There are various species in North America, one of which is remarkable for having thirteen fawn-coloured stripes along the back, on a blackish ground. There are others that have cheek-pouches, found also in Eastern Europe.

The DORMOUSE, well known in the woods and copses of the more southern districts of England, is a pretty little animal: has a lively eye, a soft fur, and a hairy tufted tail. They live on trees and feed on fruit, and pass the winter in the most profound lethargy.—Several other species exist in the South of Europe, among which, the FAT DORMOUSE, *M. glis*, Linn., is about the size of a rat, and sometimes attacks small birds.

The COMMON MOUSE, *M. musculus*, a little, active, timid creature, and one of the most prolific in nature, is universally known. Some purely white, with red eyes, have been caught, and kept as pets, but whether a different species, or merely albinos of the same, is not fully ascertained.

The HARVEST MOUSE, *M. messorius*, the smallest of all British quadrupeds, measures two inches and a quarter from the tip of the nose to the end of the tail, and two of them put in a scale weighed down just one copper halfpenny, about the third of an ounce averdupoise! “ They never enter into houses, but are carried into ricks and barns with the sheaves. They abound in harvest, and build their nests amid the straws of corn, and sometimes in thistles. They breed eight at a litter, in a little brown nest composed of blades of grass or wheat. One of their nests I procured this autumn, most artificially plaited, and composed of the blades of wheat, perfectly round, and about the size of a cricket ball, with the aperture so ingeniously closed, that there was no discovering to what part it belonged. It was so compact and well filled, that it would roll across a table

without being discomposed, though it contained eight little mice, naked and blind."—*White's Hist. of Selborne.*

The LEMMING, *M. lemmus*, Linn., resides usually on the shores of the Arctic Ocean. It is about the size of a rat; has short ears and tail, with feet peculiarly well-formed for digging. It is of a yellowish-black colour above, and white beneath. The most remarkable circumstance in the history of this animal is its migrating in innumerable bodies from north to south on the approach of a hard winter: these always proceed in a direct line, from which nothing can make them deviate. If they meet a hill, they go over it; if a river, they swim it; if they reach the ocean, they go forward, and are drowned. More terrible than the inroads of larger animals, their line of march is marked by devastation, like the locust, leaving scarce a green blade behind. But their enemies are numerous besides man: birds and beasts prey upon them, and their flesh forms a substitute for the food they have destroyed; and when subsistence fails, they are said to attack and devour one another.

The JERBOA *Dipus*, (two-legged) spreads from Barbary to the north of the Caspian Sea. It is about the size of a rat, and has nearly the same kind of teeth; the tail is long, and tufted at the end, which while leaping it stretches out, but while standing or walking, it carries in the form of an S, the lower part touching the ground. But their most remarkable character consists in their limbs, the fore being exceedingly short, and having five toes, and the hinder immoderately long, having three. Their colour is of a light fawn above, white beneath, and the tuft of the tail black, tipped with white. Their usual posture in feeding is sitting upon the haunches, and using their fore paws as do the squirrels. They progress in rapid bounds by their posterior legs only, yet their speed is so great, as often to baffle the greyhound in the chase. They live in burrows, and become torpid during winter. Their flesh is eaten by the Arabs.



BEAVER.



RABBIT.



GUINEA FIG.



The MUSK RAT, is found in almost all parts of America from Carolina to Hudson's Bay. It is as large as a rabbit, and is of a reddish-grey colour. In winter, they associate and construct little huts on the ice, composed of grass and rushes, cemented with clay, in which several families reside together. They feed on roots. Though they neither dive nor swim well, their habit of building has induced some naturalists to refer this species to the genus *Castor*, or Beaver.

The BEAVER, *Castor fiber*, is at present found only in the northern parts of Europe, Asia, and North America, in the higher latitudes of which, though greatly thinned, it still most abounds.* It is in size about a badger, with a thick round head and short small ears, diminutive eyes, an obtuse muzzle, and vertical fissure in the upper lip; the incisor teeth, two on each jaw, large and powerful, are peculiarly typical of the rodent order, not only serving them to strip off and divide the bark of trees, but to gnaw through trunks of considerable thickness; they are sharp like chisels, and strongly enamelled on the anterior surface, with a faculty of growing as fast from the base as they are worn down at the extremity: their fore limbs are shorter than the hinder, which possess also greater strength and muscularity; the toes are five on each foot, these behind being webbed; the tail, nearly half as long as the body, is oval, flat, and covered with scales, cumbersome on land, but useful as a stand and rudder in the water, where the greater part of his existence is passed. Its colour is of a bright brown, and the hair is of two sorts, the exterior long and coarse, the anterior soft, short, and silky. During summer, the beaver lives in holes on the banks of rivers, which he leaves only to seek food,

* This animal appears to have existed in one river in Wales, and one in Scotland in the 12th century. Bones of the species have been found in beds of marl, under peat-moss in Perthshire and Berwickshire.—Neil's Account of Fossil Remains, &c. quoted by Dr. Fleming.—*Brit. Ani.* p. 24.

the bark of young trees, herbage or berries, or to bathe; but as autumn advances, he seeks associates to prepare his winter dwelling, in rearing which he displays an instinctive sagacity almost approaching to reason. The situations these bands, sometimes amounting to 200 or 300, choose, are either a lake, pretty deep under the bank and not liable to be frozen to the bottom, or a running stream, which to this advantage adds the convenience of water-carriage for their materials, preferring the northern bank for the benefit of the sun, but rather an island for the sake of security. If, as is often the case, the spot selected be the bank of a river where the water is rather shallow, they construct a dam with amazing ingenuity and industry, by carrying a mole across, in a straight line if the stream be slow, but curved if the current be rapid; convex and perpendicular on the side opposed to the current, but acclining on the other from a base of ten or twelve feet thick to a summit usually about three. It is formed of timber, stones, and clay, for which purpose the trees nearest the water's edge and above their site are chosen; these they gnaw round, so as to make them fall towards the stream to save trouble; they then lop off the branches, which with the trunks they cut into lengths, and then float the whole down to their destination; there they are secured by stones brought by the beavers in their paws from the bottom, and a succession of layers compacted by mud completes the work. The huts, in number varying from ten to thirty, are built of the same materials, six or seven feet above the water, of an oval or round shape, with a dome roof. "The entrance is made beneath a projection, which advances several feet into the stream, with a regular descent, at least three feet below the surface, to guard against its being frozen up: this is called by the hunters the *angle*, and a single dwelling is sometimes furnished with two or more. Near the entrance, and on the outside of the houses, the beavers store up the branches of trees, the bark of which forms their chief sub-

sistence during the winter; and these magazines sometimes contain more than a cart-load of provisions." Their work is all performed at night, and with great expedition. The individuals in each house seldom exceed two or four old ones, and thrice as many young. The females produce once a-year from two to four at a birth, who quit their parents at the age of three years. The social and constructive habits of the beaver, however, only develop themselves in the wilderness. In the neighbourhood of civilized man it becomes a solitary and a burrowing animal, a sense of danger producing a necessary separation into single families, and forbidding any association that would insure their ruin. They are an affectionate race, and easily tamed: some in confinement have been known to die of grief for the loss of their companions or young. Their flesh is said to be delicious, and they furnish castor, a substance used in medicine; but their beautiful fur is the chief cause of their destruction. In 1828, the skins sent to this country from Quebec alone amounted to 126,927. It will not therefore appear surprising, that the numbers should be lessened, and the extermination threatened of this interesting animal.

The PORCUPINE, *Histrix cristata*, Linn. The common porcupine, found in Italy, Spain, and Sicily, but said to have been originally brought from Africa, is about two feet in length, has a short truncate head, rough tongue, upper lip divided, and large whiskers. Their distinguishing character is their armour, consisting of long hollow spines or quills, about the size of a goose quill, annulated black and white, closed at the extremity, and generally running out into a fine point; but those on the tail appear as if cut off in the middle, and make a loud rustling noise when the tail is shaken. These cover the upper part of the body except the head and neck, which are crested with long light coloured hair, capable of being raised or depressed at pleasure; on the under parts it is of a brownish hue. The spines generally incline backward, but stand erect when the animal

is irritated; they are incapable of being discharged, as was vulgarly supposed. The porcupine is an inoffensive animal, yet when roused to self-defence assumes an attitude the lion dares not assail; and he destroys the serpents who attempt to enfold him, by gathering himself into a ball and rolling over them. His food consists principally of roots, buds, and fruits: he hurrows in the earth, generally sleeps through the day, and partially hibernates. Besides this species, there are the *Fasciculated Porcupine*, having an elongated tail, terminated by a tuft of flat horny slips. The arboreal species, the *Urson* of Canada, and the prehensile-tailed *Conardo* of Brazil, which last, however, is said to be also carnivorous.

The next genus, the HARE, *Lepus*, comprising several species, is spread over almost the whole world. The common hare of this country has two incisors on each jaw, these in the upper doubled; its ears are longer than its head, and black at the tips; his large prominent eyes are so placed, that it can almost see behind when it runs; its fore legs are shorter than its hind, and its tail is very short; the inside of their mouth and under part of the feet are furred, like the rest of the body. Has its form on the ground. Beset with enemies of every description, dogs, cats, weasels, birds of prey, and man, it is the most timid of animals, and possesses no means of escape but flight; for this it is admirably formed, its senses both of sight and hearing are exquisite, nor is it deficient in sagacity. It uses a variety of arts to evade the dog, by taking to the water and hiding itself among the rushes, by joining a flock of sheep in the field, and after having run for two hours will even dislodge a fresh hare and take possession of its form. Hares sleep much by day, with their eyes open, as they feed chiefly by night: their favourite food is grass, fruit, such plants as yield a milky juice, and in winter the bark of young trees: they chew the cud. They are extremely prolific, the females bringing forth several times in a year, and frequently five

at a litter: they live to the age of ten or twelve.—The ALPINE HARE inhabits the higher regions of Europe, Asia, and America: it is found in the Scottish mountains, rarely descending lower than 1500 feet above the level of the sea: it is rather less than the other, and changes its colour during winter, remaining from the middle of November till the middle of March of a shining white all but the tips of the ears, which remain black.

The RABBIT, *L. cuniculus*, has ears shorter than the head, dark-coloured towards the lips; in a wild state, the colour is generally uniform, but when domesticated, which it is more easily than the hare, it varies greatly: it inhabits the temperate and warmer regions of Europe, Asia, and Africa, and is common on the British Continent and islands: it lives from eight to nine years, and breeds seven times a year, bringing forth four to eight at a time, which are full-grown in six months: its flesh is white and delicate, and its fur of some value. Extensive warrens are kept on different parts of the island, where the sandy soil precludes more valuable products. There are three kinds in this country, the common *Grey Rabbit*, the *Black Rabbit*, and the *Silky Rabbit*, found in the Isle of May and some other islands, supposed to have been originally brought from Angora. The fur is of a dirty ash-colour, paler beneath and of a silky fineness, three inches or more in length. They do not associate with the other kinds.

The GUINEA PIG, *Cavia cobaya*, is found wild in the woods of Brazil and Paraguay. Of this animal there are several species, but the best known is the *Mus percillus* of Linnæus. When domesticated in this country, it very much resembles the rabbit, but smaller in size, and is marked with irregular patches of black, white, and orange. Their ears are rounded and almost naked, and their feet are short, and it has no tail. It is a very cleanly animal, and the male and female spend much of their time in licking and smoothing the fur of each other; and should the young get soiled, the

mother will never again suffer them to approach her ; but it is devoid of attachment : it is capable of breeding at two months, and produces from four to twelve at a time.

The CHINCHILLA, *Chinchilla lanigera*, Bennett, a native of South America, inhabits the alpine vallies of Chili, is said to be gregarious, and burrows in the earth. The only living specimen known in Europe, belongs to the Zoological Society. The length of the body of this little animal is about nine inches, its tail nearly five. The form of the head resembles that of a rabbit, the eyes are full, large, and black, and the ears broad, naked, rounded at the tips, and nearly as long as the head ; the moustaches plentiful and long, some black, some white ; its limbs are comparatively short, the posterior the longest, the fore are used as hands, like the squirrels, when it sits on its haunches, which it usually does when feeding : on each of the feet are four toes with short claws. It is chiefly valuable for its fur, which is of a dark clear grey colour, and of exquisite fineness, and of such a length as allows of its being spun. The Peruvians formerly wove their garments of it : its food is vegetable, and its manners gentle. The Peruvian species is larger in size and rougher in fur than the Chilian.

SECT. V.—INSECTIVORA—INSECT-EATING ANIMALS.

The HEDGEHOG, *Erinaceus*, is found throughout the greatest part of Europe. Its length is about ten inches, and its tail one inch : the ear is rounded, the eye is small, and the muzzle produced and truncated ; it has short and almost bare legs, with five long and separated toes on each foot ; the head, back, and sides are covered with spines, but the nose, breast, and belly with fine soft hair. Its food is insects, snails, frogs, fruit, and succulent roots, which it ploughs up with its snout. It is generally found in thickets,

under the trunks of old trees, or near the roots of hedges, where it builds its nest of moss, leaves, or grass, only venturing abroad during the night, and sleeps during the winter. Its hearing is acute, and the moment an enemy approaches, it withdraws all its vulnerable parts, rolls itself into a ball, and presents nothing to view but a round impervious panoply of spines, from which the polecat, the weasel, and the marten quickly retire, and at which the dog contents himself with hopelessly barking. It is easily tamed, and is useful in gardens for destroying snails and worms, and in kitchens for ridding them of cockroaches and beetles. It pairs in spring, and brings forth from three to five young ones. There are reckoned about six varieties, including those of Asia and Africa.

The TENREC, *E. acaudatus*, is covered with spines like the hedgehog, which it exceeds in size, but does not possess the power of rolling itself into a ball: it is smaller in size, has a pointed muzzle, and has no tail. It generally inhabits near creeks of salt water. There are three species, all peculiar to Madagascar; but all that is known of their habits is, that they are nocturnal, and that they are lethargic for three months in the year.

The SHREWS, *Sorex*, which were formerly confounded with the mice, differ in their dentition, in the conical form of the head, and in their long tapering nose, and upon each flank there is a small band of stiff thickly-set bristles, from between which oozes an unpleasantly-odorous fluid, the product of small glands. This animal lives in holes which it excavates in the earth, is nocturnal in its habits, and preys on worms and insects. Its voice is shrill.

The WATER SHREW, *S. fodiens*, is about twice the size of the former, and lives on the banks of rivulets or wet ditches: their food is the larvæ of the ephemeral flies: they dive with much adroitness, and, if pursued by the weasel, drop into the water and escape.

The DESMANS, OR RUSSIAN MUSK RAT, *S. moschatus*,

nearly as large as the shrew. Their snout is drawn out into a little flexible proboscis, which they keep constantly in motion; their tail, about one-fourth less than the length of their body, is scaly, and flattened on the sides; they have no external ears, and very small eyes, and their feet are webbed: their colour above is blackish, and whitish beneath. They frequent the banks of rivers, where they feed on small fishes, worms, the larvæ of insects, &c. A kind of musk is extracted from the tail.

The MOLE, *Talpa*. Destined to spend its brief existence underground, this little miner is wonderfully adapted by providence for its situation. It is generally between five and six inches in length, and covered with a glossy black fur, though occasionally found of all the intermediate shades of colour to yellowish-white. The fore legs are short and muscular, to which are attached broad feet constructed like hands, whose fingers terminate in long, flat, stout, and sharp nails; the palms are obliquely directed, so as to enable it to tear the earth and throw it behind; the hinder limbs, smaller than the former, aid in clearing away the mould which the others excavate; the eyes, almost imperceptible, are protected by the fur, and the small orifices which form the ears are covered by valves, so that, in pushing through the earth, not the smallest particle can injure these delicate organs; the snout resembles that of the hog, and the body is round and compact. Its senses of hearing and smelling are remarkably acute, and it swims well. It constructs its galleries or roads three or four inches below the surface, in the softer grounds, where it can find the greatest supply of worms and insects. Moles usually cast their winter fur in May, before which time they have paired. The female produces four or five at a birth. The nest is made very soft and warm with moss and herbage, under the largest hillock of the field, formed into a vault, interwoven with the roots of plants, and beat down so that the rain cannot penetrate; within is an eminence covered with herbs and

leaves, as a bed for the young, surrounded by a ditch, from which diverge several paths, serving to carry off the moisture, or as passages for the mother to go in quest of food for herself and offspring. They are most active a little after sunrise, and an hour or two after noon; and before rain in summer, and thaw in winter. The flesh of the mole is esteemed a delicacy by the Arabs. The skin used formerly to be made into purses by the rustics in this country.

SECT. VI. — EDENTATA — TOOTHLESS ANIMALS.

The SLOTH, or AI, from its plaintive cry, *ai*,—*Bradypus tridactylus*, Linn. He inhabits the remote and gloomy forests of the New World, from Brazil to Mexico. Never has there existed any more calumniated creature than the poor unfortunate Ai, hitherto held up as the personification of all that is helpless and indolent in nature—as climbing a tree with immense labour, and remaining there till it had devoured the leaves and the bark, then dropping to the ground when fairly starved out, and remaining in wretched imbecility till it could gather strength to accomplish such another achievement. This has arisen from the naturalists who have heretofore described this singular animal having only seen it in captivity, and in a state for which it was not formed. Other quadrupeds may be described while resting on the ground: the sloth is an exception; his history must be written while he is in the tree, for he is destined to be produced, to live, and die, in the trees; and what is most extraordinary, not *upon* the branches, but *under* them: he moves, rests, and sleeps, suspended from the boughs. For this manner of life, his peculiar conformation (which some naturalists, wiser than their Maker, have styled *hungling*!) is most admirably adapted.

He is about the size of a fox ; the head, small and rounded, hardly exceeding three inches in length, shows a wide and thick mouth, without incisive or canine teeth ; the eyes are dull and heavy ; the body is fourteen inches long, with a short tail ; the fore limbs are double the length of the hinder, wanting soles, but furnished with three toes, which terminate in strong hook-like nails, crooked downward and backward : these render moving on the ground as difficult for him as it would be for a man to progress while supported only on the tips of his nails, supposing his nails were like eagles' claws, and he condemned to walk on all-fours ; but they enable him to cling to the branches with amazing tenacity. His hair is thick and coarse at the extremity, and gradually tapers at the root, where it becomes fine as the finest spider's web, and is so much of the hue of the moss which grows on the branches, that it is difficult to detect him when at rest. In the deep woods where he resides, the branches of the trees touch each other in great profusion, so that he easily passes from tree to tree, and that with a rapidity which is far from justifying his cognomen of Sloth. He is a timid, harmless creature, and the female brings forth but one at a birth. His food is chiefly leaves, buds, and fruit, and, as he ruminates, he has four stomachs. His flesh is esteemed a great delicacy by the Indians.—There is another species, *UNAU*, the *Two-toed Sloth*, rather larger, which is found both in America and India. Besides the difference in its extremities, it has forty-six ribs, while the *Ai* has only twenty-eight ; it has also a rougher fur ; but their habits, so far as known, are quite similar.

The *ARMADILLO*, *Dasypus*, *Linnaeus*, as its name imports, is remarkable for being clothed in armour. A shell, composed of several scales of a square shape, united in bands by a cartilaginous substance, which gives it flexibility, covers the whole body except the lower parts of the belly and throat, which present a white grainy skin like that of a

plucked fowl; the tail and limbs are protected by a series of rings, also of a crustaceous substance; the head is somewhat like a young pig's; the eyes are small, the ears large, and the tongue long and slender, covered with a viscid saliva, and adapted for picking up ants or other insects; the legs are thick and powerful, and the toes furnished with long nails for burrowing, which it does with such rapidity in the light sandy soil that it inhabits, as by this means frequently to escape its pursuers; but if the soil be too hard, or be too closely pressed, he withdraws himself under his shell, and, if near a precipice, rolls over in safety. His food, besides insects, consists of fruit, eggs, snakes, or the flesh of dead animals: his own is reckoned a delicacy by the natives. The female brings forth four young monthly. There are several species, distinguished by the number of their rings.

• The ANTEATERS, genus *Myrmecophaga*, are natives, like the former, of the warmer regions of America. Their head is long and slender, terminating in a small mouth without teeth, from which the tongue is protruded to an extraordinary length, nearly two feet, for the purpose of collecting its food, which consists of ants and small insects, and honey. When he demolishes their dwellings, he thrusts this extraordinary member, covered with saliva, amid the insects, to which they adhering, he swallows them by thousands, and will repeat the operation almost twice in a second.—The GREAT ANTEATER is nearly four feet long, and stands about a foot high; has four toes on the anterior limbs, armed with strong, sharp claws, suited both for defence and for uprooting the ant-hills; the posterior have five, with short nails: the fur is thick, and the tail is about two and a half feet long, with which he covers himself from the heat or from the rain. There is only one produced at a birth. He fights standing, like the bear, using his fore paws, and will, it is said, sometimes overcome the jaguar, fixing him immovably by his claws within his tremendous embrace. His

motions are slow, but he swims well: the flesh is eaten by the Indians. There are several lesser species.

The PANGOLIN, or MANIS, found in Africa and India, has a natural coat of mail still more invulnerable than the armadillo, all the upper parts of the body being covered with triangular scales of different sizes, hard as a flint, and sharp at the point, which, attached to the skin only at the lower extremity, it can erect at pleasure, and, rolling itself into the form of a ball, present as a defensive apparatus, which, wounding while it resists, bids defiance to the most voracious animals. The head is small, with a pointed snout, minute eyes, and no external ears; its tongue is protruded like the anteaters, and it feasts on the same fare; the limbs are short, thick, and the toes pointed with nails adapted for digging; the tail, thick at the base, tapers to a point. There are several species, of which that member is the distinguishing character, it being in some twice as long as the body, and in others not so long. Their flesh is eaten, and the tail is particularly prized. The last we shall notice of this class is that strange animal,

The ORNITHORHYNCHUS PARADOXUS of Blumenbach, the DUCK-BILLED PLATYPUS of Dr. Shaw; a native of New Holland, where it frequents the banks of rivers and marshes, and is known as the *Water Mole* of the English colonists, and the *Mouften Gong* of the aborigines. It is about thirteen or fourteen inches long, covered with a thick soft fur of a dark chestnut colour; the head is small, the eyes embedded in an oval spot of white, and scarcely visible; but the most singular character of this animal is the mouth, formed exactly like that of some broad-billed species of duck, having a loose leathery membrane stretching across it at the root, where it joins with the skull; the legs are short, with webbed feet; the tail is broad, flat, and covered with hair. The platypus is *oviparous* (*i. e.* hatched from eggs before birth), and supported after by a fluid prepared in the large mammary gland, and emitted through small



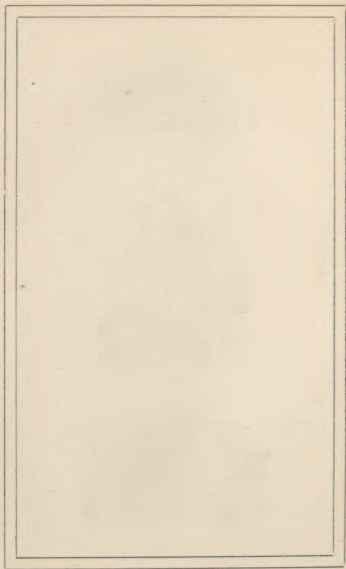
HEDGEHOG.



OPOSSUM.



WILD BOAR.



capillary tubes. It is timid, recluse, and aquatic in its habits. Its burrow enters below the surface of the stream, and is a roomy excavation, lined with leaves and moss, situated about twelve yards from the water, and about two below the surface of the ground. Its food consists of aquatic insects, worms, and vegetables.

SECT. VII. — MARSUPIALIA — POUCHED ANIMALS.

The peculiarity which gives rise to this name and order, is a pouch formed by the skin of the abdomen in the females, covering the mammæ, where the young, who are produced in an imperfect state, are preserved as in a second uterus, till they attain a degree of development similar to that in which other animals are born, and to which, long after they can walk, they fly for shelter on the approach of danger. These animals are chiefly natives of Australia, the whole of whose mammalia almost are of this description, a few only being found in America, the Celebes and Molucca Islands. They are divided into several tribes, according to their subordinate characters.

The OPOSSUMS, *Didelphis*, being the most widely diffused, are placed first. Animals of this genus have a lengthened head, with a large mouth, containing fifty teeth, and on the upper lip numerous long divergent whiskers; their ears are large and naked; their tail shorter than the body, prehensile, hairy at the origin, and for the most part covered by scales intermingled with bristles; the colour of the fur is whitish grey. The limbs are short, with five toes on each, the fore ones armed with claws; on the hinder there are opposable thumbs without nails, which give them the power of hands. Their walk is slow and clumsy on the ground, but they are expert at climbing trees, and in all their movements among the branches, where they most commonly

reside. Their food consists of birds, eggs, small animals, and insects, and by simply curving their tail at the extremity, the opossum sustains his weight, and depending from the branch of a tree or any other projection, hangs in full security, rifles the birds' nests, gathers fruit, or seizes any prey within its reach; and to regain his position, a little exertion of the tail easily throws him up, or if any lesser animal happen to pass underneath, he drops upon it with unerring aim, and quickly devours it: he is also guilty of stealing into the poultry-yard, where he commits great devastation, cutting the throats of the fowls and sucking their blood, and destroying more than he can eat. His habits are nocturnal, and he is therefore hunted in moonlight nights. When about being seized, he will drop from the branch, and feigning himself dead, will lie still among the long grass, where he cannot easily be discovered, and thus escapes. Even if caught, he still continues to feign a death-like appearance, till deceit can be no longer of any avail; and so expert is he at this trick, that "He is playing *possum*," has become an American proverb to denote a dissembler. The fetid odour which it emits when in danger, is also another means of its defence. The female brings from ten to sixteen at a birth, at first not much larger than beans, helpless and blind; and when they become too large to be carried in the pouch, she will sometimes be seen toiling along with her cubs, nearly the size of rats, each with a turn of its tail round the root of its mother's, and clinging on her back and sides with paws, hands and mouth. The opossum is pursued for its flesh and fat, whose flavour is said to resemble that of a roasted pig. The common or Virginian Opossum, which we have taken as the type of the genus, is about the size of a domestic cat.

There are several smaller species; and some, as the MARMOSE and the MEXICAN OPOSSUM, who, instead of an abdominal pouch, have two longitudinal folds, within which the young continue to suckle till they attain sufficient

maturity to use their limbs, after which they are carried upon their mother's back, supporting themselves by twisting their tails round hers. — Next come the PHALANGON, peculiar to the Moluccas and New Holland. The two first fingers of their limbs are united by a skin, as far as the last phalanx, hence their name; the tail is prehensile, in some of them scaly. They are of various sizes and colours; live on insects and fruit, and dwell in the trees: they diffuse a very unpleasant odour, notwithstanding which, their flesh is eaten by the natives. Among these, Fred. Cuvier includes, what Bennett thinks rather incongruous,

The FLYING OPOSSUM, similar to the flying squirrels. The most remarkable is the PETAURUS SQUIRREL, an inhabitant of New South Wales, and said to be particularly plentiful at the foot of the Blue Mountains. It is a beautiful little creature, of a delicately grey colour above, somewhat darker on the head, and white beneath, with a black line running along the back from the nose to the tail, and another edging the lateral folds of the skin: its tail is rather longer than its body, and not strictly prehensile. During the day it remains quietly nestled in the trees, but becomes active on the approach of night, and skims through the air, supported by its lateral expansions, half leaping half flying, in search of its food, leaves or insects.

The KANGAROO, *Macropus major*, about the size of a large sheep, found only in New Holland, presents one of the most extraordinary figures among the quadrupeds; for its natural position, being that of sitting, exhibits a cone, broad at the base and tapering towards a point, and all its muscular powers seem concentrated in the hinder parts of the animal: its head is small and gentle in appearance, with full bright eyes, a mouth not large, and pointed ears; its neck is slender and graceful; its shoulders narrow, and its fore limbs short, divided into five fingers with nails; the hinder are more than three times the length of the fore, with five toes, of which the two inner are small, and so

united as to appear but one ; the next is large, strong, and armed with a pointed hoof—no useless weapon of defence—outside of which there is one small claw. In walking upon all-fours, it limps slowly along ; but for speed or safety it depends entirely upon the strength of the hind limbs, bounding along with great velocity, and clearing at one spring obstacles nine feet high, or ravines of nearly double that width. Its food is entirely vegetable.

Gentle and inoffensive in its nature, it yet defends itself with desperation, and not unfrequently kills several of the dogs who attack it, laying open their howels with a single kick, or levelling them with one blow of its formidable tail. In water it awaits their approach, seizes them with his fore paws, and holds them under till they are drowned.

The young ones, which at birth are only an inch long, remain in the maternal pouch even when they are old enough to graze, which they effect by stretching out their necks from their domicile while the mother is feeding. When full grown, they associate in troops, and are conducted by the old males. The kangaroo attains a large size, some weighing nearly two hundred pounds ; and its flesh is much esteemed, and said to have the flavour of the finest venison.

The WOMBAT, *Phascolomys ursinus*, also a native of New Holland and King's Island ; lives in holes, and resembles in many points the hurrowing class of the Rodentia. Its size is that of a badger, with a large flat head, thick neck, short limbs, no tail, and altogether a clumsy looking animal, with a smooth thick fur, of a yellowish-brown : it is sluggish in its habits, feeds entirely on herbs and fruits, grows very fat, and its flesh is deemed excellent.

SECT. VIII. — PACHYDERMATA — THICK-SKINNED ANIMALS.

The SWINE, *Sus*, holds an intermediate station between the carnivorous and graminivorous animals, living, in a natural state, chiefly upon fruits and vegetables, yet not altogether averse to animal food: they have six incisors in each jaw, and their canine teeth are very long, forming in the male formidable projecting tusks; the neck is stout and brawny, the legs short, and the general form unwieldy; the hoofs are cloven, except in one species, which has them undivided; the skin is hard, and covered with rough bristles, beneath which, and between the flesh, the fat or lard forms a thick, distinct, and continued layer, that renders them insensible to blows. Buffon mentions, that in a styre mice have been known to burrow in the back of the animal, without producing any apparent inconvenience. It is voracious in its appetites, and uncleanly in its habits, but is not destitute of sagacity, as the many learned pigs which have been exhibited attest; and in England it has even been trained to act as a pointer. It possesses also an instinctive affection for its species, and readily runs to assist whenever it hears any of them utter a cry of distress. In conjunction with the ass, the hog is sometimes yoked to the plough in Minorca. It is after its death, however, that it is chiefly serviceable: its flesh, when cleanly fed, is delicate, and takes salt better than almost any other; the skin is used for saddles; and brooms, brushes, and pencils, are made of the hair. The swine is prolific beyond any animal of its size, and is said to live, if permitted, till about twenty.

The WILD BOAR, *S. scrofa*, Linn., the original stock, and once very plentiful in the British forests, is more sagacious and cleanly than the domesticated animal. He is smaller in body, with a longer snout, and short round ears; he is likewise more uniform in colour, being always of an iron-grey, shading into black: they feed chiefly upon acorns and other

fruit; they also plough up the ground for roots. They are partly gregarious, and the herds combine for mutual defence; when attacked, they place the youngest and feeblest in the centre, and forming a semicircle, present a front which few of the largest animals will dare to attack, or if they do, will escape with impunity. The chase of the wild boar is a favourite amusement in those countries where he is found. He is hunted with the small mastiff: when "reared," he betrays little fear; going slowly forward, he stops at intervals, turns round and dares his pursuers, who, if experienced dogs, aware of his ferocity, hay at a respectful distance, till he resume his course and proceed. When completely fatigued, the younger brood close upon him, and not unfrequently suffer for their rashness; the hunters then finish the business with their spears. If not too old, his flesh is highly esteemed, especially the hams. — Of the TAME SOW there are numerous varieties of breeds and cross-breeds, chiefly distinguished by the thickness of "the bristles" and the length of the leg: in some the ears are pendulous, in others erect.

The BABYROUSSA, or INDIAN HOG, *Sus Babyroussa*, Linn., a native of Southern Asia, the Indian Isles, and Africa, though classed with the hog kind, differs in the head, which has a shorter muzzle; in the body, which is more slender; and in the legs, which are longer; besides, it is covered with hair, soft and woolly, and its tail is terminated by a tuft of the same kind. Its general colour is black; but its most distinguishing character is the canine teeth, two in each jaw, which protrude as four enormous tusks; those of the lower, like the wild boar's, long, sharp, and piercing; those of the upper, crooked and semicircular, bend back almost to the eyes, all of beautiful ivory, finer but softer than that of the elephant. It is gregarious, and feeds upon grass and the leaves of trees. When pursued, they make for the water, and being excellent swimmers, often escape; but if that be impracticable, they turn, and if possible plant themselves against a tree, and fight desperately. When going to repose, they hitch their curved teeth on the branch of some tree for

support, and sleep standing; some say they suspend themselves by their strong tusks, and thus sleep. The flesh is reckoned very good, but soon putrifies.

The PECCARY, or MEXICAN HOG, *Dicotyles*, abounds in all parts of South America; bears a resemblance to the wild boar; the head, however, is shorter and broader, with a proportionally longer moveable snout; the legs are more slender, and the hinder feet have only three toes instead of four, as on the others; the tail is abrupt, flat, and pendulous, and the bristles stronger than the hog's: it has, besides, what distinguishes it from all other animals, a peculiar gland, placed immediately beneath the skin, on the middle of the loins, which secretes a filthy fluid that renders it disgusting when alive, and if not instantly removed after death, communicates its unsavory flavour to the flesh. They inhabit only the thickest and most extensive forests, dwelling in the hollows of trees, or in the holes formed by other animals; they are rarely found in the neighbourhood of villages, but sometimes commit great devastation among the sugar-canes, the maize, manihot, and the potatoe crop. They are divided into two species,—

The COLLARED PECCARY, or PATIRA, *D. torquatus*, Cuv., seldom measuring three feet in length, or weighing more than fifty pounds: its general colour is of a yellowish grey, with a long row of black bristles along the back from the ears to the tail, and it has a narrow oblique line of yellow-pointed hairs, which passes from behind the shoulders to the fore part of the neck; whence its name is derived. They feed chiefly on vegetable food, but do not decline fish or reptiles; and are said to be expert in destroying serpents. They are not migratory, and little gregarious, usually roaming the forest in pairs, or small families. They are easily tamed.

The WHITE-LIPPED PECCARY, *Dicotyles labiatus*, Cuv., measuring more than three and a half feet in length, and weighing about one hundred pounds. Its body is thicker, its legs shorter, and its snout longer, than the other. The

colour is black, interspersed with brown rings, and the whole of the under lip, the sides of the mouth, and the upper part of the nose, are white. They migrate in immense numbers, upwards of a thousand in a body, guided, say the natives, by a leader, who leads the foremost rank, and animates them to cross the most rapid rivers, by plunging first into the current. Should the huntsman venture to attack them when thus congregated, he would be instantly surrounded and torn in pieces, unless some tree were at hand, up which he might climb for safety. When met in smaller numbers, they are more cowardly, and rather seek their safety in flight.

The CABIAI, also a South American animal, is common in Guiana, Brazil, and Amazonia. It is about the size of a small hog, but the head is longer and the eyes larger; the muzzle is split like that of the rabbit, and furnished with whiskers; it has only the rudiment of a tail; the hoofs on the fore feet are divided into four toes, on the hinder into three, and one in a manner webbed. Its colour is a deep reddish brown above, and fawn beneath. It habitates upon the banks of rivers and by the sides of lakes, delighting in the water, beneath which it can remain a long while, and like the other, preys upon the finny inhabitants, which it catches with its fore feet and teeth, and carries to the shore to devour: it feeds also upon fruit, corn, and sugar-canes. It is gentle in its temper, and easily tamed: its flesh is said to be tender, but of a fishy flavour.

SECT. IX. — PACHYDERMATA — GRAMINIVORA.

The Swine forms an omnivorous family; the following subsist entirely on grass or herbs. We commence with the largest,

The ELEPHANT, *Elephas*, is now only found in the torrid zone of the Old World, and stands alone as a genus of



PECCARY.



ELEPHANT.



HIPPOPOTAMUS.



which there are but two acknowledged varieties, the Indian and the African. The largest are said to be those met with in Ceylon, sometimes sixteen feet in height, but the medium appears to be from eight to twelve, the length from ten to thirteen, and the weight from five to seven thousand pounds. The head seems small in proportion to his enormous bulk, and is rendered lighter by large cavities within the cranium; his eyes are small, but lively and expressive; his ears broad, long, and pendulous. In the place of canine teeth he has two large tusks, which project from the mouth, and frequently attain an enormous size; the largest, which was sold at Amsterdam, weighed three hundred and fifty pounds; and one mentioned by Hertensfels in his *Elephantographia*, exceeded fourteen feet — these form our ivory. But his most remarkable feature is the proboscis or trunk, an elongation of the nose by a circular tube divided into two canals, composed of not less than forty thousand small muscles variously interlaced, extremely flexible, endowed with the most exquisite sensibility, and terminated by an appendage resembling a finger, which answers every purpose of a hand; with it he lifts the heaviest burden, or picks up the smallest pin, unties knots, opens and shuts doors, carries his food to his mouth, or fills with water (which he discharges at pleasure) to quench his thirst or to cool his body. His neck is short and strong, the limbs are stout and massive, the feet have five toes, but so encrusted in the callous skin which envelopes the foot, that they are only discernible by the nails protruding beyond the hoof. The tail is tufted at the point with strong bristles; the skin is hard, wrinkled, without hair, and about an inch thick upon the back; the general colour dark ash-brown, but some, though rare, are of a white colour; and when one of such can be procured pure and unspotted by the natives of Siam, he is lodged in a palace, has numerous attendants allotted him, has his food, which is gilded corn, served up on gold plate, is regarded as a superior being, and ludicrous as it

may appear, human blood has been shed as freely to maintain the title of King of the White Elephant, as to maintain that of Defender of the Faith, King of France, or Emperor of the French. The temper of the elephant is mild, and his sagacity amazing. His sense of hearing is acute, and his smelling exquisite; he delights in the sound of music, and the fragrance of flowers. In a wild state they are social, and always travel in herds, the strongest males acting as leaders, and the next as a rear-guard, the females and the young being placed for safety in the middle. In their progress through the forests, they bear down all before them, breaking or tearing up the largest trees, whose roots, with herbs and leaves, are their common food; for the Creator has mercifully provided that an animal so powerful and sagacious, should not be carnivorous. He is excessively fond of sweetmeats and arrack, a spirituous liquor distilled from rice. The young elephant sucks with the mouth, compressing the udder of its mother, which is placed between her fore legs; he does not attain full growth till after twenty, and lives considerably beyond a century; some assert, even so long as two hundred years. He is therefore seldom reared in a domestic state, but is caught in the woods, and tamed; sometimes entrapped in covered pits, but more frequently—like rational men—the tame female is employed to ensnare the male: by her love cues she induces him to follow her into a strong pallisadoed inclosure, where the hunters are waiting with ropes to secure him; his legs and trunk are instantly fettered, he is then kept in a complete state of abstinence for some days, and after being first subdued by hunger, two or three of his tame brethren who have gone through the same routine, directed by experienced trainers, are employed to discipline him into subjection.

At what period the elephant was first subjected by man is enveloped in fable, Bacchus, one of the first conquerors of India, being styled by the Greek poets his first master. He-

rodotus saw elephants' teeth at Babylon, anno 450 A. C. ; and Ctesias, A. C. 410, saw elephants at the same city, " once throw down palm-trees at the bidding of their drivers." They were formerly used in war, but the invention of gunpowder has dismissed them from the service, except as beasts of burden. They are still, however, used for purposes of state in the East, and in tiger-hunting. It is an admirable swimmer. When domesticated, it is the most gentle, obedient, and affectionate of animals ; it soon conceives an attachment for its keeper, and appears even anxious to anticipate his wishes ; but while grateful for favours, it is no less indignant at insults. The story of the tailor of Calcutta is well known, who having been accustomed to give an elephant an apple as he passed to the water, one day, when hurried, pricked his proboscis with a needle, and the elephant immediately retired ; but filling his trunk with the foulest water, on his return he flooded the poor fellow off his board, by discharging upon him the dirty deluge. The Indian Elephant has an oblong head, and rather smaller ears than the African ; there is also a difference in the crowns of the grinders, the one having transverse undulating fillets, the other lozenges. The African Elephant is now only hunted for its ivory.

The HIPPOPOTAMUS, or RIVER-HORSE, *Hippopotamus amphibius*, the Behemoth of Scripture, frequents the large rivers of Africa, and was once common on the banks of the Nile. Next to the elephant, it is the largest of quadrupeds, being sometimes above seventeen feet long from the extremity of the snout to the insertion of the tail, about sixteen round the body ; and although its legs be so short that its belly nearly touches the ground, yet it stands not less than seven feet high. When full grown, it will weigh 4500 lbs. Its medium size, however, is about eleven feet long, and five feet high. The head is large, the muzzle swollen, and surrounded with bristles ; the eyes and ears are small, the mouth extremely wide, and the canine teeth, of which there are four, are of enormous size, protruding like tusks, and of

texture like ivory; the tail is short; on each foot there are four toes, terminated by small hoofs. The stomach bears some resemblance to the ruminating animals, being divided into several sacs. The skin slack, of a mouse-colour, and almost impenetrable to a musket ball. This huge animal is gregarious, and nocturnal in its land habits, lurking during the day in the swamps or among the reeds, and during night wandering in search of its food, which consists of roots, succulent grasses, rice, or whatever grain it can find growing. The devastation it commits is immense, not only in the quantity that it devours, but in what it tramples down and destroys. But fortunately these ravages do not extend widely, as the hippopotamus seldom ventures far from the river, to which it immediately betakes itself on the approach of danger, and plunging in head foremost, walks securely on the bottom, only rising occasionally to the surface to draw breath, and merely showing the upper part of its head above the water. It possesses great strength, and has been known to bite a large piece out of a boat, so as instantly to sink it, and to raise another, containing six men, so high as to upset it. The animal, however, is harmless if not disturbed, but when enraged is a dangerous comrade. It is sometimes taken in pitfalls, and its flesh is eaten by the natives of Africa. The female brings forth her young upon land, and seldom more than one at a time.— We are still but imperfectly acquainted with the habits of the hippopotamus, but it seems to have been well known to the Romans. Augustus exhibited one as an emblem of Egypt, in his triumph over Cleopatra.

The RHINOCEROS, found in India, Java, Africa, and Sumatra, in point of size and muscular power, ranges with the elephant and hippopotamus. They are heavy and clumsy in appearance, not unlike a monstrous hog, except that the Indian has one horn, and the African species two, in a line projecting from the nose, a large and a smaller, the longest crooked backward behind, adhering solely to the skin, with-

out any bony socket, and composed of a fibrous and horny substance resembling agglutinated hair, but hard as iron. The eyes are small; the ears erect and pointed; the limbs short and thick, and the skin capable of resisting the stroke of a scimeter or turning a musket ball, and deeply folded across the shoulders and thighs in the Indian, but smooth in the African animal. The senses of smelling and hearing in both are keen, and the appetite gluttonous; herbs and the succulent roots of herbs are their food; swamps and marshy plains their favourite haunts, in which they wander solitary, seldom in pairs. They are quiet if undisturbed, but when roused, furious and formidable, the elephant himself being hardly an equal antagonist. A species of recent discovery by Burchell in the interior of South Africa, *Rh. Burchellii*, is of enormous size, with its first horn nearly twelve feet in length, and whose head, when severed from the body, required eight men to raise it into the waggon. It is supposed to be the unicorn of Scripture, and possesses all the rage, untameableness, swiftness, and strength, ascribed to that animal. Bishop Heber, however, mentions having seen some of the Indian breed, who were quiet and gentle, and one who submitted to be ridden as tractably as an elephant.

The DAMANS, genus *Hyrax*, which is styled by Cuvier, "the horn excepted, the rhinoceros in miniature," from a similarity in its dentition and intestines, was by former naturalists placed among the *rodents*. It inhabits Syria and the adjacent countries, Abyssinia, and various parts of Africa. It is the *coney* of Scripture. Its size is about that of a hare, but it is thick in the body, and stands low on its legs; the head is short, as are the ears; the tail is a mere rudiment; their fur is soft; they are gregarious, and dwell among the cliffs of the most inaccessible rocks, where their nests are huilt of leaves and grasses, and to which they retire on the least alarm. They are active and playful, and soon become docile when caught.

The TAPIRS, genus *Tapir*. Their generic characters are these:—six incisors, two canine, and seven molar teeth, in the upper jaw; the same in the under, except the molars, which are only six; the canines are separated from the incisors by a small vacancy, and from the molars by a larger;—the prolongation of the nose and upper-lip into a kind of proboscis, protruding several inches beyond the mouth, and capable of being moved in various directions, and by the anterior feet having four toes, and the posterior three, all encased at the point in short, rounded hoofs. “They bear,” says Bennett, “a more close resemblance in their general osteology to the rhinoceros than to any other animal.” In outward form, and in some particulars, they approximate the hog, while their moveable trunk seems to connect them with the elephant.

The AMERICAN TAPIR, *Tapir Americanus*, is said to reach six feet in height. It has an elongated head, with small eyes, and short rounded ears, an arched and muscular neck, bristled with a thin mane of blackish hair; a massive body, covered with close smooth hair of a deep brown colour, except the sides of the lower lips, upper edges of the ears, and a line at the junction of the hoofs, which are all purely white; the skin is of great density, not less than seven lines in thickness on the back, and eight or nine on the cheeks, and so tough as to repel a musket-ball; the legs are thick; the tail a rudiment. The tapir roams a solitary innocuous animal from the Straits of Magellan to the Isthmus of Darien, amid the dark forests, or by the swamps of rivers, for it delights to roll in the mud or to plunge in the water, to which, being an excellent swimmer, it betakes itself in cases of danger. It is nocturnal in its habits, passing the day in slumber, and in the night seeking its food—roots, young shoots, buds, and wild fruit. Its strength is enormous, and it beats down for itself a path through the most compacted underwood with little difficulty, and it will snap asunder at a single effort a cord strong enough to in-



RHINOCEROS.



HORSE.



interrupt a bull in the height of his headlong course. It has been domesticated in Cayenne, in which state it is among the most omnivorous of animals. The natives esteem its flesh, though coarse and dry, excellent food. M. Sonnini says, that from its great strength and gentle disposition, it might by care and attention be rendered serviceable as a beast of burden. The Indian Tapir is larger than the American, and differs somewhat in its colour. There is a third species found in the Cordilleras, but it is not yet very accurately known.

The Hoase, *Equus caballus*, is the most useful and most beautiful of all the quadrupeds: the symmetry of his form, the freeness and elegance of his motions, his fleetness, strength, and spirit, render him one of the most valuable of those which have been reclaimed by man. But like all other domesticated animals, he varies greatly in his size, colour and shape, from the varied treatment he is exposed to, and the cross breeds which have been introduced into the family. Though distributed over almost every region of the globe, his native country is uncertain, nor does he seem to exist at present in a wild state, except in those places where domesticated horses have been set at liberty, as in the vast plains of Great Tartary, or the extensive savannahs of South America, where they associate in large troops, each under the direction of one veteran leader. Should any tame animal of their own kind attempt to claim acquaintanceship with the Tartarian, it is said that they instantly surround him, and compel him to provide for his safety by a precipitate retreat. On the contrary, the South American steeds, we are told, use all their efforts to seduce the domestic horse to join them.

The generic characters of this tribe are — an undivided hoof, a tail set with long hair, and the teeth; these are, six incisors in each jaw, and six molars on each side above and below; two canine in the upper, and two in the lower jaw, always found in the male, are almost always wanting

in the female. The horse's age is known by the incisors. The milk teeth begin to grow about fifteen days after the colt is foaled; at two years and a half, the middle ones are replaced, at three and a half the two next ones, and at four and a half the outermost or corner ones. All these teeth have originally an indented crown, which they gradually lose by dentrition; when seven or eight years old, this is entirely removed, and the horse is no longer marked. The lower canines are produced at three and a half, the upper ones at four; they remain pointed till six, and at ten begin to peel off. The stomach of the horse is small, and at the *cardia*, or superior opening, there is a little valve, that renders him incapable of vomiting. The mare goes eleven months, and rarely brings forth more than one. They are capable of living from forty to fifty years, but are seldom permitted to live half that time, through the maltreatment and too often wanton torture of man, the lord they so willingly and faithfully serve.

The English race-horse is reckoned the most perfect of the European breeds for speed and bottom. He is said to have been originally a cross with the Arabian. An ordinary racer will go at the rate of a mile in two minutes. The best English draught-horses, also, are esteemed superior in size and strength to any in the world. The indigenous Scottish breeds, or *Shelties*, are small, but hardy and mettlesome. The Arabian, by some supposed the original stock, is a noble animal, and by the inhabitant of the desert alone is treated with that kindness which his services deserve. One tent lodges the family and their "friend;" and the younger children may be often seen embracing the neck, or reposing on the body of the mare, without any idea of fear or danger. The whip or the spur are seldom used, and the Arab would almost sooner want himself than suffer his horse to want. The mares are preferred, as being less vicious, and more capable of enduring abstinence and fatigue than the males, who are for the most part disposed



ASS.



ZEBRA.



OTTER.



of at high prices to the Turks. The description of the war-horse in Job has been often quoted as one of the most sublime descriptions which poetry affords.

The Ass, *E. Asiaticus*, in the primitive ages and in Eastern countries, appears to have been earlier reclaimed than the horse: nearly two thousand years before the Christian era, we read of Abram having he-asses and she-asses, and it is said of Job that he had five hundred she-asses. Originally from the great deserts of Central Asia, it is still to be found there in a wild state, and in innumerable troops, each directed by one chief, ranging from north to south according to the season. It is known by its long ears, its tail terminated by a tuft, and a black cross on the shoulders. Its age is ascertained by its teeth, as is the horse. Its peculiar bray has become a proverbial term for loud and foolish talking. In its native climates it is a large, handsome animal, and even more spirited than the horse, for Solomon says, "a whip for the horse," but "a bridle for the ass."

In the southern states of Europe it has not much degenerated, and is still used for the saddle, and on the Barbary coast for the draught, in conjunction with oxen, and, at no remote date, with Christian slaves. Of great strength apparently for his size, he bears fatigue and hunger with patience, a few thistles or dried herbs being sufficient for his day's sustenance; but he is peculiarly nice in the water he drinks, tasting nothing but what is clear and pure. In northern latitudes he degenerates, but more perhaps from the unfeeling senseless bad treatment he receives than from the climate; for when young he is sprightly, it is only as he grows up that he shows the effects of his education in his stubbornness and stupidity. If well treated, he is strongly attached to his master, and no female shows more fond, intrepid affection for her young. The ass is four years in growing, and lives twenty-five or thirty. The milk of the ass is medicinal: the flesh of young wild asses is said

to be delicate. The skin is manufactured into thick vellum, and by the orientals into shagreen.

The MULE is an intermediate creature, springing from an union of the ass with the mare, which produces large mules, or of the horse with the she-ass, which produces small mules. The first is the best, and most generally used: it has the legs and shape of the horse, the ears, the tail, and the cross of the ass. It is extremely obstinate, but is very sure-footed, and if left to its own instinct, will cross the most tremendous precipices in safety. It is much used on the Alps, the Andes, and Cordilleras, in carrying burdens where horses could scarcely be trusted. The first mules we read of are those mentioned as having been found by Anah the Edomite in the wilderness, about anno 1700 B. C., Gen. xxxvi. 24.

The DZIGGUETAI, *E. Hemionus*, supposed by Cuvier to be the wild mule of the ancients, by others the wild ass of the Scriptures, is a slender and elegant-looking creature, but of great muscular powers. It is described as running with the rapidity of lightning, carrying its head erect, and snuffing up the wind. It easily escapes the hunters, for the fleetest coursers that ever scoured the desert would in vain attempt to overtake it. Its air is wild and fiery, expressive of its unbounded energy and tameless character. It is a native of the deserts of Tartary, where it roams in bands under their respective leaders. It is of a cream colour, with a black mane, and a dorsal line of the same colour: its tail is terminated by a tuft.

The ZEBRA, *Equus Zebra*, Linn., *E. montanus*, Burchell, has a great resemblance to the mule in his figure; the body striped black, on a fawn-coloured ground in the male, white in the female: the mountain districts of Southern Africa are its habitat. This beautiful animal is strong and fleet, but almost untameable: its voice is said to resemble that of a post-horn. It also is gregarious.

The QUAGGA, *E. Quacca*, bears a greater resemblance

to the horse than to the zebra: the hair on the neck is brown, with whitish transverse stripes, the croup of a reddish-grey, tail and legs whitish: its voice resembles the barking of a dog. It is a native of the same country as the zebra, but is not so fierce: like it, however, its flesh is much relished both by man and the king of the forest, whose combined depredations are thinning its ranks.

CHEIROPTERA — HAND-WINGED ANIMALS.

This family belongs to the order of

CARNARIA, or Flesh-eating Animals. The following are its generic characters: Four extremities; no free thumb antagonizing with the fingers; teeth of three kinds, and restricted to a vertical motion — incisores or cutting, caninæ or canine, molars or grinders.

The BATS, — *Cheiroptera*, *Hand-winged*, — are so named from a thin membrane which incloses their four feet, and serves the purpose of wings. By some naturalists they were considered as connecting the quadrupeds and birds; but as they bring forth their young alive, and suckle them, have teeth, and in no other respect, except the power of flying, resemble the feathered tribes, Linnæus rather considered them as the connecting link between the *Quadrupeds* and the *Quadrupeds*, placing them first in the latter class, which arrangement has been followed by Cuvier. There are reckoned upwards of thirty genera of this curious animal, and more than three hundred species. We omit those whose variations are minute, and select the following.

The COMMON BAT, *Vespertilio murinus*, is about the size of a mouse, or nearly two inches and a half long, covered on the body with a short fur of a mouse colour, tinged with

red. Its long, thin fore limbs and fingers extend its skin wings as whalebone does a parasol, leaving, however, the thumbs uninclosed, which are short, and terminate in strong hooked claws; the hinder ones feeble, divided into five toes, furnished with pointed claws. The eyes are small; the ears large, and of such exquisite sensibility as to supply the deficiency of sight, for when its eyes are sealed up, or even out out, it will thread its way through the mazes of a room purposely labyrinthed, or the intricacies of a ruin, with as much certainty as when these organs were entire. There are reckoned about fifteen different species in Britain, but they all agree in general habits: they all hybernate, and are nocturnal, their activity commencing in the end of spring or the beginning of summer, and that only on the most genial evenings at twilight, when they leave their holes in pursuit of gnats, flies, or other insects, which constitute their chief food (though they do not refuse raw flesh), frequenting chiefly wooded places, shady walks, or skimming like the swallow along the surface of the water. Their usual abodes are the chinks of some dilapidated building, some lonely cave, or the hollow of some ancient tree. The female makes no nest for her young: content with the first hole she meets, she sticks her claws against the side of her apartment, and permits her young to hang at the teats for a day or two, till, pressed by hunger, she goes in search of food; she then takes her little ones and sticks them to the wall in the manner she herself had hung, where they remain immoveable till her return. The flight of this animal is strong, rapid, and marked by sudden evolutions, but is seldom protracted beyond an hour. They are particularly the prey of the owl.

The VAMPIRE, or SPECTRE BAT, *V. spectrum*, is chiefly found in South America, of the size of a squirrel, and their wings, when extended, measure four or five feet; the muzzle is funnel-shaped, and it has no tail: they live on flesh, fish, and are peculiarly fond of blood. "This spe-

cies," says D'Azzara, "differs from the other bats in being able to run, when on the ground, nearly as fast as a rat. Sometimes they will bite the crests and beards of fowls while asleep, and suck the blood: the fowls generally die of this, as a gangrene is engendered in the wound. They bite also horses, mules, asses, and horned cattle, usually on the buttocks, shoulders, or neck; nor is man himself secure from their attacks. On this point, indeed, I am enabled to give a faithful testimony, since I have had the ends of my toes bitten by them four times, while sleeping in the cottages in the open country. The wounds, which they inflicted without my feeling them at the time, were circular, and rather elliptical; their diameter was trifling, and their depth so superficial as scarcely to penetrate the cutis. No one in our neighbourhood fears these animals, nor gives himself any trouble about them." Captain Stedman, however, treats the subject more seriously. While sleeping in the open air in Surinam, he also was bitten without feeling it, but awoke besmeared and surrounded with clotted blood; and he adds, that these animals, knowing by instinct that the person they intend to attack is in a sound slumber, generally alight near the feet, where the creature continues fanning with his enormous wings, which keep the person cool, inflict the wound, suck, disgorge, and return so often, that the sufferer has frequently been known to sleep from time into eternity.

The KALONG, *Pteropus Javanicus*, a Rousette, or Fruit-eating Bat, abounds in the lower districts of Java. In adult subjects, the extent of the expanded wings is full five feet, and the length of the body one foot. They are often met with in companies to the amount of several hundreds, suspended in clusters from a tree by their hinder claws, with their heads hanging down, and their wings folded round them. If killed while thus suspended, they retain their position after death. During the day they remain silent, but at night set out in search of food, when they commit

great depredations, both upon the cocoa-nut plantations of the peasant, and the richer orchards of the chief. They are shot by the Javanese during the moonlight nights, not only as an amusement, but as a security against their ravages.

AMPHIBIA — ANIMALS THAT LIVE UPON LAND
AND WATER.

The SEAL, family *Phocæ*, have short heads resembling a dog, three sorts of teeth, all trenchant or conical; the feet are short, enveloped in the skin, and have five toes, each webbed, excellent as oars, but on land they give them a strange waddling gait; the body is elongated and tapering, covered with a smooth close fur; the tail is short, and placed between the hind paws. They are seldom on land but to bring forth their young (generally two), or to bask in the sun; and their conformation is peculiarly adapted for the water; they have no external ears, their nostrils are closed by a kind of valve when they dive, and they have a large venous *sinus*, i. e. cavity in the liver (*Cuv.*) which affords a receptacle for the blood, and renders respiration less necessary while submersed. Their food is fish, and they are gregarious in their habits, fond of music, gentle in their dispositions, and easily tamed.

The COMMON SEAL, or SEA CALF, *Phoca vitulina*, is about six feet in length, and of various colours. They abound on the northern coasts of Europe and America, and frequent in considerable numbers the west and northern isles and shores of Scotland and Ireland. In the Statistical Account it is said, that Lochar abounds with plenty of the finest salmon, and what is uncommon, the seal comes up from the ocean through a very rapid river in quest of this fish, and retires at the approach of winter. In January 1819,

a gentleman in the neighbourhood of Burntisland, county of Fife, completely succeeded in domesticating a seal. Its singularities attracted the curiosity of strangers daily. It appeared to possess all the sagacity of a dog, lived in its master's house, and ate from his hands. In his fishing excursions he generally took it with him, when it afforded no small entertainment. If thrown into the water, it would follow for miles the track of the boat; and though thrust back by the oars, it never relinquished its purpose. Indeed it struggled so hard to regain its seat, that one would have imagined its fondness for its master had overcome its natural predilection for its native element. To the Greenlanders, the seal is a necessary of life; its flesh affords them food, its skin clothing, and its oil light. Formerly it used to be eaten in Britain, but it is now sought only for its fat and its skin. It is easily killed by a stroke on the nose, but is otherwise very tenacious of life. There are, besides, several sub-genera, marked by variations in dentition and size, as the *Monk Seal*, the *Hooded Seal*, &c.; but the largest known is the **ELEPHANT SEAL**, common in the southern latitudes of the Pacific Ocean, New Zealand, Chili, &c. measuring from twenty to twenty-five feet in length, of a brown colour, the muzzle of the male terminated by a wrinkled snout. It is much sought after, on account of the quantity of oil it yields.

The **MORSE**, or **WALBUS**, *Trichechus rosmarus*, Linn., resembles the seal in its limbs and the general form of its body, but is much more clumsy; it surpasses the largest ox in size, attains the length of twenty feet, and is covered with a short yellowish hair. Its head, which is small in proportion to its body, and its teeth, constitute its most striking peculiarities; there are no incisors or canine in the lower jaw, but from the upper project downward two enormous tusks, frequently two feet long, and as white and hard as ivory, weighing sometimes thirty pounds. The lips are thick, and studded with strong bristles; the ears are only two small

orifices; the neck is short and thick. It inhabits the Arctic Seas, is gregarious, and resorts in vast herds to icebergs, or the ice-bound coast (which its tusks enable it to climb), to breed and sleep. If attacked, numbers hasten to assist each other, in their turn become assailants, and often handle the boats very roughly. It is valuable on account of its oil and tusks; the skin makes excellent coach-traces. Cook thus notices them — “ They lie in herds of many hundreds upon the ice, huddling over one another like swine, and roar and bray so very loud, that in the night or in foggy weather, they gave us notice of the vicinity of the ice before we could see it; we never found the whole herd asleep, some being always on the watch. These, on the approach of the boat, would awake those next to them, and the alarm being thus gradually communicated, the whole herd would be awake presently; but they were seldom in a hurry to get away till after they had been once fired at; they then would tumble over one another into the sea in the utmost confusion, and if we did not at the first discharge kill those we fired at, we generally lost them though mortally wounded. The dam, when in the water, holds the young one between her fore arms.”

The OTTER, *Lutra*, placed by Cuvier among the carnivorous animals, the weasels, chiefly on account of its dentition, having three kinds of grinders and six incisors in each jaw; is ranged by other naturalists among the amphibia from its habits, it being capable of continuing for some time under water, and there pursuing its prey. It is somewhat shaped like a badger. The species composing this genus are pretty numerous: we notice only the following:—

The COMMON EUROPEAN OTTER, *L. vulgaris*, is about two feet long, with a tail sixteen inches in length, flattened horizontally, with short stout limbs, five toes on each, webbed, and having strong grooved nails, but loosely articulated; they are capable of being brought on a line with the body, and used as fins. The head is flattened, the ears

minute, the muzzle blunt, and the nostrils furnished with a valve, which closes when they dive; the eyes are small, and the tongue smooth. Its fur is long and silky, and valuable, of a brown colour above, whitish round the lips, on the cheeks, and whole inferior surface of the body. It is sometimes found spotted and whitish. Its food is fish, and its habits aquatic and nocturnal, haunting streams and lakes, and hurrowing on their banks; and the lungs being larger than in other quadrupeds, it is enabled to remain longer under water; it brings, however, the fish to land to devour. — The female has a strong instinctive tenderness for her young. “On one occasion,” says Professor Stiller, “when I had deprived an otter of her progeny, I returned to the place eight days after, and found the female sitting by the river listless and desponding, who suffered me to kill her on the spot, without making any attempt to escape; on skinning her, I found she was quite wasted away from sorrow for the loss of her cubs.” The otter is fierce and shy, and hunting it used to be a favourite amusement on the Scottish and English borders. When pursued, he takes to the water, where he defends himself determinedly to the last; and when overpowered dies without a cry, though very seldom without being revenged. But, notwithstanding, it is capable of being tamed and taught to fish for its master, for whom it displays the affection of a dog. Bewick mentions one kept some years ago by a James Campbell, near Inverness, which he employed very successfully in salmon fishing, and which would sometimes take eight or ten in a day. — The SEA OTTER, *L. marina*, frequent in the northern parts of the Pacific Ocean, is double in size to the European species. It is much hunted by the British and Russians for its fur, which is of a blackish velvet-looking appearance, and extremely valuable.

BIRDS, *AVES* OVIPARIE.

THE first class of these creatures which lay eggs, or are produced from eggs, comprises all such as have their bodies covered with feathers, having horny beaks or bills divided into two parts, called mandibles; who respire by means of air-vessels extended through the body, and whose eyes are furnished with a thin, whitish, somewhat transparent membrane, which like a curtain they can draw over the whole external surface at pleasure, so that neither their sight nor breathing are impeded or injured by the rapidity with which they move through the air; they are almost all destitute of external ears, and their organs of motion are two wings and two legs. There are, according to Mr. Vigors, five orders of birds, each of which has its peculiar station on the surface of the globe. The BIRDS OF PREY, *Raptores*, which soar to the highest pitch in the atmosphere; their station is manifestly the air. By means of the Owls and the Goat-suckers, we pass to the PERCHERS, or *Insessorial*, whose station among land-birds is upon the trees, intermediate as it were, between the air and the earth. On the surface of the latter is the domain of the WALKERS or *Gallicinaceous* tribes, which nestle and feed upon it, and have their legs peculiarly fitted for walking, while their wings are but ill adapted for flight. They are connected with the PERCHERS by the intervention of the Pigeons, and with the WADERS by means of the long and bare-legged Ostrich, which leads through the Cranes to the more strictly typical birds of the Wading order. The half-amphibious station of the latter, whose home is among the fens and marshes and brakes, connects the land-birds with those which are purely aquatic, by affinities of location, as completely as they are

connected through the medium of the same order by affinities of structure ; and lastly, the SWIMMERS or *Natatory* are united by means of some of the truly oceanic tribes, which feed exclusively on the wing, with the raptorial order, whose typical station we have found already to be the air. Thus, the air, the trees, the land, the marshes, and the water, are each peopled by their own peculiar order ; and the Raptorial, the Perching, the Gallinaceous, the Wading, and the Swimming Birds, respectively occupy a separate station on the surface of the globe.

SECT. I.—BIRDS OF PREY.

BIRDS OF PREY, *Accipitres*, Linn., *Raptores*, Illig., are distinguished by the following characters:—an incurved hooked bill, on the upper mandible or division of which, on both sides, is a sharp projecting tooth ; the nostrils are wide, the feet are short and strong, with three toes before and a thumb behind, armed with powerful talons. They live in pairs, and the females are generally larger and more beautiful than the males. They are divided into Diurnals and Nocturnals.

At the head of the *Diurnals*, naturalists have placed the *Vulturidæ*:—and the CONDOR, *Sarcoramphus gryphus*, as the first among them, a pre-eminence owing to the exaggerated accounts which have been given of the immense size and ferocity of this, the largest of the American birds, which yet, however, although reduced by accurate investigation, are still sufficiently formidable. But though now placed in front of the Vultures, he possesses so much of the Eagle that we feel inclined to adopt the older method, and place this enormous bird in a separate order, along with the two which follow. The largest authentic measurement is fourteen feet across the wings, from tip to tip.

Humboldt, however, met with none above nine, and the length of a male specimen of that dimension was three feet three inches from the point of the beak to the extremity of the tail, and its height, when perching, two feet eight inches; its beak two inches and three quarters in length, and an inch and a quarter in depth when closed; the head, to which is attached an oblong firm caruncle or comb, and the neck, are covered with a bare, wrinkled, reddish skin, and under the neck a wattle, like that of the common turkey; a ruff of white downy skin-feathers separates the skin from the true feathers, which are of a bright black, mingled with a greyish tinge; the tail is short, and wedge-shaped; the legs thick and powerful, the toes elongated, the talons very little curved. It inhabits the regions of the Andes in South America, and is most frequently met with at an elevation of from ten to fifteen thousand feet above the level of the ocean, in small groups, never exceeding four; nor does it ever descend to the plains, except when compelled by hunger. The female builds no nest, but deposits her eggs, of a white colour, about four inches long, upon the bare rock, without protection of any kind. "The habits of the Condor," says Mr. Bennett, "partake of the bold ferocity of the eagle, and of the disgusting filthiness of the vulture. Although, like the latter, it appears to prefer the dead carcass, it frequently makes war upon a living prey; but the gripe of its talons is not sufficiently firm to enable it to carry off its victim through the air. Two of these birds acting in concert, will frequently attack a puma, a llama, a calf, or even a full-grown cow. They will pursue the poor animal with unwearied pertinacity, lacerating it incessantly with their beaks and talons, until it falls, exhausted with fatigue and loss of blood. Then having first seized upon its tongue, they proceed to tear out its eyes, and commence their feast with their favourite morsels. The intestines form the second course of their banquet, which is usually continued until the birds have

gorged their maws so fully as to render themselves incapable of using their wings in flight.

“The Indians, who are well acquainted with this effect of their voracity, are in the habit of turning it to account for their amusement in the chase. For this purpose they expose the dead body of a horse or a cow, by which some of the condors, who are generally hovering in the air in search of food, are speedily attracted. As soon as the birds have glutted themselves on the carcass, the Indians make their appearance armed with the lazzo, and the condors being unable to escape by flight, are pursued and caught by means of these singular weapons, with the greatest certainty. The sport is a peculiar favourite in the country, where it is held in a degree of estimation second to that of the bull-fight alone.” The condor is extremely tenacious of life. Some Indians who had taken one alive, first strangled it with a lazzo, and hanged it on a tree, pulling it forcibly by the feet for several minutes; but scarcely was the lazzo removed, than the bird arose and walked about as if nothing had happened. It was then shot with three balls discharged from a pistol, at less than four paces, all of which entered its body, and wounded it in the neck, chest, and abdomen; still it kept its legs, till another ball struck its thigh, and it fell to the ground, but did not die till after an interval of half an hour. It is not true, however, that it attacks the human kind, either men or children.

The KING OF THE VULTURES, *S. Papa*, a native of South America, is common in Paraguay, and occasionally met with as far south as Florida and the intermediate countries, congregating in large flocks in Mexico. It derives its name from a belief among the natives that the other vultures pay it a particular respect, abandoning their prey whenever it makes its appearance. When full grown, this bird measures about two feet and a half in length, and more than twice as much in the expanse of its wings. It is esteemed the most elegant, although among the smaller species of the vulture

family. The upper part of the neck is of a bright red, which fades gradually into orange and yellow as it descends; a ruff of ash-coloured downy feathers surrounds the base of the neck; the body is a reddish-brown above, yellowish-white beneath. They perch on the tallest trees, building their nests in the hollows of the trunks, and lay only two eggs. They never attack the smallest animal or bird that has life, and when carrion fails, they feed on snakes and lizards.

The BEARDED VULTURE, *Gypaëtus barbatus*, Vulture-Eagle, or LÄMMER-GEYER, *i. e.* Lamb-Vulture, of the Swiss and German Alps, is the largest of European birds of prey, being upwards of four feet in length, and between nine and ten, sometimes even twelve, across the wings. The colour of the upper part is of a greyish-brown, the under parts white, with an orange shade. Its head is feathered, and it has a beard of strong hair, whence it derives its name. Its beak is hard and convex; the legs short, thick, and feathered; the talons sharp and strongly curved. It carries off sheep, lambs, young goats, calves, nor when pressed with hunger, does it allow even man himself to escape. Its habitation is the loftiest mountains, and there are tales of its having descended upon the unfortunate chamois hunter with such irresistible force, as to dash him from the glacier precipice into the gulf below. The belief is current in the Alpine regions, that it has carried off children to feed its young; nor does this seem to be entirely groundless.

The TRUE VULTURE, *Vultur*. The distinguishing characters of this bird are the nakedness of its head and neck, which are only covered with slight down or a few scattered hairs; a broad and powerful bill, hooked at the point; strong thick legs, with weak unretractile talons, little curved; a keen eye, and most remarkably acute sense of smell. Disqualified by the form of their talons for seizing and carrying off a living prey, they perform the more disgusting, though less cruel, and certainly not less useful task, of removing the

carrion, whose putrid effluvia would but for them spread pestilential contagion: their services are, therefore, of inestimable value in the economy of nature. We select as examples,

The GRIFFON VULTURE, *Vultur fulvus*, one of the largest birds of prey of the Old World, measuring about four feet in length, and eight across the wings. They have a broad ruff of pure white feathers round the lower part of the neck; the rest of the plumage is of a greyish-brown in the full-grown bird, which undergoes three different changes of colour, from a bright variegated fawn when first hatched, till it settles in the above in the third year. They inhabit the lofty mountain chains of Europe, Asia, and Africa, as far north as the Cape of Good Hope, and, like all others of its tribe, are gregarious. When attracted by a dead carcase, they arrive in flocks at the spot, and rarely quit the banquet while a morsel of flesh remains, which sometimes lasts for several successive days. They seldom attack living animals, and then only such as are incapable of resistance. When gorged, they sit immovable for hours, till hunger again impels them to rise; or if violently disturbed, they must first unload their stomachs ere they can mount again; but so soon as they are lightened, they quickly soar to such an height as to become invisible to the human eye, notwithstanding their bulk. The Griffon Vultures nestle in the rocks, and lay from two to four eggs, of a greyish-white, spotted light red.

The SOCIABLE VULTURE, *V. auricularis*, a gigantic bird, a native of South Africa, measures upwards of ten feet at the expanse of its wings. The head and greater part of the neck are of the colour of raw flesh; the throat is covered with black hairs, and the lower part of the neck behind with a ruff of the same colour; the rest of the body is covered with feathers of a blackish brown above, and lighter beneath, projecting from the breast, belly, and lower sides, in such a manner as to exhibit an almost pure white thick down, with which it is everywhere closely covered. This, like all other vultures, is a bird of the mountains, in whose

caves it passes the night, and reposes after the gluttonous fatigues of the day. Here they nestle: the female lays two, rarely three, eggs, and during the time of incubation, the male always keeps watch at the mouth of the cavern. Their tails are always worn down by friction against the stones between which they thrust themselves, or on which they perch, and are also injured by the soil of the plains, in so much, that ere they rise, they, like human vaulters, must take a race before they make a spring. Their flight, notwithstanding, is lofty, and they soon disappear from the eye; but if a hunter kill a large animal which he cannot immediately remove, in an instant they descend, and on his return he will find a flock of these marauders at work upon his game. "Desirous," says Vaillant, "of observing how so great a number of vultures could congregate together in so short a space of time, I concealed myself one day in a thicket, after having killed a large gazelle, which I left upon the spot. In an instant a number of ravens made their appearance, fluttering about the animal, and making a great croaking. In less than a quarter of an hour, these birds were reinforced by kites and buzzards; and immediately I perceived, on raising my head, a sight of birds at a prodigious height, wheeling round and round in their descent. These I soon recognized to be vultures, which seemed, if I may so express myself, to escape from a cavern in the sky. The first comers fell immediately upon the gazelle, but I did not allow them time to tear it in pieces. I left my concealment, and they betook themselves slowly and heavily to flight, rejoining their comrades, whose numbers continued to increase; they seemed almost to precipitate themselves from the clouds to share the spoil, but my presence caused them speedily to disappear. Thus, then, it is that the vultures are called upon to participate in their prey: the first carnivorous birds that discover a carcass rouse the others which may happen to be in their environs by their cries and by their motions. If the nearest vulture does not

spy his prey from the lofty region of the air in which he swims, he perceives the subaltern and more terrestrial birds of prey preparing to take possession of it; but perhaps he has himself a sufficient power of vision to enable him to discover it. He descends hastily, and with a wheeling flight, and his fall directs the other vultures who witness his evolutions, and who, no doubt, have their instinct sharpened with regard to every thing that concerns their food. A concourse of carnivorous birds speedily takes place in the neighbourhood of the carcase, sufficient to attract the whole vultures of the district."—The ALPINE VULTURE, *V. peregrinopterus*, inhabits Palestine, Arabia, and Egypt; is of a blackish hue, and was held sacred by the ancient Egyptians on account of its services in clearing away the putrifying filth. It formed a prominent figure on their obelisks and among their mummies.

II. *Falconidæ*. — These form the second division of the Diurnal Birds of Prey. Their head and neck are feathered, their eyebrows project, and their eyes are sunk: they generally prey on living animals. This family has been again subdivided into—1st, *Noble Birds of Prey*, the true Falcons, which were wont to be trained to the once noble but now neglected amusement of falconry. These are characterized by short curved beaks, with a sharp tooth on each side of its points, bifid tongues, and powerful retractile talons: they are analogous to the cat tribes among the quadruped carnivora. They change their plumage with their growth, and it is not till the third or fourth moulting that their character becomes at all permanent: their prey is usually taken in the air. Of these, the most remarkable, long celebrated for its docility and activity in the chase, is the

PEREGRINE FALCON, *F. peregrinus*, thus named from its migrations. Its range is over Europe, the North of Asia, America, and New Holland. It is frequent in the North of Scotland. Its length is rather more than a foot and a

half; its wings, which reach to the tip of the tail, measure more than three across when extended: the bill is blue; the plumage above blackish-grey, darkest on the head, and lightest on the rump, with obscure black bars; the under parts are white, with black bars, and a few longitudinal spots of black on the breast: they are also distinguished by moustaches, *i. e.* a black stripe extending from the base of the bill, under the eye, along the cheeks, and a short way on the sides of the neck. It has its nest on the rocks, and produces three or four eggs of a reddish hue, with brown spots. Its flight is amazingly rapid. One that eloped from its master, in Angus in Scotland, on 24th September 1772, with four heavy bells on its feet, was killed on the morning of the 26th at Mostyn in Flintshire. Their food consists chiefly of small birds, though it will sometimes give battle to the kite, and extend its ravages to the poultry-yard. There are reckoned at least ten varieties, dependent chiefly upon age, sex, and country. Under the name of Gentle Falcon, this bird was in ancient times required to be trained and kept for the use of the Scottish Court by the king's falconer; and as long as the office is kept up, a nest of young birds is required to be annually presented by the falconer to the Barons of Exchequer. "The term Gentle Falcon," Mr. Bennett says, "is applicable to all the species when rendered manageable."

The SHAHEEN, or SYRIAN FALCON, a small but courageous bird, about the size of a pigeon, with which, Dr. Russel in his Account of Aleppo informs us, the inhabitants take large eagles. "This hawk was in former times taught to seize the eagle under the pinion, and thus depriving him of the use of one wing, both birds fell to the ground together; but the present mode is to teach the hawk to fix on the back between the wings, which has the same effect, only that the bird tumbling down more slowly, the falconer has more time to come to the hawk's assistance: but in either case, if he be not very expeditious, the falcon is ine-

vitably destroyed. I never saw the shabeen fly at eagles, that sport having been disused before my time; but I have often seen him take herons and storks. The hawk, when thrown off, flies for some time in a horizontal line, not six feet from the ground; then mounting perpendicularly with astonishing swiftness, he seizes his prey under the wing, and both together come tumbling to the ground."

The **JER FALCON**, a corruption of *Hierofalco*, *i. e.* Sacred Falcon, its ancient name, and still retained by Cuvier as its scientific, is larger than the peregrine. It is a native of Iceland, but rarer in Scotland, though found in Aberdeenshire and the Orkneys. Its plumage is white, with dusky lines; the dark spots on the wings are large, the throat and long thigh feathers pure white, and the rest of the plumage below white, with narrow dusky stripes. It breeds on the rocks, and lays from three to five spotted eggs: feeds upon birds, which, when it eyes from its eyrie or its course in the sky, it darts down upon them like an arrow. In the days of falconry, this bird was in high esteem, and used for the larger game, such as cranes and herons.—The **MERLIN**, or **STONE FALCON**, *F. Esalon*, is among the least of the European species, being only twelve inches in length, and twenty-five in breadth: the body above is of a bluish-grey colour, with a longitudinal black spot on each feather; beneath, the throat is white, and the remainder yellowish-white, with oblong dusky spots pointing downward; the tail feathers have an entire dark broad band, tipped with white at the end: the female plumage is tinged with brown, and the spots below are more numerous. They nestle in trees or on the ground, and have five or six eggs, white, marked with greenish at the one end. It flies low, but its motions are so quick as almost to elude the sight: it was formerly used for taking partridges, which it would kill by a single stroke on the neck. It is a migratory bird, common to Europe and America: it visits the South of England in October, but breeds in the North, and in Scotland.

The OSPREY, or BALBUZZARD, is common in various parts of Europe and America: the length is about two feet, and the breadth upwards of five, the wings, when at rest, reaching beyond the tail; the bill is black, the cere and legs blue, the irides yellow; the colour above is brown, except the back of the head, which is white, as is also the under parts; beneath the eye is a band of brown, reaching almost to the shoulder; the tail is composed of twelve equal feathers, the two middle ones dusky, the others barred with brown and white; the soles of the feet are very rough. It builds on trees, or on the ground among reeds, and the female lays three or four eggs, white and elliptical. Its usual haunts are the margins of large rivers and lakes, and it feeds chiefly on fish, which it is very expert at catching, by darting upon them in the water.

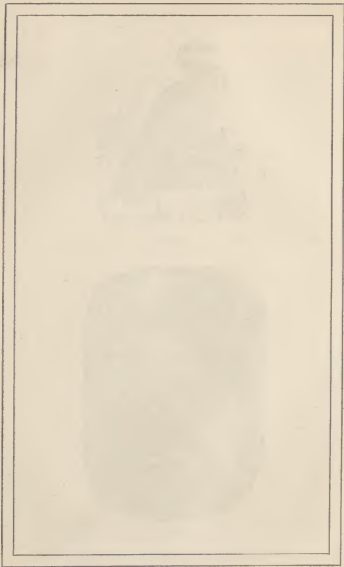
2. *Ignoble Birds of Prey*—so called because they cannot be employed in falconry: their beaks straight at the base, and strongly hooked at the end, want the tooth-like processes at the points; and their wings, when at rest, reach to the extremity of the tail; but the fourth quill being the longest, and the first very short, they appear obliquely truncated at the point. These comprise several genera. The EAGLE, *Aquila*, which modern ornithologists, regardless of the eloquent declamation of elder naturalists, have placed after those of whom it was wont to take precedence, judging rightly that mere animal courage or instinctive ferocity, gives no right to priority in the arrangements of science. Among them are found some of the largest of the rapacious tribes. Their legs are of great strength, feathered to the base; their toes are robust, and of a moderate size; and their talons, stout, short, and channelled on the inward surface, are eminently constructed for grasping. They are strictly monogamous, and except during the time of incubation, when the male provides for his mate, they pursue their game together; soaring aloft, they pounce upon their victim



EAGLE.



OWL.



with fearful rapidity, and bear it away to their nest. Their famed magnanimity consists in preferring a larger animal to a smaller, inasmuch as a fox or a fawn affords a more plentiful meal than a hare. Both take charge of the education of their young, but so soon as they are able to provide for themselves, they are driven to a distance to seek their food, nor suffered even to hunt within the circle of the parental domains. — The GOLDEN EAGLE, *A. chrysaetos*, are spread over the north of Europe, Siberia, and North America, and abounds in Scotland: they measure, when full grown, about three feet in length, and more than seven across the wings. The beak is large and deeply curved; the eyes bright and piercing; the iris hazel; there are large callous tubercles beneath the toes to protect the talons, which are extremely sharp and long, the posterior sometimes extending four inches over its curve. The plumage is of a dusky brown, lighter on the legs and thighs; the tail of a deep grey, with a dark-brown band at the extremity; the cere and toes of a dark yellow; and the claws black. Their attitude, when perched, is bold, upright, and majestic. They build on high precipitous crags, forming a nest of sticks and branches of trees, interlaced with smaller twigs, and lined with reeds or heath. The female seldom lays more than three eggs, of a dusky white colour, with red spots. They attain a great age. One that died at Vienna in 1719, is said to have been confined there for upwards of a century; they are likewise remarkable for being able to endure a long abstinence. They have been tamed, but they could never be trusted. — The RING-TAILED EAGLE, formerly treated as a distinct species, is now generally considered as only the young of the Golden Eagle, before its colouring has been fully developed.

The GREAT SEA EAGLE, or ERNE, *A. albicilla*, is an inhabitant of Europe and of Northern Asia; it is rather inferior in size to the former: its legs are partly naked on their lower parts, and the outer toe is capable of taking a backward direction. The bill is whitish, and the iris

light brown; the plumage is dusky brown mixed with ashy grey, lighter on the belly; the tail is perfectly white. Their prey consists chiefly of fishes and aquatic birds, but they do not disdain carrion, and from this last propensity has originated a device by which they are taken in Sutherlandshire. "A miniature house, at least the wall part of it, is built upon ground frequented by the eagle, and an opening left at the foot of the wall sufficient for the egress of the bird; to the outside of this opening a piece of strong cord is fixed, with a noose on one end; then a piece of carrion is thrown into the house, which the eagle speedily finds out and devours voraciously. When fully satiated, it never thinks of taking its flight immediately upwards, unless disturbed, provided it can find another way to get out of the house, as it is not easy for it to begin its flight but in an oblique direction; it therefore walks deliberately out at the opening left for it, and the noose catches hold of and fairly strangles it." The Erne builds in the rocks, has two eggs, white, with a few reddish spots. This bird has been classed as several different species, owing to the various markings it assumes in its progress to maturity, and forms the Petit Pégarouque of Buffon, the lesser or white-tailed Eagle of Latham; the *Falco Ossifragus* of Linnæus; and the Cincereous Eagle of Pennant.

The WHITE-HEADED SEA EAGLE, *Haliaëtus leucocephalus*, or BALD EAGLE, is rarely met with on the old continent, but abounds on the sea coast, on the margins of the vast lakes, and the banks of the great rivers of North America. When fully grown, it measures upwards of three feet in length, and more than seven across; its head, neck, and tail, are pure white: the remainder of the plumage deep brown, approaching to black; the eye of a brilliant straw-colour; the beak of a dusky brown; the cere and legs golden yellow, and the talons of a deep blackish hue. It appears to have a peculiar delight in invading the property of others; and a favourite haunt of this rapacious bird—

which the Anglo-Americans glory in as the emblem of their country — is the Great Cataract of Niagara, where the carcasses of the numerous animals precipitated down these falls, afford a luxurious feast to vast numbers of the birds of prey, all of whom must give place to this aerial tyrant.

“ We have seen,” says Wilson, “ the Bald Eagle, while seated on the dead carcase of a horse, keep a whole flock of vultures at a respectful distance, until he had fully sated his own appetite;” but the finest and most graphic description of his habits is given by the same author, which, although often quoted, we cannot resist transcribing: — “ Elevated on the high dead limb of some gigantic tree, that commands a wide view of the neighbouring shore and ocean, he seems entirely to contemplate the motions of the various feathered tribes that pursue their busy avocations below; the snow-white gulls slowly winnowing the air; the busy *tringæ* coursing along the sands; trains of ducks streaming over the surface, silent and watchful cranes intent and wading; clamorous crows, and all the winged multitudes that subsist by the bounty of this vast liquid magazine of nature. High over all these, hovers one whose action instantly arrests his attention. By his wide curvature of wing, and sudden suspension in the air, he knows him to be the fish-hawk (the osprey), settling over some devoted victim of the deep. His eye kindles at the sight, and balancing himself with half-opened wings on the branch, he watches the result. Down, rapid as an arrow from heaven, descends the distant object of his attention, the roar of its wings reaching the ear as it disappears in the deep, making the surges foam around! At this moment, the eager looks of the eagle are all ardour; and levelling his neck for sight, he sees the fish-hawk once more emerge, struggling with his prey, and mounting in the air with screams of exultation. These are the signals for our hero, who launches into the air, instantly gives chase, soon gains on the fish-hawk; each exerts his utmost to mount above

the other, displaying in these rencounters the most elegant and sublime aerial evolutions. The unencumbered eagle rapidly advances, and is just on the point of reaching his opponent, when, with a sudden scream, probably of despair and honest execration, the latter drops his fish; the eagle, poising himself for a moment, as if to take a more certain aim, descends like a whirlwind, snatches it in his grasp ere it reaches the water, and bears his ill gotten booty silently away to the woods."

The HARPY EAGLE, *Harpyia destructor*, Cuv., a South American bird, has a range from Mexico to Guiana, but is considered as rare even in its native regions—a fortunate circumstance, when its strength and ferocity are considered. Its length exceeds three feet and a half; its wings are short, and when closed do not reach beyond the middle of the tail; the legs are extremely robust, and only partially feathered; its powerful beak and talons are more curved than in other eagles; the head is of a light grey colour, with a crest on the back part, which it erects when excited; the upper part of the body is black, the under part pure white; the tail striped black and white; the legs are a dull yellow, and the claws black. It is a solitary bird, living in the darkest recesses of the deepest forests; sullen and ferocious; it perches on the loftiest trees, where it sits motionless, and without uttering a cry, till stimulated by hunger, when it boldly attacks the fiercest beasts, and even man himself, whose skull it will split with a single blow of its beak. It commonly feeds upon the sloths in the forests of Guiana, upon fawns and other young quadrupeds, besides birds, for the capture of which it is not so well qualified, on account of the shortness of its wings, and the comparative slowness of its flight. Like several other eagles, it has been described under a great variety of names.

The GOSHAWK, *Falco palumbarius*, common to the North of Europe, Asia, and America; breeds in Scotland, but is rare in England. It is about two feet in length; has a blue

bill, tipped with black, a greenish cere, yellow eyes, with a white stripe over each, and yellow feet. Above, the plumage is of a bluish-grey, and white beneath, with transverse brownish bars; the tail is of an ash colour, white at the tip, with four or five dusky bands. It feeds on the largest kind of birds, and was formerly held in high estimation in hunting, being flown at cranes, wild-geese, and big game. It breeds in trees, and has two to four eggs of a bluish-white colour, with brown spots and streaks.

The SPARROW-HAWK, *F. nisus*, abounds throughout Europe. It is in length about one foot, and across the wings nearly two; the legs are slender, and the tail long; its bill is black, the cere, irides, and legs, yellow. Above, it is of a deep grey colour; beneath, white, with a reddish tinge and streaks of brown on the throat and other parts. The female is considerably larger than the male; builds in trees or old ruins, and lays three to six eggs of a dirty white colour, with angular reddish spots. It eagerly pursues small birds, and frequently commits sad havoc among the inhabitants of the dove-cot and poultry-yard; but it is more easily tamed than most of the rapacious tribes, and is not unsusceptible of affection for its keeper.

The KITE, *F. milvus*, a large and handsome, but cowardly bird, is spread over Europe, Asia, and Africa. It measures nearly three feet from the end of its yellow bill to the tip of the tail, which is dark coloured and forked: the feathers above are deep brown, with pale edges; the under parts are of a rusty-iron colour, with dark longitudinal stripes. It breeds on trees, and forms its nest of sticks, lined with wool, laying two or three eggs, white, spotted with dirty yellow. It is known by its flight, which resembles a sailing or gliding through the air, without the least apparent motion of its wings. He lives chiefly on accidental carnage: when he falls in with a bird that has been previously wounded, or some unfortunate chicken or duckling that has strayed too far from the maternal wing; though sometimes,

when pressed by hunger, it assumes an unusual boldness, and making a sudden clutch, will carry off one of a brood even under the eye of the mother, whose agitation and anguish is most strikingly displayed as she screams after her unresisting offspring, carried away in the talons of the rascally thief. He is known in Scotland by the name of the Gled.

The HONEY BUZZARD, *F. apivorus*, Linn., *F. pernisi*, Cuv., which derives its name from its fondness for bees, is known generally throughout Europe. Its common length is twenty-three inches, and its wings expand fifty-two: the head is grey, the bill, cere, and talons black, the eyes and feet yellow; the plumage above is brown, and beneath, brown and white; the tail is long, and has transverse ash-coloured bars; the toes are half feathered: the plumage of the female is spotted. It breeds in trees; the eggs, two in number, are grey, with obscure spots. In a nest at Selborne there was found one egg, smaller and not so round as that of the common buzzard, dotted at each end with small red spots, and surrounded in the middle with a broad bloody zone. Besides bees, this species preys on mice, small birds, reptiles and insects.—The COMMON BUZZARD, *F. buteo*, Bech., our COMMON HAWK, is less than the former, seldom extending beyond twenty-one inches in length, or fifty across the expanse of its wings. Its bill is bluish, the cere, irides, and feet, yellow; above, the plumage is deep brown, with pale margins, below, it is of a greyish tinge, with darker spots, and sometimes cross bars of white, especially on the breast, belly, and vent; the tail feathers, which are a little longer than the wings, are of a dusky colour, with pale tips and brown bars. It builds in large woods, usually seizing the old nest of a crow, which it enlarges, and lines with wool and other soft materials: the female lays two or three eggs the size of a hen's, white, with rusty spots at the larger end. It is of an indolent, sluggish nature, often remaining perched on the same bough for the greatest part of the day. It feeds on mice, rabbits, frogs, and birds, pouncing on its

prey on the ground.—The MOOR BUZZARD, *F. aruginosus*, generally found in swampy situations, or on heaths, measures twenty inches in length, and fifty in breadth, with wings a little shorter than the tail: the bill and talons are black, the cere and eyes yellow; the head, neck, and breast, are of a yellowish-white colour, with longitudinal white spots, the rest of the plumage is of a chocolate-brown, paler at the edges; the upper mandible has a distinct blunt tooth, and its feet are longer and more slender than those of other hawks. This species breeds on the ground, has three or four eggs, spotless white. Though smaller, it is more bold and active than the former. It preys on aquatic birds, fish, and rabbits.—The HEN HARRIER, *F. circus*, *Bech.*, the *F. cyaneus* of Temminck, is in length eighteen inches, and in breadth forty: has a dark blue bill; the cere, eyes, and legs are yellow; on the upper part of the body it is of a bluish-grey colour, on the under, white. Its distinguishing mark is a kind of collar formed on each side of the neck by the ear feathers. This species flies near the ground, and is very destructive to poultry and to game. It breeds on the ground among furze or heath, and has four or five bluish-white eggs, without spots. The young are of a light ash colour, fading into a yellowish-white on the under parts, with blackish bands on the two middle tail feathers; and these were formerly noted as a different species, under the name of the Ring-tail.

The SNAKE-EATER, or SECRETARY, *F. serpentarius*, *Cuv.*, an African bird, frequents the dry and open grounds in the vicinity of the Cape. When erect, it stands three feet in height from the ground to the top of the head, on the back side of which are several long, dark-coloured feathers, capable of being erected at pleasure, whence the colonists give it the name of Secretary. Its general colour is bluish-ash, tipped with black; the beak is hooked, the eyelids project, and its long legs, where its chief strength lies, are completely feathered; its toes are also very long. It is

styled by the Hottentots the Snake-eater, on account of the delight it appears to take in devouring these reptiles: its usual mode of destroying them is by spurning or treading them to death, though sometimes a regular set-to occurs. Vaillant narrates one, of which he was a spectator. The serpent, on the approach of his enemy, endeavoured to regain his hole, but the secretary, by a single leap, got between him and it, and cut off his retreat. On whichever side the reptile strove to escape, the falcon faced him; he then raised himself, and, hissing dreadfully, displayed his menacing throat, inflamed eyes, and a head swollen with rage and venom. Sometimes this produced a momentary suspension of hostilities; but the bird soon returned to the charge, and, covering its body with one of its wings as with a buckler, struck its antagonist with the bony protuberance of the other, till the serpent at last dropped, and the secretary split his skull with one stroke of the beak." This singular bird is sometimes tamed, when it becomes very familiar, and if well fed, lives with the poultry on amicable terms; and, should any of them quarrel, will exert itself to separate the combatants.

Nocturnal Birds of Prey.—OWLS, *Strigida*.—These have all large globular heads, and large eyes adapted for night vision, capable of great dilatation and contraction, surrounded by a circle of slender feathers; the beak is crooked from the base, the cere is soft and spongy, the tongue divided; they can move the outer toe either backward or forward; their talons are strongly curved, sharp and retractile; their feathers are soft, and covered with down, and make no noise in flying. Owls, which the ancients chose as the emblems of wisdom, from their imperturbable gravity and life of retirement, have in later times, on account of their strange unearthly appearance, the loneliness of their habitations, the silence of their motions, and the harshness of their cries, been regarded by vulgar prejudice as fowls of

evil omen; though of all birds of prey the most useful to man, by destroying those swarms of mice and other petty but prolific and dangerous enemies of our corn-fields, barns, and barn-yards, whose multiplication, were it not for them, would increase to a ruinous extent. It is mentioned by an old English writer, that "in the year 1580, at Hallowtide, an army of mice so overrun the marshes near Southminster, that they ate up the grass to the very roots. But at length a great number of strange painted owls came and devoured all the mice. The like happened again in Essex about sixty years after." For this service they are admirably adapted by their conformation and instinct, seeking their food by night, and on the surface of the ground. Incapable of enduring the glare of the sun, their activity commences with twilight. During the day, they sit perched and motionless in their dark retreats, amid mouldering ruins and in solitary places: if disturbed, they do not attempt flight, but assume a variety of grotesque attitudes, and use the most ludicrous gestures. Then the smaller feathered tribes, who have a natural antipathy to them, assemble around, insult and attack them in their helpless state; but so soon as the light fades, these petulant tormentors must either seek safety in flight, or pay the penalty of their impudence. Their nocturnal opticals are aided by a sense of hearing so nice, that they perceive the least rustling among the leaves of the trees or the herbage on the ground, and thus are enabled to discern and seize the birds retiring to their nests, and the smaller quadrupeds seeking their holes. In the Linnæan system the Owls formed but one genus; they have since been subdivided into numerous genera and species, some of them marked but by trifling differences, the particularization of which would be tedious to our readers. We shall therefore follow, in the few specimens we are able to give, the simpler arrangement, distinguishing only those who have feathers standing up like ears or horns, and those without, commencing with the *Horned Owls*.

The GREAT EAGLE-OWL, *Strix bubo*, is found throughout the most of Europe. It is nearly two feet in length, and five in the expanse of its wings; has a tuft of feathers like horns on either side of its head, and its legs and toes are feathered down to the very claws, which, with the bill, are black; the plumage above is black, waved with yellow; beneath, the ground colour is yellow, with black stripes; the irides are bright orange, and the throat of the male white. It preys on mice, rats, moles, and frogs. In the Orkneys, according to Dr. Neill, it carries off rabbits and moorfowl. It builds in the clefts of rocks or in deserted ruins. Its nest is about three feet in diameter, formed of branches interwoven with roots and twigs, and lined with leaves: the female lays three eggs, round and white. This species occasionally flies abroad during the day. — The LONG-HORNED OWL, *Otus vulgaris*, frequents the extensive woods of Scotland: is in length fourteen and a half inches, and in breadth forty; the bill and claws are black, the iris red; the body above is of a yellowish-brown colour, with dusky streaks, and freckled with grey and white; beneath, it is of a dull yellow, with oblong brown spots; the horns consist of black feathers, about an inch long, brown and white at the edges: the female has the whole plumage tinged with greyish-white, and a white throat. They breed in evergreen trees, and not unfrequently take possession of the old nests of crows, and lay four or five dull-white eggs. — The SHORT-HORNED OWL, *O. ulula*, is nearly about the same size, but of greater weight than the former: the body is brown above, with the feathers lighter at the edges; beneath, it is of a yellow shade, blending with white on the belly; the tail is crossed with brown and yellow bars. It breeds in heat, and pursues, in dark weather, pigeons, moorfowl, and plovers, but it feeds likewise on mice and small birds. In the middle districts of Scotland and England it appears, frequenting stubble fields and long grass, but departs in spring. — The LITTLE HORNED OWL, *Strix scops*, Temm.,

is only about seven and a half inches in length; has a variegated plumage, brownish above, and greyish beneath; the horns and head are brown, with black dots; the feet are naked, the bill black, and the eyes yellow. It breeds in rocks, and has two to four eggs, of a white colour.

Owls without Horns.—The SNOWY OWL, *Noctua nyctea*, is a native of the most northern districts of both worlds. In Europe, its southernmost domicile appears to be the Orkneys, and in America it seems most frequent in the latitude of Hudson's Bay. It is of equal size with the eagle-owl, but its head is smaller, and the eyes yellow; the bill and claws are strongly curved, and of a deep black colour. The plumage, soft, close, and thick, affording a warm cloak impenetrable to the arctic cold, is white, with transverse streaks of brown, which grow whiter, and at length disappear with age, in the male: in the female, which is rather larger than the male, they never entirely fade. This species, the most beautiful of the owl kind, flies quicker, remains longer on the wing, and is more abroad during the day, than any other bird of the family. They are a kind of semi-omnivorous feeders, neither birds, quadrupeds, fishes, nor even carrion, coming amiss to them. Hearne says—"They are so great a hindrance to those employed on the hunting service, that the same premium is given for one of their heads as for that of a hawk;" for they will follow the hunter a whole day, and when he has shot a bird, dart down upon the game, and carry it off ere he can reach it. It also frequents the banks of shallow streams, watching for fish, which it seizes with a sudden stroke, and carries off triumphantly, if too large to swallow on the spot, though it is capable of gorging animals of considerable size, such as young rabbits and hares. "It rests generally," Mr. Edmonstone observes, in his Account of Orkney, "beneath some strong projection, which shields it from the rays of the sun, and delights in solitary elevations." Their nest is on the ground, where the female lays three or four eggs, though

seldom more than two are hatched.—The BARN OWL, *Strix flammea*. This well known species have wide and open ears, beaks elongated from the base, and curved only at the point; their colour above is a pale yellowish-brown, intermingled with greyish streaks and dusky freckles; they are white beneath. They breed in steeples, old ruins, or trees, and have three or four eggs, of a white colour; they also frequent barns, hay-lofts, and outhouses, where they are of essential use to the farmer. Seeing better in the dark than any other species, one of them, it is said, will keep a barn more free from vermin than a dozen of cats. When a pair of them have young ones, they sally out alternately, and speedily return with mice for their young. Stewart says, “in general they return every five minutes with a live mouse,” which they skin with great dexterity. The young are easily tamed.

The SHRIKES, *Laniadæ*, have now, from their size and shape, been placed among the Passerine order, and first in the tribe *Dentirostres*; but their carnivorous propensities, which procured for them the name of *Butcher Birds*, justifies the old arrangement, which rather placed them among the birds of prey, where we have allowed them to remain.—The GREAT CINEREOUS SHRIKE, *Lanius excubitor*, is about the size of a thrush, ten inches in length, and fourteen across the wings. The bill is curved and strong, of a black colour, as are the legs, which, together with the toes, are slender; the head, neck, and back, are of an ash colour, having a black band under the eyes reaching the ear-covers; the breast is crossed with darkish lines, and the belly is white; the tail is wedge-shaped, and white at the edges. Its chief prey consists of small birds, frogs, and insects, several of which it spits at a time upon a thorn, that it may devour and eat them at its leisure, or keep in reserve for some future occasion; but such is its appetite for flesh, that it will attack birds of three times its own

size, as the pie and the crow, and often comes off victor, though sometimes it perishes in the conflict, and falls together with its victim. Even the more powerful *Raptores* learn to respect this courageous creature, especially during breeding time, when the male and female unite to protect their young. In spring and summer, it imitates the notes of the smaller feathered tribes, to allure them to their destruction, but at other times it is mute. It builds on trees in mountainous districts, and makes its nest with moss and dry grass, lined with wool. The female, whose feathers are marked with brown crescents, lays six or seven eggs, white with brown spots; at first she feeds her young with insects and caterpillars, and as they increase in strength accustoms them to flesh, which her mate is very assiduous in procuring. Unlike other birds of prey, both birds retain their parental care and affection for their progeny even after they are fully grown. They live in families together in peace and subordination, and hunt in concert, till the young pair off to become parents themselves. They have a singular mode of flying, rising and falling vertically, seldom moving either straight forward or making any circular motion.

The following birds in their habits are analogous to the Insectivorous Quadrupeds:—The RED-BACKED SHRIKE, *L. collurio*, or LESSER BUTCHER-BIRD, or FLUSHER, is about the size of a lark, and weighs two ounces: the back and upper parts of the wings are of a ferruginous colour; the head, neck, and rump, grey; the wings are brownish; beneath, it is of a rose colour, inclining to white on the throat. It builds in hedges a nest of moss, lined with hair, and lays three or six eggs, variable in their colour. Its food is chiefly insects. There are reckoned about forty varieties of the above birds, differing in some minute particulars.

The FLY-CATCHERS, *Muscicapidæ*. There are reckoned ninety-two species of this bird; we shall only notice two, natives of Britain:—The RED FLY-CATCHER, *Muscicapa*

atricapilla, or RED FINCH, which inhabits the northern counties of England, does not exceed five inches in length; has an angular bill, incurved at the point, and covered with bristles at the base; above, the plumage is black in front, and white beneath; in the female, the white front is wanting, and the plumage above is greyish brown. It builds in the hole of a tree, forming its nest of a few leaves, fibres, and hairs; the female lays six eggs, of a pale bluish colour. It feeds chiefly upon insects. — The SPOTTED FLY-CATCHER, *M. grisola*, breeds in England, but it is a migratory bird, leaving that country for a warmer one on the approach of winter. It is rather larger than the other; is of a brown colour above, and dull white beneath, with longitudinal brown spots on the head and sides of the neck. It builds in orchards and outhouses a nest of moss, lined with wool, and has five bluish eggs with rusty spots. It feeds on flies, but is also fond of cherries, whence it has been familiarly called the Cherry-sucker.

The TYRANT FLY-CATCHER, *M. tyrannus*, *Briss.*, or KING-BIRD, is a migratory wanderer over the American Continent, visiting the United States in spring, where it spends the summer, returning to the south on the approach of autumn. It is about eight inches in length; dark bluish-grey on the upper parts; chest greyish-white, becoming pure on the throat and under surface. "The appellation of King as well as Tyrant has been bestowed," says Wilson, "on this bird for its extraordinary behaviour, and the authority it assumes over all others during the time of breeding. At this time, his extreme affection for his mate and for his young makes him suspicious of every bird that happens to pass near his residence, so that he attacks without discrimination. In the months of May, June, and part of July, his life is one continued scene of frolics and battles, in which he generally comes off conqueror. Hawks and crows, the bald eagle, and the great black eagle, all equally dread a rencontre with this little champion," who, as he

perceives this last approaching, launches into the air to meet him; mounts the air, darts down upon the back of his sovereign, teases him incessantly, sweeps upon him from right to left; remounts, that he may descend upon his back with greater violence; all the while keeping up a shrill and rapid twittering, and continuing the attack for more than a mile, till relieved by some other of his tribe equally eager for the contest. He builds on trees, at no great distance from the ground; the eggs are five or six, reddish-white, spotted.—The ANT-CATCHERS, *Myiothera*, have long legs and short tails; they live chiefly on insects and ants. The largest of this tribe is termed the King: is about the size of a quail; has grey chequered plumage.

The BEE-EATER, *Merops apiaster*, inhabits Europe and Asia, but is more rarely found in America. It has an elongated beak, triangular at the base, slightly arched, and terminating in a sharp point; it has long pointed wings, with short feet; the back is of a brownish colour; the belly and tail of a bluish-green; the throat yellowish, and two of the tail feathers longer than the rest. It is gregarious, and pursues its prey in flocks, which consists of insects, gnats, flies, but particularly bees and wasps, by which it is remarkable they are rarely stung; or seeds, when these cannot be found. Its voice is harsh and disagreeable. It constructs its nest of moss, in subterraneous caverns near waters, and lays from five to seven eggs. This bird has been occasionally observed in flocks in Norfolk.

SECT. II.—BIRDS of the PASSERINE, or SPARROW ORDER.

The birds of this order, which is the most extensive of the whole feathered tribes, feed upon insects, fruit, and grain; they nestle on trees, bushes, in houses, or on the ground, often forming the most artificial dwellings, and are generally found in the neighbourhood of man. The propor-

tional length of their wings, and their power of flight, the shortness or elongation, thickness or slenderness of their bills, vary as much as their habits. We shall follow the general arrangement into families and genera which have been adopted by the latest naturalists, without, however, attempting to pursue them into all their sub-genera and infinite variety of species, preferring, at the same time, the older method of associating them together, rather by their general habits and prominent characters, than by the more scientific mode of minute anatomical distinctions. In this order is comprehended all that beautiful class which charm us equally by their music and their loveliness—the birds of song.

We commence with the Thrushes, *genus Turdus*, Linn., who have a compressed and slightly arched bill, the upper mandible a little emarginated; the nostrils oval and mostly naked, a few slender hairs at the corner of the mouth, and the tongue a little jagged at the end.—The MISSEL THRUSH, *T. viscivorus*, so named from feeding on the berries of the mistletoe, is the largest of all song birds: the hack is brown, the neck white and spotted, and the bill yellowish. It commences its song in spring, and sitting on the top of some high tree, makes the woods resound with its fine full notes; in summer it retires to wilds and commons. It is a tyrannical pugnacious creature, nor will suffer any of its congeners to remain in its favourite haunts. It breeds twice in the year, making its nest in thickets and shrubberies, of mosses, lichens, and dry leaves, lining it with withered grass, and fortifying it on the outside with small sticks. It lays four or five eggs, of a flesh colour, marked with deep and light rust-coloured spots.—The SONG THRUSH, THROSTLE, or MAVIS, *T. musicus*, very much resembles the former, only it is less in size, and excels it in voice; it generally sings about nine months in the year, beginning on the first week of February, if the weather be mild, and after the 20th of that month, continuing almost constantly till November, even when the weather is pretty severe.—

"The Mavis' song
 Is varied as his plumes; and as his plumes
 Blend beauteous each with each, so run his notes
 Smoothly with many a rise and fall.
 How prettily upon his parded breast
 The vividly contrasted tints unite
 To please the admiring eye; so loud and soft,
 And high and low, all in his notes combine,
 In alternation sweet to charm the ear." — GRAHAME.

If trained along with the nightingale or woodlark, it will imitate their music, but these, like imitations in common, fail to give that pleasure which the natural effusions of its own unadulterated melody inspires. It frequents woods and gardens, and builds in hedges or low shrubs; the nest is composed of earth, moss, and straws, plaistered on the inside with clay; it lays from four to six eggs, blue, with blackish spots at the larger ends. In some parts of the Highlands of Scotland and the Western Islands, where there are no hedges or planting, it will build in the thatch of houses.

The FIELDFARE, *T. pilaris*, is a native of the north of Europe and of Syria; with us it is a bird of passage, comes to Orkney in its course southward in autumn, and makes its appearance about the beginning of October in England, leaving again about the end of February or beginning of March; they fly in flocks, though sometimes seen singly, and if spread over the fields in search of food, they post a sentinel, who gives a warning note in case of danger, when they collect and retreat in a body. In size it is between the Song and the Missel Thrush, being in length ten, and in breadth seventeen inches, and in weight four ounces; the head and neck are ash-coloured, with black spots; the back and shoulders chestnut, the throat and breast reddish yellow spotted, the belly white. It builds in high trees, and lays from four to six eggs, of a sea-green colour, with red dots. It feeds on the berries of holly, the hawthorn, and juniper; it likewise eats worms, snails, and slugs. This bird was highly esteemed by ancient gourmands, and fed by the Romans in their aviaries with great attention. Accord-

ing to Varro and Plutarch, their flesh had a bitter flavour, and was highly relished.

The RED-WING, *T. filiacus*, is less than the fieldfare, being only eight inches in length and fifteen in breadth, and not weighing more than two and a half ounces. It has a black bill, with a yellow base, and a yellow mouth; the legs are yellow, and the claws black; above, it is of a greenish brown, and white beneath, with brownish spots; it has a white line above the eye, and under the wings it is red—whence its name. It nestles in trees, and has six eggs, bluish green, spotted with black. This likewise is with us a winter guest; it appears sooner than the fieldfare, and continues longer. In Sweden, where it resides in the woods, which abound in maple trees, it sings delightfully from their highest tops; with us it is only tuneful in fine weather, about the end of March or the beginning of April. It has been known to breed in the Isle of Harris.

The BLACKBIRD OUZEL, or MERLE, *T. merula*, is in size about eleven inches, and weighs four ounces. It is of a fine deep black colour, and the bill of a bright yellow, as are the edges of the eyelids: the female is of a brownish colour above; beneath, of a dirty white, with dusky spots. It frequents woods and thickets, but in breeding time approaches gardens, and comes nearer our houses; at other times it is solitary, timid, and restless. This beautiful and well known songster is one of the first that proclaims the genial return of spring:

“ When snowdrops die, and the green primrose leaves
Announce the coming flower, the Merle's note,
Mellifluous, rich, deep-toned, fills all the vale,
And charms the ravish'd ear. The hawthorn bush,
New-budded, is his perch; there the grey dawn
He hails; and there, with parting light, concludes
His melody.”

GRAHAMK.

But though delightful in the woods or at a distance, the blackbird's notes are rather too strong for a room; yet when the prisoned warbler sings from its wooden cage outside the peasant's cottage, its song is as charming as that of any feathered chorister we have. In captivity, it easily learns

to imitate the human pipe—a faculty which Butler ludicrously notices when mentioning, among the accomplishments of Hudibras, his aptitude for acquiring languages :

Latin—It was no more difficile
Than for a Blackbird 'tis to whistle.

The blackbird feeds on insects and caterpillars, nestles in hawthorn hedges or small shrubs, and forms the nest of mosses and dry grass, plastered internally with clay, strewed with winkle straw. It breeds twice in the season, and the eggs, five in number, are light blue, with brownish spots.

The BLACKBIRD OF AMERICA is a more social bird; frequents the orchard, and is often seen following the plough, looking for worms in the furrows. In autumn they gather in vast flocks, and sometimes produce a roar like the rush of a waterfall by their flight.

The RING OUZEL, *T. torquatus*, is much about the same size as the blackbird; has its black plumage bordered with grey, and has a white crescent on the under part of the neck; the bill is black, the mouth yellow, and the iris chestnut: in the female, the plumage beneath inclines more to grey, with a tinge of red. These birds migrate in some places, but in the Highlands of Scotland continue during the whole year; and a few years back they were not rare on the Pentland Hills, near Edinburgh. They build on the ground among heath, at the foot of some shrub, or among rocks near waterfalls, and have four to six eggs, greenish-white, with brown spots: they feed on insects and berries, and when fat, their flesh is much esteemed. — The WATER OUZEL, WATER CRAKE, or WATER CRAW, *Cinclus*, is of a black colour above, the margin of the feathers inclining to grey, and the head and neck with a brown tinge; the throat, breast, and upper part of the belly, are white; the lower part, belted with red, terminates in black. This bird, feeding chiefly on water insects and small fish, lives near streams, and in winter betakes itself to the rocky declivities, or springs which do not freeze, and, without being web-footed, will descend their rapid torrent; but the most wonderful

trait in its character is, that it can walk upon the bottom beneath the water, in quest of minnows, as easily as on land. When disturbed, it flirts up its tail and makes a chirping noise; but its song in spring is said to be pretty. It nestles on the ground, forming its habitation of hay and the dried fibres of plants, lining it with dry oak leaves, and fortifying its wide entrance with mosses: it has five or six eggs, of a transparent white colour.

THE AMERICAN MOCKING-BIRD. This bird is about the size and shape of our thrush; its colour is grey, with a reddish bill. It is celebrated for its imitative powers, assuming the tone of almost every animal of the forest, whom it seems to delight in quizzing, alluring at one time the smaller birds by the call of their mates, then terrifying them when they come near with the screams of some bird of prey; but its own natural music is the most enchanting. Wilson gives the following description of this pride of the American grove:—“The plumage of the Mocking-bird, though none of the homeliest, has nothing gaudy or brilliant in it, and, had he nothing else to recommend him, would scarcely entitle him to notice; but his figure is well-proportioned, and even handsome. The ease, elegance, and rapidity of his movements, the animation of his eye, and the intelligence he displays in listening and laying up lessons from almost every species of the feathered creation within his hearing, are really surprising, and mark the peculiarity of his genius.

“In his native groves, mounted upon the top of a tall bush or half-grown tree, in the dawn of a dewy morning, while the woods are already vocal with a multitude of warblers, his admirable song rises pre-eminent over every competitor. The ear can listen to his music alone, to which that of all the others seems merely an accompaniment. Neither is this strain altogether imitative: his own native notes, which are easily distinguishable by such as are acquainted with those of our various song-birds, are bold and full, and varied seemingly beyond all limits. They consist

of short expressions of two, three, or, at the most, of five or six syllables, generally interspersed with imitations, and all of them uttered with great emphasis and rapidity, and continued with undiminished ardour for half an hour or an hour at a time. His expanded wings and tail glistening with white, and the buoyant gaiety of his action, arresting the eye, as his song irresistibly does the ear. He sweeps round with enthusiastic ecstasy—he mounts or descends as his song swells or dies away—he bounds aloft with the celerity of an arrow, as if to recover or recall his very soul which expired in the last elevated strain."

The Mocking-bird is a native of Virginia and the other southern states. They often build their nests in fruit-trees about the houses of the American planters, and are easily domesticated and taught artificial tunes.

The WARBLERS, *Motacilla*, Linn., distinguished by straight and slender bills, have latterly been separated into several families; we shall follow the older and more natural arrangement, and include them under one, distinguished for the excellence of their music, which most aptly illustrates their designation. The first and most celebrated of this tuneful tribe is the NIGHTINGALE, *M. luscinia*, a small bird, seven inches in length, ten and a half across the wings, and weighing about six drachms. Like all our most delightful songsters, it owes little to the beauty of its plumage, which is reddish-brown above, pale ashy-yellow beneath, with the tail of a deep tawny-red; the bill, legs, and claws are black, the mouth yellow; the eyes, large and bright, are of a hazel colour. It is common to the warmer latitudes of Europe and Asia, and visits the southern parts of England in April, leaving in August.

"The Nightingale, as soon as April bringeth
 Unto her rested sense a perfect waking,
 Which late bare earth, proud of new clothing, springeth,
 Sings out her woes." — SIR PHILIP SYDNEY.

It is never found farther north than Yorkshire ; and although attempts have been made to rear it in Scotland, by placing its eggs in the nests of small birds, where they were hatched, they have never been successful ; the young brood always left with the autumnal migration, and never returned to the place of their nativity. The song of the nightingale, to the most enchanting sweetness unites a wonderful degree of strength, as its notes may be heard, in a calm night, at the distance of half a mile. When all the others are hushed in silence, then this

“ Sweet bird, that shunnest the noise of folly,
Most musical, most melancholy,”

commences her nightly song,

“ Elate to make her night excel their day ;”

and its variety and power are equal to its strength. The modulations from plaintive to sprightly, in warmer climates, follow each other in almost uninterrupted rapid succession ; with us, the melody is seldom continued long without a pause—a natural stop, that gives a thrilling tremor to the listening ear. For weeks together, if undisturbed, the male will sit and sing upon the same tree ; and during breeding-time, always at a distance from the nest, where the pledges of his love are treasured under the fostering bosom of his mate, yet still sufficiently near to charm her tedious watching with his lay. In a cage, the nightingale sings ten months ; but sentimental wailers think its song in captivity is not so alluring ; and while deprecating the tyranny of taking it from those hedges where it is most pleasing, greatly depreciate its imprisoned efforts. Bingley, however, is of opinion, that a caged nightingale sings more sweetly than those we hear abroad in spring. It builds on the ground at the bottom of hedges, where the bushes are thickest and best covered. The nest is formed of leaves, straw, and grass ; the eggs are four or five, of a uniform dark-brown colour.

The PETTYCHAPS, *M. hippolais*, is less than the night-

ingale, but is esteemed little inferior in song, and is also a regular summer visitant of the southern counties of England. The plumage above is a greyish-brown, with an olive tinge, and it has a white circle round its hazel eye; the under parts are yellowish-white; the wings and tail brown. It forms its nest in a bush near the ground, of grass, mosses, and feathers, and has four eggs, of a dirty-white colour, blotched with light-brown and cinereous spots.

The WHEAT-EAR, or STANE-CHACKER, *M. ananthe*, is a native of Asia and Europe. It weighs about an ounce, and is six and a half inches long. The plumage above is grey, beneath white, with a slight tinge of red on the neck; the tail black and white; the eyes are hazel, with a white band above, and a black stripe beneath, which passes from the base of the bill to the ear-covers. It is an annual visitant in this country, arriving in March and departing in September; the females arrive about a fortnight before the males. In some parts of England they are found in vast numbers, and, when fat, are greatly esteemed for the table; they are taken in snares made of horse hair, and although not gregarious, flying only two or three together at a time, yet the quantity taken is almost incredible; one shepherd, on the Downs of Eastbourne, in Sussex, caught, it is said, eighty-four dozen of them in one day. They are exceedingly timid, and the shadow of a cloud, or the appearance of a hawk, will drive them in crowds into the traps. The immense swarms which frequent these downs are supposed to be attracted by a species of fly that feeds on the wild thyme with which the neighbourhood abounds. Their nest is large, made of dry grass, rabbits' down, a few feathers, and horse hair, and placed in a hole of the ground, or among stones. The eggs, five or six in number, are of an uniform blue colour. They feed on insects and earth-worms.

The BLUE-BIRD, sub-genus *Sylvia*, lives on the highest regions of the Alps, and even there chooses the most craggy rocks and frightful precipices for its habitation. It is in

size and shape similar to the blackbird, only the colour of its plumage, whence it derives its name, is a beautiful blue, which darkens as winter approaches into a brownish black, resuming on the return of spring its original tint. It is a scarce bird, and held in high estimation on account of its peculiar talents; for it not only whistles most delightfully, but can be taught to speak with an articulate distinct voice, and is so docile, that in captivity, if waked by any of the family, it will speak and whistle at the word of command. It makes its nest in deep holes and inaccessible solitudes, and has seldom more than five young. — The AMERICAN BLUE-BIRD is about the size of the nightingale, aerial sky-blue on the upper, and whitish on the under parts. It is found along the New Continent, from the United States to Guiana. In the former section he is said to be a bird of passage, making his appearance about the middle of February, familiarly frequenting the barn, orchard, and fence-posts, the inheritance of generations. His food is insects, particularly large beetles and spiders; his song is soft and agreeable. In his general character he strongly resembles our social little countryman,

The REDBREAST, or ROBIN, *S. rubecula*. Fortunate beyond almost any of the feathered race, the Robin is a privileged or pet bird in every country of Europe or America where he is known, and nothing, perhaps, shows more strongly the influence of nursery songs and popular ballads, than the universal kindness shown by children in this country to the affectionate robin, who covered with leaves the innocent Babes of the Wood. But he is also a pretty bird, and has a sweet song: his bill is slender and delicate; his eyes large, dark, and expressive, and his aspect mild. He is of an ashy-brown colour above, white beneath, with a red breast and throat; he is in length six inches, in breadth nine, and weighs about half an ounce. This bird, in our climate, has the sweetest song of any; others may have louder notes and more complicated inflections, but the red-

breast's voice is soft, tender, and well supported, and the more to be valued as we enjoy it in winter —

“ Even when each branch
Is leafless, and the harvest morn has clothed
The fields in white, he on the hoar-plumed spray
Delights, dear trustful bird ! his future host.”—GRAHAME.

During spring and summer the robin haunts the woods, the grove, and the garden, and retires to the thickest and shadiest hedgerows to breed, where its nest, made of dried leaves, hairs, and mosses, and lined with feathers, is placed among the roots of trees or bushes, in some concealed spot near the ground. In winter, impelled by hunger, he draws nearer the abodes of man, frequenting our barns and gardens, and often suddenly alighting on the rustic floor, picks up the crumbs that fall from the table : —

“ Half afraid, he first
Against the window beats ; then brisk alights
On the warm hearth ; then hopping on the floor
Eyes all the smiling family askance,
And picks, and starts, and wonders where he is ;
Till more familiar grown, the table crumbs
Attract his slender feet.” THOMSON.

Notwithstanding all his fabled mildness, however, the robin is a very pugnacious little fellow, nor are two ever seen together on the same tree. His principal food consists of caterpillars and worms, which last he never eats alive, but holds by one extremity in his beak, and beats it against the ground till the inside comes away, and then swallows it. The female lays from five to seven eggs, whitish, with rusty-cinereous spots.—The ROBIN of AMERICA is larger than the European Redbreast, being about nine inches and a half in length ; the upper parts of the body are black, the breast a dark orange. Like it he is familiar with the haunts of man, and frequents the orchards, often building on the apple trees ; his nest is plastered inside with clay, and receives five eggs, of a beautiful sea-green. His food is berries, worms, and caterpillars. He is a bird of passage,

and one of the earliest songsters in the United States, his overtures forming the prelude to the grand general concert about to burst from the blossoming woods and fields.

The REDSTART, *S. phœnicurus*, is about the same size as the robin: is of a bluish-grey colour above, white beneath, with a throat black in the male, but white in the female; the breast, rump, and side tail feathers, are red; the eyes are hazel; the bill and legs black, and the mouth yellow. It is a bird of passage in this country, arriving in April and departing in September. It has been found to build in Glenea, in Dumfrieshire. It is distinguished by a peculiar quick horizontal motion of its tail on alighting. It nestles in the hollow of trees, in old walls, and ruined edifices; its little habitation is composed of moss, lined with hair, and the female produces five or six eggs, of a fine blue colour. It feeds on flies, spiders, the eggs of ants, small berries, and soft fruits. When taken young it is easily trained, and will pour forth its song by night as well as by day, with great sweetness and freedom. It also imitates the notes of other birds.

The BLACKCAP, *Atricapilla*, called also the Mock Nightingale from the sweetness of its song, is nearly the same size as the redbreast; the top of its head is black, whence it derives its name; the plumage above is greyish-green; the hind neck, with the breast and belly, of an ashy hue; the legs are of a leadish colour. Its bill has rather a curious appearance, the upper mandible being of a dark horn, the under of a light blue, and both whitish on the edges. The blackcap frequents gardens, and builds its nest in a low bush near the ground, composed of dried stalks, with wool and moss, lined with fibrous roots and hair. The female lays four or five eggs, of a pale reddish-brown, mottled with a deeper colour. It feeds on insects, and on the berries of the ivy and mountain ash.

The COMMON WREN, *Troglodytes*, if not the smallest of our songsters, disputes it only with the next; it hardly exceeds four and a half inches in length by six in breadth. and

scarcely weighs three drachms. Its plumage above is a dark reddish brown, undulated with obscure dusky lines beneath, and light yellowish-brown sides and thighs, crossed with darker lines; the tail obscurely spotted with black and white; the irides hazel; the bill and legs dusky brown, but, as if to compensate for its size, it is among the most prolific of birds, producing from twelve to fifteen young at a time, and its nest is the biggest:—

“ The little woodland dwarf, the tiny wren,
That from the root-sprigs trills her ditty clear:
Of stature most diminutive herself,
Not so her wondrous house; for, strange to tell,
Hers is the largest structure that is formed
By tuneful bill and breast.”

Her curious dwelling is huilt in the trunks of trees, on the ground, or in holes in the walls; it is oval-shaped, and roofed over, and when fixed against a wall, or in the hollow of a tree, has only one entrance in the side; but if placed within a hush, then it has two, by which means its escape is facilitated from birds of prey. Like human architects, when building against a wall or a tree, the wren commences by tracing out its plan; then closes up the sides, and roofs in, artfully covering the outside with hay, green moss, or white lichen, as circumstances require, for better concealment. It is framed of moss on the outside, and lined with the finest down, small feathers, and hair:—

“ Each circumstance
Most artfully contrived to favour warmth,
Here read the reason of the vaulted roof;
How providence compensates, ever kind,
The enormous disproportion that subsists
Between the mother and the numerous brood,
Which her small bulk must quicken into life.”—GRAHAM.

The music of this bird, sprightly and loud, rivals the notes of the robin. In the middle of winter, when the coldness of the weather has condemned the other choristers to silence, the wren, like the robin, frequently approaches the habitation of man, enlivening the rustic garden with its song the greater part of the year. Its eggs are not much bigger

than a pea, and are of a whitish colour, with a few small reddish spots at the larger end. It feeds on snails, and the following is given as an instance of its sagacity:—“Having frequently observed,” says an American writer, “some broken snail-shells near two projecting pebbles on a gravel walk, which had a hollow between them, I endeavoured to discover the occasion of their being brought to that situation. At last I saw a wren fly to the spot with a snail-shell in his mouth, which he placed between the two stones, and hammered at it with his beak till he had broken it, and was able to feed on its contents. The bird must have discovered that he could not apply his beak with sufficient force to break the shell, while it was rolling about, and he therefore found out and made use of a spot which would keep the shell in one position.”—The GOLDEN-CRESTED WREN is rather smaller than the former, and is reckoned the smallest of all British birds, and one of the most beautiful. It is bright orange on the crown of the head, tipped with black; the plumage above is olive, shaded with an ash colour towards the head; the under part is a silvery grey, tinged with brown and yellow; the quill feathers are greyish-brown, edged with green; at the base of the wing is a black bar, tipped with white; the tail is dusky, with greenish edges. It inhabits trees, and forms its nest of green moss, interwoven with wool, and lined with small feathers. Its eggs amount to eight or ten, brownish-white, and darker at the thick end. It has a delicate pleasing warble, not so loud as the common wren, and occasionally in winter emits a shrill squeak, somewhat like the cricking of a grasshopper. It is a restless bird, constantly in motion, flitting from spray to spray, and often hanging with its hack downwards. Insects and their eggs, small worms, and various kinds of seeds, constitute their food. It migrates from the Shetland Isles in winter, but continues in Orkney and the southern parts of our island during the whole year.—The WILLOW WREN, or YELLOW WREN, is larger than the common wren, and is found all over the world: above it is of a green yel-

lowish-brown colour; beneath, white, tinged with yellow. It delights in willows, along the branches of which it runs in search of insects. In high northern latitudes, as in Lapland, it settles on the most lofty branches of birch trees, and makes the air resound with accents, melodious, bold, and full of harmony. Its nest is similar to its congeners', and the eggs, six or seven in number, are white, with dusky spots.

The WAGTAIL, *Motacilla alba*, is a familiar bird, and of which the White or Water Wagtail is the most common species known in this country. It is a slender, elegantly-shaped bird: the front, cheeks, side of the neck, and belly, are white; the back of the head, the upper and under side of the neck, chin, and breast, are black; the two lateral feathers of the tail, which is about three inches long, and continually wagging, are black and white. As its name imports, this bird is found near water: it frequents the banks of rivers, ponds, or pools, in search of aquatic insects; it likewise follows the plough to pick up worms, and runs swiftly in the furrow. In winter, the chin and throat are white. Their nests, in walls or old trees, are composed of moss, dried grass, and wool, lined with hair; the eggs are four or five, white, spotted with light brown or ash colour. — The GREY, or WINTER WAGTAIL, is about the same size as the former; of an ash colour above, and yellow below. It nestles in heaps of stones, and has six eggs, pointed, of a dirty-white colour, with reddish spots. In summer, it seeks its food in the fields, but during the winter months resides chiefly near streams. — The YELLOW WAGTAIL, *Budytes*, has an olive-green plumage above; beneath, it is of a bright yellow; the eyes are hazel, and have a white streak over them. They have their nests in holes in the ground, or at the roots of trees, formed of dry grass, lined with hair: the female lays six rounded eggs, olive-green, with flesh-coloured spots. It chiefly frequents cultivated grounds, and seems less attached to water than the other species. It is a summer visitant in Scotland, but is believed to be a resident in the south during the whole year.

The MEADOW TITLING, or TIT-LARK, *Anthus pratensis*, is near six inches in length, and weighs upwards of half an ounce. The bill is dusky yellowish at the base of the lower mandible; the plumage above is dusky brown, paler at the edges, and beneath of a dirty white; the lateral tail feathers are white on the outside, and a white line passes above the eyes. It is found frequently in low marshy grounds, where it has its nest among the grass, lined with hair: the eggs are six, variable in colour. It feeds on seeds and insects. It roosts on trees, and pours forth its delightful song from among the leafy branches, when soaring in the air, or seated on the ground.

The next family we notice is the SWALLOWS, *Hirundo*. They are distinguished by their peculiar formation, their length of wing, wideness of mouth, shortness of limbs, and twittering motions, as marked by Gray—

“The Swallow, twittering from its straw-built shed.”

And their mode of life is suited to their structure: they seldom walk, but are ever on the wing; they catch their insect prey, sip their drink, and wash themselves as they fly. They are summer birds, and their disappearance in winter has been variously accounted for, some naturalists asserting that they emigrate to distant lands, and others that they pass that season in a state of torpidity. The most probable opinion, and that which seems best supported, is, that the early-hatched birds leave this country in autumn, and form the flocks which mariners have observed at sea; while the late broods, not being sufficiently strong for the passage, remain behind, and are those which have been found in a dormant state:—

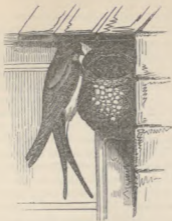
“The heavens declare the glory of the Lord,
The firmament shows forth his handywork!
Less loud, but not less clear, His humbler works
Proclaim his power: the Swallow knows her time,
And on the vernal breezes wings her way,
O'er mountain, plain, and far-extending seas,
From Afric's torrid sands to Britain's shore.”—GRAHAME.

They make their appearance, however, in the southern parts of our island early in spring, and do not quit till September. They are divided into Diurnal and Nocturnal.

The *Diurnal* are the CHIMNEY SWALLOW, *H. rustica*, which, although seven inches in length, and twelve in breadth, does not weigh more than one ounce. The forehead and chin are chestnut red; the plumage above, black, with a purple tint; the breast is likewise black, but the rest of the parts beneath are dusky white; the tail, which is much forked, is marked on all its feathers, except the two middlemost, with oval white spots near the ends. They nestle in chimneys or in outhouses, where they build upon or against the rafters: the nest is composed of clay on the outside, with grass and feathers within, and is open above; the eggs are from four to six in number, white, with red specks. They frequently bring out two broods in the season. The swallow is deservedly cherished as one of our most valuable birds; they clear the air of innumerable insects which would prove fatally prejudicial to the labours of the husbandman. In dry weather, when the insects rise in the air, the swallow's flight is higher; when the weather becomes moist, and the insects, who immediately feel its influence, descend, they, too, lower their sweep, and prognosticate approaching rain. Should a hawk or an owl approach, the swallow sounds the note of alarm to the whole of its kind, who instantly collect, and pursue and attack their enemy till they force him to a precipitate retreat. They will also strike at cats while climbing on the roofs of houses.—The MARTEN, *H. arbica*, is inferior in size to the swallow. It is black above, and white beneath, with a conspicuous white rump; the bill is black, the eyes hazel, the claws white, and the legs and toes closely covered with a white down; the tail and wings are shorter than those of the swallow, and its motions are less quick. Sometimes individuals of this species are found altogether white. It builds in windows, under the eaves of houses and the jutting ornaments of steeples and churches:—

" This guest of summer,
 The temple-haunting Martlet, does approve,
 By his loved masoury, that heaven's breath
 Smells wooingly here. No jutting frieze,
 Buttress, or coignes of 'vantage, but this bird
 Hath made his pendant bed and procreant cradle:
 Where they most breed and haunt, I have observed
 The air is delicate." SHAKESPEARE.

Its nest is built of similar materials with the former, but close, with a hole at the top for entrance; and the same birds will frequent the same nest for a number of successive seasons. In a porter's lodge at the entrance to Newbattle Abbey, near Dalkeith, a pair, some years ago, built their nest in a rack for holding clothes in the same room where all the family were employed, and did not appear at all disturbed by the noise of the children. To facilitate their ingress and egress, a pane of glass was removed from the window; and care being taken not to injure the nest or touch the rack, they finished their labours, appeared quite at home, and returned to their little dwelling again the following year. Its eggs are four or five, white, and it is said sometimes to breed thrice in a season, and has been observed feeding its young in the latter end of October.—The SAND MARTEN, *H. riparia*, is the least of the Swallow kind that visit Britain, and makes its appearance first, arriving a week or two before any of the others. It is mouse-coloured above, and on the breast; white on the other parts. It forms its nest of grass and feathers, at the extremity of horizontal holes, which it digs in sand-banks, two or three feet in length: has four to six eggs, of a white colour. This species has an irregular flight, often making sudden jerks as it skims along.—The SWIFT, *H. apus*, is the largest of the swallows known in Britain, being eight inches in length, and eighteen across, and weighs more than an ounce. It has all the four toes turned forward: its plumage is black, with a white throat. It flies high in the air, but if it fall on the ground it cannot rise easily, its feet being so short and its wings so long. They breed in steeples and high towers, around



SWALLOW.



SPARROW.



which, during the fine summer evenings, they may be observed wheeling in crowds, occasionally uttering a shrill screaming kind of call. In the neighbourhood of Edinburgh, in the month of June, they do not retire to their nests till ten o'clock at night, and are abroad again about three in the morning. They have but two white eggs, and breed only once in the season.

The *Nocturnal* birds of this family are the GOATSUCKER or FERN OWL, *Caprimulgus*, so called from an absurd idea formerly entertained that it sucked the teats of goats; an operation for which it is altogether disqualified by the form of its bill, which is small, a little curved, and sharp pointed. Its plumage is ash-coloured, variegated with black, white, and brown. Its eyes are large and dusky; and the legs are scaly, and feathered below the knee. It lies dormant during the day, and comes only abroad at twilight in search of its food, moths or beetles, which it takes on the wing. A favourite attitude when at rest, is sitting on a bare bough, with its head lower than its tail. It makes a singular noise, like that of a spinning wheel, whence, in Wales, it has the name of the wheel-bird. It makes no nest, but lays two eggs, which are white marbled with brown, on the ground, among fern or grass.

The WHIP-POOR-WILL, *C. vociferus*, peculiar to America, is noted for its singular cry, a rapid warbling repetition of the name it bears, so distinctly pronounced as to seem like the voice of a human being. It is a solitary bird, remaining silent during the day, but at night approaches the human dwellings, and begins its strange melody.

The ESCULENT SWALLOW, *Hirundo esculenta*, which inhabits China and the islands in the Indian Ocean, is celebrated for its nest, of which Willoughby gives the following often quoted account:—“On the sea-coast of the kingdom of China, a sort of parti-coloured birds, of the shape of swallows, at a certain season of the year, which is their breeding time, come out of the midland country to the rocks,

to gather a certain clammy glutinous matter, perchance the spawn of whales or other young fishes, of which they build their nests. These nests the Chinese pluck from the rocks, and bring them in great numbers into the East Indies to sell. They are esteemed by gluttons as great delicacies; who, dissolving them in chicken or mutton broth, are very fond of them, far before oysters, mushrooms, or other dainty and liquorish morsels." The substance of these nests resembles isinglass, and their figure is like a citron cut through the middle longitudinally; the broths to which they communicate their relish, become, as might be expected, both dirty and black. The birds are of a dark greyish brown above, and dirty white beneath, and are distinguished by having the whole tail-feathers marked with a white spot. There are reckoned three species,—two inland, and one, the smallest, which only inhabits the sea-coast, whose nests are the most valuable, being white and transparent, and fetching often in China their weight in silver. The prices of these nests vary according to their quality, the finest bringing at Canton about six pounds sterling per lb., the next about four, and the most inferior not above two! The whole quantity imported in 1818, was estimated at 242,000 lbs. employing 30,000 tons of Chinese shipping (junks), producing £284,290. The best nests are those obtained in deep damp caves, before the birds have laid their eggs; the coarsest, those obtained after the young have been fledged. They are collected thrice a-year, and if regularly collected and no unusual injury offered to the caverns, will produce very equally, the quantity being little if at all improved by the caves being unmolested for a year or two. This productive luxury is claimed as the exclusive property of the sovereign, and everywhere forms a valuable branch of his income, or the revenue of the state.

III. The Third Family, *Conirostres*, is marked by conical bills.—The LARKS, *Alauda*, are distinguished by the hind-

claw being nearly straight, and longer than the toe. — The SKY-LARK, or FIELD-LARK, *A. arvensis*, is the most common with us; it is in length about seven, and in breadth twelve inches, and weighs an ounce and a half. Its plumage is of a reddish-brown above, and yellowish-white, with dusky streaks, beneath. Its nest is composed of dry stalks lined with fine roots of grass, is built on the ground, in some furrow or under a tuft of grass; and its eggs, four in number, are of a dusky-white colour, spotted with brown. It is one of our most delightful songsters, commences early in spring, and continues throughout the summer. It rises with the sun, and sings upon the wing:—

“ Minstrel o’ morn ! the first to greet
 Day’s earliest smile wi’ music sweet
 Far out o’ sight thou seyes thy skill,
 An’ sings ‘mang clouds thy matins shrill.
 When Spring peeps on the growin’ shaw
 Frae out amang the wreaths o’ snaw,
 It’s thy wild warblin’ notes that wyle her,
 An’ to our fields again beguile her.”

This sweet bird ascends almost perpendicularly, and by successive springs; but it is chiefly while the female is sitting, that the male exerts his utmost powers. On first leaving the earth, his notes are feeble and interrupted; he raises his voice as he soars aloft, trills loudly when high poised in air, then descending with a swell as he comes from the clouds, his tone softens gradually as he sinks into the welcome nest. The lark never perches on trees, but hops along the ground, which his russet garb so much resembles, that he is hardly perceptible. In winter, they assemble in large flocks, and are caught in vast quantities in England for the table, being reckoned a great delicacy; the gourmands glorying over a dish of these exquisite minstrels, whose song has so often gladdened the ear of the meek rural enthusiast. They feed on seeds and insects.

The WOOD-LARK, *A. arborica*, is rather less in length, but wider across than the sky-lark. Above, the plumage is

brownish-black, with pale edges; beneath, pale yellowish white, with dusky longitudinal streaks, and it has a white band from the bill over the eyes, surrounding the head. Its nest is on the ground, of coarse grass, lined with finer fibres, or a few long hairs; the eggs, four, are wood-brown, with blotches of grey and brown. It perches on trees, but sings as it flies, and sometimes late in the evening, when its strains have been mistaken for those of the nightingale. — The GRASSHOPPER-LARK, *A. trivialis*, is the smallest species of lark; it is of a variegated greenish-brown on the upper part of the body, beneath, of a yellowish-white, and speckled on the neck and breast. It has a chirp like that of the grasshopper, but louder and shriller, and in the height of summer continues almost the whole night.

The TITMOUSE or TOMTIT, *Parus*, has a short pointed bill, sharp edged; and the tongue ends in four filaments. — The GREAT TITMOUSE is olive-green on the back, grey on the rump and wing-coverts, the latter tipped with blue; the sides of the belly are yellowish, and the under tail-coverts white. They nestle in the holes of trees or walls, and form their dwelling of moss lined with hair. The eggs are from six to eight, white, with rusty spots. They feed on insects, seeds, and on carrion, and frequently pick the food lying in their way. They are courageous creatures, and will even venture to attack birds larger than themselves, when they aim their blows always at the eyes; but when they meet with birds weaker than themselves, they pick a hole in their skull, and feast upon their brains. They are distinguished by their rancour against the owl. In confinement, if a seed of the sunflower be presented, the little captive dextrously takes hold of it between its claws, and strikes powerfully with its bill, till the black covering splits and yields its white contents to the persevering hammerer. — The CRESTED TITMOUSE, *P. cristatus*, found in fir-woods in Scotland; it weighs about two and a half drachms; is of a yellowish-brown colour above, and white beneath; its

crown feathers are elongated, and with those on the cheeks and sides of the neck are black, with white margins tinged with yellow. It has its nest in the hollow of trees, and produces two young; the eggs are white, with a reddish spot. It is a solitary bird and not easily tamed.— The LONG-TAILED TITMOUSE, *P. caudatus*, the smallest species, is also the most prolific; the female lays from ten to seventeen eggs, white, and lightly spotted; it constructs its nest of lichen and wool, lined with feathers, on the fork of a tree of an oblong shape, with two openings. Its back is of a rose-red colour; its belly ashy-grey, with a rosy hue. It frequents gardens and orchards, and is by some supposed to do injury to the buds, while others assert that it renders material service to the gardeners, by destroying those insects and their seed which would blight his hopes.

The BUNTINGS, *Emberiza*, Linn., have a short straight conical beak, the upper chip of which is narrow, and sinks into the lower, and it has a hard knob on the inside of the upper for breaking seeds; they are graminivorous, and unsuspecting birds.— The YELLOW-BUNTING, *E. citrinella*, YELLOW-HAMMER, or *Scotice*, YELLOW-YITE, is a familiar bird, and resides near the dwellings of men. The head, neck, and breast, are of a gamboge-yellow colour, though sometimes the head assumes an olive-green tint; the back is brownish-yellow, tinged with green; the tail has a fleshy hue. They pair in May, and build, on the ground among low grass, a neat nest, lined with hair, and have five eggs, pale purplish-white, with red streaks. They feed on insects and seeds; and the note of the male is soft; not unlike that of the linnet.— The COMMON BUNTING, *E. miliaria*, or BUNTING-LARK, or CORN-BUNTING, is olive-brown above, white, spotted with black on the throat; a white belly, and black wings and tail. It weighs about two ounces. It has its nest on the ground, like the former, and produces four eggs, whitish, spotted with brown. They are gregarious, and are often seen on the branch of some bare tree

in immense numbers. They are caught in lark-nets, for the table. But the most exquisite morsel for the epicure is the ORTOLAN, *E. hortulana*, which is rather larger than the yellow-hammer, of a chestnut-brown, mixed with black on the upper parts, and on the under, pale rufous. They are common in Italy and France, where they are caught and fattened for the table, being fed in a dark place with oats or millet, by which process they become so fat, that they will weigh three ounces, and would die from that cause alone, were they not killed for the market; when served up, they are like one lump of delicious marrow. — The SNOW-BUNTING, *E. nivalis*, or SNOWFLAKE, in Zetland the OAT-FERNE, is a native of the highest northern latitudes, where it spends the summer, but visits this country in harvest, and remains till the latter end of spring. It is first seen on the high ground in stubble fields, and its motions resemble those of the lark; but as the winter advances, it approaches the barn-yards, and feeds with the sparrows and finches. It breeds also in some of the mountains of Scotland; and in the severe winter of 1815-16, numbers of them took up their abode on the Caltonhill of Edinburgh. On the head, neck, and lower parts of the body, with the tail, the feathers are white, with black roots; on the back they are black, with pale edges. In the young, the plumage on the breast and sides is more or less mixed with chestnut, and on the back dusky, with rufous edges; in which state they have been described as the TAWNY-BUNTING, and MOUNTAIN-BUNTING. They build their nests in the crevices of rocks, of grass on the outside, lined first with feathers, and then with hair, and produce five eggs, white, with dusky spots.

The SPARROWS, *Fringilla*, have short stout rounded bills, sharp at the point, and comprehend, in the latest arrangements, the Finches, Linnets, Canary-birds, Widows, and Grosbeaks. — The HOUSE-SPARROW, *F. domestica*, is a

most familiar and well-known bird, constantly fluttering round our habitations, streets, fields, barn-yards, gardens, and orchards; it weighs about an ounce and a half, and is upwards of six inches in length. The chin, throat, and gorget, are black; on the upper part of the body it is a brownish-black, and on the under, a greyish-brown; an orange-brown band passes above the eyes and over the ears. It builds its nest under the eaves of houses, or in the holes of walls, formed of hay and straw, lined with feathers, and so placed as to be screened from the sun, wind, and rain. The cock sparrow is distinguished from the hen, by a jet-black spot on a whitish ground under the bill: has five eggs, greyish-white, with darker spots. It is a courageous and cunning little creature, and will combat with birds ten times bigger than itself. It is voracious upon grain; but it is strongly asserted that its services overpay its board to the farmer, it being calculated that a single pair of sparrows, when they have young, will destroy several thousand caterpillars every week, besides winged insects, and an immense quantity of larvæ, which would produce myriads of caterpillars. In its wild state the sparrow has only a kind of chirrup, which is not unpleasant; but if taken young, it may be taught to sing and to perform a variety of feats. In Pratt's Gleanings, there is one mentioned which he saw on the Continent, that, with a straw for a firelock, had been trained to go through the manual exercise. — The TREE or HEDGE-SPARROW, inhabits the middle district of England, is less than the house-sparrow, and its eggs are smaller; but in general habits and appearance it is not much dissimilar.

The CHAFFINCH, *F. caelebs*, or SHILFA, is of the size of a sparrow; the feathers on the back chestnut, with pale greyish margins; on the breast reddish; the belly is white rump yellow, tail bluish-grey in the middle, black with white spots on the exterior. This handsome little bird is everywhere well known: it commences its short and re-

peated song early in the spring, and continues it till about the middle of summer; and, in the still and sultry hour,

“ When not a strain is heard through all the woods,
Then full and clear the sprightly ditty rings,
Cheering the brooding dam; she sits concealed
Within the nest, deep-bellowed, well disguised
With lichens grey, and mosses gradual blent,
As if it were a knarl in the bough.”

The eggs are five, bluish-white, with reddish spots. The sexes separate into flocks during winter; and in Sweden the females emigrate for the south in the latter end of September, nor return again to their mates till about the beginning of April. The males are said to be very pugnacious about pairing time.

The **GOLDFINCH**, *F. carduelis*, is a small bird, not weighing above half an ounce, but is one of the most beautiful and harmonious we have: the bill is in the form of a lengthened cone, light yellow, black at the base, with a dark tip; the forehead, temples, and throat, bright red; the cheeks, ear-covers, and lower part of the neck, white; the back and breast yellowish-brown; the wings, bright yellow on the inner half, the other black, tipped with white; the tail also is variegated, black and white. It builds in shrubs and frequently in fruit trees, a nest most exquisitely constructed:—

“ With equal art externally disguised,
But of internal structure passing far
The feathered concaves of the other tribes,
The **GOLDFINCH** weaves, with willow-down inlaid,
And cannock tufts, his wonderful abode.
Sometimes suspended at the limber end
Of planetrees spray, among the broad-leaved shoots,
The tiny hammock swings to every gale;
Sometimes in closest thickets 'tis concealed,
Sometimes in hedge luxuriant, where the brier,
The bramble, and the plum-tree branch,
Warp through the thorn, surmounted by the flowers
Of climbing vetch or honeysuckle wild.”—GRAHAM.

The notes of the goldfinch are not loud, but sweet in an uncommon degree. It is extremely mild and docile in its disposition, and can be easily taught a number of most amusing

tricks ; even though taken when old, if well attended to and gently treated, it will become in a few weeks as familiar with its keeper as if it had been brought up by him from its youth. As if conscious of its beauty, it delights, when in captivity, to view itself in a mirror, which, to gratify this propensity, is sometimes fixed in its cage. Its food consists of the seeds of thistles and other plants.

The WIDOW-FINCH, *Vidua paradisæ*, a corruption of the Portuguese name, the WHIDAH BIRD, brought from the kingdom of Whidah, on the western coast of Africa, is found also in various parts from Senegal to Angola. It is nearly related to the linnets, with the exception of the peculiar structure of its tail, having two or more of the intermediate quill-feathers in the male birds lengthened in an extraordinary degree. It has much the manners of the linnet, and is lively and active in captivity. It is fed upon grain, with the occasional addition of green herbs, and is fond of bathing in the water which may happen to be placed in its cage. Twice a-year it is subject to change of plumage, the long feathers, the peculiar attribute of the male, falling off in autumn, and returning in spring, when he recovers with his new dress his sharp but agreeable and varied note. His summer dress is on the upper part black, except the back of the neck, which is half surrounded with a broad lightish chestnut band ; the breast is reddish-brown, the under part nearly white. In winter, its head is variegated with black and white ; its breast and back of a dull orange, with dusky spots ; its quill feathers dark brown, and its under parts dirty white ; the bill is dusky ; the iris of a deep brown, approaching to black ; the legs of a yellowish flesh colour. It is said to live for twelve or fifteen years.

The BROWN LINNET, *F. cannabina*, is larger than the goldfinch, and weighs about an ounce ; it is, however, more plain in its plumage. The crown, nape, and sides of the neck, are bluish-grey, the throat yellowish-white, streaked with brown, the front and the breast carmine-red ; above,

chestnut-brown; beneath, white, with a rufous tinge; the tail is forked, and black, margined with white: the carmine-red on the front and breast is wanting in the female. But if plainer in its garb than the goldfinch, the linnet is richer in its music, and stands in the first rank of our most admired songsters; and not only has he an excellent pipe of his own, but he is very apt in learning the strains of others, and if educated along with the wood-lark, their song can hardly be distinguished. It is easily domesticated, and sings well in a cage. It builds, in furze and low shrubs, a small, handsome nest of moss and grass, lined with hair: the female lays five eggs, bluish-white, speckled with purplish-red. They are very fond of lintseed, from which, it is supposed, the name has originated.—The ROSE LINNET, *F. linaria*, is rather smaller than the Brown: has a yellow bill; the head, neck, breast, sides, and rump, are crimson; the back is black, with brown edges, and the belly white. The female has crimson only on the head, the other parts which are of that colour in the cock bird, being white, with dusky stripes, in her. They lodge in low trees, and form the nest of moss, lined with the down of plants; and have five eggs, bluish-green, spotted with orange-brown.

The COMMON GROSBEEK, *Coccothraustes*, has a large, conical, and blunt pinkish-white bill; the cheeks, head, and rump, are brown, the front and throat black; and it has a bluish-grey collar round the nape of the neck; the upper part is reddish-brown, and the tail black. It builds on trees, and has five eggs, of a greenish tint, with brown spots. This bird breeds in the mountainous parts of Europe, visits England in small flocks in autumn, and departs in April. It feeds on hawthorn berries.—The CROSSBILL, *Loxia curvirostra*, is a singular bird, about the size of a lark, and remarkable for the peculiar construction of its bill, both mandibles having hooked points, and the lower crossing the left side of the other. The muscles on the right side for closing the lower jaw, Dr. Fleming remarks, are much

larger than those on the left—a singular example of compensation for the loss of power occasioned by the oblique position and motion of the lower jaw. The general colour of the body is a reddish-orange, which changes with age into a yellow and ashy hue; the tail is forked, and, with the wings, is of a dusky shade. It breeds, early in spring, in the North of Europe, in the pine forests, fixing its nest in the clefts of the branches, and has four or five greenish-grey eggs, with a circle of brown spots or rays at the larger end. Its food consists chiefly of the seeds of the fir, which it extracts from the pine-cones with great dexterity, and it is said that it will divide an apple with one stroke of its bill to get at the seeds. It has been tamed, and its motions in a cage resemble those of a parrot, climbing from the lower to the upper bars by means of its bill.—The GREEN GROSBEAK, or GREEN LINNET, *C. chloris*, is if anything less than the house-sparrow, of a yellowish-green, with the margins of the feathers greyish; the tail a brighter yellow; the bill is flesh-coloured, and the legs brown. It is a very common bird, and easily tamed: its own song is silly, but it easily catches the notes of other birds. It has its nest in hedges, of moss, lined with hair and feathers, and produces five eggs, bluish-white, speckled with brown. It congregates with linnets and chaffinches during the winter.

The BULLFINCH, *Pyrrhula*, about the size of a sparrow, has a head and neck larger in proportion to its body than any other small bird, and thence it has obtained its name. It has a short black bill, thick and hooked. In the male, the cheeks, neck, breast, belly, and flanks, are of a bright red; the back is grey or lead-coloured, the rump white, and the crown of the head and the tail are black. The female is bluish-grey above, and brown below, and less brightly marked on the other parts of her body than the male. They pair in April, and make their nests in hedges, of dry twigs, lined with fibrous roots: the eggs are five, bluish-white, spotted with brown. In a state of nature, it is not very

remarkable for its music; but it is a very docile bird, easily trained to imitate the sound of a pipe or the whistle of a man, in a fine mellow tone, and will continue its exertions even when artificial light has been introduced into the room. In summer, it seeks the woods and more sequestered retreats; but in winter it approaches gardens and orchards, where in spring it makes sad havoc among the buds.

The CANARY-BIRD, *Fringilla Canaria*, originally brought from the Canary Islands, is well known, having been long domesticated in every* country in Europe. In its native groves, its plumage is a dusky grey, but with us has all the variety of colour usual among domestic fowls; some are white, some mottled, some beautifully shaded with green, but the most common is a yellowish-white. It has a high, piercing pipe: dwelling upon the same note for some time in one breath, then rising higher and higher by degrees, it passes through a variety of modulation. Buffon eloquently remarks, "that if the nightingale be the chantress of the woods, the canary is the musician of the chamber: the first owes all to nature, the second something to art. With less strength of organ, less compass of voice, and less variety of note, the canary has a better ear, greater facility of imitation, and a more retentive memory; and as the difference of genius, especially among the lower animals, depends in a great measure on the perfection of their senses, the canary, whose organ of hearing is more susceptible of receiving and retaining foreign impressions, becomes more social, tame, and familiar, is capable of gratitude, and even attachment; its caresses are endearing, its little humours innocent, and its anger neither hurts nor offends. Its education is easy: we rear it with pleasure, because we are able to instruct it. It leaves the melody of its own natural note to listen to the melody of our voices and instruments. It applauds, it accompanies us, and repays the pleasure it receives with interest; while the nightingale, proud of its talent, seems desirous of preserving it in all its purity, at



GOLDFINCH.



BULLFINCH.





least appears to attach very little value to ours, and with great difficulty can be taught any of our airs. The canary can speak and whistle; the nightingale despises our words as well as our airs, and never fails to return to its own wild wood-notes. Its pipe is a masterpiece of nature, which human art can neither alter nor improve; while that of the canary is made of more pliant materials, which we can model at pleasure, and therefore it contributes in a much greater degree to the comforts of society. It sings at all seasons, cheers us in the dullest weather, and adds to our happiness by amusing the young and delighting the recluse, "relieving the tediousness of the cloister, and gladdening the cell of the more innocent captive." In the cage, it breeds generally twice a-year; and sometimes the female has laid her eggs for a second brood ere the first be fully fledged, when the male takes the first family under his charge, and feeds them while she is sitting. It is often crossed with the goldfinch, and the produce is a beautiful mule.

The BOHEMIAN CHATTERER, *Bombycilla garrula*, is a migratory bird, found in Europe, Asia, and America, about the size of a large lark; it is crested on the head, and the plumage is of a reddish ash colour, with a black band over the eyes; and the throat, the bill, and toes, are black; the iris vermilion red, and the tail black, tipped with yellow. It is remarkable for the horny red appendages at the tips of seven of its flag feathers. It migrates in flocks, and is often seen in the neighbourhood of Edinburgh in the month of February. It feeds on insects, and those berries which remain on the trees during winter in more genial climates, although decidedly insectivorous; it delights in early cherries in the spring, and the junipers in autumn. Its flesh is excellent. It is said to nestle in holes of the rocks.

The STARLING, *Sturnus*, bears a considerable resemblance to the blackbird in size, shape, and appearance, having a black plumage, but with purple reflections, whose glossy tints vary according to the various lights in which they

are placed; the feathers are tipped with triangular white spots, the bill is yellow, the feet brown, and the tail dusky, with pale reddish-brown feathers on the outside: the female has more white on the breast and belly. They build in the hole of a tree or wall, with dry grass, and have five bluish-green eggs. It is a noisy bird, and has a rough voice, but is a good mimic, though, like mimics in general, it is not very fastidious, imitating the creaking of a door as readily as the finest melody, or perhaps rather more so; but it is held in most estimation for its capacity of pronouncing words distinctly. It is gregarious, and in winter collects in immense flocks. In Orkney, it is seen in myriads; and it is so fond of company, that farther south it associates with redwings and fieldfares, and, rather than sit alone, will even scrape acquaintance with the owls and the jackdaws. They have a whirling mode of flight, which Buffon compares to a sort of vortex, in which the whole flock performs a uniformly circular motion, but advances at the same time.

The Crows, genus *Corvus*, are distinguished by strong convex bills, and rounded tails. — The RAVEN, *C. corax*, measures twenty-eight inches in length, of which the tail is one-half; the wings are large, and, when extended, the breadth from tip to tip is forty-eight inches; the weight is nearly three pounds. The plumage is black, with a blue gloss; the irides consist of two circles, the outer brown, the inner grey; the bill and legs are black. It builds its nest in high trees or rocks, composed of sticks, lined with wool, and has five pale-green eggs, with brown and grey spots. This species feeds on carrion, birds, young lambs, and weakly sheep, which he first attacks by picking out their eyes. In the northern regions, he joins in the plundering excursions of the white bear, the arctic fox, and the eagle. His scent is remarkably acute. He is by nature a glutton, and by habit a thief; yet with his mischievous he possesses many diverting qualities, and there is no bird that

exemplifies more the necessity and advantage of a good education. He is easily tamed, and may be taught to fowl like a hawk, fetch and carry like a spaniel, speak like a parrot, and sing like a man. He seems also to possess a kind of natural humour. A tame specimen at the seat of the Marquis of Aylesbury, in Wiltshire, having been taught to speak, was in the custom of collecting, in his rambles, a crowd of crows, rooks, and others of his inquisitive brethren; and as soon as he thought a sufficient number had assembled, he astonished the natives by roaring out lustily, *Holloa* when the terrified crowd immediately took to flight, and he appeared highly to enjoy the joke. But covetousness is a vice we in vain seek to eradicate in birds or men: the raven can never be cured of pilfering, especially bright toys, or shining metal rings or money. They are solitary birds, live in pairs, and in clear weather fly high. They were reckoned birds of ill omen by our forefathers:

“ The Raven himself is hoarse
That croaks the fatal entrance of Duncan
Under my battlements.” *Macbeth.*

They are very long-lived, some, it is said, having attained to more than a hundred years of age.—The *CARRION CROW*, *C. corone*, is much less than the raven, but similar in its figure and manners, only its black plumage is not so glossy, and its tail is more slightly rounded. Its nest, with its eggs, are similar.—The *HOODED CROW*, *C. cornix*, is of a medium size between the carrion crow and the raven, weighing twenty-two ounces, and measuring twenty inches in length. Its head, throat, wings, and tail, are black, with blue and greenish reflections; the rest of its body is of an ashy-grey; and its bill has a pale tip. Its grey colour becomes whiter with age, and this has originated a suspicion that it may be the carrion crow at a more advanced period; for its nest, eggs, and habits are the same, only perhaps a little bolder, as it is said to attack horses, if it see them entangled, and pick out their eyes. It is a bird of passage in England,

appearing in the beginning of winter, and going away with the woodcock: it is stationary in Scotland.

The Rook, or COMMON CROW, *C. frugilegus*, is about the same size as the hooded crow, being twenty inches in length, and thirty-eight across: its bill is nearly straight, and the skin at the base is naked; the general colour is black, but the fore part of the head is ashy-grey. It is gregarious, and flies abroad in flocks morning and evening, and their nests are built on the topmost boughs of the tallest trees, of sticks, lined with fibrous roots, and generally near to each other. The whole pair and commence their operations in March—the old to repair their nests, the young to frame new; but they are such thieves, that while the one is fetching materials, the other must keep watch to prevent the rising fabric from being plundered by their neighbours. As soon as the nest is finished, and the eggs produced (five, bluish-green, with dark blotches), the male takes upon himself the care of providing for his mate, which he continues during the whole period of incubation. They frequent the same rookeries for years, but allow no intruders into their community; and if any stranger bird, not belonging to the clan, make its appearance among them, they immediately fall upon it and drive it away, or sometimes, it is said, lead it forth to public execution. A curious instance of their aversion to strangers occurred at Newcastle in the year 1783. A pair of aliens attempted to introduce themselves into a rookery near the Exchange, but were compelled to retire and seek refuge in the steeple of that building, where they succeeded in establishing themselves, in opposition to the efforts of the other rooks to obstruct them; and built their nest on the top of the vane, and reared their young there, though their little habitation was whirled about by every gust of wind; they returned regularly for ten years, till the spire was taken down. They feed chiefly on worms and the larvæ of insects; they also eat grain and seeds, whence they have sometimes been sup-

posed injurious to the farmer; but they amply repay him for what they take, by destroying the vermin in his fields. It has been ascertained by experiment, that a nest of rooks will destroy upwards of two thousand a-day of the grub of the tipula, an insect most injurious to corn. It is a noisy bird, particularly when repairing to their nests at sunset; like a cloud hovering over their colony, and performing their circular evolutions ere they alight for a few hours' repose. In former times, it was common for gentlemen to have rookeries in the vicinity of their seats, and there are some of these still remaining around several of the dilapidated monuments of departed grandeur in various counties of Scotland.

The JACKDAW, *C. monedula*, is much less than the rook, being fourteen inches in length, and weighing about nine and a half ounces. It is also of a black colour, with a greyish tint above, and bluish beneath, while the hinder part of the head and neck are of a hoary grey: the irides are greyish-white. It is gregarious, and frequents, in great numbers, churches, old towers, and mouldering ruins, where it builds its nest of sticks, lined with wool: the eggs are five, greenish-blue, with dark-brown spots. Jackdaws are easily tamed, and may be taught to pronounce several words; but they are extremely troublesome from their thievish tricks, especially laying hold of money wherever they can get it, which, as if to be a living satire on the miser, they are excessively fond of secreting and hoarding. They feed on insects, grain, fruit, and small pieces of flesh: they are said greatly to relish partridges' eggs, and to have been seen to catch fish.

The PIES, *Pica*, are rather smaller than the Crows: have the upper mandible more arched than the lower, and the tail long, and of a wedge-like form.—The COMMON MAGPIE, *P. caudata*, is a beautiful bird, of a silky black colour, with purple, blue, and gold reflections; white on the belly, with a large spot of the same colour on the wings. It is a most ingenious bird, of which its nest forms a remarkable indi-

cation, both in its site and structure. It chooses the middle of some thick hawthorn bush, or the top of some high tree, in some impervious hedge-row, fenced by brambles at the root: the frame of the nest consists of hawthorn branches firmly united, with the thorns projecting outward: within it is well plastered and lined with dried grass, and it is covered with a canopy of the sharpest thorns, woven closely together, so as to form an impenetrable barrier against its enemies, the kite and the sparrow-hawk. The only entrance is by a door on the side, just large enough to admit the bird itself. In this fortress the female deposits six to eight eggs, of a pale yellow colour, spotted with brown. It is omnivorous; nothing comes amiss, worms, insects, or seeds—bread, cheese, or flesh—small or sickly birds, and even occasionally a new-fledged chicken, if it stray too far from its mother's protection. It is not difficult to domesticate, but it is a thievish rogue. Plutarch tells a singular story illustrative of its imitative powers. A barber in Rome had one of these birds, which caught almost every noise that it heard: when some trumpets being sounded near the shop, for a day or two afterwards it remained mute and pensive, and it was supposed the sound had stunned the Mag; but this was a mistake—he had only been in a brown study, which, to the astonishment of all who came to get their beards dressed, ended in a perfect imitation of the trumpets in all their repetitions, stops, and changes. Goldsmith remarks, it has too many of the qualities of a beau: vain, restless, loud, and quarrelsome, it is an unwelcome intruder everywhere; and never misses an opportunity, when it finds one, of doing mischief.

The JAY, *Garrulus*, is likewise one of the most beautiful of the British birds. The head is white, with black streaks, and covered with long feathers, which it can erect at pleasure; the breast, belly, and rump are white; the neck, back, and shoulders, faint purple-red; and the sides of his wings are brilliantly chequered with white, black and blue.

It is confined to woody districts, and builds, in the hazel, thorn, or low birch, an artless nest of sticks, fibres, and tender twigs; has five or six eggs, of a pale blue colour, mottled with brown. Like the magpie, it is talkative, and apt to imitate sounds and pronounce words. One used to mimic so exactly the risping of a handsaw, that it was actually mistaken for a carpenter at work; and another used to set a cur-dog upon cattle, by whistling and calling to him by name. In summer, they are very injurious to gardens, devouring great quantities of pease, adroitly opening the pods, and also cherries: in autumn, they feed on acorns, but they also prey upon small birds.

The CORNISH CHOUGH, *Corvus graculus*, has a black plumage, tinged with violet; bill, legs, and toes, orange; its wings are as long as its tail. It not only inhabits Cornwall, but is also found in Wales, England, and Scotland. It nestles on sea-cliffs or in old towers near the coast. They are numerous about the Cliffs of Dover, where they are celebrated as forming one of the features of the scenery: —

“ The crows and choughs, that wing the midway air,
Shew scarce so gross as beetles.” SHAKESPEARE.

It feeds on insects and newly-sown corn, and its flesh is reckoned delicate. It is active, restless, and thievish, and is rather dangerous, being very ready to seize on pieces of lighted wood, and has thus been known to set fire to houses where it has been domesticated. It also does considerable damage to thatched houses, by tearing holes in the straw.

The ROLLER is of a genus not less conspicuous for beauty than any of those we have been describing; but only one species, the GARRULOUS ROLLER, *C. garrulus*, is known in Europe, and that but as an occasional visitant in England. It is of the size of the jay. The head, neck, and breast, are of a bluish-green, the upper part of the body reddish-brown, the flag feathers black, and the tail, which is forked, has a light blue tint. It builds on trees, particularly the birch,

and lives on frogs, beetles, acorns, grain, and fruit. Its flesh is thought excellent.

The HOOPOE, *Upupa*, is found in Europe, Asia, and Africa, and is numerous in France and Germany; as a summer visitant, it has been seen in Britain from Orkney to Devonshire, where it has even attempted to breed. It is upwards of twelve inches in length, and nineteen in breadth; the bill is elongated; the neck and breast are of a purplish-red colour; the back pale brown, tinged with grey, and with black and white bands at the lower part; the wings are black, with five white bands; and the tail is black, with a V-shaped mark of white. But its most remarkable feature is a crest, two inches high, of a pale orange colour, tipped with black, which it erects upon being alarmed. They make their nests of grass, lined with feathers, in decayed trees, or holes of walls, and their eggs are five, greyish-white, spotted with brown. It is a solitary bird, and seldom seen in pairs.

The BIRDS OF PARADISE, *Paradisea*, which have obtained that name from the splendour of their plumage, are natives of New Guinea and the adjacent islands, and consist of a number of species, but the best known is the GREAT BIRD OF PARADISE, *P. apoda*, about the size of a thrush. It has a strong straight bill, with small nostrils, which are covered with feathers of a velvet tissue and metallic lustre produced from the base. The wings are large, compared with the bird's other dimensions; the feathers of the hinder part of the breast and belly are singularly extended into bunches, longer than the body; and the tail, measuring six inches, is of equal length with it: but what chiefly attracts notice is two naked filaments, which spring from the upper part of the rump, above the tail, two feet long, of a deep black colour, bearded at the insertion and at the point, with downy feathers of a changeable hue. The front of the head, throat, and neck, are of a shining yellow; the hinder part of the head is of a brilliant green, mixed with gold; and

the body and wings are beautifully variegated with brown, purple, and gold. These birds are gregarious, always seen in large flocks, and perching at night upon the same tree. They live on fruits, and are said to be particularly fond of aromatics. It has a cry like that of the starling. It is the male that furnishes plumes for adorning the heads of our fair countrywomen. These birds are killed by the natives with blunt arrows, and sold to the Europeans; but as this forms a lucrative kind of merchandise, the "virtuous" Chinese fabricate specimens of these celestial fowls, of the feathers of parrots and paroquets, which they sell to strangers, and by which craft they make great gain.

IV. *Family Tenuirostres* — Slender Bills. — The NUTHATCH, *Sitta*, is nearly six inches in length, and weighs about an ounce: it has a straight pointed beak, three quarters of an inch long. The upper parts of the body are of an ash-grey; the sides under the wings red; the cheeks and chin white; the breast and belly of a dull-orange; and the feathers under the tail red, with white tips. It feeds on insects and nuts, which it hoards in the hollow of a tree, near where it nestles; and it is amusing to observe it bring a nut from the store, place it fast in a chink, break it with a stroke of its bill, and catch the kernel. It also perforates the bark of trees, and abstracts the larva it contains, in which process it sometimes will produce a sound as if it were rending the tree asunder. Its feet are formed for walking, and it will run up and down the trunks with great celerity. Sometimes it seizes on the deserted nest of the woodpecker, filling up part of the entrance if too large with clay. The female lays six or seven eggs. It is a solitary bird, but in winter draws near to houses and gardens, and its note is most generally heard in the night. The young ones are esteemed a delicacy.

The CREEPERS, *Certhia*, are spread over almost the whole globe. — The COMMON CREEPER, *C. familiaris*, which fre-

quents this country, is among the smallest of European birds: it has a long, slender, sharp bill, hooked like a sickle; the upper part of the body is a yellowish-brown, intermixed with black, brown, and white; the breast and belly are of a silver-white. It feeds on insects, in search of which it runs along the stems and branches of trees in every direction. He is a brisk and cheerful bird, builds his nest in the holes of trees, of grass lined with feathers, and has seven to nine eggs, white, speckled with reddish-brown. His notes are pleasant. — The WALL CREEPER, *C. muraria*, is rather larger than a house-sparrow, ash-coloured above, and white beneath, with orange-coloured spots on the wings; it frequents old towers, castles, and walls, creeping along in search of insects, especially spiders, of which it is a great destroyer. Its voice is sharp, and it flies with an irregular motion. It builds, like the former, in the holes of trees, but sometimes has been found in the skulls of animals, and occasionally even in the deserted tenement of man's intellect.

The HUMMING BIRDS, *Trochilus*, include an immense number of species, upwards of two hundred of which have been classed into their several genera by modern ornithologists; but the whole tribe, although diversified by an infinite variety of colouring and minute differences in structure, may yet be comprehended under one general description, embracing the more prominent features of the family. They swarm in the tropical portions of the New World, in the great archipelago of islands lying between Florida and the mouth of the Orinoco, and on the mainland of the southern continent of America, till it passes the tropic of Capricorn, only two species extending far into the northern. They are the smallest, but the most brilliant of birds, whose gorgeous drapery has been compared to the emerald, and the topaz, and the sunbeam: and so far have emblems been employed to illustrate their beauty, that after every intelligible similitude has been exhausted, they have been said to exceed

“ the hue of roses steeped in liquid fire ! ” But they are justly celebrated for the metallic lustre of their plumage, and the bright plates formed by scaly feathers on their throat and head. The sizes of the different species vary from that of our smallest wren to that of our common humble-bee ; they have wings large in proportion to their body, and fly with amazing rapidity ; and it is when they are on the wing that they produce, by the velocity of their motions, that humming sound whence their name, and that their splendid colours are disclosed to the greatest advantage :—

“ Each rapid movement gives a different dye ;
Like scales of burnished gold, they dazzling show,
Now sink to shade, now like a furnace glow.”

Their bills are long, slender, hooked at the point, with saw-like teeth, containing a tongue, split almost to its base, forming two filaments, which they can protrude at pleasure, and with which they extract the nectar from flowers, or the small insects that lodge in the cups, as they also seize them when floating in the air. “ I have seen the humming bird,” says Wilson, “ for half an hour at a time, darting at those little groups of insects that dance in the air, on a fine summer evening, retiring to an adjoining twig to rest, and renewing the attack with a dexterity that sets all other fly-catchers at defiance.” Their feet are small and slender, but have long claws, and, in consequence, they seldom alight upon the ground, but perch easily on branches, from which also they frequently suspend themselves when sleeping, with their heads downwards. Their tail is broad. Their nests, about an inch in diameter, and as much in breadth, are very compactly formed, the outer coat of grey lichen, and lined with the fine down plucked from the stalks of the fern and other herbs, and are fixed to the side of a branch or the moss-grown side of a tree so artificially, that they appear, when viewed from below, mere mossy knots, or accidental protuberances. They are bold and pugnacious, two males seldom meeting on the same bush or flower without a battle ;

and the intrepidity of the female, when defending her young, is not less remarkable. They attack the eyes of the larger birds, when their needle-like bill is truly a formidable weapon; and it is affirmed, that if they perceive a man climbing the tree where their nests are, they fly at his face, and strike him also in the eyes. Most of the species lay only two eggs, and some of them only one. They have been tamed — a female, with her nest and eggs, brought from Jamaica to England, was fed with honey and water on the passage, and the young ones, when hatched, readily took honey from the lips of the lady to whom they were presented, and one, at least, survived two months after their arrival.

The KINGFISHER, *Alcedo ispida*, is one of the most lovely of European birds, and when suspended in the air, in a bright day, exhibits a dazzling variety of colour. The plumage above is of a bluish green, tinged with azure blue on the head and shoulders, and entirely azure on the back and rump; beneath it is orange-coloured, with a white chin; is about seven inches in length, eleven in breadth, and weighs about an ounce and a half. But if one of the loveliest of our birds, it is one of the filthiest in its habits. It feeds on small fish, and frequents the banks of rivers, where it sits on a projecting hough, watching for minnows, on which it darts with unerring aim, carries to land, beats to death, and then swallows; but should the banks be bare, it sits on some stone, or even the gravel, whence it takes a spring upwards, of twelve or fourteen feet, and then darts upon its prey. Its nest, if such it may be called, is merely the indigested bones of the fish disgorged, and other excremental matter lodged at the end of some hole, which the water rat has deserted, or which itself has scooped out, mixed with earth and dried by the heat of its body, where the female deposits and hatches her eggs, six in number, of a transparent pink-white.

The HORNBILLS, *Buceros*, are large birds, natives of Africa and India, about two feet six inches long, with a

curved bill of more than five inches, having saw-like margins, and on its upper part a protuberance whose shape varies with age, and in very young birds is not even visible, rounded at the top, reaching two thirds of its length, and black on the fore-part. The plumage is in general black, tinged with green on the upper part of the body; the legs are black and very short. They are omnivorous, eat soft fruits, reptiles, and even carrion; they are excellent mousers, and are reared in a domestic state by the inhabitants on the island of Ceylon, for clearing their houses of vermin. Their manners in the woods are singular: they seldom visit the ground, but flying into a tree, or from one tree to another, they traverse the branches; commencing with the lowest, they delight to spring from branch to branch, till they reach the topmost, which, when they have gained, they suddenly stop and utter a loud roaring sound, which may be heard at the distance of at least half a mile, and resembling the roar of some ferocious beast, is terrific to those who do not know whence it proceeds.

SECT. III. — SCANSORES, OR CLIMBING BIRDS.

These are birds whose external toe is directed backward like the thumb, which enables them to support the weight of their bodies in clinging to, or climbing upon trees, and distinguishes them from the Perchers, as they do not only perch, but grasp the branches of the trees, among which they chiefly pass their existence.

The WOODPECKER, *Picus*, so named from its picking holes in trees to procure the insects which form its food, has a long straight angular beak, terminating in a wedge-like end, adapted for piercing the bark; and a long slender tongue, bony and hard at the point; the legs are short and strong; the toes are two before and two behind; and their tail is

composed of two hard and elastic feathers, which act as a prop to aid them in climbing. They wander over trees in every direction, striking the bark on hollow or decayed places with their beaks, and insinuating their tongues into its crevices in search of the insects or their larvæ, on which they feed: —

“ Every leaf was at rest, and I heard not a sound,
But the Woodpecker tapping the hollow beech-tree.”

It is also very adroit in ensnaring ants, first pecking their hills to call them abroad, and then thrusting out its long red tongue, like a worm, which the ants, supposing it their common prey, settle upon in great numbers, when, with a sudden jerk, the bird withdraws it and devours them. Instead of a nest, it forms a circular hole in the decayed parts of trees, with mathematical accuracy; there the eggs, five or six, pure white, are deposited, without anything to keep them warm except the heat of the body, and the male and female sit alternately. — The GREEN WOODPECKER, *P. viridis*, measures thirteen and a half inches in length, and upwards of twenty-one in breadth, and weighs about seven ounces. Its plumage is green above; beneath grey, and red on the crown. It is called in some parts of the country the Rain Fowl, because when it makes a greater noise than usual it is supposed to foretell rain. — The GREAT SPOTTED WOODPECKER is nine and a half inches in length, twelve in breadth, and weighs three ounces; it is black above and white beneath; and the crown of the head is black, with a crimson bar on the hinder part, reaching down to the neck; the wings are black, with white spots; the tail white, with black spots; eggs five, bluish-white. The MIDDLE SPOTTED WOODPECKER, is the young of this bird, before they have attained maturity. — The LESSER SPOTTED WOODPECKER is not an ounce in weight, and not above six inches in length; has the crown of the head red; is black on the back, and in the lower parts, mottled with white. It has five eggs, purplish-white. There is another species, called

the Carpenter, by the Spanish Americans, from the noise that it makes; and a minnte creature about the size of a wren, which is found in Cayenne.

The RED-HEADED WOODPECKER, *P. erythrocephalus*, is a native of the United States, about nine inches in length, lively and familiar in its habits, and frequently hovering about the orchards and fields of Indian corn, where it commits extensive depredation. Their general food is insects, but they are particularly fond of cherries in their season, and hundreds may be seen at once on one cherry-tree, regaling themselves with the fruit; and while enjoying their luxurious repast, they utter shrill notes, as if from exuberance of delight; when the feast is ended, they retire in parties to some neighbouring trees to amuse themselves by gamboling and sportively chasing each other. The head and neck are bright crimson; the upper part black, with blue reflections; yellowish-white underneath the rump, and the secondaries white. Its abode is a spacious chamber, scooped out in the body or large limbs of decayed trees, where the female deposits five or six eggs, of a pure white; yet here its castle is frequently invaded by the black snake, which glides up the trunk and enters the woodpecker's peaceful apartment, devours the eggs or helpless young, in spite of the cries and flutterings of the parents; and if the place be large enough, coils himself up on the spot they occupied, where he will sometimes remain for several days. The eager schoolboy, after hazarding his neck to reach the woodpecker's hole, at the triumphant moment when he thinks the nestlings are his own, and strips his arm, launching it down into the cavity, and grasping what he conceives to be the callow young, starts with horror at the sight of a hideous snake, and almost drops from his giddy pinnacle, retreating down the tree with terror and precipitation. "Several adventures of this kind have come to my knowledge," says Wilson, "and one of them that was attended with serious consequences where both snake and boy fell to the ground, and a

broken thigh and long confinement cured the adventurer completely of his ambition for robbing woodpeckers nests.

The WRYNECK, *Yunx torquilla*, is about the size of a lark, variegated with white, grey, black, and brown feathers, the grey predominating above the white beneath. Its bill is three quarters of an inch long; and the tongue, like a worm when extended, will twist round the bird's head, and when protruded attracts the ants, which form its chief food. It often turns about its head, whence it has its English name. It intimates to the swallow-birds by a cry, the approach of a hawk. It is a bird of passage in England, where it arrives a few days previous to the cuckoo, and at the end of summer grows remarkably fat, when it is much sought after, and greatly celebrated by the connoisseurs in good eating.

The Cuckoo, *Cuculus*: —

“ Hall, beauteous stranger of the wood,
Attendant on the spring!
Now heaven repairs thy rural seat,
And woods thy welcome sing.

“ The schoolboy wandering in the wood
To pull the flowers so gay,
Starts, thy curious voice to hear,
And imitates thy lay.”

This delightful visitant cannot boast of much variety or beauty of plumage, but to compensate this deficiency, has a light and elegant form; the plumage is of a deep bluish-grey; the belly white, crossed with many lines of black; the tail is black, white, and dusky intermingled; the bill is blackish-brown; the eyes and feet yellow; its nostrils, round and prominent. The Cuckoo is remarkable for having no nest of its own, and not hatching its own eggs, which the female generally deposits in the nest of the hedge-sparrow, and leaves to her the care of hatching and bringing up the strange brood, so different from its own; and what is remarkable, the foster-mother preserves it at the expense of her own young. On the 18th June 1787, Dr. Jenner examined the nest of a hedge-sparrow, which then contained a cuc-

koo's and three hedge-sparrow's eggs. On inspecting it the day following, the bird had hatched; but the nest then contained only a young cuckoo and one young hedge-sparrow. The nest was placed so near the extremity of a hedge, that he could distinctly see what was going forward in it; and, to his great astonishment, he saw the young cuckoo, though so lately hatched, in the act of turning out the hedge-sparrow. The mode of accomplishing this was curious:—the little animal, with the assistance of its rump and wings, contrived to get the bird upon its back, which is broad, with a considerable depression in the middle, and making a lodgement for its burden by elevating its elbows, climbed backward with it up the side of the nest, till it reached the top, where, resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. After remaining a short time in this situation, and feeling about with the extremities of its wings, as if to be convinced that the business was properly executed, it dropt into the nest again. There is, however, no rule without exceptions:—a clergyman in Derbyshire saw a cuckoo rise from a nest in the stump of a tree, and in it there were two young cuckoos, which for many days he beheld the mother return regularly to feed. — *Phil. Trans.*, 1772. The food of the cuckoo consists of insects, especially caterpillars. It arrives with us in April, and the old ones depart in July, the young following in succession.

The BEE-CUCKOO, *C. indicator*, or HONEYGUIDE, inhabits the interior of Africa, and is frequent at the Cape; so called from the faculty it has of pointing out to man and the ratel the nests of the wild bees. It is not unlike our common sparrow, of a brownish-grey colour above, and white below; it has a yellow spot on each shoulder, and the tail, which is wedge-shaped, is brown. Morning and evening are the seasons for its marauding excursions, when it raises the gathering cry of *cheer, cheer, cheer*, which is always attended to if heard, and answered by a gentle

whistle. When the bees' nest is at some distance, the bird often makes long stages or flights, waiting between each flight for its sporting companions, and calling to them to come on; but it flies to shorter distances, and repeats its cry more frequently and with more earnestness, as they approach nearer to the nest. When it comes to the place, it hovers over the spot for a few seconds: after which it sits in silence, and for the most part concealed in some neighbouring tree or hush, waiting to receive its share of the booty, which is always left for it by the plunderers.

The TOUCAN, *Ramphastos*, a native of South America, is distinguished from all other birds by his enormous bill, in some species as large as its whole body, which is about the size of a jackdaw. There are reckoned about fifteen species. We confine ourselves to the ARIEL TOUCAN, described in the Zoological Gardens, &c., vol. ii., from a living specimen. The entire length is about eighteen inches, of which the bill forms more than three, and the tail upwards of seven: the general colour of the bird is black, excepting the throat, neck, and cheeks, which are of an orange-yellow, and two crimson hands, an inch broad, one crossing the breast, the other the tail-coverts. It lives chiefly upon vegetables, but it is exceedingly fond of flesh. A goldfinch being introduced into its cage, was immediately seized, and the poor little bird had only time to utter a short weak cry, for within a second it was dead. The toucan then hopped with it in its bill to another perch, and when it had plucked it, broke all its bones, till the unfortunate bird was reduced to an almost shapeless mass, and in the course of a quarter of an hour devoured. In feeding, it jerked the morsels as it tore them off up in the air, and let them fall at once into its wide-distended throat; and during the whole time, the toucan appeared to experience great enjoyment, hopping about from perch to perch with its prey in its mouth, and when the meal was finished, cleaned its bill by rubbing it against the perches and bars

of the cage. It has been observed to return its food from the crop some time after it had taken it, and, masticating the morsel in its bill, again swallow it,—an operation strongly resembling the analogous action in ruminating animals. In the cage it is gentle and tractable, but wild and shy out of it. It builds its nest in the holes of trees, and lays two eggs, of which the monkeys are great destroyers; but should it so happen that any of these inquisitive visitants pops its nose upon the place while the bird is sitting, its tremendous bill gives him such a salutation, that he is glad to scamper off, chattering his curses, to some other quarter. It is held in great estimation by the natives, both on account of the delicacy of its flesh and the beauty of its plumage, with which they ornament themselves.

The PARROT, *Psittacus*, has been long one of our most familiar birds, remarkable for the faculty of learning to pronounce words distinctly, and to imitate the human voice more nearly than any other bird. Its hooked bill, both of whose parts are moveable, round on the outside, and hollow within, has in some degree the capacity of a mouth, and allows the tongue to play freely; and the sound striking against the circular border of the lower mandible, is there modified as on a row of teeth, while the concavity of the upper mandible reflects it like a palate; and thus a full articulation is produced. It is also distinguished for its memory, having been taught, if we may credit Goldsmith, not only to pronounce a vocable, but repeat a sonnet! Birds of this genus, however, who have achieved two or three words, are not rare. Besides its adaptation for speech, the bill assists the bird in climbing: with it catching hold of the bough of a tree, he then draws his legs upward, then stretches to the next within reach, and performs the same exploit from bough to bough; for his feet are not framed for hopping. He is a gregarious bird, and they mutually assist each other against any animal which may attack them.

They generally breed in trees, scooping out holes for themselves in such parts as they find beginning to decay; and there the female, without any other nest, lays two or three eggs, the size of a pigeon's, marked with small specks. They feed upon vegetables, nuts, which they break very adroitly, and fruits, and keep their food in a kind of pouch, from which they afterwards throw it up, in the same manner as ruminating animals: they associate in pairs, and the male and female sit alternately upon the eggs. They are very numerous and noisy in the groves of the East and West Indies; but though they are common, and live long in our climate, they never breed. There are a great many species, of almost every variety of colour: the largest,

The MACCAW, *P. macao*, is of the size of a common hen, and has a tail wedge-shaped, and two feet and a half long. It is a native of South America, and delights in the palm woods, whose fruit forms its chief food. It is entirely of a deep and brilliant blue colour above, and red beneath, with black legs and claws.—The PARROQUET, *P. passerinus*, is not much larger than a sparrow, and consists of a great number of species: the best known is the Blue and Green Parroquet. The general colour of its body is green, but lighter, approaching to a yellowish shade, on the belly, with a blue spot on the wings: it has a longer tail than the common parrot, is more easily tamed, but speaks with less facility.—The COCKATOO, *P. cristatus*, or CRESTED PARROT, is a native of the Molucca Islands, and is distinguished from the common parrot by a crest of long feathers, which it can erect at pleasure, and which gives the bird a fine striking appearance. It has a short tail, and often repeats the word Cockatoo, whence it has its name. It seeks damp and marshy situations, usually near rivers or brooks, delighting to bathe frequently in the water. It chiefly subsists on vegetable substances, and in confinement is excessively fond of sweetmeats. Like the rest of the tribe, it may be taught to repeat a word or a phrase. The colour throughout is a

pure white, except the crest, of which the longer feathers are bright yellow. It is remarkably intelligent, and becomes attached to those who treat it with kindness.

SECT. IV.—GALLINACEOUS BIRDS—Of the POULTRY KIND.

The PEACOCK, *Pavo*. This most splendid bird, a native of India, was introduced into Europe by Alexander the Great, and has been long domesticated in this country. Its head is adorned with an aigrette or crest of the most exquisite green and gold; its body is brilliantly variegated; but its distinguishing feature is its train, which rises just above the tail, and when erected, forms a circular fan of the most resplendent hues. The two middle feathers are sometimes four feet and a half long, the others gradually diminishing on each side, all spangled with eyes; which, when pleased or in the sight of his females, he displays in all its loveliness, strutting slowly, and frequently turning round, as if conscious of his elegant dress, and desirous of exhibiting himself to the greatest advantage. The plumes are shed every year, and while moulting, the bird, as if ashamed, keeps out of sight. The peacock, in former times, has been served up at baronial feasts, but its flesh was never esteemed; and it more frequently was exhibited as an article of show, or of veneration, for it sometimes, along with the holy virgin, had vows addressed to it by chivalrous knights. Like other birds of the poultry kind, it feeds chiefly on corn, preferring barley; but at other times it seeks insects and worms, and is very mischievous if it can find any admission into a garden. It always roosts high, and is a proud and quarrelsome bird. The female lays five or six eggs, which she hatches in twenty-seven or thirty days. The plumage is in its perfect state in the third year: it lives twenty-five.

The TURKEY, *Meleagris gallopavo*, now a common domestic fowl—originally brought to Europe from America by the Jesuit missionaries, men who were not less distinguished for their excellent taste in good eating than for their profound skill in mathematics—is sufficiently marked by a naked fleshy excrescence depending from the throat, and another on the forehead, which in the male becomes so inflated and long when he is excited, that it hangs over the point of the beak; the general colour of the body is brown and black. The female lays a considerable number of whitish-freckled eggs, which are reckoned as excellent as those of the common hen. Though a hardy bird when full-grown, the chickens are very tender, and require great care and attentive nursing before they are able to provide for themselves. In its wild state, the turkey is more beautiful and larger than when tame; yet in England, in the county of Norfolk, where they are brought to great perfection, they will sometimes weigh above twenty pounds. It is irascible, but cowardly, pursuing children, small animals, or whatever appears to dread it, but flying from the slightest show of resistance. A solitary American anecdote of its courage is, however, to be found: A gentleman of New York received a present of a turkey-cock and hen, along with a pair of bantams, which were all turned out into the yard together; when a hawk made a pounce at one of the bantams, and she giving a note of alarm, the turkey instantly flew to her assistance, and struck the hawk with such violence as made him forego his predatory attempt. It has a natural antipathy at red, and when a rag of this colour is presented, it seems to lose its terror in its rage. A new species has lately been discovered in the Bay of Honduras, which almost rivals the peacock in the brilliancy of its colours and the splendour of its tail.

The GUINEA-HEN, *Numida meleagris*, a native of Africa, as its name imports, is now common and well known in Europe. It is about the size of the common hen. It has a

small naked head, with wattles under the bill, but proceeding from the upper chap; its back is arched, its legs long, its tail short, turned downwards; its colour is black, thickly spotted with white, which gives it at a distance something of a greyish-blue tint: it has a restless gait, and an odd, disagreeable, but not very describable cry. They were known to Aristotle, and are accurately described by Clytus, one of his disciples, under the name of Meleagris: by the Romans they were held in repute for the table, and sold at a high price. They lay from twenty to twenty-seven eggs. In a wild state, they live in large flocks, and prefer the vicinity of marshes.

The PHEASANT, *Phasianus*, or Bird of Phasis — a river of Colchis, an island in Asia Minor — said to have been brought to Europe by the Argonauts, is one of the most elegant of birds, perhaps even exceeding the peacock; nor is it possible to conceive anything more beautiful than the vivid colours and lively variety of their plumes—so glossy, so bright, and so finely blending into each other; uniting the deep-yellow richness of gold to the finest glow of the ruby, with reflections of green, set off by spots of shining black:

“ See, from the brake the whirring Pheasant springs,
 And mounts, exulting, on triumphant wings.
 his glossy, varying dyes,
 His purple crest, his scarlet-circled eyes;
 The vivid green his shining plumes unfold,
 His painted wings, and breast that flames with gold.”

He is about the size of the common cock; the tail is wedge-shaped, and, from the middle feathers to the root, is about eighteen inches long; the bill is of a pale horn-colour, as are the legs, which have black spurs; the wings are short. They live in the woods, but nestle on the ground: the hen lays from ten to twenty eggs. They feed on acorns, grain, and seeds, and it is said to be also carnivorous. The voice of the male is unpleasant, but the flesh of both is highly relished.—The GOLDEN PHEASANT, *P. pictus*, is less than

the common pheasant, not being more than two feet nine inches long, and has also been naturalized in Britain. The general colour of its plumage is crimson, with a yellow crest of a fine silky lustre; its secondary flag-feathers are blue, and the tail, twenty-three inches in length, is of a chestnut colour, mottled with black. The general colour of the hen is brown.—The SILVER PHEASANT, *P. nycthemerus*, resembles the Golden in its manners and habits, only it is white in its plumage, with a black crest. Both are originally Chinese birds.

The Cock, *Gallus*, the original of our domestic poultry, is only known in a state of nature in some of the islands in the Indian Ocean, and on the coast of Malabar, where his plumage is black and yellow, and his comb and wattles yellow and purple. When he became domesticated it were useless to inquire, as of all birds he seems to have been the oldest companion of man. His appearance is stately; his plumage various and beautiful, and his courage unyielding. He is watchful, and not only announces the approach of danger to the roost, but instinctively heralds so accurately the approach of morning, that cock-crow was the signal for the commencement of rural labour; and in our own country, according to Allan Ramsay:—

“ When frae east nook o’ Fife, the dawn
Spee’d wastlins up the lift,
The wives wha heard the cock had crawn
Cried lassies up to thrift,
Betimes that day.”

To his females the cock is assiduously attentive, but his jealousy is said to be as strong as his gallantry, of which Dr. Percival relates a strange instance, in which some partridge’s eggs having been hatched under a hen, the cock, as soon as he saw the brood, fell furiously upon the unfortunate foster-mother, and killed her before any help could be afforded.

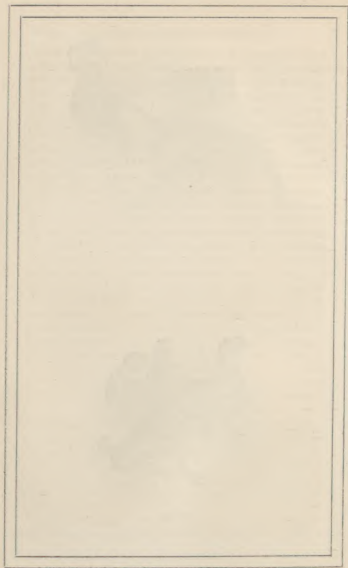
The Hen seldom hatches oftener than once in a season, though some have been known to produce twice; and ten



GOLDEN PHEASANT.



GROUSE.



or twelve are the usual number of chickens, which she can easily rear. Her nest is merely a hole scratched in the earth; and when her eggs are regularly removed, she will continue laying to the amount of above two hundred, if she be at liberty, and well fed and supplied with water. She is the tenderest and most courageous of mothers, abstaining from every kind of food her young can swallow, till they are satisfied; and gathering them under her wings upon the least appearance of danger, and facing the horse, the hog, or the mastiff, and even man, in their defence. Goldsmith mentions having seen a whole brood run for security into the thickest part of a hedge, while the hen herself ventured boldly forth and faced a fox that came for plunder, and received several wounds from the thief, before a mastiff forced him to retreat. As these fowls are seldom allowed to die a natural death, it is not ascertained how long they might live, but it is generally supposed they are past their prime at the age of four or five years. In 1777, however, a hen was living at Highberries, in Cumberland, thirty years old, full of feathers and very fat. The largest English poultry weigh from seven to eight pounds, and a cock sometimes fourteen. They feed upon the seeds of grass and corn, also upon grubs and worms, which they scrape up with their feet. In Egypt, at Grand Cairo, chickens are hatched by placing eggs in stoves shaped like ovens, and six or seven thousand are produced at a time, and in that warm climate thrive extremely well.

The GROUSE, *Tetrao*, *Linn.*, comprehends a great many species, characterized by a naked, and most generally red band, which occupies the place of the eyebrow. This genus is divided into sub-genera by Cuvier, — viz. the Partridge, Ptarmigan, and Quail, — a deviation from the old arrangement, which, without being of much importance, renders the subject more complex and artificial to the general reader; we have therefore followed the more natural order of the older naturalists, commencing with

The **WOOD-GROUSE**, or **CAPERCAILZIE**, *Tetrao urogallus*, or **COCK OF THE WOOD**. In strength, size, and beauty, this was once the noblest of the British game birds, abounding in the pine forests of Scotland; it is now exceedingly rare, if not extinct. The male is nearly three feet in length, and weighs sometimes fifteen pounds. The upper parts are brown, black, and grey, varied; the lower, black, interspersed with white feathers; the fore part of the breast is of a rich glossy green, with a golden tinge. The female is considerably less than the male, and is of a brown colour, with black crescent-shaped markings. They are now found in the forests of Russia, Norway, and Sweden, where they feed on the young shoots and cones of the pine, the catkins of the birch, and berries of the juniper. They are polygamous; and about the beginning of February, the male, perched on the top of some tree, with his neck stretched out, the feathers of his head erected, his wings hanging down about his feet, and his tail extended, calls his females around him, and his coarse notes of love are replied to by an amorous croaking, by no means melodious; but so soon as incubation begins, he skulks away to renew his plumage, and leaves her to hatch and rear her progeny. They are often domesticated in Sweden, and become so tame as to feed out of the hand, and like common hens, will run forward when corn is thrown to them. Attempts have been lately made to reintroduce them into our Scottish woods. It is extremely shy, but when intruded on will attack those who approach its place of resort with great boldness, and stationing himself on the ground, will peck at the legs and feet of such as have disturbed its domain. The flesh of this bird is delicious, and its eggs have a delicate flavour beyond those of any other fowl.

The **COMMON BLACK GROUSE**, *Tetrao tetrix*, or **BLACK-COCK**, is nearly two feet in length, and weighs forty-eight ounces. The plumage of the adult male is of a fine glossy black, with a bluish tinge, wanting on the under parts; the

secondary wing feathers are tipped with white, which form a white bar across them; the under tail-coverts are altogether white; the tail itself is forked, having the feathers bending outwards. The female is smaller, clothed in a brown garb, barred and mottled with black; and the fork of the tail is slightly seen. The favourite abodes of this species are the hilly steep tracks, where the ravines are covered with deep fern, and strewed with the hirsch-hush, hazel, willow, and elder, whose young shoots and berries afford them, in their season, a sufficiency of food. They are polygamous; and about the end of January or February, if the weather be mild, the strongest males, selecting some elevated situation, drive from it every rival, though not without many a hattle; and as the spring advances, display all their arts to allure the females, beginning almost before day-dawn to make the hill side echo their murmuring calls of love. These are soon responded to by the females, who crowd around their lords. But the tender intercourse is short; the females disperse to seek out nests and hatch their eggs; the males retire in small parties, to spend in dull and heavy inactivity their moulting time among the brush and fern beds. The sexes continue separate until winter, when the old males join the young brood, to feed and sport together on some sunny hill side, or descending to more cultivated quarters, in flocks of hundreds, especially delighting to revel in turnip fields during the hard frosts, when their leaves yield them a supply of food they could with difficulty find elsewhere.

The Red Grouse and Ptarmigan have been separated from the above, as their toes and tarsi are entirely covered with hairy feathers, and the toes are without pectinated fringes; the hind toe is also very short.

The RED GROUSE, *Lagopus Scoticus*, or MUIRFOWL, a native of, and peculiar to the British isles, receding before the progress of agricultural improvement, are now only to be found, in anything like their former numbers, in remote

districts, where access and accommodation for sportsmen are restricted or wanting. The length is fifteen and a half inches, and the weight twenty ounces. When full grown, the plumage is of a rich deep sienna-brown, mottled with pale spots; the belly almost entirely black; the tail feathers are black, the four middle ones barred with red; and above each eye is a rough naked scarlet spot or wattle. The female is smaller, of a paler colour, with the markings larger, and the scarlet spot less distinct. The common food of the muirfowl is berries, heath tops, and other mountain plants; but in the neighbourhood of cultivated lands, they plunder the stooks, or glean what has been left on the stubble or ploughed lands. In districts where it has not been much molested, the grouse is far from being a wild bird; but in those where it has been frequently persecuted, it becomes the most wary of our game, and the resemblance of their plumage to the dark-brown moss and heath greatly aids their concealment. They pair early in spring. Their eggs, ten to fourteen in number, of a dirty white, brown spotted, are deposited upon a little straw or dried grass, in some hollow at the foot of a heath-tuft, where they are sometimes annoyed by the corby, who has a great liking for the eggs; but if both birds be at home, they often in return attack and successfully beat off the aggressor. The chicks or *pouts*, are of a light colour. The parents and their young keep together in families till the beginning of winter, when they associate in large flocks with other birds.

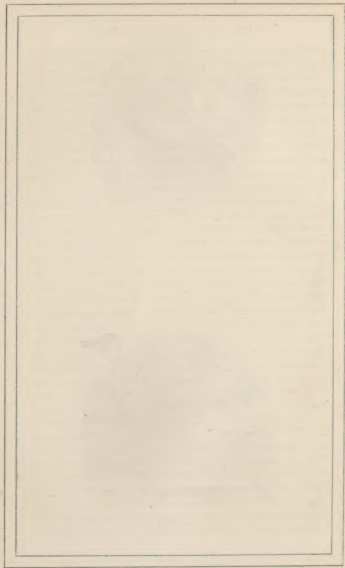
The COMMON PTARMIGAN, *T. lagopus*, Linn., is found in Siberia, and is scattered over the alpine regions of Europe; in Scotland it is confined to the highest mountains. Its summer plumage is ash-grey, tinged with brown, and marked with black and dusky spots, which changes into white in winter; its legs are thickly feathered. As their colour harmonizes with the rocks in summer, and the snow in winter they are not easily discerned in either season. From inhabiting barren and solitary spots seldom visited by man,



PTARMIGAN.



OSTRICH.



they appear so tame, that, with their broods, they run before the intruder like common poultry; when provoked to rise, they make very short flights. The nest is rudely made under rocks and stones, and the female lays ten eggs, which are white, with brown spots. Their flesh is accounted a great delicacy.

The COMMON PARTRIDGE, *Perdix cinerea*, familiarly known over Europe, and abundant in our own island, is, in the general colour of its plumage, a mixed cinereous brown and black, with a deep bay-coloured crescent on the breast. They pair early in spring, but incubation does not take place till a later period. They make no nest, and in cultivated countries, the eggs, from twelve to twenty, of a wood-brown colour, are deposited in a furrow, or by the side of a tuft of grass, and have even been found on the crooked stump of an oak, and during this interesting period the attention of the male to his mate is most assiduous. The affection of both parents to the young, which leave their nest twelve hours after being hatched, is peculiarly strong; they both lead them out, point out their proper food, and assist them in procuring it, by scratching it up. They frequently sit close by each other, covering their brood with their wings, and if disturbed, the male employs many stratagems to decoy the intruder, fluttering along the ground, hanging the wings, and feigning to be wounded; but when there appears a probability of success, they will fight obstinately in defence of their young. Mr. Selby mentions, in his British Ornithology, that a person engaged in a field not far from his residence, had his attention arrested by some objects on the ground, which upon approaching he found to be two partridges, a male and female, engaged in battle with a carrion-crow; so successful and so absorbed were they in the issue of the contest, that they actually held the crow till it was seized and taken from them by the spectator of the scene. Upon search, the young birds, very lately

hatched, were found concealed among the grass. It would appear, therefore, that the crow, a mortal enemy to all kinds of young game, in attempting to carry off one of these had been attacked by the parent birds, and with the above singular success. Varieties of the partridge are not uncommon; those in which the white prevails are the most frequent, along with those entirely of a cream colour. — The MOUNTAIN PARTRIDGE, *P. montana*, is wholly of a deep reddish-brown colour, and is more frequently found on the hills than on lower situations, whence it has obtained its appellation. It is also called the Red Partridge, from its colour. — The RED-LEGGED, or GUERNSEY PARTRIDGE, *P. rufa*, is about half as large again as the common partridge; of a reddish-brown on the upper part of the body; the breast of a bluish-ash colour; the throat pure white; and the bill and legs red. The plumage of the sides is marked by a series of transverse crescent-shaped spots, of black, white, and chestnut. It is plentiful in France and Italy, and in Guernsey, from which it occasionally, though rarely, extends its flight to the southern coasts of Britain, where it has of late years been introduced into the preserves. It prefers hilly situations, and nestles in fields and copses, but is by no means of a social disposition. It lays from fifteen to eighteen eggs, of a dirty-white, with scattered reddish spots; and wherever it obtains ground, it drives the common species out of the preserves, and threatens in time, to exterminate the native race. It is more easily tamed than the common, and its flesh is held in higher estimation.

The QUAIL, *Coturnix*, is not above half the size of the partridge, but it is generally a very fat bird, and its flesh is very highly esteemed. It is distributed over the Old World as a bird of passage: in this country it arrives in the beginning of May, and takes its departure in October. They fly high, two by two; and when their route is over land, they continue their migration by night, in preference, it is said,

to, and with a swifter pace than hy day. On the western coasts of the kingdom of Naples, and on the shores of Provence, they arrive in such prodigious numbers, that a hundred thousand have been taken in a day within the space of four or five miles. In China, they are domesticated, and trained to fight, and large hets are laid upon their success, as upon the game-cock with us. The quail has the crown of the head and the neck black; over each eye there is a yellowish streak, and another down the forehead; the plumage, a mixture of black, brown, and ash, above; the belly and hreast are pale-huff or orange; the tail blackish-brown, with a light yellow tinge at the base and tip. In the female, the tints are generally paler, and white specimens sometimes occur.

The Quails of America differ from those of Europe in the greater thickness, brevity, and elevated form of their bills; they have also longer tails: in manners they are similar. Both frequent thickets and hushes, building their nests on the ground, and migrate during winter from the colder to the more temperate regions; hut the American appear to excel in their pugnacious disposition. Of these, the CALIFORNIAN QUAIL, *Ortyx Californica*, forms a beautiful specimen. In size it is rather larger than the European, measuring nine or ten inches in length, and standing eight. The general colour of the hody above is brown; the fore part of the hreast, and tail, of a leaden tinge; the under parts, from the breast downward, are of a dull yellowish-white. They are plentiful in the low woods and plains of California, where they assemble in bands of two or three hundred, and become fat and well-flavoured. Captain Beechey, on his return from his voyage of discovery, presented a number of male birds to the Zoological Society (the females having all died on the passage), of which one alone survived in 1835. Their manners, Mr. Bennett tells us, seem to be identical with those of the quails and partridges; hut they have a much more erect and graceful

bearing, and a beautiful crest on their head adds much to their elegant appearance. They are perfectly contented in captivity, and stand the change of climate well.

PIGEONS, *Columbidæ*, now ranked among the Gallinaceous Birds, are found in every quarter of the globe except within the frigid zones, and in no tribe do we meet with a plumage more delightful, either for diversity or brilliancy. It is, however, in the tropical climates where their colouring is most vivid, and where this family admits of the most numerous subdivisions. At present, the whole are classed in five groups—1st, The Arboreal Pigeons; 2d, The True Pigeons; 3d, The Turtles; 4th, The Ground Pigeons; and a 5th, consisting only of one species, remarkable for its large size and the crest upon its head. Mr. Bennett, however, remarks, that this arrangement appears to require an accurate revision, with a view to a still more extensive subdivision of its numerous species. In the meantime, it will be sufficient for our purpose to select the following specimens of each group, without entering into any detail of the numerous species, marked by minute distinctions, which would be useless if abridged, and uninteresting if given at length.

The AROMATIC VINAGO, or GREEN PIGEON, *Vinago aromatica*, a native of Continental India and the Asiatic Isles, inhabits their deep forests, or lodges among the exuberant growths of the hanyan-tree, itself a forest. Its bill is stouter and thicker than that of the common pigeons, very hard, and hooked at the tip; the wings, of a medium length, are strong and pointed; the legs short, and partly covered with feathers, and the feet, formed for perching, have sharp semi-circular claws; the eyes are bright red. The general colour of the head and lower part of the body is green; the back a dark brown, with a purple tinge; and the greater wing-coverts and secondary quills edged with the brightest yellow. The tree where its nest is fixed affords it both food and

security; for although a flock is marked into a tree, yet its colour is so similar to the leaf of the hanyan, on the small red fig of which it feeds, that if a bird does not move, a person may look for many minutes before he can perceive one, although there may be fifty among the branches. It is wild and timid, and is generally seen in flocks, except at pairing time, when the conjugal couples retire to nestle in the recesses of the forest. Their nest is composed of a few twigs loosely put together, and they have not more than two eggs.

The RING-DOVE, or CUSHAT, *Columba palumbus*, Linn., is widely disseminated throughout Europe, either as a migratory or stationary bird. In our own woods it is a permanent resident; although in winter it seeks the turnip or young clover fields in search of food, assembling in large flocks for this purpose towards the end of October, and continuing together till the genial weather in spring awakens their natural instincts, and they again pair off to the woods:

" Sweet, constant bird! the lover's favourite theme!
Protected by thy love-inspiring lay,
Seldom thou mov'st thy house; year after year,
The self-same tree beholds thy youngling pair
Matured to flight." GRAHAME.

The cushat breeds twice, in spring and in autumn; and the nest, a flimsy fabric, consisting of a few sticks loosely put together, is erected indiscriminately on hush or tree—the beech, the holly, the young fir, or the thorn: the eggs are two in number, white, and of an oblong shape. Both sexes sit alternately during the time of incubation, and are equally attentive to their young, who, when first excluded from the shell, are blind, and but thinly covered with down: they rear them upon a milky pulp ejected from the crop, where the food has undergone a preparatory process before being given to them. As the little ones increase in size, and require to be more frequently supplied, the food remains less time in the parental craw, and is gradually less comminuted.

till, when nearly fledged, they receive it but little altered from the state in which it was swallowed by the old pair. The ring-dove is among the largest of the columbidæ, measuring from sixteen to seventeen inches in length.* The bill is of a yellowish colour, and slightly arched; the wings calculated for vigorous flight, the feet adapted for perching or walking, and the tail square or even at the end; the general colour above is bluish-grey, the breast and belly purplish-red, passing into the same colour in the lower region; the irides are yellowish-white; the neck, which is glossed with green, has a white patch on each side, nearly meeting below, and forming a kind of semi-collar or ring, whence the name originated; the feet are red, the claws black. It is easily tamed, but has never been known to breed in confinement; and although brought up from the nest, if set at liberty it seeks the woods, and returns to man no more. Its strains are monotonous—

“ Deep-toned
The Cushat plains; nor is her changeless plaint
Unmusical, when with the general choir
Of woodland harmony it softly blends.” GRAHAM.

Mr. Montagu, we are told, reared a number of different birds together—a common pigeon, a ring-dove, a white owl, and a sparrow-hawk, which lived in perfect harmony, and the ring-dove was master of the whole. — The WOOD-PIGEON, *C. anas*, is a bird of inferior size, and in our island is chiefly confined to the southern and midland counties of England, and those parts of them only which are well wooded. Its habits are similar to the ring-dove, but its flesh is of a more exquisite flavour. By some naturalists it has been considered as a younger specimen.

The ROCK-DOVE, *C. livia*, the stock of our common pigeon; but it will not breed with it, and it never builds in the same localities, choosing hollows in decayed trees, or on the forks or the higher branches of others, while the

* *Nat. Lib. Ornith.*, vol. v. p. 140.

latter, in its wild state, prefers the holes of rocks on the sea-shore, or ruinous old towers, and is found along the whole stretch of our coasts, among the precipitous cliffs, as far as the Orkneys, retiring to the inmost recesses of their extensive caverns, beyond where the sea-fowl breed. The rock-dove is about thirteen and a half inches in length; has a bluish-grey plumage; the bill brown, the irides pale orange; the neck and upper part of the breast iridescent, a dark-purple ground, glossed with shades of green and purplish-red, the varied tints glittering with lively changing hues, according as the light falls upon them; the wings, when closed, exhibit two broad dark bars, one across the middle of the greater coverts, the other at the ends of the secondary quills; the lower part of the back is white; the tail deep grey, black at the tip.—But this species is best known as the COMMON PIGEON of the dove-cot, in which state, although under the guardianship of man, it can hardly be said to be domesticated: it contributes, however, much to his benefit, affording a pleasant and nutritious aliment, and a considerable profit to the proprietors of the pigeon-house; for, as they breed eight or nine times in a year, vast numbers of young pigeons are produced by this system. These abodes may be compared to huge caverns, where the fowl is furnished with a dwelling, but is left perfectly at liberty to enjoy her natural habits; they should, therefore, be erected with a southern exposure, as the birds delight to bask in the sun, and at no great distance from water, as the whole tribe of pigeons are frequent and great drinkers. The varieties of colour in this species are too many to admit of enumeration, and besides, are for the most part artificially multiplied. To this species belongs the celebrated

CARRIER PIGEON, *C. tabellaria*, known by a circle of red skin round the eyes, and by being of a blue or blackish colour. In point of attachment to the place of its birth it far exceeds all others, as it does in the power of its wings; and it is on account of these qualities that it has been used

in ancient and in modern times as a messenger to carry dispatches, with a speed superior to any other method of conveyance, and to places inaccessible by any other means — to besieged cities or to languishing maidens, to announce the tidings of victory, the approach of relief, or the vows of love. Transported hundreds of miles from the place of its nativity, the moment it is unloosed it springs upward with amazing velocity by a series of circular evolutions, and when it has attained the requisite elevation, darts homeward with unerring certainty :

“ Led by what chart, transports the timid dove
 The wreaths of conquest, or the vows of love?
 Say, through the clouds what compass points her flight?
 Monarchs have gazed, and nations bless'd the sight.
 Pile rocks on rocks, hid woods and mountains rise,
 Eclipse her native shades, her native skies:
 'Tis vain! through ether's pathless wild she goes,
 And lights at last where all her cares repose.
 Sweet bird! thy truth shall Harlem's walls attest,
 And unhorn ages consecrate thy nest.”

ROGERS.

A few years ago, a carrier-pigeon sent from London to Bury St. Edmonds, returned thence to its cot in two hours and a half, having accomplished a distance of seventy-two miles in that time. Some have been known to travel even forty miles an hour, and to continue at that rate for several hours together; but what rests they took in the course of their journey must remain a secret.

The *TURTLE-DOVE*, *C. turtur*, inhabits Europe, Africa, and Asia, and is known in England as a migratory bird, arriving about the middle of May, and quitting early in September, as soon as its young are fully fledged, and fit to accompany it to warmer regions. It builds in the most retired and solitary places, generally in the neighbourhood of water, high upon the branches, or in the hollow trunks of the loftier trees, and numbers of them always associate in the same neighbourhood: their nests and habits are similar to those of the cushat. The turtle-dove is about eleven inches in length; the colour of the upper part of its body is brown;

the crown of the head and back of the neck of an ash-grey ; the sides of the neck are marked by a patch of small black feathers, with white points ; the throat and breast are of a beautiful chocolate hue, and the remainder of the under surface and legs are pure white, with red feet and black claws. The turtle is proverbial for constancy :

“ One silent eve I wander'd late,
And heard the voice of love ;
The Turtle thus address'd her mate,
And sooth'd the list'ning dove :—

“ Our mutual bond of faith and truth
No time shall disengage ;
These blessings of our early youth
Shall cheer our latest age.” COWPER.

The PASSENGER TURTLE, *C. migratoria*, ranges the North American Continent from the twentieth to the sixtieth degree, and is remarkable for the immense multitudes which compose the mighty flocks that literally darken the sun during their periods of migration. Wilson thus mentions one flight to which he was a witness — “ Coming to an opening by the side of a creek called the Benson, where I had a more uninterrupted view, I was astonished at their appearance : they were flying with great steadiness and rapidity, at a height beyond gun-shot, in several strata deep, and so close together, that could a shot have reached them, one discharge could not have failed of bringing down several individuals. From right to left, as far as the eye could reach, the breadth of this vast procession extended, seeming everywhere equally crowded. Curious to determine how long this appearance would continue, I took out my watch to note the time, and sat down to observe them : it was then half-past one. I sat for more than an hour, but instead of a diminution of this prodigious procession, it seemed rather to increase both in numbers and rapidity ; and anxious to reach Frankfort before night, I rose and went on. About four o'clock in the afternoon, I crossed Kentucky River at the town of Frankfort, at which time

the living torrent above my head seemed as numerous and as extensive as ever. Long after this, I observed them in large bodies that continued to pass for six or eight minutes, and these again were followed by other detached bodies, all moving in the same south-east direction, till after six o'clock in the evening. The great breadth of front which this mighty multitude preserved would seem to intimate a corresponding breadth of their breeding-place, which, by several gentlemen who had lately passed through part of it, was stated to me at several miles. Now, if we suppose this column to have been one mile in breadth (and I believe it to have been much more), and that it moved at the rate of one mile in a minute, four hours, the time it continued passing, would make its whole length 240 miles. Again, supposing that each square yard of this moving body comprehended three pigeons, the square yards in the whole space, multiplied by three, would give two thousand two hundred and thirty millions two hundred and seventy-two thousand pigeons! an almost inconceivable multitude, and yet probably far below the actual amount." These wonderful migrations are not periodical, nor influenced by the temperature, but take place only when a scarcity of food obliges them to remove; otherwise they will remain together in the same locality for years. These colonies sometimes occupy a large extent of forest: one in the State of Kentucky, which stretched through the woods in nearly a north and south direction, was several miles in breadth, and was said to be upwards of forty miles in extent; and when they have long frequented one of these places, the appearance it exhibits is surprising: the ground is covered to the depth of several inches with their dung; all the tender grass and underwood is destroyed; the surface strewed with large limbs of trees, broken down by the weight of the birds collecting one above another—a single tree often containing above one hundred nests—and the trees themselves, for thousands of acres, killed as completely as if girdled with an axe. When these

roosts are first discovered, the inhabitants, from considerable distances, visit them in the night, with guns, clubs, long poles, sulphur pots, and various other engines of destruction, and in a few hours fill sacks and load horses with them. By the Indians, a pigeon breeding-place is considered an important source of national profit and dependence for the season, and all their active ingenuity is exercised on the occasion. The incredible quantity of beech mast and acorns produced in the primeval forests constitutes a great proportion of their food, but great quantities of buck-wheat, rice, Indian corn, with hollyberries, hackberries, and other small fruits, are consumed in their seasons. They commence breeding early in spring, and produce two or three families in a year, of two each, and it is asserted they consist always of a male and a female. The upper plumage of the passenger turtle is of a deep bluish-grey; wing-coverts spotted with black; the head and cheeks lighter; the fore-neck, breast, and sides, brownish-red; the lower part, and side of the neck, are of a purplish-crimson, reflecting tints of emerald, green, and gold. The female is inferior in size, and duller in plumage.

The CARUNCULATED GROUND PIGEON, *C. carunculata*, is a native of South Africa, and was first discovered by Le Vaillant in the Namaqua country. Its bill in form is like that of the common pigeon, but differs in having a naked red wattle pendent below it. The general colour of the superior parts is purplish-grey, that of the lower white, and the tail, which is short and rounded, is of a deep reddish-brown; the bill is reddish at the base, the tip black, and the legs, covered with scales, are of a purplish-red. It builds its nest upon the ground, of twigs and dried grasses, and the female has six or eight reddish-white eggs, upon which both parents sit alternately. The young, so soon as they quit the shell, are able to follow their parents, who brood over them like the common hen, and show them their food, which consists of dead insects and worms. They live

entirely upon the ground, except during the hours of repose, when they perch upon the low branches of trees.

The CROWNED GOURA PIGEON, *Lophyrus coronatus*, is a native of many of the great islands of the Indian Archipelago, where it inhabits the forests, builds upon trees, and, like the major part of the columbidæ, lays but two eggs. It feeds upon berries, seeds, and grain. The voice is hoarse and murmuring. It exceeds in magnitude all the other branches of the columbine family, measuring from twenty-seven to twenty-eight inches in length. The head is ornamented with a large semicircular crest, which it always carries erect, and which, with the head, neck, and inferior parts of the body, are of a pure greyish-blue colour; the superior, rich purple-brown, with a broad central bar of white across the wings; the legs are grey, the toes strong and short.

SECT. V. — GRALLATORIÆ — STALKERS OR WADERS.

These birds derive their names from their conformation and habits, having naked legs, and long thighs, which elevate the body as if upon stilts, and enable such of them as feed upon fish, to wade in the water to a certain depth without wetting their feathers. They have been divided into several Families, of which the first, *Brevipennis*, is distinguished by the shortness of their wings, and the thumb being always deficient. The *Brevipennis*, which may more distinctively be denominated Stalkers, "occupy," says Mr. Bennet, "a station in some degree intermediate between the Gallinaeous, or Rasorial birds, and the Waders, approaching the latter in many particulars of their outward form, but much more closely connected with the former in their internal structure, in their food, and in their habits." They have accordingly been ranged by some naturalists under that



LAND TORTOISE.



CROCODILE.



LIZARD.



order. Without pretending to decide upon the propriety of the arrangement, we have followed Cuvier, and commence with

The OSTRICH, *Struthio Camelus*, though spread over all Africa, is especially a bird of the Desert, and has, from the earliest ages, been associated with the camel, being like it peculiarly formed for subsisting amid the arid sands of Arabia. It is the largest of known birds, being generally from six to eight feet in height, and weighing from seventy to eighty pounds, but is a terrestrial fowl, as its wings are incapable of supporting its enormous hulk in the air, for which it was evidently never intended; its breast bone being flattened on its outer surface, like that of a quadruped;* but its legs, which are of great length, are very powerful, and when put in action by muscles of extraordinary magnitude, and aided by its wings, enable it to distance with little exertion the fleetest Arabian courser. The head of the ostrich is small in proportion to its size, and bald in front; the ears naked without, and hairy within; the eyes, large and brilliant, are placed in a horizontal line, and furnished with upper lids and lashes, like those of a man; the bill, short, straight, broad at the base, and round at the point, is very strong, and opens with a wide gape; the neck is long, and covered on its upper half with a thin down, on the lower with small feathers of various colours; instead of feathers, the wings are adorned with undulating plumes, and have, on the ends of each, two long plumeless shafts somewhat similar to the quills of a porcupine; the tail terminates in plumes, which, with those of the wings, both beautifully white, were wont to decorate the hats of our ladies, and the helmets of our heroes. There are no feathers

* In many points of its organization, the Ostrich resembles the camel. Like it, it has only two toes, and a callous protuberance over the sternum or breast-bone, corresponding to the callous protuberance on the chest of the camel; it can also endure long thirst, and it has a large reservoir, where the urine accumulates as in a bladder, being the only birds which can be said to contain urine.

on the sides or under parts of the wings ; nor on the limbs, which are divided at the extremities into two unequal toes, the largest inside, about seven inches long, with a claw, the other about four, and without. The body of the male is black, intermingled with white ; the female dusky. The ostrich is a mild bird, and notwithstanding its great strength, seldom even stands on the defensive, and generally seeks safety in flight, which it would seldom fail to obtain, were its intelligence equal to its speed. As it is, their chase is esteemed one of the most exciting exercises, both for the Arab and his horse, requiring no little skill, and a great deal of patience. When taken, they soon become familiar and docile, and suffer themselves to be mounted and ridden like horses. In the Desert, the ostriches live together in large herds, and appear to be polygamous, as they are certainly in South Africa, more females than one contributing to furnish the family of one male. Beneath a tropical sun, the eggs are merely laid on the warm sand, and the solar rays are generally sufficiently powerful to hatch them, without any farther assistance from the hen, " which leaveth her eggs on the earth, and warmeth them in the dust ; and forgetteth that the foot may crush them, or that the wild beast may break them." While this fact stands incontestably proven, it has been denied that the succeeding statement is correct, that " she is hardened against her young ones, as though they were not hers." But it would require some other evidence than the report of a passing traveller, to overthrow the current belief of antiquity and the plain assertion of Scripture, although the sacred writers sometimes use the popular language of their age as the most intelligible to those whom they addressed. Vaillant relates, that having disturbed a female from a nest containing thirty-eight eggs of unequal size, and having thirteen others scattered around it, he concealed himself at a short distance, and observed, during the day, four females successively taking part of the maternal office, and towards the close of

the evening the male also took his part of the duty ; but it is to be remarked, that in the more temperate regions of South Africa, the female ostrich sits like other birds, and does not seem to be the unnatural mother that she is in the Desert. The eggs are as large as a child's head, and have a hard shell, but are wholesome and well-tasted ; and the numbers which one bird will lay are estimated from ten to eighty. This wide variation among naturalists has been accounted for by supposing that the eggs have been withdrawn and multiplied, as in the case of our common domestic poultry, or that several females have deposited their eggs in the same nest. It is said they also lay a number of eggs at a short distance from their breeding-place, for the purpose of feeding the young as soon as they are extricated from the shell ; but some have doubted whether this be indeed the reason why separate parcels of eggs are found near each other. Their natural food consists of vegetable substances, seeds, and grain, and in Southern Africa they used to be exceedingly injurious to the farmers. Owing to some obtuseness in its taste, it will also swallow stones, or minerals ; but the pebbles, money, or iron, which it receives into the stomach, undergo no process of digestion, and are either passed as by other animals, or found in the stomach after death, in a corroded state. The Jews were forbidden to eat the flesh of the ostrich, and the Arahs now consider it unclean ; but it was a favourite dish with the Romans, and in the interior of Africa, some of the tribes delight to feast upon it whenever they are fortunate enough to find it.

The RHEA, or AMERICAN OSTRICH, common in the southern latitudes of South America, is much smaller than the African, and is distinguished by having three toes, all with nails. Its plumage is greyish, browner on the back, with a black line on the hinder part of the neck in the male. Several females, it is said, deposit their eggs, which are of a yellowish hue, in the same hole, and they are

hatched by the male. Their flesh is only eaten when they are very young. This bird has been confounded with

The TOUYOU, or the JABIRU, *Mycteria*, Linn., a bird little inferior in size to the true Ostrich, and somewhat similar in appearance to the Rhea, but having the bill turned up a little, and acute; it is, however, widely different in disposition and habits, being fierce and voracious, feeding on fish, and nesting in the boughs of large trees, on the banks of the South American rivers, and laying only two eggs. Its colour is light brown when young, which turns into white in its third year.

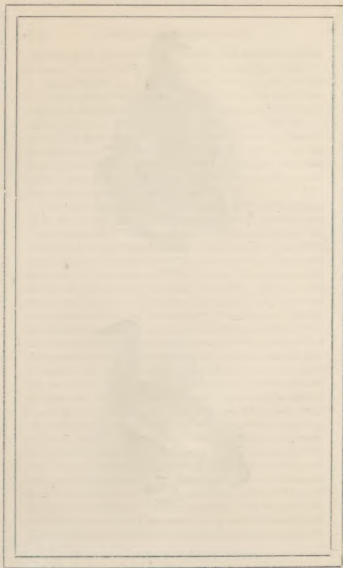
The CASSOWARY, *Cassuarius vulgaris*, Linn., is the largest of birds next to the Ostrich, and occupies its place in the Ultra-Gangetic Peninsula and the Indian Archipelago. Its head, though small, has a formidable appearance, being surmounted by a horny prominence, covered with a horny substance; the eyes are large, and of a bright yellow; the naked skin of the head and upper part of the neck is of an azure blue, blended with bright red, and it has pendent caruncles like those of the turkey. The wings are hardly perceptible, and their feathers are the same as those on the other parts of the body, looking at a distance rather like a hairy coat than the plumage of a bird. The general colour is brown, with vermilion spots. It feeds on fruit and eggs, but no grain. A specimen in the menagerie of the museum at Paris had for its daily fare about four pounds weight of bread, six or seven apples, and a bunch of carrots; and to qualify its food, which it swallowed without bruising, it drank nearly four pints of water in summer weather, and somewhat more in winter. It was occasionally ill-tempered and mischievous; had an especial antipathy to persons covered with rags or clothed in scarlet, and sometimes would leap out of its enclosure to claw the legs of a beau or a beggar. It is a powerful bird, and besides its beak, has some stiff stems on the wings without barbs, which it uses as weapons, and it strikes in a very dangerous



EMEU.



QUAIL.



manner with its feet, either before or behind, kicking in the manner of a horse at any object which offends it. Its music is something like the grunting of a hog. The female lays a small number of eggs, of a green colour, which she also abandons, in particular situations, to the influence of the sun.

The EMEU, *Dromaius Nova Hollandia*, peculiar to New Holland, is said to attain a height of more than seven feet, and in form closely resembles the Ostrich, only shorter in the legs and neck, and more clumsy in the shape of its body. Its plumage, like the Cassowary—whence it has been called the New Holland Cassowary—has at a distance the appearance of hair; and its general colour is a dull brown, mottled with grey, except on the neck, where the skin, seen distinctly, gives it a purple hue. The wings are so small, that they afford no assistance in running, and are altogether undistinguishable when clapped close to the body. Its food is wholly vegetable—fruits, roots, and herbage. Its manners are inoffensive, and it is extremely shy, which, combined with its speed in running, renders it difficult to be overtaken, or brought within gunshot; they are therefore hunted with dogs, and afford excellent coursing, equalling, if not surpassing, the same sport with the hare in England. The flesh is said to be truly exquisite, and intermediate between that of a turkey and sucking pig; but there is little fit for culinary use, except the hind quarters, which are of such dimensions, “that the shouldering of the two hind legs homewards for a mile’s distance, once proved to me.” says Mr. Cunningham, in his amusing work, *Two Years in New South Wales*, “as tiresome a task as I ever recollect to have encountered in the colony.” The eggs, six or seven in number, are as large as those of the ostrich and as thick shelled; they are of a beautiful dark-green colour, and are much relished by the natives, who almost subsist upon them during the hatching season. These birds, in captivity, become easily domesticated, and they have been bred in various collections in this country without difficulty.

The DODO, *Didus ineptus*. This bird, of which a few fragments alone are now known to exist, presents a striking instance of the extermination of one of the feathered tribes, by that great destroyer man: to this fate, the peculiar structure of the unfortunate Dodo especially exposed it. Yet it is not beyond the range of possibility that some perfect specimen, dead or alive, may still be discovered in the recesses of those islands where it once had its habitat. Formed for solitudes unexplored by man, it was found by the Portuguese in the islands of Bourbon, Mauritius, and Rodrigue, when first discovered, and when uninhabited by human beings, and by them named the Solitario. In 1691, when Legual visited Rodrigue, it was abundant, and from him we derive the following particulars:—“The males have generally a greyish or brown plumage; the feet of the turkey, as also the beak, but a little more hooked. They have hardly any tail, and their posterior, covered with feathers, is rounded like the croup of a horse. They stand higher than the turkey-cock, and have a straight neck, a little longer in proportion than it is in that bird when it raises its head. The eye is black and lively, and the head without any crest or tuft. They do not fly, their wings being too short to support the weight of their bodies, about fifty pounds; they only use them in heating their bodies, and in whirling round.” Their legs were short and thick, as little calculated for speed as their wings were for flight. The females were of a pale brown colour, and built their nests with leaves of the palm-tree, upon a clear spot of ground, laying only one egg, larger than that of a goose. The most perfect relics of this strange looking bird, are a head and a foot in the Ashmolean Museum, Oxford, the remains, it is said, of a perfect specimen which once belonged to Mr. Tradescant’s Museum at Lambeth; a cast taken from the head is in the museum of the Edinburgh University. There is also a painting of the entire bird in the British Museum, copied from an original, which was

taken from a living specimen sent to Holland when the Mauritius was in the possession of the Dutch. Of its manners, it is impossible to say anything, as it became extinct about the middle of the seventeenth, or beginning of the eighteenth century.

Family II. *Pressirostres* — have the bill strong enough to penetrate the earth in search of worms: they have long legs, without a thumb, or one too short to reach the ground.

The GREAT BUSTARD, *Otis tarda*, Linn., which may be considered as the European representative of the Ostrich family, being the largest land-bird in that quarter of the globe, was once numerous in England, and native in Scotland some centuries ago. But the increased cultivation of the country, with the persecution of the sportsman, have greatly reduced it, and it is now nearly confined to the county of Norfolk in the southern, and seen only rarely and as a straggler in the northern division of our island. It owes this almost extirpation to the excellence of its flesh, which is delicious, and its bulk, for its body is massive, weighing twenty-five to thirty pounds. It has a small head, with a tuft of feathers on each side of the lower mandible and along the neck, both ash-coloured; its short wings are sufficient to elevate it, but can sustain no extensive flight; its legs are long, and naked on the lower part: above, it is yellowish-red, crossed with black bars; beneath, white. It feeds on wild berries, large earth-worms, which appear in great quantities on the downs before sunrise, also on insects, green corn, turnip tops, and clover. It inhabits only open and extensive plains, where its food may be easily procured, and every invader seen at a distance; and as it is gregarious, sentinels are always placed at proper eminences to watch, and give notice of any approaching danger. Thus they are seldom shot, for on the first intimation they endeavour to escape by running among the long grass or corn,

if it be near; but they are frequently followed and seized by greyhounds, for if in good body they are very fat, and unable to rise without a race, which allows their pursuer time to come up. The female makes her nest, or rather merely scrapes a hole, in some sequestered spot, which she lines with a little straw or long grass, and in which she deposits two olive-brown eggs, spotted with grey. The male, besides being larger than his mate, is provided with a pouch in the fore part of his neck, capable of containing upwards of four quarts of water, with which it is supposed he supplies the female when sitting, and which he can eject with such force as to drive off the birds of prey.—The **LITTLE BUSTARD**, *O. tetrax*, chiefly found in the more southern and eastern parts of Europe, and never but as a straggler in Britain, differs only from the preceding in size, not being above eighteen inches in length.

The **PLOVERS**, genus *Charadrius*, have bills somewhat cylindrical and obtuse, and three toes on the feet, but no thumb.—The **GOLDEN OR GREEN PLOVER**, *C. pluvialis*, is well known, being common on our heaths in small flocks in summer, and on the sea-shore in winter. The plumage above is black, elegantly varied with golden yellowish-green spots; below it is white, and the feet are ash-coloured. From its spots bearing some resemblance to those of the leopard, the ancients called it *Pardalis*. In the Orkney Islands, it is found in thousands. Its nest is formed of a few rushes on the heaths, and it has four ashy-coloured spotted eggs. Its voice is a shrill whistling, and it may be enticed within gun-shot by a skilful imitator of its voice. Its flesh is esteemed a delicacy.—The **DOTTEREL**, *C. morinellus*, is reckoned a very stupid bird; and it is rather curious that it should have obtained this character from its supposed propensity to mimic the action of the fowler, stretching out its wing in mockery of his stretching out his arm, and thus procuring its death as the reward of its imitative powers. This species appears in England and in the

south of Scotland in April, and again in September; but there is reason to believe that it breeds on the Grampians, though this has not been fully ascertained. The dotterel measures ten inches in length, of which the bill makes one, and it weighs five ounces. The crown of the head is black; the cheeks and throat white; the upper parts of the plumage are olive-brown, with dusky-yellow margins; the breast is a dull orange, and across it runs a streak of white, surmounted by a narrow line of black.—The RINGED-PLOVER, SEA-LARK, or SANDY-LAVEROCK, *C. hiaticula*, is about seven and a half inches in length, and weighs two ounces: the bill is half an inch long, and black at the point; the irides hazel; cheeks black, as is the front, but with a white band between the eyes; above, it is of a brownish ash-colour, and has a black breast and a white belly. It nestles in a cavity in the sand, near high water-mark, and has four eggs, brownish, with black and grey spots. This species frequents all our shores, and practises the stratagem of feigning lameness to decoy intruders away from its nest. During summer it is solitary, but in winter becomes gregarious, living in large flocks, and frequenting the low grounds. They display considerable instinctive sagacity to obtain supplies, striking the earth with their feet in order to set the worms in motion, on which they feed.

The LAPWING, or BASTARD PLOVER, *Vanellus cristatus*, is found throughout Europe, and as far north as Iceland. It is about the size of a pigeon, weighing eight ounces, and is a beautiful, though not a gaudy bird. The head is black, glossed with blue, as is the elegant waving crest that adorns it; the back is iridescent green; the sides of the neck, the belly, and base of the tail, white. The female builds, in some shallow cavity in moist grounds, a simple nest, consisting of a few dried stalks, where she lays four or five eggs, olive-brown, dark spotted, which the young forsake almost as soon as hatched, running away with the shell upon their backs. The mother displays the fondest attach-

ment to her progeny; when she sees an enemy approach, instead of flying, walks boldly forth to meet him, and when as near as she can advance with safety, rises with a scream, as if just started, and flies in an opposite direction from her brood, becoming more clamorous and seeming more anxious the farther she leads the pursuers off their scent; for if very near, she, with an almost rational finesse, appears as if entirely unconcerned. Nor is the manner in which the peewits procure their food unworthy of remark. They live chiefly upon worms, which they find in low marshy grounds. When the bird meets one of those little rolls of earth which are thrown up by the worm, it gently removes the mould from the mouth of the hole, then strikes the ground at the side with its foot, and the moment the reptile, alarmed at the sound, seeks the surface, seizes and swallows it. The peculiar notes of this bird have given it the secondary names of *Peewit* in England, and *Peesweep* in Scotland.

The OYSTER-CATCHER, *Hamatopus*, Linn., or SEA-PIE, has a bill larger than the head, straight, and wedge-shaped at the point, and feeds generally on shell-fish, oysters, limpets, and such like; these it gets at by detaching them from the rocks to which they are fastened, and opening the shells, where these are double, with its long stout bill, which it inserts between them. The head, neck, and upper surface of the body, are black; the lower, white, and the sides black and white; the tail black at the tip, and white at the base. Its nest consists of a few lichens spread on rocks or gravel, generally on the sea-shore; but Dr. Fleming mentions having observed it breeding on the islands in the Tummel, at Moul-inearn, between Dunkeld and Blair-Athol. It has two olive-brown eggs, spotted with black. When full-grown, the male measures seventeen inches in length, and weighs a pound: the female does not much differ from her mate.

Family III. *Cultrirostres* — with strong and sharp-edged bills. — The CRANES, *Grus*, Linn. The COMMON CRANE,

Ardea Grus, is a tall bird, standing upwards of three feet, and weighing about ten pounds. It has a long neck, long legs, and a long straight sharp bill; the top of the head and neck is destitute of feathers, whose place is supplied by a kind of black-coloured bristles; the plumage in general is ash-coloured, and the wings are fringed with feathers bearing a resemblance to hair, curled at the end, which the bird can raise or depress at pleasure. It feeds on grain, vegetables of all kinds, reptiles, and fish: it builds, in moist places, a broad hut slender nest, and lays two bluish eggs. When at rest, it stands upon one leg. The crane is known throughout Europe and Asia as a social and migratory bird; numerous flocks were wont to haunt the fens of Lincoln and Cambridge. Lesly speaks of them as common in Scotland, and Sibbald as sometimes visiting Orkney; but in modern times their visits have been extremely rare, and they are now reckoned only among the stragglers in Britain. When they migrate, their bands assume a wedge-like form, and mount to an almost viewless height in air:

“ Part, ranged in figure, wedge their way,
 Intelligent of seasons, and set forth
 Their airy caravan; high over seas
 Flying, and over lands, with mutual wing
 Easing their flight. So steers the prudent Crane
 Her annual voyage, borne on the winds.” MILTON.

They breed in the north, and leave Europe about the latter end of autumn. During their flights, when hardly visible themselves, they spy out the standing corn as they pass, and frequently stop in the night to regale at the expense of the farmer, when, like all irregular visitors, they occasion incredible damage, and more by what they destroy than by what they consume.

The DEMOISELLE, or NUMIDIAN CRANE, *Anthropoides virgo*, to which the French Academicians have given the name of Demoiselle, on account of the graceful symmetry of its form, the tasteful disposition of its plumage, and the elegance of its deportment, — in all which these gallant

philosophers found some fanciful resemblance to the figure and manners of a lovely and accomplished female. The demoiselle, when fully grown, measures in length, from the point of the bill to the tip of the tail, about three feet, and three feet six inches from the ground to the top of the head, when standing erect. It differs from the common crane in having every part of the head and neck fully plumed, and of a black colour, except a tuft of feathers behind each eye, of three or four inches in length, which are pure white, and float in graceful undulations on the slightest motion of the bird; on the neck there are long slender feathers, which depend over the breast, of a black hue; the rest of the plumage is of a slatey-grey, dusky-black on the outer halves of the quill feathers. It is migratory, but seldom comes farther north than the environs of Constantinople in Asia: its limits are the southern coasts of the Black and Caspian Seas. In Africa, it extends along the whole of the Mediterranean and Western Coasts, from Egypt to Guinea, abounding about Tripoli, and that tract which formed the ancient Numidia. It has been bred in France, and a bird produced in the menagerie at Versailles lived four-and-twenty years.

The CROWNED, or BALEARIC CRANE, *Ardea pavonina*, stands four feet: its general plumage is of a bluish-slate colour, varied on the wings and on the tail with beautiful streaks of black, bright brown, and pure white; the cheeks and temples are naked, and bright red, as is the upper part of the throat, from which depends a fold of the skin like the wattle of a turkey. But the most remarkable feature of this bird is a circular crest, about four or five inches in height, surrounding the back of the head, and composed of flat yellowish filaments, fringed with black pointed hairs. It lives on the same food as the other cranes, and is similar in its habits, so far as known. At Cape Verd, it is said to come of its own accord into the poultry-yards, and feed along with the domestic fowls. It is a native of Guinea and the surrounding country.

The TRUMPETER, *Psophia, Linn.*, is a native of South America, and derives its name from the curious sound that it produces, and which naturalists appear puzzled to determine from what opening of the body it proceeds. Bingley says — “The bird utters with precipitation, five, six, or seven times, a hollow noise emitted from within its body, nearly as if one pronounced *tou tou tou tou* with the mouth shut, resting upon the last *tou* a very long time, and terminating by sinking gradually upon the same note.” It is an affectionate creature, and when tamed, caresses its master, and follows him closely, and it is said to have been trained to take charge of the poultry-yard; but it is also jealous, and will fly at a dog or a cat, or even a man, if it suspects them of sharing the affection of the person to whom it is attached. Dr. Fleming says a single example of this bird occurred in Surrey. According to the notices communicated by Lord Stanley to Montagu, it was in the habit of attending a farmer's yard, whither it had come of itself, and associated with his poultry. It is about the size of a common fowl, with a long neck; lives chiefly in woods, feeding on grain and fruit. It flies badly, but runs fast, and nestles on the ground; and has from ten to sixteen eggs, of a light-green colour.

The HERONS, *Ardea*, have bills considerably longer than the head, sharp at the point, and either straight or but very slightly curved, and frequently denticulated at the edges; their legs are covered with scales; the toes are long and slender, and the middle one toothed like a saw, and the whole rest on the ground. The genus is subdivided into six sections, containing not less than eighty species. Of these, the COMMON HERON, *A. cinerea*, considered as the type of the whole, is best known. Its length is rather more than three feet, and the expanse of its wings exceeds five, and its extent of neck has procured it in this country the distinctive epithet of “*the long-craiget heron*.” its weight is about three pounds. The upper part of the body is of an

ashy-grey colour, with a bluish tinge, deeper on the back of the head, which is ornamented with a dependent crest, about three inches in length; the under part is pure white, marked with longitudinal black spots on the front of the neck and breast; beneath the lower half of the bill, which is five inches long, the skin is capable of great extension, and can be sometimes used as a pouch. The herons may be considered birds of passage, for they are found as far north as Russia; but may almost be regarded as resident in France, Britain, and Holland, where, at breeding time, they assemble in numerous companies, forming *Heronries*. They build their nests on lofty trees in the vicinity of streams and marshes, constructing them of twigs, lined with wool. Their eggs are about the size of a duck's, greenish-blue, and never exceeding four or five: the female alone sits, and the male provides during her incubation. They are fond of the society of ravens, although the latter often theftuously carry off their eggs. Both parents provide for their young till they are able to fly; but as soon as they can use their wings, they are sent away to shift for themselves. Their food consists chiefly of fresh-water fishes; in pursuit of which they wade into the streams or ponds where they abound, and standing upon one foot, the fish are quickly attracted around them in sufficient quantity to yield them a plentiful supply. Bechstein affirms, from his own observations, that it is the excremental matter which the heron drops that allures its prey: these it generally swallows entire; and it used to be a current helief, that eels were not killed till they had passed several times through the intestines of the bird. They are very voracious; when tame, they have been known to devour at the rate of fifty pretty large carp daily for several successive days. Herons are taken sometimes by attaching a live fish to a hook at the end of a line, and letting it swim in the waters they are known to frequent, and they swallowing it, are caught. In the days of falconry, flying at the heron was

reckoned among the finest of its sport; the powerful wings of the bird enabling it to soar to an amazing height, put the hawk's vigour to the test, and its sharp beak often transfixing its enemy, made the coursing be traced with the most lively interest. Somerville gives a spirited picture of a chase which ended in the death of a falcon and the heron:—

“ Now like a wearied stag
That stands at bay, the heron provokes their rage;
Close by his languid wing, in downy plumes
Covers his fatal beak, and cautious hides
The well-dissembled fraud. The falcon darts
Like lightning from above, and in her breast
Receives the latent death: down plumb she falls,
Bounding from earth, and with her trickling gore
Defiles her gaudy plumage.
. at length the heron, fatigued,
Borne down by numbers, yields, and prone on earth
He drops: his cruel foes, wheeling around,
Insult at will.

The BITTERN, *A. Stellaris*. Amid the melancholy notes that rise, as the sun goes down, from among the reeds on the unfrequented river side, or the rank sedges of the noisome dreary marsh, none give to saddened feeling a more solemn tone, than the dismal hollow booming of the bittern; and in the prophetic vision of Babylon's ruin, the sound is brought to deepen the horror of her desolation — a descriptive trait Southey has transferred to his Thalaba:—

“ And when, at evening, o'er the swampy plain,
The Bittern's hoom came far;
Distinct in darkness seen,
Above the low horizon's ling'ring light,
Rose the near ruins of old Babylon.”

In length, the bittern is about two and a half feet; the bill four inches; the plumage is of a yellowish-red, with black spots and bars. It is widely diffused over the old continent, and is sometimes found near extensive fens in England, and also in Scotland, where it has the name of Bog-jumper and Bog-blatter; but it is now rare, and promises soon to be among our extinct species of birds. It is possessed of great

courage, and often beats off the huzzard, nor when wounded does it fly away, but will even turn upon the fowler, peck at his legs or aim at his eyes. During summer, the hittern fares on fish and frogs; when these are scarce, it pursues mice. It builds a nest of reeds in the marshes, and lays five olive-green eggs. Once it was a fashionable dish at the tables of the great, and as it is now becoming scarce, it may perhaps regain that unenviable distinction.

The STORK, *Ciconia*, is distinguished by a long straight bill, broad at the base and narrowing regularly to the point; the legs, too, are long, and covered with scales; the wings are broad, and extend beyond the tail; the toes are partially webbed, with claws somewhat like the nails of a man, and all on the same level. The most celebrated among them is the WHITE STORK, *C. alba*, well known from its regular migrations, spending its winters in the north of Africa, and enjoying the summer season in France, Holland, Germany, and sometimes even making excursions to Russia. They are rare visitants in Britain, only two solitary instances have been noticed during this century; one in Kent, which was killed, 1805, and another in Hampshire, 1808. Their movements are regulated by their food, consisting of garbage, fish, worms, and reptiles, particularly frogs, to which they have an especial liking; and the cold that drives them to their holes, sends the storks to the south in search of such as bask in a warmer sun. It measures more than three feet in length, stands about the same in height, and is six in expanse of wing; its bill, of a reddish hue, is seven to eight inches. Its general plumage is white, relieved by glossy black on the rump, and exterior feathers of the wings. These birds have always been favourites in the places they frequent, from the mildness of their disposition, and the peculiar services they render the inhabitants. In Egypt, the frogs would soon again become a plague, were it not for the stork; and the enormous quantity of reptiles engendered in the dykes and marshes of Holland, would



STORKS.



STORMY PETREL.



prove an equally fertile source of pestilence, were it not for the providential instrumentality of this useful agent. The Dutch, in consequence, have ever treated it with kindness, and enacted laws for its protection; and the stork, in return, evinces the same friendly feelings towards them, building upon the house tops, or on the loftiest trees in their vicinity, or stalking fearlessly along their most crowded streets, and returning for years together to the same nests, which are religiously preserved for them, and of which they take possession with every mark of joy and attachment to their hosts. They generally have from two to four eggs, of a dull yellowish-white colour. Their affection for their young is remarkably strong; as soon as the brood burst the shell, they are carefully watched and fed by both parents, who, as soon as they are fledged, carry them first upon their wings, and then exercise them in short circular flights around their nests; and in periods of danger, the mother will sometimes rather perish with than forsake her offspring. In a conflagration at Delft, a female, after several ineffectual attempts to rescue her young, chose rather to share their fate than to leave them. When at rest, or watching for food, it stands upon one leg; when flying, the head and neck are directed forward, and the limbs extended backwards almost in a line with the body, a position the best calculated for cleaving the air with rapidity. Their flight is lofty and long. For several weeks they prepare for migration, assembling from various quarters to one centre, whence they depart for the south in a body, amounting to several hundreds, without noise or confusion; they return to Europe in smaller bands; some, however, remain during the winter, and do not seem to suffer from the climate. They are easily tamed, and become wonderfully familiar. An anecdote, which appears authentic, is told of one in a garden, where children were playing at hide and seek, which joined the youngsters, and took its turn in the game with as much accuracy as any of its playmates.

The BLACK STORK, *C. nigra*, is similar in its form to the white, but differs in its colours, as its name testifies, and in its habits; the upper surface of the body is of deep glossy black, with reflections of violet and green; the under, white. Instead of associating with, it shuns man, and seeks its temporary residence afar from his, building on the summits of the loftiest pines, and frequenting morasses, lakes, or rivers, where human footsteps seldom tread. Yet it submits patiently and with a becoming resignation to captivity. Its food is the same as that of its white congener, and it is also migratory, but extending its visits north as far as Siberia, while it is almost unknown in Holland.

The ADJUTANT, a native of New Holland, has been classed variously among the herons and among the storks; perhaps it more properly belongs to the latter, in the shape of its beak, which, however, along with the head, presents rather an anomalous appearance, as if composed of two long pieces of wood stuck into a block of the same; its notes likewise are different, for it is literally a very timber-tuned vocalist, the sounds which it emits being exactly like the clattering of two sticks: under the chin is a pouch, which seems to connect it with the pelicans. The head and neck are bare of feathers, and the eyes have no apparent lids; the back and wings are of a blackish-blue colour; the under part of the body is whitish, and its long bare legs are of the same colour.

The SPOONBILL, *Platalea leucorodia*, whose range is from the Feroe Islands to the Cape of Good Hope, approximates the stork in the structure of its body, but is distinguished by the thin flat enlarged extremity of the bill. It is about the size of a heron, but somewhat shorter in the legs; the colour in general is white, margined with black on the coverts, and black on the breast; on the hind part of the head it has a beautiful white crest reclining backwards. Its nest is placed on the highest trees near the seaside, and especially about the mouths of rivers. The female lays three or four white eggs, powdered with a few pale red spots, and of the size of a

ben's. They are very noisy during breeding time, like our rooks. Their food is fish, which they often take from other birds, in the manner of the bald eagle; also mussels and other shell fish; they likewise devour frogs and snakes, and even grass and weeds, which grow in the water, as well as the roots of reeds. They are migratory, and now not frequent visitors in Britain, though they are said to have inhabited Lincolnshire at one time; and Pennant mentions having observed, in April 1774, a flock shaping their course into the marshes near Yarmouth, in Norfolk.

Family IV. *Longirostres*—Long-billed.—The IBIS, *Ibis religiosa*. The sacred bird of the Egyptians, to which "this enlightened people," says Dr. Goldsmith, "who worshipped the deity in his creatures, paid divine honours."* It was reared in the temples, and when dead embalmed. This veneration, it is said by some writers, arose from its clearing the country of serpents; others allege it was on account of a fanciful relation between its plumage and one of the phases of the moon; while a third class attribute it to the fact, that its appearance announced the overflow of the Nile. This bird, so highly celebrated in the mythological history of ancient Egypt, transmitted to us in immense numbers in the shape of mummies from a remote antiquity, and still inhabiting the same country, was yet most unaccountably mistaken by every modern writer on natural history, till our adventurous countryman, Bruce, pointed out the identity between the figures represented on the ancient monuments, the mummies preserved in the Egyptian tombs, and a living bird common on the banks of the Nile, known by the name of *Abra Hannes*, or *Father John*. "But," Mr. Bennett observes, "it was not until after the return of the French expedition from Egypt, that the ques-

* The Apostle Paul gives a different account of the matter—"Professing themselves wise, they became fools, and changed the glory of God into an image, made like to corruptible man, and to *BIANS*:"

tion was definitely settled, by a careful anatomical comparison of the ancient mummies and recent specimens, then brought home by Geoffrey Saint-Hilaire, and Savigney. From an examination of these materials, M. Cuvier was enabled to verify Bruce's assertion, and to restore to science a bird, which, after having formed for centuries the object of a nation's adoration, had fallen into utter oblivion."

The CURLEW, or WHAAP, *Numenius arquata*, is frequent along all our coasts; for although its rude nest be usually in unfrequented heaths and marshes, it soon leaves its breeding place, and during winter is oftenest to be seen and heard flying about the sea-shore and damp grounds in the neighbourhood:—

"Soothed by the murmurs of the sea-beat shore,
His dun-grey plumage floating to the gale,
The Curlew blends his melancholy wail,
With those hoarse sounds the rushing waters pour."

H. M. WILLIAMS' *Sonnets*.

The common curlew is two feet long, three and a half across, and weighs upwards of two pounds; the bill is about six or seven inches long, black, and arched in the upper mandible; its plumage above is greyish-white, streaked with brown; its breast belly, and rump, are white; the tail is grey, with brown bands, and the legs of a lead colour. Its food, during summer, consists of frogs, worms, and water insects, at which time the flesh is pleasant and well-flavoured, but in winter, when it derives its substance from the sea and the beach, its flesh is rank and fishy. Its has five eggs, olive, with brown spots.

The SNIPE, *Scolopax*. Under this generic is composed more than thirty species, agreeing in having a straight soft bill, with the upper mandible enlarged beneath, for the reception of the lower; at the head of these has been placed the WOODCOCK, *S. rusticola*, about the size of a pigeon, weighing twelve ounces, and held in much repute by gourmands for its exquisite flavour. It is a native of the northern regions; with us it is a winter visitant, arriving at night

with a north-east wind, about the first week of October, and departing in March; a few, however, have been known to breed in this country. The crown of the head and back of the neck are of an ashy-colour, barred with black; the upper part of the body is beautifully variegated with red, yellow, black, and grey; the tail is black, tipped with grey above, white below. The woodcock delights in moist situations in woods, and near hedges by the sides of rivulets, where he lurks concealed among the withered leaves, dry stalks, and moss, whose wintry tints harmonize so finely with his own, and finds the food upon which he subsists. The female is larger than the male. They build on the ground, and have four yellowish eggs, spotted with brown. — The COMMON SNIPE, *S. gallinago*, remains with us the whole year; in winter it frequents marshy and wet grounds, roosting among the rushes; in summer, its favourite haunts are around the margins of our mountain lakes, as not less beautifully than truly described by the poet:—

“ Amid those woodless wilds, a small round lake
I've sometimes marked, girt by a spongy sward
Of lively green, with here and there a flower
Of deep-tinged purple, firmly stalked, of form
Pyramidal,—the shores bristling with reeds,
That midway over wade, and as they bend
Disclose the water-lily, dancing light
On waves soft rippled by the July gale:
Hither the long and soft-billed SNIPE resorts,
By suction nourished; here her house she forms,
Here warms her four-fold offspring into life.

The snipe weighs about four ounces, and is in length twelve inches, of which the bill forms three; the crown of the head is a dark-brown, with a yellowish-red stripe in the middle, and one on each side; the upper part of the body is black, similarly streaked; the chin and belly are white; the tail dusky, with a tinge of green. The nest is made of coarse grass, on a dry spot in a marsh: their eggs are of a greenish colour, grey spotted. In the breeding season, when disturbed, they spring upwards to a vast height, the male

uttering as he flies a shrill and piercing clang, which, in superstitious times, procured for him the title of *campana caelestis*, the heavenly bell. Their usual flight is irregular and swift, its descent abrupt and sudden. — The GREAT SNIPE, which weighs double the common variegated, differs also in colour—above, brown and red, and beneath, reddish-white, with black bands on the belly and sides — called likewise by some sportsmen, from being always found alone, the *Solitary Snipe* — is doubtfully noticed by Bewick as a distinct species; “it not being,” he says, “clearly ascertained whether its bulk and change of plumage be not acquired from age, and its solitary habits from ceasing to breed.” — The RED GODWIT, *Limosa rufa*, weighs twelve ounces; has a bill four inches long, turned up, and black at the tip; the crown of the head is red, with brown streaks; and the hack black, with red spots; the wings grey, with white borders; beneath, it is of a deep red, with black streaks on the side of the breast. It is spread over the north of Europe, and frequents the British coasts in small flocks during autumn, and remains till spring, but is not known to breed in the island. Its flesh is esteemed delicate.

The COMMON SANDPIPER, *Tringa hypoleucos*, Linn., has a bill soft at the base, firm and with cutting edges towards the point, and toes flat below, webbed at the base of the first joint. Above, the plumage is brown, glossed with olive, and the wings marked with minute undulated lines; it has a white spot above the eyes, and brown streaks upon the neck; beneath, the plumage is uniformly white; the tail is fan-shaped, spotted with white, on a ground colour like the back. It is a solitary bird, frequenting rivers and lakes during the summer, and building its nest of dry leaves under their banks: it lays five eggs, of a dirty-white, with dusky spots. It is found as far north as Caithness. — The RUFF, *T. pugnax*, thus denominated from a spreading tuft of feathers on each side of the head in the male, is subject to great variety in the colours of its plumage, but the pre-

vailing ground colour is brown, inclining to ash, with lateral and under covers white. He is so pugnacious, that Linnæus conferred on him the surname of the "warlike." Previously to pairing, their contests are frequent and mortal; and so intent are they on mutual destruction, that they allow the fowlers to take them in nets rather than desist. Even in confinement they discover their untameable animosity, nor is it till they are fairly matched that they become peaceable and sedate. The ruff weighs seven ounces, and is in length a foot. The females, who are called *Reeves*, are smaller than the males, and want the ruff. They nestle in tufts of grass in fens, and have four eggs, white, marked with rusty spots. The ruffs are fattened for sale with milk, bread, and boiled wheat; but the people who fatten them must keep them shut up in dark apartments, for if the least light were admitted, the turbulent things would instantly attack each other, nor cease till one fell, "especially," as an old naturalist tells us, "if anybody stands by." These birds belong to the North of Europe, and such of them as visit Britain are chiefly to be found in the breeding season in the fens of Lincolnshire. — The *KNOT*, *Canutus*, is considerably less than the ruff, weighing not more than five ounces, and scarcely measuring ten inches from the tip of the bill, which is greenish-black, to the tail. The plumage above is black, bordered with red, and red oval spots on the wings; below, it is brownish, and the belly is white, with red and black spots; the tail is dusky ash, bordered with white: but in winter the colours undergo a change, the upper surface becoming cinereous, with brown streaks, and the lower white, with dusky lines on the breast and sides. The knot used formerly to frequent the fens of Lincolnshire in autumn, when it was caught and fattened with the ruff for the table. Canute the king, who greatly prized it, had the honour of being its name-father. It is not known to breed in England, but Dr. Fleming supposes it does in the Orkneys. — The *TURNSTONE*, *Streptilas interpres*, which has its name from

its turning up stones for the purpose of feeding upon the insects and worms that lurk below, is common to Europe, Africa, and America; the species, however, with which we are best acquainted, is a winter visitant in England and Scotland, and stationary in Zetland. The bill is an inch in length, stout, conical, and a little turned upwards, furnishing the poor fellow with an excellent bread-earner; his legs are short and naked, with black claws, and the hind toe turns inward; the crown of the head is reddish-white, streaked with brown; the body black, variegated with white and brown; the throat and belly white, the breast black, and the feet orange. Its nest is a shallow pit in the sand on the sea-shore, which it frequents in winter to pursue its avocation. The female lays four eggs, of a light-olive hue, spotted. Captain Sabine states, that it breeds in the North Georgian Islands.

The AVOSETS, *Recurvirostra*.—The SCOOPER, YELPER, or COBLER'S AWL, is remarkable among birds for the bend its long slender bill takes upwards, and which has obtained for it the last of its titles. In length it is eighteen inches, and weighs thirteen ounces: the crown of its head, the hind part of the neck, its back, and the quill feathers, are black; all the rest of its plumage is white; the legs are of a bluish-grey, and the feet are webbed to near the end of the toes. It is a resident in England, recreating itself in summer in the marshes and fens of Lincolnshire and Cambridgeshire, where they also breed, forming their nests in some small holes on the dirtiest spots of their territory, and laying two dark-olive, spotted eggs. After the breeding season, they form themselves into parties of six or seven, and seek the sea-coast, where they abide during winter, scooping out the worms and insects on which they feed from the sand. All its movements are lively, alert, and volatile, and by means of its long legs it runs over shores covered five or six inches with water, in pursuit of its insect prey. There is said to be an Avoset found in Hudson's Bay, purely white.

Family V. *Macroductyle*—long-footed.—The JACANA, *Parra chavaria*, Linn., is a native of South America, about the size of our domestic cock. The hind part of its head is ornamented with a crest; the rest, with the upper part of the neck, are only covered with down, the base surrounded with a black collar; but it is remarkable for being armed with spurs upon the wings, the alula or bastard wings having two or three spines at each, about half an inch long, thick and hard, but concealed, except when its powerful wings are expanded, when they form very effective weapons, and with these it attacks successfully rapacious birds much larger than itself. It is an excellent swimmer, although its long-toed feet are not webbed, and flies easily when on the wing, only it has some difficulty in rising; and yet, what is wonderfully strange, the Americans have so thoroughly domesticated it, that it not only does not fly away itself, or take to the water, but goes abroad with the poultry, watches over them, and defends them from the ravenous vulturidae that hover over them, and returns regularly home with them in the evening. From the nails of its long toes, which are sharp as lancets, it has received the vulgar name of the Surgeon; but its beneficial qualities have deservedly gained it the epithet of "the faithful" Jacana. It feeds chiefly on aquatic plants.

The HORNED SCREAMER, *Palamedia cornuta*, Linn., is also a native of South America, found chiefly in the Brazils. It is as large as a turkey, utters a horrible cry, and has a horn on the head. This last distinguishing feature projects nearly two inches, is round, white, and hard as ivory; the head which bears it seems small in proportion to the body, but is suited for the weight it has to carry; the bill is conical, and slightly arched on the upper mandible; its wings have each two strong sharp spurs, and its long toes have nails of a similar description, in particular the posterior, which is straight like the lark's. Thus armed at all points, it seems formed for war, and has been placed by some na-

turalists among the rapacious water-fowl, but by others it is said to subsist chiefly on reptiles, yet eating also herbs and seeds. They are, however, noisy and quarrelsome birds, and inhabit the marshes, where they walk with great facility. The male and female, it is said, are never seen separate; and such is their conjugal affection, that if one dies, the other never leaves the body, but pines to death beside it. They make a large nest of clay, shaped like an oven, and lay two eggs. The general colour is dark grey, with spots of white, and some streaks of yellow.

The RAIL, *Rallus crex*, Linn., or CORN-CRAIK, the well known harpinger of summer, whose monotonous cry of *crex, crex, crex*, heard on a fine May evening, always associated with that sweet season, gives more pleasure than many a finer note. It frequents corn, grass, hroom, or furze, amongst which it runs very swiftly, but it flies heavily. The length of the craik averages eleven inches, and the weight seven ounces: its bill, thickish at the base, becomes more slender towards the point; the plumage above is dark brown, the feathers yellow margined; the wings of a red-chestnut colour; it is greyish beneath. It makes a nest in moss or dry grass, laying from twelve to sixteen eggs, of a dull white, with rusty spots. It feeds on grain, worms, and insects: its flesh is excellent. This bird is not common in England south of Northumberland: it arrives in Scotland in the end of April, and departs in October. It abounds in Orkney.

The WATER-HEN, *Gallinula*, is considered by some naturalists as a link between the waders and the swimmers; her long naked legs and usual habits uniting her with the former, and a slight membranous connexion between the toes enabling her to take the water, when choice or necessity requires, with the latter. Her usual residence is by the side of a lake, a marsh, or a river, where she seeks her food; and here she plants her nest, upon some low tree or shrub by the water's edge, in which she deposits from five to ten

eggs, of a light yellow-brown colour, with darker spots. Her plumage above is dark olive-brown; beneath, dark bluish-grey, with a few white feathers on the sides; the legs and toes are a dusky green, with a red garter above the knee. She measures about fourteen inches in length, and weighs fifteen ounces. In flying, she hangs down her feet, and in running, flirts up her tail occasionally, so as to exhibit the white feathers below.

The Coot, *Fulica atra*, is considerably larger than the water-hen, measuring a foot and a half in length, and sometimes so heavy as thirty ounces. Its head and neck are black, the back of a dark ash colour, paler beneath. Though well fitted for swimming, it is equally qualified to walk steadily, and ascends trees very readily. It is common in fresh-water lakes and sluggish rivers, feeding on the smaller fishes, aquatic insects, seeds, and even the roots of rushes. It makes a nest of flags, on the margins of the waters it frequents, and lays six to fourteen eggs, light brown, spotted. Its flesh when young is eatable.

The FLAMINGO, *Phœnicopterus ruber*, is one of the most extraordinary water-fowl, and stands as an insulated genus, having naked legs longer than almost any of the waders, and with the three anterior toes palmated to the end, like the swimmers, yet it does not swim. The neck is quite as long and slender as the legs; so that, though the body be not much larger than that of the goose, yet when standing erect it measures rather more than six feet. The bill is bare, of a kind of broken curve shape, with teeth-like points on the margin, and incloses a thick fleshy tongue, and rather appears as if bent upwards. It varies in its colours at different periods, but when mature, which is about the third year, it is a purple-red on the back, rose-red on the wings, and ash-coloured, with brown streaks, below. It feeds on shell-fish, insects, and the spawn of fishes. It once was abundant in the warmer latitudes of Europe, and is still occasionally met with on the shores

of the Mediterranean; but it is now chiefly found on the African and American coasts. When first discovered in these then unfrequented regions, it was so tame, that it would allow itself to be taken and shot with facility, but it has now become one of the shyest of the feathered race; and "whether birds confabulate or no," it has learned, from the experience of others, to shun those dangers which proved so fatal to its unsuspecting progenitors, and to avoid those places where they were ensnared, — a lesson which it were well that men would always learn. They now affect the most deserted scenery, salt-water swamps, and low-lying, uninhabited islands, and are generally seen together to the amount of two or three hundred, forming a line resembling at a distance a long brick wall, guarded by a vigilant watch, who warns them of the approach of an intruder by a loud shrill scream. Their nest is of the most curious construction, formed entirely of clay, raised above the surface of the marsh, and hardened by the heat of the sun or of the bird, presenting exactly the appearance of a chimney can, but solid, except at the top, where there is a cavity for the reception of two eggs and the body of the female, who sits astride upon the column, her legs hanging down by the sides to the water—a position to which she is forced by the length of those members. The flesh of the flamingo is good, but the tongue was held the chiefest of delicacies by the luxurious and degenerate Romans in the days of their decline; and one epicure of an emperor, with a cruel and foolish waste befitting the purple, caused fifteen hundred of these tidbits be served up in a single dish at an imperial feast.

SECT. VI. — PALMIPEDES — WEB-FOOTED SWIMMERS.

The general characters of birds of this order are — short feet, and legs placed far back in the body, with webbed

toes; a dense plumage, saturated with oil, with a fine thick down next their skin, to preserve their warmth in the watery element; and bills of greater length than their feet, to enable them to search for their food in the depths upon whose surface they swim. These have been divided into four families—I. *Brachyptera*, Fin-winged—their wings being almost as efficient as fins, and who may be considered as almost exclusively attached to the surface of the water.

The CRESTED GREBE, *Colymbus cristatus*, Linn., is of the size of a duck, and weighs generally between two and three pounds. Its bill is above two inches long, red, tipped with white, and it has a white face; the crown of the head and back of the neck are black; the remainder of the upper surface of the body dark brown, with a white band on the wing; beneath, it is of a silver white. On the top of the head is a beautiful crest, and a broad collar round the neck, both of a glossy black, the latter tinged with reddish-brown: it has no tail. The grebe inhabits the lakes of Europe and Siberia. It is seldom seen on land, where it walks with difficulty, from its legs being placed farther back than in any other bird, and when it stops, it is obliged to stand vertically. It makes its nest of aquatic plants, and lays them on the reeds floating on the surface: should it happen to break loose when the female is sitting, she keeps her seat, and with her legs for oars, steers her frail vessel to the nearest harbour, and there hatches her eggs, four in number, white, and of the size of a pigeon's. This bird breeds in England, in Shropshire and Lincolnshire, and is said to be stationary even in Shetland.

The GREAT NORTHERN DIVER, or EMMER GOOSE, *C. glacialis*, is three feet and a half in length, five across the wings, and weighs ten pounds. Its bill is upwards of four inches long; its head and neck are black, changing to a green, and has two collars, white, freckled with black; its back is black, spotted with white, breast and belly white; the tail short and rounded. These birds differ considerably

in their colours, according to their age, but the above is its appearance when fully adult, which is when it has attained the third year. They nestle on the margin of fresh-water lakes, and have two eggs, yellow, with purplish-grey spots. They abound in Orkney during the winter, and at the same season visit the Frith of Forth following the herrings.

The GUILLEMOT, or FOOLISH-GUILLEMOT, or MAROT, *Uria troile*, *Brisson*, the LAVY of St. Kilda, is especially distinguished by having no posterior toe or thumb. It is about eighteen inches in length, and weighs twenty-four ounces: the bill is straight and pointed, of a black colour, and about three inches long; the bird itself is of a brownish-black colour above, and white on the breast and belly. In winter, the black on the throat and fore neck becomes white, and the rest of the upper plumage assumes a greyish tinge. It is an arctic bird, but is also common upon all our coasts, where it nestles on the precipitous rocks, and lays one large greenish egg on the bare stone. About the beginning of February, it appears in large flocks at St. Kilda, and is hailed by the inhabitants as the harbinger of approaching plenty. They take it in a manner which justifies its characteristic epithet of "foolish." A man with a white sheet tied around him is lowered down during the night to some jutting ledge, where seated he awaits his game, and the bird, attracted by the cloth, alights upon him or near him, and is immediately seized. In this way, several hundreds will sometimes be caught before the advance of dawn warns his companions to draw him up.

The GREAT AUK, or GAIR-FOWL, *Alca impennis*, is spread over the northern ocean, and belongs, perhaps, properly to the arctic regions, but it breeds occasionally in St. Kilda. It has a strong convex bill, compressed at the sides, about four inches and a quarter in length, of a black colour, and closely covered at the base with short feathers; the head is black, with an oval white patch in front of the eye; the upper part of the body is of a black-brown hue;

the wing feathers tipped with white; the breast and belly wholly so, which tint supersedes the darker shade of the throat and fore-neck in winter. The wings of the auk are very short, which incapacitates it for long flights, and it is never seen out of soundings; its appearance is always an infallible token of the neighbourhood of land. It feeds on the lump-fish, and others of similar size. It lays but one egg, white, with purple spots, close to the sea-mark, and if that be removed, it lays no more that season. It dives well, and swims under water, rising after some time at a considerable distance from where it went down. Its land habits are extremely awkward, being hardly able to waddle; and when it calls a halt, it must perch upright upon its rump. When fed in confinement, it holds up its head, expressing its anxiety by shaking the head and neck, and uttering a gurgling noise. Its flesh is rancid, but is relished by the Greenlanders. — The RAZOR-BILL, called also the BLACK-BILLED AUK, is much smaller than the former, but its wings are larger, and of course its flights longer. — The PUFFIN, *Alca arctica*, or as it is sometimes called, the PUFFIN-AUK, has a bill of a very extraordinary form, as high as the head, and higher at the base than it is long; the half next the point red, the other grey, marked with three deep furrows, one in the livid part, and two in the red. It is about the size of a pigeon; dark above, and white beneath. It is one of the tribes that hover over the northern ocean, but it sometimes breeds on the cliffs of England, and is far from uncommon on the coast of France. Pennant asserted that birds of this species, when taken hold of by the wings, and torn from their young, would inflict upon themselves the most cruel wounds, as if actuated by inconsolable grief and despair; but subsequent experiments have shown that they are not quite so sentimental; the violence they exert when seized on, being, as is common with other animals, directed against the bodies of their captors, rather than their own — a much more judicious mode of procedure. — The SHEAR-

WATER, or MANKS PUFFIN, *P. anglorum*, is a summer visitant, and resembles the former in its colours, but differs in having the lower mandible bent downwards, and possessing wings sufficiently long to aid its buoyancy in air. It nestles in holes, which it either makes in the earth, or in those of rabbits, of which it takes forcible possession, after ejecting the old and destroying the young. It has only one egg. Few birds or beasts, it is said, will venture to attack them in their retreats, and the attempts of the great sea raven give rise to singular combats. "As soon as the raven approaches, the puffin catches him under the throat with its beak, and sticks its claws into his breast, which makes the raven with a loud screaming attempt to get away; but the little bird still holds fast to the invader, nor lets him go till they both come to the sea, where they drop down together, and the raven is drowned; yet the raven is too often successful, and invading the puffin at the bottom of its hole, devours both the parent and its family." But its most destructive enemy belongs to the human species: the inhabitants of the Isle of Man seek after them when they are young and fat, and take them in great quantities and salt them; and eaten with potatoes or cabbage, they afford a pleasant and comfortable meal.

The PENGUIN, *Aptenodytes*, is in the antarctic, what the Auk is in the arctic regions; their bills are similar, but they are even less capable of flying than the auks, their side appendages being merely apologies for wings, covered with scale-like vestiges of feathers, serving them, however, as paddles in the water, through which they skim with great celerity; their legs or feet, placed far behind the centre of gravity, seem two short nobs stuck to their rump, to which are attached four toes, the three anterior ones webbed, the posterior or thumb, directed inwards. They never venture to land except to breed, and can only reach their shallow nests on the shore, by drawing themselves along on their bellies; they hatch their one egg erect, and they cackle

like geese. The largest, the PATAGONIAN, styled sometimes the MAGELLANIC PENGUIN, is found in immense flocks near the Straits of Magellan, and as far as New Guinea. It is of the size of a goose, of a dark ash colour above, and white beneath; the head and neck, which approach to black, are separated by a golden-coloured spot at the ears. Its flesh is black and oily, but eatable.

Family II. *Longipennes*, Long-winged — which, from their power of flight, are to be met with in every latitude. Of these, the PETRELS dwell most upon the sea, and at the greatest distance from land. Linnæus ranged them under one genus, *Procellaria*, storm-birds; and the name *Petrel*, Little Peter, has been given it by the sailors, from the Apostle Peter's walking on the water in a storm. They have a bill, hooked at the point; the three anterior toes are webbed, but instead of a thumb, they have a small nail placed in the heel. They make their nests in holes of the rocks, and eject an oily fluid from their nostrils on those who attack them. The largest species, the GIANT PETREL, is only found in the South Seas; it is larger than the goose; its plumage varies, but in general is black above, and white below. But the best known is

The STORMY PETREL, *P. pelagica*, the size of a swallow, diffused over almost every quarter of the world, but met with most frequently on the northern and Atlantic Ocean, called by the sailors, *Mother Carey's Chickens* :—

“ Here run the stormy Petrels on the waves,
As though they were the shadows of themselves.”

MONTGOMERY.

They follow the ships in great numbers, picking up the greasy substances in the wake, and their appearance is generally indicative of a gale. In the most tempestuous weather, they are often observed skimming with incredible velocity the summits of the billows, and sometimes in the hollows between the surges :—

“ Outflying the blast and the driving rain,
The Petrel skins o'er the stormy main ;
So fleet that it scarcely e'en sprinkles its breast,
On the wave as it passes its curling crest.”

The plumage of the Petrel is sooty black, excepting the coverts of the tail, the tail itself, and the vent feathers, which are white ; it has long and slender legs. It nestles in holes in the rocks, or in the earth, and has two white eggs. It makes a low purring noise when breeding, but at other times is a clamorous bird, particularly during the night. Dr. Fleming mentions, that an individual which Mr. Scarth kept for some time in a cage, was supported by smearing the feathers of its breast with train oil, which the bird afterwards sucked with its bill. When the oil was placed in a saucer in the cage, the bird dipped its breast-feathers in it, and then sucked them. — The FORK-TAILED PETREL, considerably larger in size, and of a brownish-black colour tinged with grey, was discovered and discriminated by the late Mr. Bullock, at St. Kilda, during a voyage of scientific inquiry made by that gentleman round the Scottish coast, in the year 1818.

The ALBATROSS, or MAN-OF-WAR BIRD, *Diomedea exulans*, is the biggest of all aquatic birds, frequently larger than a swan, and has a wide range upon the ocean, both within and without the tropics. It has a large strong yellow bill, terminated by a stout hook on the upper mandible ; the plumage is white, the back and wings marked with black lines, and the feet a carnation red ; it has only three toes, webbed. It is a very voracious bird, and commits great depredations on the salmon, which are found in shoals at the mouths of rivers in these countries ; and it is the greatest enemy of the flying fish, when forced to seek refuge in the air from the pursuit of its destroyers in the sea ; nor are its ravages confined to the finny tribes — it makes a prey likewise of the smaller water-fowl, when it can contrive to surprise them. In return, however, it finds powerful antagonists in the sea eagle, and the skua gull, especially

after it has gorged itself and become heavy, when it sometimes pays the penalty of its gluttonizing. On the shores of South America, about the end of September, it builds a nest of earth upon the ground, from one to three feet high, and lays a number of eggs, four and a half inches long, which are eaten by the natives; its flesh is hard and dry, but it also is used for food. Its voice is said to resemble the braying of an ass.

The SKUA GULL, *Lestris cataractes*, Linn., might perhaps have been placed with propriety among the rapacious birds, from its boldness, rapidity of flight, and its living upon plunder. It is about the size of a raven, and has its habitat in the northern climates. It preys not only on fishes, but also on the lesser water-fowl, such as teal, and forces the common gulls, through fear, to drop their newly caught, or disgorge their half-digested food, which it catches before it reaches the sea. In Shetland it is called Bonxie, and possesses the ridges of one of the hills on the island of Foula; there it is a privileged bird, and a fine of ten pounds Scots is exigible for destroying its eggs, because it beats off the eagle, which dares not intrude upon the island while the skua is breeding, for during that season it is so fierce, that it will attack whatever approaches its retreat, even men or dogs; and though the eagle be stronger, it is not so nimble in its evolutions as the skua, which strikes so often and with such effect, that its powerful opponent is often obliged to retire wounded and screaming from what we should have been apt to suppose a very inferior bird. It is of a dark-brown on the upper parts of the body, greyish-brown below, with streaks or spots of yellowish-white at the base of the wings and tail; its talons and its beak are strong and hooked. It lays two eggs, of a muddy-green colour, and constructs its nest of a few dried weeds. It is gregarious during breeding time, but afterwards leads a solitary life on the ocean.

The GULL, genus *Larus*, Linn., has the bill hooked and

the tail even; and what seems a curious interchange, those which have white heads in summer become darker in winter, and those which have black heads in summer get white heads in winter; and this, together with the varying of the plumage according to the age, has given rise in some cases to a mistake, not uncommon with regard to other birds, so that the same fowl has been described under different names, according to its different appearances, and thus species have been multiplied, which a better acquaintance has tended to diminish. The larger gulls measure from two to three feet in length; and in breadth, from tip to tip of the wings, two feet to nearly six. Of these, the **BURGOMASTER**, *L. glaucus*, breeds in the Arctic regions, but visits Zetland in winter. Its plumage is white, shaded with ash-grey upon the back and wings. It is rapacious, but shy.—The **HERRING GULL**, *L. argentatus*, whose appearance announces the approach of the herring-shoals, and is hailed with joy by our fishermen, measures in length two feet; at the expanse, four and a half, the wings being longer than the tail; and weighs about two pounds. Above, it is of a bluish-grey colour; beneath, white. It nestles on the islands, and has two olive-brown eggs.—The **COMMON GULL**, *L. canus*, seldom exceeds seventeen inches in length, or expands more than three feet. It is similar in colour to the former; makes its nest of sea-weed, on ledges of rock on the coast, and has two or three dull olive-brown eggs, spotted.

The **TERNs**, or **SEA-SWALLOWS**, *Sterna hirundo*, are so named from the resemblance they bear to the land-swallows, in the length of their pointed wings, and their forked tails, as well as in their habits—skimming along the face of the waters, and seizing the insects that hover over them, or darting upon the smaller fishes that seek the surface. It is more than fourteen inches long; the back of the head and part of the neck are black; the rest of the upper portion of the body light grey; the front of the neck is freckled; the breast white, with a rosy tinge; and the other quarters



PELICAN.



SWAN.



of the lower region white. They make their nests on the rocks, or among gravel, and have two eggs. — The NODDY, a bird of this species, without the forked tail, mostly brown in its plumage, with a spot of white on the top of the head, and much about the same size, is very common in the tropical seas, and is celebrated for the blundering manner in which it throws itself on board of ships, and allowing itself to be taken with the hand. — The SKIMMERS, *Rynchops*, found in the vicinity of the Antilles, are about the size of a pigeon, which they resemble in their wings and tail, but are like no other bird in the formation of their bill, the upper mandible being shorter than the under, and is composed of two flat blades, which meet without clasping; nor is their mode of feeding less extraordinary, which is by skimming the water with their lower mandible as they fly over it. It is black on the upper part of the body, with a white band on the wing; the lower part white; the bill and feet are red.

Family III. *Totipalmatae* — distinguished by having the thumbs joined with the three toes by one single membranous web, yet they are almost the only Palmipedes which perch upon trees. — The COMMON PELICAN, *Pelicanus onocrotatus*, is as large as a swan, measuring, when fully grown, from five to six feet from the point of its bill to the tip of its tail. Its bill, which stretches to sixteen or eighteen inches, and two or three in breadth, forms the distinguishing singularity of this bird. The upper mandible is quite flat, with a small red hook at the point; the under consists of two pieces united at the tip, between which is placed a large dilatable pouch, of a light straw colour, that extends down the fore part of the neck, and is capable of containing, when extended, fifteen quarts liquid measure, and serving the double purpose of a reservoir and provision bag, for in this the parent fetches both food and water to its young. The neck has somewhat of the curvature of the swan, but

without its majestic bearing, and is covered with a short close down; the head is bare in front, and flesh-coloured, but on the back part has a tuft of feathers falling down on the neck. The body is large; the wings of a moderate size, extremely light in their bony structure, and capable of receiving a large quantity of air, which enables it to soar high and continue long on the wing; the legs are short, and bare above the knee. In an adult bird, the plumage is almost entirely white, excepting the quill feathers, which are black; but as it advances in age, it becomes tinged with light red or yellow. The white pelican is found on the seashore, and on the banks of lakes or great rivers, in almost every part of the Old World, with the exception of the arctic regions. In the year 1663, a straggler was shot in England at Horsey Fen. It feeds on fish; and when a single bird is in search of prey, it wheels round and round at the height of fifteen or twenty feet, and as soon as it perceives a fish, darts upon it with inconceivable rapidity: should it miss, it rises, and again repeats the manœuvre, till it succeeds; and, as soon as caught, it is consigned to its bag, till it accumulates a sufficient store to satisfy its voracity, with which it retires to some neighbouring lock or tree to eat and digest at leisure, and to sleep till the call of hunger stimulate it to fresh exertion. Sometimes, according to Buffon, they assemble in large flocks, and exhibit no small ingenuity in collecting and securing an abundant meal. This they accomplish by forming a circular line, and gradually narrowing the inclosure, till the fishes are driven within a limited space; then, upon a given signal, they all plunge into the water at once, fill their wallets, and return loaded to land to satiate their gluttony. It builds in rocks, or in marshy and unfrequented places in low islands and lakes, and has two or three white eggs. It is affectionate and attentive to its young, and from feeding it out of its pouch originated the fable of its piercing its breast and feeding them with its blood. In the eastern islands of Asia, there

are varieties of the pelican of a rose colour, and brown; and a wanderer of the latter colour is said to have been observed by Dr. Leith, not many years ago, flying over his head, in the month of May, at Blackheath in Kent.

The CORMORANT, *Phalacrocorax carbo*, or SCART, the Sea-Raven of the ancients, is a large water-fowl about the size of a goose, and something like it in shape, but with a compressed bill, commonly five inches long; the upper mandible hooked at the extremity, and the middle toe notched like a saw. Its plumage is black, with greenish and purple reflections; it has a crest of long feathers on the hind head, and numerous slender white feathers on the head, neck, and thighs; the tail is black, and rounded. It is a bird of such insatiable appetite, that its very name has become a synonyme for voracity: all sorts of fish, tenants of the lake or of the deep, are devoured with equal avidity, and it carries on its ravages by night as well as by day. In England it was formerly used for fishing, as the hawks were for fowling, and in China it is still trained for the same purpose. It builds its nest on rocks on the shore, or even on trees near great lakes, and has three or four greenish-white eggs. It is a foul and unclean bird, of a fetid odour, and with a most disagreeable croaking voice. To it Milton has compared Satan, when he perched, devising death, in Paradise:

" He on the tree of life,
The middle tree, and highest there that grew,
Sat like a cormorant."

The FRIGATE BIRD, *Tachypetes aquilus*, Linn., differs from the pelican in having both of its mandibles bent, and having a forked tail: its wings are powerful and long, sometimes upwards of twelve feet from tip to tip; whence it soars high, and glides swiftly through the air, and has been seen by navigators upwards of four hundred leagues from land. It is found principally between the tropics, where it darts upon the flying-fish; and attacks the boobies, to make them

disgorge their prey, which it adroitly snatches ere it reach the sea. It builds on trees and on rocks, the female laying one or two eggs. Its plumage is black, varied with white on the under part of the throat and neck, and the bill is red.—The BOOBY, *Sula*, has received this name on account of its stupidity. Their plumage is brown; breast and belly white. It is found in the Indian and Atlantic Oceans.

The GANNET, or SOLAN GOOSE, *S. Bassanas*, is of the size of the domestic goose, but longer in the wings. The crown of the head is of a buff colour; the general plumage white, except the bastard wing and greater quills, which are black; the bill, six inches long, and a little bent at the point, is bluish; the legs and toes black, with green streaks, the claws white. They subsist entirely upon fish, especially herrings and sprats, the movements of whose shoals appear to regulate their migrations and determine their residence. They are most abundant in Iceland, whence their name Solan, from *Sule*; and on the Bass Island in the Frith of Forth (whence their Latin title *Bassanas*) it is scarcely possible to walk without treading on them: the flocks upon the wing are so numerous as to darken the air like a cloud, and their noise is such, that persons speaking can with difficulty hear one another. Nor are they less numerous on Ailsa in the Clyde, on the rocks of St. Kilda, or among the Skelig Islands off the coast of Ireland. They build, on the highest and most unapproachable cliffs, a large nest of sea-weeds, drift sticks, or such substances as they can readily find, and lay only one white egg; but if plundered of it, they will lay a second and a third, but never more than three in one season. The young are at first of a dusky hue, which alters till they attain their fixed colouring in their third year. In their migrations they fly low and near the shore, but never pass over any jutting headland. In fishing, they rise in the air, then dart rapidly and vertically upon their prey, and with such force, that they will pierce a plank an inch thick; and thus they are sometimes

caught by the St. Kildanes, who fasten a few herrings upon a fir board, and set it afloat, when the gannet swoops down, and kills itself by its violent rapacity.

Family IV. *Lamellirostres*—distinguished by thick bills sheathed in soft skin instead of horn, and furnished with little teeth at the edges, and by the posterior toe being distinct from the others. At their head ornithologists have properly placed that noble-looking bird, the SWAN, *Cygnus*, the common tame species of which, *C. olor*, has long formed the finest ornament of our rivers and lakes, far exceeding any other aquatic fowl, when it “proudly rows in state,” in the elegance of its attitudes, and the gracefulness of its motions. They are by far the largest of web-footed water-fowl, and their plumage throughout is of the purest white. The neck is not more remarkable for its extreme length than for its majestic personation of the line of beauty; its bill, slightly hooked at the point, of a red colour, edged with black, is all of an equal breadth, only higher than it is wide at the base, which is surmounted by a large protuberance of a deep black; the legs are black, with a tinge of red. The male is upwards of five feet in length, and more than eight in the expanse of its wings; its usual weight averages from twenty to twenty-five pounds, and sometimes it will even reach thirty: the female is smaller in size. In former days, swans as well as peacocks were served up at the tables of the great; but both have now disappeared from our feasts, and are retained only for their beauty, their flesh at best being dry and hard when the birds are full-grown; yet cygnets are still occasionally used, but certainly more for show than taste, as they are not at all comparable to a good barn-yard chicken. The swan is a long-lived bird, but it is disputed whether the traditionary accounts which allot it a term of more than a century be correct; about half that period may perhaps be its legitimate boundary. The swan lives almost entirely upon the water, and feeds chiefly upon

aquatic plants, yet varying its vegetable diet with frogs and insects. It is as harmless in its habits as it is lively in appearance; but if compelled to act on the defensive, then his bulk, weight, and great muscular power, render him a formidable combatant, from whose prowess the eagle himself is frequently compelled to seek safety in flight. The smaller water-fowl that frequent their domains are never disturbed, but should a rival be found near its retreat during the season of its amours, a sanguinary contest is the consequence, which seldom terminates until one of the lovers yield his pretensions or his life. The females build their nests, in the most solitary places at the water's edge, of twigs and reeds in the rudest manner, but line it comfortably with feathers plucked from their breasts: they lay six or eight greyish eggs, and sit for five weeks. When the young are hatched, both parents superintend their education, bearing them on their backs, and teaching them to swim, or placing them beneath their wings to shelter them from danger; nor do their attentions cease till next pairing time, when the young are set off to shift for themselves, and leave room for a new family. When swans were first domesticated it would not be easy to discover, but they were at one time so abundant, that it became doubtful whether any of that species were to be found in a wild state. They are, however, to be found on the large streams and lakes in almost every country of Europe, especially towards the East, and are far from being scarce in Siberia. Like most of the water-fowl, they are migratory, leaving the temperate parts of Europe in October, and returning in the beginning of March; and generally to their old abodes. But when the winter is not very severe, numbers remain, and find shelter about the dams or outlets of the rivers, where the waters do not freeze.

The WILD SWAN, or HOOPER, *C. ferus*, is rather more widely diffused than the other: on the north, skirting the borders of the arctic circle, and on the south, extending to

Egypt and Barbary; in America, they range from Hudson's Bay to Louisiana and the Carolinas. It is about the same size, and its plumage also is white; but it wants the protuberance at the bill, which is of a bright yellow colour at the base, and the legs are black or dusky. To these variations, which might mark a distinct species, are added material anatomical differences, which decide the matter. The ribs are twelve in the wild swan, and only eleven in the tame; and the windpipe, which in the latter passes directly from the neck into the cavity of the chest, has various convolutions in its progress before it reaches the same point in the former. From this different conformation it occurs, that the wild swan can emit some coarse and disagreeable sounds, while the tame is the mutest of all the feathered tribe; but although neither can astonish us by the divine cadence of its dying song, yet their rapidity of flight is truly astonishing. Speaking of this species, Hearne tells us, that "it is frequently necessary, in shooting at them, to take sight ten or twelve feet before their bills;" and gives as his opinion, "that in a brisk gale, and before the wind, they cannot fly at a less rate than a hundred miles an hour; but when flying across the wind or against it, they make but a slow progress." And in the same writer's estimation, "their flesh is excellent eating, and when roasted, is equal in flavour to young heifer beef, and the cygnets are very delicate." They arrive in Hudson's Bay in March, and are shot by the natives in great numbers at the falls and the rapids: in Iceland, they are hunted at moulting time by dogs, which run them down, seize them by the neck, and overset them. The female builds in rushes on the margins of lakes, or on an island in the centre, and lays from five to seven eggs, of an olive-green colour, and so big, that one of them is a sufficient meal for a moderate man, without bread or any other addition. Its habits do not materially differ from those of the tame swan.

The BLACK SWAN, *C. atratus*, which the ancients con-

sidered as rare a bird upon earth, as the moderns do an honest lawyer, has been discovered in great numbers in that receptacle for detected rogues, New South Wales, whence many individuals have been brought to England, "where they thrive equally well in confinement," Mr. Bennett tells us, "with the emus, kangaroos, and other Australian animals, insomuch that they can now scarcely be regarded as rarities even in this country." They are precisely similar in form to the others, but only rather smaller in size, and entirely black in the plumage. Their bill is of a bright-red colour, and has a slight protuberance; the under part greyish-white, and the legs and feet of a dull lead colour; in every other respect it corresponds with its well-known congeners.

The COMMON EIDER DUCK, or DUNTER GOOSE, *Somateria mollissima*, is in length about twenty-two inches, and weighs four pounds. Its bill, two and a half inches long, is of a dusky-green colour, as are its legs; its cheeks, back, and breast, are white, the breast with a reddish tinge; the nape of the neck pea-green; the wings shaded with brown; the belly and rump black. The female is less, with a reddish-brown plumage. They abound in Greenland, Iceland, and Norway, and are even not unfrequent in the isles of Scotland. The female lays from three to five eggs, pale greenish olive; and the most remarkable circumstance in this bird's history is the nest in which these are deposited. It is built of seaweeds, and lined with down plucked from her own bosom, to preserve the warmth necessary for hatching; this down, so light, expansive, and warm, forms a considerable article of commerce; and during breeding time, the natives of the countries where they breed, rob the nest two or three times of the down, which the female always replaces, till she becomes quite bare, and then the male furnishes his quota; one nest produces about half a pound of down, which is however greatly reduced in weight when it is cleaned. As long as the female is sitting, the male keeps watch, but sets

off as soon as the young hrood hurst the shell, and she, as soon as they are able to creep, takes them on her hack to the water-side, swims in a few yards with them, when she dives, and leaves them to their own resources. Their flesh, though of a fishy taste, is much liked by the Greenlanders, and their skin is made into warm clothing.— The GREY GOOSE, *Anser palustris*, has the whole upper part ash-grey; the hreast and belly white, clouded with grey; the bill and legs yellowish; claws white. They are natives of the northern and temperate parts of Europe, and reside and breed in the fen counties of England; they nestle in marshes, and have eight eggs, of a dirty-white. This species being permanently resident, was reclaimed at an early period, and is the stock of our domestic TAME GOOSE. Like all animals when taken under the charge of man, the goose exhibits a great variety both of size and colour; of the latter, the predominant is white, varying to grey. In rural economy, these birds are an object of considerable profit, and are reared for the sake of their flesh, quills, and feathers; the former is much relished in England, but why devoted to Christmas it is difficult to say, unless it be that the priests of the Romish church, excellent judges of good eating, had considered them in their prime at that sacred season, and introduced the practice. The numbers of geese sent to London for sale are enormous, droves of several thousand being no uncommon sight.

The CANADIAN GOOSE, *A. Canadensis*, is larger than the tame goose, and slenderer in its make. The hack and upper parts of the body are brown, with white spots; the head and neck black, with a conspicuous white patch on the throat and lower part of the cheeks; the bill is black and the feet lead coloured. It is not, however, confined to Canada, but extends its migrations from the southernmost borders of the United States to the most northern points that have been reached by man; and they are marked by

the swiftness of their flight, and the height to which they soar. —

“ Vainly the fowler's eye
Might mark thy distant flight, to do thee wrong ;
As darkly painted on the crimson sky
Thy figure floats along.

“ Seek'st thou the plashy brink,
Of weedy lake, or merge of river wide ;
Or where the rocking billows rise and sink
On the chafed ocean side ;

“ There is a Power, whose care
Teaches thy way along the pathless coast,
The desert and illimitable air,
Lone wandering, but not lost.

“ Thou'rt gone ! the abyss of heaven
Hath swallowed up thy form !”

If few, they fly in one line, but if numerous, in two, converging to a point like the letter Δ turned upside down, and they are always led by an old experienced gander. They make their appearance in Hudson's Bay in spring, going north, where great quantities are taken, and salted for a winter's store ; and on their return in winter, they are killed and frozen up for fresh provisions. They are easily domesticated, and readily pair with the common grey goose ; but their wings must be cut to prevent their absconding, for on the approach of spring they are always observed to become restless and uneasy, frequently looking up into the air, making attempts to fly away, and hailing every flock of their wild brethren that passes over their heads, who always acknowledge and return the salute.

The DUCK or MALLARD, *Anas boschas*, has a flat yellowish-bill ; the head and neck are of a fine rich green, ending in a white collar ; the general plumage is variegated white and brown ; darker on the back, and lighter on the belly ; the wing-covers white, purple, and black. It frames its nest of dry grass, lined with its own feathers and down, and lays from ten to eighteen bluish-white eggs. — The WILD DUCK, or rather the *Common Duck* in a wild state,

differs little from the tame, only the four middle tail feathers of the male are always curled at the point, and his colours are usually the same in all individuals, white; the tame shares the variety of other domesticated fowl. Both walk easily, with a waddling gait, but have considerable powers of flight. They feed on water-plants and other seeds; on fishes, reptiles, and insects, nor do they dislike a young frog or mouse, if not too big to manage. This species, the stock whence our common duck has sprung, are birds of passage, and in winter arrive in flocks in this country, where they take up their abode among large marshes or lakes, in the neighbourhood of woods; but they have suffered much from the progress of agricultural improvement, many of the fens and marshes where they used to breed in vast numbers being now drained. Their nests, formed of long grass, heath, or sticks, and finely lined with their own feathers, are usually built among heath or rushes, not far from the water; and they lay twelve or fourteen eggs before they sit. So soon as the young are extruded the shell, they are taken to the water, their natural element, by the mother, with great care, sometimes seated upon her back, or guided by her bill and between her feet. Instances are related of their having taken possession of the deserted nests of crows or magpies; and it is said that they have reared their rude fabrics upon trees, at a considerable distance from the ground.

OCEANIC MAMMALIA — *Cetacea*.

THE last order of Mammalia are those great sea-monsters that draw out the breast, who, although tenants of the vasty deep, yet breathe the air with true lungs, suckle their young, for whom they discover strong affection, have a double heart, and red warm blood. In other respects they are entirely suited to the element they inhabit: they have fins instead of fore-hands, and no hinder feet; their head is united to the trunk without any perceivable neck, and the trunk tapers gradually to the tail, which ends in a horizontal fin— which fin excepted, their external form is altogether that of fishes; the skin is naked, and beneath it is a layer of fatty substance (blubber), deepening from ten to twelve inches in different species,— elastic, to defend the internal organs against the pressure of the water—an almost complete non-conductor, to retain the vital heat, and prevent the gigantic creature from perishing by cold in the polar sea—and specifically light, to render its immense carcase more buoyant in the water. From this anomalous structure, we feel strongly inclined, with the older naturalists, to place the Whales at the head of the FINNY TRIBE; nor can we perceive the propriety of breaking down those boundary lines which the Great Creator himself has appointed, or mingling, in arbitrary arrangement, the beasts of the field, the fowls of the air, and the fish of the sea; and it does certainly appear most natural to keep separate the inhabitants of the earth, the air, and the ocean, while at the same time we do not overlook the characters which are common to any of the tribes, or to all.

This order is divided into two families:—I. The HERBIVOROUS, *Cetacea herbivora*, which feed on submarine plants, and have four cavities in the stomach, bearing some resem-

blance to the ruminating land animals. — The SEA-COW, genus *Manatus*, inhabits the seas that wash the coasts of South America and Western Africa, generally near the mouths of rivers. One only is recorded as having found its way to our shores, whose carcase was thrown up at New-haven, near Leith, 1785, about the harvest season, much disfigured, and in a putrid state. When full-grown, it extends from fifteen to twenty-eight feet. The head is rounded; the teeth consist of eight grinders above and below; the lips have strong mustachoes, and the mammæ are pectoral. Vestiges of nails are apparent on the edges of their fins, which they employ in carrying the young, and in creeping among the submarine meadows. As they raise the anterior part of the body vertically above the water, when seen from a distance they bear some resemblance to the human body, and are supposed to have originated the Tritons and Sirens of ancient days, and the maids of the ocean, the Mermaids of modern times.

The DUGONG, genus *Halicore*, *Illiger*, is a native of the Indian seas, in length from six to seven feet; the mouth is on the undermost part of the head, and besides flattened grinders, has two tusks on the incisive bone, covered with flesh; the tail terminates in a crescent-shaped fin. In clear water, it is seen browsing at a great depth on the green submarine plains, while moving along in a horizontal posture. It is esteemed delicate food.

II. PISCIVOROUS family, *Cetacea ordinaria*, the true Cetacea of Cuvier, which feed on fishes, and in this respect bear an analogy to the land carnivora. They have large heads (in many exceeding the length of the body), furnished with sharp teeth, but they swallow their food without chewing; their nostrils terminate in narrow *blow-holes* in the top of the head, through which they sometimes violently expel the air from their lungs before they reach the surface of the water, and cause those *jets d'eau* which seamen ob-

serve at a great distance. The sight and hearing are acute beneath the water; nor are they insensible to smell, as has been supposed, for they are driven off by bilge-water pumped from the hold of a vessel. The stomach has four, sometimes seven divisions, and several have a vertical fin on the back, of a tendonous substance, but unsupported by bone. The following are the most remarkable branches of this family.

The DOLPHINS, genus *Delphinus*, Linn., celebrated in ancient fable for its attachment to mankind, its amenity, and its love of music; in fact, however, it is cruel and voracious. Like the wolf, it hunts down its prey in troops; and it is said sometimes even to attack the whale, and make him leap out of the water. It has an oblong and nearly cylindrical body, with a slender acute snout; the teeth are numerous and conical, and its length is from eight to ten feet. It is met with in the warmer latitudes, and is the grand enemy of the flying-fish. When sporting in groups around the vessel, it presents a most brilliant spectacle. In dying, it exhibits a beautiful variety of colours; when

" Fleeting life escapes in sanguine rills,
 What radiant changes strike the astonish'd sight,
 What glowing hues of mingled shade and light!
 No equal beauties gild the lucid west,
 With parting beams all o'er profusely drest;
 No lovelier colours paint the vernal dawn,
 When orient dews impearl the enamell'd lawn."—FALCONER.

The COMMON PORPOISE, *Phocæna communis*, which differs only from the dolphin in having a shorter muzzle, is the smallest of the Cetacea, seldom reaching in length more than four or five feet. It is a native of our coasts, and may be seen in shoals in the mouths of our rivers, tumbling about with a rolling motion, now rising to the surface, and now sinking, and presenting to the spectators something of the appearance of a wheel. The flesh of this animal was formerly held in estimation; and Malcolm IV. granted to the monks of Dunfermline the right of fishing for them in



PORPOISE.



SEA UNICORN.





the Frith of Forth opposite the monastery, perhaps in order to regale themselves during Lent.

The NARWAL, *Monodon*, Linn., about sixteen feet long, and eight in circumference, is chiefly remarkable for a spiral tusk, peculiar to the males, projecting from the upper jaw in a line with the body, from six to ten feet in length, and hard as ivory; whence has arisen his secondary name of Sea Unicorn. He is swift, and has been known to pierce the side of a vessel, in which the horn has been afterwards found; and he is said to be a formidable enemy to the whale, whose blubber he sucks greedily. His usual food is fish and sepia. About a dozen are generally found to herd together in the polar seas, but solitary individuals have been caught on the British shores. In June 1648, one was cast ashore on the Isle of May, twenty-two feet long, of which the horn measured seven. Dr. Fleming received an account of another from Sir Joseph Banks, which was found at Frieston, near Boston in Lincolnshire, on 15th February 1800: "The animal, when found, had buried the whole of its body in the mud, of which the beach there is composed, and seemed safely and securely awaiting the return of the tide. A fisherman going to his boat, saw the horn, which was covered up, and trying to pull it out of the mud, raised the animal, who stirred himself hastily to secure his horn from the attack." This specimen was twenty-five feet in length, the horn about seven. There is sometimes the germ of a second horn, but it is seldom developed. The other Cetacea have the head of a third or one half the length of the whole body. Of these there are many genera, of which the following are the most remarkable.

The CACHALOTS, or SPERMACETI WHALES, *Physeter*, Linn., which appear chiefly on the American coast, in the waters bordering on the antarctic circle, in large herds, often amounting to more than a hundred, consisting generally of females, under the guidance of one male of enormous dimensions. Their head is extremely large, with a row

of teeth on the lower jaw, which are received into corresponding holes in the upper; the superior part of the head consists almost entirely of large cavities, filled with an oleaginous fluid, which becomes spermaceti when it cools, and for which they are chiefly sought, as they yield but little oil, which, however, is also mixed with spermaceti. From this animal is likewise obtained the aromatic called ambergris, formed in the intestines, and voided as feces. These are the giants of the deep, sometimes measuring one hundred feet; and their fierceness and voracity are equal to their size. They occasionally even attack and destroy the whalers. An interesting account of one such occurrence we extract from Messrs. Tyerman and Bennet's *Voyages in the South Seas*:* it is given nearly in Captain George Pollard's own language. "My first shipwreck was in open sea, on the 20th November 1820, near the equator, about 118° west longitude. The vessel, a South-Sea whaler, was called the *Essex*. On that day we were on the outlook for sperm whales, and had actually struck two, which the boats' crews were following to secure. I perceived a very large one (it might be eighty or ninety feet long) rushing with great swiftness through the water right towards the ship. We hoped that she would turn aside and dive under when she perceived such a bulk in her way. But no! the animal came full force against our stern-post. Had any quarter less firm been struck, the vessel must have burst; as it was, every plank and timber trembled throughout her whole bulk. The whale, as though hurt by a severe and unexpected concussion, shook its enormous head, and sheered off to so considerable a distance, that for some time we had lost sight of her from our starboard quarter; of which we were very glad, hoping that the worst was over. Nearly an hour afterwards, we saw the same fish (we had no doubt of this from her size and the direction in which she came)

* A deputation from the London Missionary Society. The work is drawn up by James Montgomery from the original documents.

making again towards us. We were at once aware of our danger, but escape was impossible. She dashed her head this time against the ship's side, and so broke it in, that the vessel filled rapidly, and soon became waterlogged. At the second shock, expecting her to go down, we lowered our three boats with the utmost expedition, and all hands (twenty in the whole) got into them, seven and seven, and six. In a little while, as she did not sink, we ventured on board again, and by scuttling the deck, were enabled to get some biscuit, beef, water, rum, two sextants, a quadrant, and two compasses. These, together with some rigging, a few muskets, powder, &c., we brought away, and dividing the stores among our three small crews, rigged the boats as well as we could. Then, instead of pushing away for some port, so amazed and bewildered were we, that we continued sitting in our places, gazing upon the ship as though she had been an object of the tenderest affection. Our eyes could not leave her, till, at the end of many hours, she gave a slight reel, and down she sank! No words can tell our feelings. We looked at each other—we looked at the place where she had so lately been afloat—and we did not cease to look till the terrible conviction of our abandoned and perilous situation roused us to exertion, if deliverance were yet possible!" Several of these animals are mentioned as having been caught on the British coasts, but of different species.

The GREAT-HEADED CACHALOT, with teeth bent, and acute summits. A male of this species, fifty-two feet long, was caught at Limekilns, in the Forth, February 1689, and is described by Sibbald; and Mr. Low states, that they frequently come ashore in Orkney. One was caught at Hoy, fifty feet long.—The BLUNT-HEADED CACHALOT; snout truncated, and conical teeth. An individual of this species ran ashore upon Cramond Island, in the Forth, December 22, 1769, fifty-four feet long, and its greatest circumference behind the eyes, thirty; the head was nearly one half of

the whole animal; the tail was fourteen feet broad; the lower jaw was eleven feet long, with twenty-three teeth on each side, each two inches long, and pointing a little outward; the upper jaw projected five feet over the lower, with a cavity for its reception, blunt, nine feet high. But the various species of the cachalots are by no means fully ascertained, and are supposed to be much more numerous than was formerly imagined.

The WHALES, *Balena*, were in former times represented as much exceeding an hundred feet in length. Whether this was an exaggeration, or that these animals, being undisturbed and allowed to attain their full growth, did actually reach that size, we cannot determine; but since they have been so eagerly sought after for their oil, and such havoc made among them, they have retreated almost entirely to the arctic circle, their numbers have diminished, and there are now scarcely any of the GREAT GREENLAND WHALE, *B. mysticetus*, to be found exceeding sixty feet in length and forty in circumference, weighing about seventy tons, of which thirty is fat or blubber. They differ from the cachalots in having no teeth in the upper jaw, their place being supplied by transverse laminæ, composed of a kind of fibrous horn, called whalebone or baleen, fringed at the edges, which serve to retain the worms, mollusca, and small sea insects. on which these huge monsters feed, their organs not being fitted to swallow that kind of food which we might suppose to be proportioned to their bulk. The lower jaw, equally devoid of teeth and laminæ, lodges a very thick and fleshy tongue, and when shut, embraces the internal part of the upper, so as to make a kind of rim for the strainer, which the filaments form. When open, the mouth is capable of receiving a ship's jolly boat, with her crew, in the cavity. The whale has no perceptible ear, only a small aperture covered by the skin; the eyes, too, are small, yet the sense of seeing is acute. But his chief power lies in his horizontal tail, which urges his speed through the sea, or avenges his quarrel

on his human aggressors ; his fins or swimming paws, merely balancing and directing his motions like a helm. When he lashes the water with this mighty instrument, the sound is like thunder, and the ocean boils, and one stroke will throw a boat with all its crew into the air ; yet he is a mild and somewhat timid animal, avoiding rather than seeking an encounter even with those whose strength is immeasurably inferior, though, when put upon his defence, his efforts often are tremendous. His most annoying assailants, however, are those whose minuteness protects them from his unwieldy exertions. He sometimes with a spring will throw himself fairly out of the water, to the admiration of those who can behold his horrid gambols at a secure distance. The female goes nine months with young, and seldom has more than one at a time, which she nurses with the most tender care, and when it is attacked, will rather die with than forsake it. Taking advantage of this instinctive attachment, the fishers attack the cub, and the mother instantly comes to its aid, joins it at the surface of the water whenever it has occasion to rise for respiration, encourages it to swim off, and assists its flight by taking it under her fin. " In June 1811," says Captain Scoresby, " one of my harpooners struck a sucker, with the hope of its leading to the capture of the mother. Presently she arose close by the ' fast boat,' and seizing the young one, dragged about a hundred fathoms of line out of the boat with remarkable force and velocity. Again she arose to the surface, darted furiously to and fro, frequently stopped short or suddenly changed her direction, and gave every possible intimation of extreme agony. For a length of time she continued thus to act, though closely pursued by the boats ; and inspired with courage and resolution by her concern for her offspring, seemed regardless of the danger which surrounded her ; allowed the boats to approach her, was struck with three different harpoons, nor ever made any attempt to escape." The whale is said to attain his full growth in about twenty-five years ; but how long he lives, is

not known. Nearly allied to the above are several species, which have been ranged by Lacepede under another genus, *Balanoptera*; they are distinguished by having a dorsal fin which the others want, and by a greater length and slenderness of body; but their oil is of little value comparatively, and small in quantity, while they are ferocious and dangerous; they are, therefore, rather avoided by the fishers. They commit great depredations on the herring shoals. Among these are the *Fin-fish* and the *Rorqual*, which have occasionally been seen on our own coasts.

FISHES — *Pisces*.

HAVING traversed the earth and the air, let us now proceed to the ocean, whose inhabitants, breathing in a dense fluid, which would prove destructive to any other species of creature, and dwelling in deeps which no human eye ever penetrated, present to us animals whose habits we are but little acquainted with, and of which we do not possess the means for obtaining a much more extensive knowledge. The first thing that strikes us in fishes is the admirable adaptation of their structure for the element in which they are destined to move. For respiring through water, they have gills placed on each side of the head, connected with the cavity of the mouth, through which the water the fish swallows escapes, while the air which it contains necessary for sustaining life, is separated and communicated to the blood. In a great number of species there is an air-bladder on the stomach, which, as it is extended or compressed, varies the specific gravity of the body, and causes it to rise or descend; in those which keep near the bottom, as the flounder, this is wanting. For progression they have fins,

named from their situation. The pectoral, are those at a little distance behind the opening of the gills, which also serve to balance the fish; the ventral, under the belly, towards the lower part; the dorsal, on the ridge of the back, which likewise contribute to the preservation of its equilibrium, but are wanting in those which swim near the bottom, as the flounder; the anal, are nearer the tail, and on the inferior side, or between it and the vent; and the caudal, are those on the tail itself, where the chief impelling power resides. It was long supposed that the senses of fishes were very obtuse; but experience and observation have shewn, that they see, hear, smell, and feel, as well as either quadrupeds or birds. They are generally oviparous, and their fecundity is so amazing, that were it not counterbalanced by their voracity, one species preying upon another, and often even upon their own, the waters that surround or intersect our globe would soon be too small to contain them.

Fishes have been systematically classified under two grand divisions:—1. *Cartilaginous*—those that have cartilages, or gristly substances instead of bones; 2. *Spinous*—those which have true bones; or Fishes, properly so called. To enumerate all the various genera and species, would be only to insert an uninteresting catalogue of names; we therefore prefer giving an account of the more remarkable, and such as possess the distinguishing characters of the tribes and sections to which they belong. Commencing with the Cartilaginous, we shall follow the old and the most natural arrangement, and assign the first place to the rapacious, which are analogous among the fishes to the carnivorous among the beasts.

The SHARKS, genus *Squalus*, are a numerous and terrific tribe, the fiercest and most ravenous of all the inhabitants of the deep; among which the WHITE SHARK, *Sq. carcharias*, deserves the pre-eminence in magnitude and voracity, averaging at least twenty-five feet in length. It has a large flattish head, furnished with huge goggle

eyes, capable of turning and seeing in all directions; its enormous mouth is armed with several rows of sharp-pointed teeth, which lie flat when the shark, is at rest, but bristle up when he prepares to seize his prey, and inflict an instantaneous death from a hundred wounds; the rows are said to indicate the age of the fish. It inhabits the ocean, at a great distance from land, and has been taken with an entire human subject in its belly, which has led some fanciful writers to suppose it the fish that swallowed Jonah. About the middle of last century, however, an animal of this kind was exhibited at Port-Royal, Jamaica, which contained the body of an unfortunate hoy in full dress. When the shark seizes his prey, he is obliged to turn on one side, as his upper jaw projects considerably above the lower, which occasions a little delay, and sometimes allows his intended victim to escape. It is of a brownish colour above, and white below; and has large triangular pectoral fins, and a powerful tail; its skin is rough, and is used for polishing wood and ivory. In swimming it is reckoned among the swiftest of the fishes; he can also dart in an instant from the bottom of the deepest water, and make a snatch at the heedless swimmer, who, if European, not unfrequently in warm climates pays for his sport with a limb or his life; but the African youth, better trained to the water, will even venture to attack the monster in his own element, and come off victorious. Vessels crowded with human beings are usually attended by shoals of sharks, who smell out the fated cargo, and riot on the offals of those horrible dungeons, the caverns of a slave-ship, numbers of whom are still permitted to sail the ocean with impunity, while the less criminal pirate is devoted to the gibbet.

These fish are rare in the British seas, but are sometimes found on the coast near Cornwall. Sailors, who delight to catch and torture the shark, usually bait a large hook with a piece of beef or pork, which is fastened to a strong rope, strengthened near the hook with an iron chain, and cast into the sea. When the voracious animal observes it, he at first

views it with suspicion, and swims round and round it for some time till at last his appetite gets the better of his caution, and he greedily swallows hook and all. When he finds himself caught, he then commences a most terrible struggle to get free, but in vain. The sailors indulge him, perhaps, with a little more rope, and enjoy his fruitless efforts till he exhaust himself; then dragging his head out of water, and casting the noose of another rope over his tail, haul him on board and dispatch him. This is usually done by beating him on the head with a handspoke. But he is exceedingly tenacious of life, and dangerous even in the agonies of death: and such is his muscular vitality, that pieces of an inch diameter will vibrate for a considerable time after being cut from his body.

As companions to the white shark, in the warmer latitudes, we have two little fishes, whose attentions, however, proceed from very opposite motives: — The REMORA, or SUCKING-FISH, *Echeneis remora*, found in the Atlantic and Pacific Oceans, and the Mediterranean Sea, often taken adhering to the shark, is about a foot or a foot and a half long, shaped somewhat like a herring in the body, but the head is thick, flat, and oval on the crown, intersected with ridges, which, when inflated, enable it to stick to any substance; and its name originated from an idea the ancients entertained, that it possessed the power of retarding a ship's progress, as it was found sometimes sticking to their sides. It is said, however, to occasion the death of the shark, by draining away its moisture. The PILOT-FISH, on the other hand, is the friend of the shark, around which it swims in shoals (as has been alleged, but not established) for the purpose of feeding on what the other leaves. It has, however, been considered as an ascertained fact that it guides the monster to its prey; for M. Geoffrey, professor of natural history in the Museum at Paris, when near Malta, in 1798, saw two of them lead a shark to a piece of bacon which a seaman had let down with a rope and hook; but as we know that the shark generally needs no direction on

such occasions, the former might be considered the most probable supposition, were it not equally well known that that animal commonly gorges its prey entire. This species, which frequents the same seas as the former, is about the same size; has a compressed head, a long body, crossed with dark bands: a small mouth, with small teeth on the jaws, a curved row on the palate, and all along the tongue; and four spines on the back.

The BLUE SHARK, six feet long, has a smooth skin, blue on the back, and white on the belly, with a pointed snout, and is not uncommon on the coast of Cornwall during the pilchard season. It is this species of which it is told, that the young, when pursued, take refuge in the belly of the mother by swimming down her mouth. — The HAMMER-HEADED SHARK or BALANCE FISH, *Zygæna*, takes its name from the form of its head, of which there is no other example in the animal kingdom. This strange member is placed transversely to the body, exactly like the head of a hammer, with an eye on each end; on the front are two nostrils; the mouth is large, in the under part of the head, filled with four rows of extremely sharp teeth; the tail consists of two fins, one longer than the other, and the fish grows to the length of six feet; grey on the back, and white on the belly. It swims the Atlantic, the Mediterranean, and Indian seas, and is reckoned even more voracious than the white shark. — The ANGEL SHARK, *Squatina Sq.* or MONK FISH, has large pectoral fins resembling wings (whence it derives its first name), and eyes, deep sunk into the head, whose malevolent expression is said to have obtained for it the second. It measures six to eight feet long, and weighs about an hundred pounds; the head is large, with formidable teeth, broad at the base, and slender and sharp at the point. It is gregarious, and feeds chiefly on the smaller flat fishes, such as flounders, but is extremely fierce, and dangerous to the fishermen among whose nets it happens to get entangled. The skin is rough, with a line of pointed prickles along the ridge of the back. — The BASKING SHARK, *Squalus maxi-*

mus, has the form of the shark, but nothing of its voracity, though it exceeds it in size, sometimes measuring more than thirty-six feet in length; and the liver in a full-grown fish yielding from eight to twelve barrels of very fine oil. It is bluish above, and white below, with a skin smooth when the hand passes over it from head to tail, but rough like a file in the opposite direction. It inhabits the northern ocean, where it is seen lying sluggishly basking on the surface, and it is said to be "so tame as to suffer itself to be approached and stroked." It feeds entirely on sea plants and marine insects, and is viviparous. When struck with a harpoon, it usually descends to the bottom, and is somewhat difficult to be taken.

The DOG-FISH, *Squalus acanthias*, to be met with in almost every sea, has much of the form, and more than the fierce voraciousness of the shark, for they will venture, it is affirmed, to throw themselves upon persons walking near the edge of the deep, or not swimming very far from the shore; however this may be, their depredations upon the haddocks and cod are indisputable, flocks of them being always near when these are abundant. It is of a brownish colour, with red or black spots, and is compressed at both extremities. Their flesh is harsh and disagreeable, and seldom eaten; their skin is formed into shagreen, or when dried is used for polishing. — The COMMON DOG-FISH, or SEA-DOG, is about three feet long, with a protruded blunt snout, of a greyish-brown colour on the back, and white on the belly. It abounds on the Scottish coast, and is often taken in the herring-nets. Its flesh is not unpalatable, and is frequently salted and dried in the northern isles for winter food. A great deal of oil is obtained from this species.

Along with these, some naturalists have classed the SAW-FISH, *Squalus pristis*, a long fish, reaching even fifteen feet; whose body, being flattened in front, is thought to link it also with the Ray kind, and thus connect the cylindrical and the flat families; but its peculiar character consists in

the singular instrument formed by its long depressed snout, resembling the blade of a two-handed sword, set on each side with stout trenchant and pointed spines, like teeth, presenting the appearance of a double edged saw; and forming altogether a most powerful weapon, with which it attacks the largest whales.

The RAYS, *Raia*, are broad horizontally flattened fish, all very similar in appearance; of which the SKATE, *R. batis*, forms a well-known familiar specimen. Were it not so common, the skate's appearance would perhaps excite considerable curiosity, as, from the head not being distinct from the body, it might seem to be without that necessary appurtenance. The eyes are situated on the upper surface; the mouth and gills below; the tail is long, and set with three rows of spines or prickles, the points of the two sides directed forwards; the colour of the skin, which is rough, is brown on the back, greyish, with spots, on the belly. The flesh is white, firm, and excellent. The eggs of the skate are often found on the beach after a storm, in a square bag, of a consistence like thin parchment, and of a maroon colour, with two shoots at each end, styled by children a sea-purse; of these the female will produce from two to three hundred. The size of this species, which is common on all our coasts, varies greatly, and sometimes reaches the weight of two hundred pounds, but when so large, acquires a harsh and disagreeable flavour. The hulk of some, in warmer climates, has been stated so high as thirteen feet broad and two feet thick; and it is supposed that an exaggerated report of some enormous monster of the Ray kind has given rise to the *Kraken* of Norway, whose measurement is reckoned by miles, and whose motions are said to agitate the deep for many a distant league. — The WHITE or FRIAR SKATE, also not rare on our coasts, sometimes exceeds six feet in length, and weighs nearly five hundred pounds; its skin is smooth, and its colour, brown above and white beneath; it has a short tail, with three rows of spines. — The THORNBACK, *R. clavata*, has a shagreened skin, freckled



TORPEDO.



SEA PORCUPINE.



SWORD-FISH.



above and white below; besides a row of strong prickles down the back, and three rows on the tail, the whole body above is irregularly spotted with them, and it likewise has a few beneath. This fish is very common in our seas, but its flesh is reckoned inferior to the skate. The young, or *Maiden Skate*, are generally spotted white, smoother on the skin, and more delicate in the flesh.

The COMMON TRYGON, STING RAY, or FIRE-FLARE, *Trygon pastinacea*, a fish between two and three feet long, rounded in the body, and thick in the middle, possesses a formidable weapon, in a sharp pointed saw-teethed spine, in length about five inches, near the base of its tail, which renders it a more disagreeable visitant to the fisherman than even the torpedo, as the wounds which it inflicts are both severe and dangerous. Its spine is fixed in the tail, in the same manner as a quill is into the tail of a fowl; and is shed annually. To the ancient fishermen, this instrument was an object of the greatest terror, and has been made the subject of the most tremendous fables, which the ancient naturalists have repeated without investigation. Trees struck by it were said instantly to lose their verdure; and even rocks themselves were not insensible to the subtle poison it contained! Its real malignity, however, appears to have been, that in very early times it was used as heads for spears and darts, before iron was introduced.

The TORPEDO, or CRAMP FISH, *R. torpedo*, is the most extraordinary animal of this genus, on account of the faculty it possesses of communicating an electric shock to its assailants, or to its prey, and is thus furnished with the means of defence and sustenance. The shock communicated to man by the touch of the torpedo is often attended with a sudden sickness at the stomach, a general tremor, or kind of convulsion, and sometimes a total suspension of the faculties of the mind. But how these effects are produced—how the galvanic fluid which causes them, is collected in the fish,—are inquiries which have not yet been answered; and in this, as in thousands of other cases,

we see certain causes producing certain effects; but why they do so we cannot tell,—all we can say is, so the Almighty has ordained it to be. When the fish is dead, this power ceases, and it may be handled or eaten with the greatest security. The body of this fish, including the head, is somewhat circular, about two feet diameter, and thicker than any other ray. The medium weight is about twenty pounds, but some are so large as to weigh between seventy and eighty. The central fins form at each side nearly a quarter of the circle, and the two dorsal are near the origin of the tail, which is short, and terminates with a broad and abrupt caudal; the skin is smooth, usually brown above and white beneath; the eyes are diminutive, the mouth small, and the teeth minute. This fish is sometimes caught on the French and English coasts.

The SEA LAMPREY, or LAMPREY EEL, *Petromyzon marinus*, is in length between two and three feet; the head is more slender than the body, which also decreases suddenly from the first dorsal fin to the tail. It is marked with black, brown, and yellow. This creature adheres so firmly to stones with the mouth, that it is with difficulty separated; and when lifted, will bring along with it a substance four times its weight. The sucker by means of which this is done, is a narrow border surrounding the lips, consisting of an outer row of conical papillæ, and several inner rows of smaller risings. The gill-openings are seven on each side, and these, by emptying the throat of air, give the eel that power of suction which is so remarkable. It has a hole on the top of the head, through which it spouts water like the whale. The lamprey has its ordinary residence in the sea, but enters the large rivers during the spring months for the purpose of spawning. It is esteemed a delicious dish: but delicacies are sometimes dangerous; Henry I. of England got his death from eating too freely of lampreys, of which he was very fond. The fish are reckoned best in the months of March, April, and May, before they have spawned. For spawning, they make holes in the gravelly bottoms of rivers

(removing and throwing out stones of considerable size by their sucking prowess, *i. e.* the power with which sucking invests them; as we would say muscular power, or nervous energy), in which the female deposits her eggs, and continues near the place till the young are brought forth, where she is sometimes seen sporting with her whole family before she conducts them in triumph to the ocean. There is a smaller species, known as the RIVER LAMPREY, or NINE-EYED EEL, *P. fluviatilis*, of a dusky blue above, and silvery beneath, not exceeding nine inches in length. This species enters the rivers in the beginning of the year, spawns in March or April, and about Midsummer returns again to the ocean.

The STURGEON, *Acipenser Sturio*, contrary to the usual rule, though one of the largest, is one of the most delicious of fishes, reaching ordinarily eighteen feet in length, and weighing five hundred pounds; and although completely armed from head to tail, is one of the most harmless. Its shape is pentagonal, and it has five rows of large bony tubercles; one along the back, from the crown to the tail, another on each side of the body, and the same on each margin of the belly: the rest of the skin is rough. The snout is long and conical, and has tendrils near the tip; the mouth is circular, the eyes are small, and the nostrils double. Its colour is grey above, and white below. The sturgeon inhabits the ocean, but betakes itself to the larger rivers to spawn. In the Rhine, the Danube, and the Volga, it is very plentiful, and is sometimes caught in the salmon-nets of our own country. It is also found in the rivers of North America. They subsist chiefly on insects and marine plants, which they find at the bottom of the water, where they mostly resort, floundering among the mud. So prolific is this fish, that the females frequently contain a bushel of spawn each; and Leuwenhoeck found in the roe of one of them one hundred and fifty thousand million of eggs. Strong in the water, yet no sooner does it get entangled, than it becomes spiritless, and suffers itself easily to be dragged on shore.

In the German and Russian waters, the sturgeon fishery is extensively carried on, and, pickled or salted, it is sent all over Europe. Caviare, made from the roe, is in great request on the Continent, but is not now much used in Great Britain.—The BELUGA, *A. huso*, is still larger, sometimes attaining the length of twenty-four feet: it is of a black colour above, and yellow below. This species is chiefly valuable for the isinglass which it produces, and which has obtained for it the name also of the *Isinglass-Fish*. This commodity, so useful in the arts, is manufactured from the skin, entrails, fins, and tail of the fish, which are boiled to a jelly, and then cooled upon plates, and when sufficiently dry, is cut and rolled into the form in which it is brought to the market.

The TOAD-FISH, *Lophius piscatorius*, or FISHING-FROG, an ugly, strange-looking animal, called also the Sea-Devil, grows sometimes the length of seven feet; resembling in appearance an enormous tadpole, its head being much larger than its whole body, with a mouth sometimes a yard wide, and the under jaw longer than the upper. The fishermen, however, have in general a great regard for this ugly thing, notwithstanding the name they give it, for it is an enemy to the voracious dog-fish, whose carcasses are often found in its stomach; they therefore, whenever they take it alive, set it at liberty. Immediately above the nose, it has long filaments rising from the head, which it uses as fishing-lines. Lying concealed among rocks, stones, or mud, these float like small worms upon the water, and the lesser fry, induced by hunger, seize the bait, nor discover the deceit till they are sucked in and devoured by their invisible tempter. A specimen, about three feet and a half long, was exhibited, in the month of May 1812, for several days at the foot of Blackfriar's Bridge, London, by the fishermen, who had caught it below the river, of which one peculiarity was marked: its ventral fins were shaped exactly like feet, with divided toes, whose use was supposed to be that of opening the ooze at the bottom of the sea, where this

gluttonous monster conceals himself when he lurks for those he is seeking to devour. M. Renau has asserted, that he knew a species of this kind, *Lophius*, which walked about the house like a dog.—*Nat. Lib. Icht.* vol. i. p. 68.

The SEA-PORCUPINE, *Ostracion*, like the land animal from whence it takes its name, is covered over with long spines or prickles, which it has the power of erecting at pleasure; and it has an air-bag within, which, when angry, it inflates, and presents the form of a large ball armed at all points, and not to be touched with impunity. When at rest, it appears flat and harmless, and differs in size from seven or eight inches to upwards of two feet. The hack is of a bluish colour, the sides and belly are white, the whole interspersed with light and dark brown spots. It is found in the Indian Ocean, and on the Coast of Guinea.—The PIPE-FISH, *Syngnathus*, *Linn.*, or SEA-ADDER, found in the Orkney Islands, under stones near low-water mark, does not exceed a swan-quill in thickness, and is from seven inches to nearly two feet in length. It is covered with hard radiated scales, and is brown-spotted on the hack, and whitish on the belly; its snout is smaller than its body, and bent upwards at the end; the breathing-hole at the nape. In the reproduction of these fishes, there is this peculiarity: the eggs slip into a pouch formed by an inflation of the skin under the abdomen, and are hatched here; when the fry are mature, the pouch splits spontaneously for their passage.

The SEA-HORSE, *Hippocampus*, which belongs to this class, and seldom exceeds ten or twelve inches in length, has received its imposing name from a fancied resemblance its little head bears to the profile of that noble animal, and its dorsal fin, which runs along from the head to the tail, bears to a mane. It is of a brown colour, variegated above, on the fore part with white and black streaks, and behind with dots. It is compressed sideways; and when alive is straight, but when dead, it assumes various curves, most frequently curled up in the figure of the letter S, when its

head is seen in its supposed shape. These three last, although joined by Linnæus to the cartilaginous fishes, have by later ichthyologists been assigned to the order of

SPINOUS, or OSSEOUS, or BONY, or TRUE FISHES.

We commence with a fish in shape like the lamprey, but darker in colour (generally deep olive above), and not so clumsy, being nearly cylindrical in the body, with a smooth depressed head. — The COMMON EEL, *Muræna anguilla*, abounds in our rivers, lakes, and estuaries, and varies in length from one foot to three; its weight also varies—some, it is said, having been caught above twenty pounds. Its head is depressed, and the under jaw the longest; the gill-openings are under the pectoral fins; it wants the ventral fins, but those of the tail, back, and anal, are continuous; the general colour is a dark olive-brown above, whitish on the belly. In a variety of this species, called the SILVER EEL, the belly and sides are silvery, and sub-translucent. It is a long-lived animal, and very tenacious of life, even continuing to writhe some time after undergoing the horrible process of flaying. Stewart says, “It is viviparous, and brings forth its young alive, though eggs are not unfrequently found in the bodies of the female.” Fleming says, “It spawns in the sea, for which purpose it leaves the lakes and rivers, descending from August to November. The young begin to appear on the shore in March, April, or May, and proceed in myriads towards the mouths of rivers for the purpose of ascending to the lakes and marshes. In their ascent, where eel fisheries are of value, the young are assisted in surmounting obstacles, such as mill-dams or cascades, by straw ropes so placed that the young eels can twist themselves round, and reach the summit. It migrates in greatest numbers in dark stormy nights.”—*Stat. Acc.* vol. xvi. p. 388. Nor are its motions confined alone to the water; it is known to quit that element, and wander along the meadows, not only for

change of habitation, but also for the sake of prey, feeding on the snails and worms it finds in its passage. Though the eel be a foul feeder, yet its flesh is not unwholesome, and is much relished by some on account of its fatness; but it used in Scotland to be held in detestation, on account of its resemblance to the serpent, whose representative it is in the waters, grovelling among mud, where it continues in a state of torpidity during winter.—The CONGER EEL, *M. Conger*, is much superior in size to the common eel, and may be distinguished by the margins of the dorsal fin, which commences nearer the head than in the common eel, and of the anal, which are always black; it has, besides, a broad white line dividing the upper and lower surface; and the upper jaw is the longest. In length it reaches more than five feet, and in weight exceeds one hundred and thirty pounds. It resides always in the sea, and is chiefly found where there is a rocky bottom. It is exceedingly voracious, preying on other fish, crabs, and dead carcases. At Yarmouth, in the year 1808, one was taken of such a size and strength, that it knocked down one of the fishermen before it could be secured. No fish is more diffused than the eel: it is found in every climate and in every sea; the numerous varieties, however, agree in their common features with those just mentioned, and therefore need no enumeration; but there is one so extraordinary, that it requires a more particular notice.

The ELECTRIC EEL, *Gymnotus electricus*. Of this tribe there are several species, of which the first was discovered by Dr. Richer in 1677; but the most accurately described is that noticed by Humboldt, whose account we extract as an interesting specimen of the whole. It is a native of South America, and found in its fresh waters. The size is from five to six feet in length; the colour an olive-green, reddish-yellow on the head; across the body there are several annular divisions, by which it can contract or dilate itself at

pleasure. The electric power also is dependent on the will of the animal, and it is exerted at a distance both to annoy and to defend; its prey is paralysed by the shock, and even the alligator is stunned before he can touch them. The Baron wished to procure some specimens, and how he attained his object we give in his own words—"The Indians told us they would fish with horses. We found it difficult to form an idea of this method of fishing; but we soon saw our guides return from the savannah, which they had been scouring for wild horses and mules. They brought about thirty with them, which they forced to enter the pool. The extraordinary noise caused by the horses' hoofs makes the fish issue from the sand, and incites them to combat. These yellowish and livid eels, resembling large aquatic serpents, swim on the surface of the water, and crowd under the bellies of the horses and mules. A contest between animals of so different organization furnishes a very striking spectacle. The Indians, provided with harpoons and long slender reeds, surround the pool closely, and some climb upon the trees, the branches of which extend horizontally over the surface of the water. By their wild cries and the length of their reeds, they prevent the horses from running away and reaching the bank of the pool. The eels, stunned by the noise, defend themselves by the repeated discharge of their electric batteries. During a long time they seemed to prove victorious. Several horses sunk beneath the violence of their invisible strokes, which they receive on all sides, in organs the most essential to life; and, stunned by the force and frequency of the blows, disappear under water. Others, panting, with mane erect and haggard eyes expressing anguish, rouse themselves, and endeavour to flee from the storm by which they are overtaken. They are driven back by the Indians into the middle of the water; but a small number succeed in eluding the active vigilance of the fishermen. These regain the shore, stumbling at every step, and stretch themselves on the sand, exhausted

with fatigue, and their limbs benumbed by the electric strokes of the gymnoti. In less than five minutes, two horses were drowned. The eel being five feet long, and pressing itself against the belly of the horses, makes a discharge along the whole extent of its electric organ. It attacks at once the heart, the intestines, and the plexus of the abdominal nerves. We had little doubt the fishing would terminate by killing successively all the animals engaged; but by degrees the impetuosity of this unequal contest diminished, and the wearied gymnoti dispersed. They require a long rest and abundant nourishment to repair what they have lost of galvanic force; and in a few minutes we had five eels, the greater part of which were only slightly wounded."

The SEA-WOLF, *Anarrhichas lupus*, called in Scotland the Sea-Cat, is one of the few fish that have incisors, *i. e.* fore teeth, and grinders. It is frequent in the German Ocean, and varies in length from three to seven feet: on the Scottish coasts, in the more northern latitudes, it is said even to extend to fifteen. It is of a blackish-grey colour above; beneath, yellowish, with irregular, waved, transverse bands of a darker colour; the head is large and blunt, round and slender. In general, it prefers the deep seas, but in spring approaches the shore; and in May and June deposits its ova on the sea plants. It subsists chiefly on shell-fish, easily crushing them with its teeth, which are so strong as to leave an impression on very hard substances. When boiled, it constitutes excellent food. It is valuable to the Icelanders, who, besides salting its flesh, employ the skin as shagreen, and the gall as soap.

The SWORD-FISH, *Xiphias gladius*, although occasionally caught in our waters, belongs more properly to the Mediterranean Sea and Southern Ocean. It is among the largest of European fishes, being in length of body fifteen feet, with a snout resembling the blade of a sword, about three. With this formidable weapon it attacks whales, and two

will join to torment their huge opponent, who can only defend himself with his tail, one blow of which would soon settle the dispute; but the sword-fish is one of the fastest swimmers, and by its agility literally cuts up its adversary, whose last refuge is flight. But it is not without its own tormentors: a parasitic crustaceous animal penetrates its skin, and sometimes renders it so furious, that it dashes itself on the shore. The body of the xiphias is conical in form, dusky on the back, and white on the belly; the mouth is large, but without teeth; the dorsal fin rises abruptly behind the gills, and then becomes low, till towards the tail, when it again rises; the tail fin is strongly forked on each side of the body. It is highly esteemed by the Italians, who fish for it in the Bay of Naples and off the coast of Sicily, and reckon it equal to the sturgeon. In the British Museum there is the plank of a vessel, through which one of these fish had impelled the whole length of its sword, where it stuck, and remains embedded. The beak of another penetrated through the sheathing and timber of the Leopard man-of-war more than a foot and a half, and was broken off by the shock. The force the fish had exerted may be calculated from the fact, that eight or nine strokes of a hammer weighing a quarter of a hundred weight would be required in order to drive an iron pin to the same depth into wood.

Jugular Fishes.—The GEMMEOUS DRAGONET, *Callionymus lyra*, is characterized by having the upper lip doubled, the eyes situated near each other, two breathing apertures in the hind part of the head, the body without scales, and the first ray of the first dorsal fin as long as the body. It grows to twelve or fourteen inches long. When newly taken, the colours are extremely brilliant, a rich cerulean blue, mixed with yellow and white. Its flesh is firm, white and esculent. It is not uncommon in the British seas, and is often found in the stomach of the cod.

The WEAVER, *Trachinus draco*, is of a yellowish colour above, silvery beneath, with two or three longitudinal, and numerous transverse lines on the sides. In length it is about a foot; has a straight back, armed with spines, and a prominent belly. It approaches the shore in the month of June, to deposit its spawn, where it buries itself in the sand, leaving only its nose out; and when trode upon, strikes forcibly with its spines, inflicting wounds which cause both pain and inflammation.

The COD-FISH, *Gadus*, *Linn.*, constitute a great family, perhaps the most valuable to man among all the ocean-tribes. They inhabit cold or temperate seas, and form the object of our most important fisheries. Their flesh is white, easily separated into layers, and whether fresh or salted, is esteemed wholesome and sapid. — The COMMON COD, *G. morhua*, averages, when full grown, about three feet in length; the colour is a dusky olive on the back and sides, freckled with yellow; the belly white; the lateral line runs straight from the gills to the tail, curving a little at the abdomen; the head is broad and fleshy, and when newly caught is esteemed a delicious dish; all the fins are soft; the tail nearly even. This fish resorts in immense shoals to the banks of Newfoundland, and the other sand-banks that lie off the coasts of Cape Breton, Nova Scotia, and New England; these appear to be the flattened tops of submarine mountain ridges, extending more than five hundred miles, and surrounded by a deeper sea, where the cod find a sufficiency of food, consisting of worms, crustaceous and other fishes. Here the British have extensive fisheries, which some years ago employed upwards of fifteen thousand seamen. To supply the enormous consumpt, the cod is prolific beyond even the usual fertility of fish. Leuwenhoeck found that one individual will deposit in one season between nine and ten millions of eggs. In 1790, a cod-fish was sold in Workington market, two feet nine inches

long, weighing fifteen pounds, of which the roe formed two pounds ten ounces. One grain contained three hundred and twenty eggs; so that this moderate sized specimen contained at the time four millions of young in embryo! The cod are caught by the hand-line, one at a time, and an expert fisher will take from three to four hundred a day. The most extensive fisheries on our own coasts are off the Western Isles and the coast of Zetland. Cod frequently, however, grow to a great size; one was taken at Scarborough, 1775, five feet eight inches in length, and five feet in circumference, and weighed seventy-eight pounds! They spawn early in the year, and deposit their ova in rough ground, among rocks. They are at their best from the beginning of February to the end of April. — Of the same genus, but less in size, and reckoned sweeter in the flesh, is the HADDOCK, *G. aeglefinus*, celebrated in Romish legendary lore as being the lineal descendant of that distinguished fish which Peter caught, at the bidding of his Lord, from which he took the tribute-money for the temple, and left the marks of his fore-finger and thumb — an honourable badge, which the species retain unto this day, in two black spots, one on each shoulder, a little beneath the gills. The haddock seldom exceeds eighteen inches in length; is of a bluish-brown colour on the back, silvery-white on the belly, and the lateral line black. Like the cod it is gregarious, but does not, like it, continue uniformly attached to any particular locality, shifting its haunts at uncertain intervals. Immense shoals arrive on the Yorkshire coast about the middle of winter, and are sometimes known to extend along it nearly fifty miles, and at some points three miles broad from the shore. They begin to be in roe in the middle of November, and continue so till the end of January; from that time till May the full-grown are out of season, but the small ones may be said to be in season almost all the year. Those caught on the Irish coast, near Dublin, are unusually large, and of a fine flavour. — The WHITING, *G. merlangus*,

is of a slender and tapering form, seldom more than a foot in length, pale brown above, silvery beneath, and streaked with yellow on the sides. They are plentiful on our coasts, and are considered the most light and wholesome of our fish, being frequently prescribed to persons the powers of whose stomachs are impaired. Spring and summer are the seasons when they are reckoned in their prime. They live at the bottom of the sea, feeding on little crabs, worms, and young fry, especially of sprats and herrings. They are usually caught with ground lines. — The LING, *G. molva*, has a lengthened body, from three to four feet, with a flat head, of which the upper jaw is longest; the tail is rounded. The colour of the ling is grey, inclining to olive, above, and white beneath. On the coasts of Scotland and Ireland, the ling forms a considerable article of commerce, and while in season, which it is from the beginning of February to the beginning of May, its liver is white, and abounds in a fine flavoured oil. — The BURBOT, *G. lota*, is a fresh-water fish, found in the slow running rivers in England, and esteemed a delicate dish for the table. In length it is from one to three feet, of a brownish colour, marked with large olive or yellow spots; the head is flattish, with equal jaws; the tail is oval, slightly pointed. It preys upon small fishes for which it lurks below stones or in concealed places, watching for them as they pass; it also springs at worms and aquatic insects. — The TUSK, *Brosmus*, caught along with cod and ling, and, when salted, forming along with them a considerable article of commerce, is chiefly fished for on the sea-banks off the coast of Zetland. It is a thick fish, about two feet long; dusky-grey above, yellow on the sides, and white on the belly. — The COAL-FISH, or PODLEY, or SILLOCK, or SETHE, *G. carbonarius*, is in length from two to three feet; has a small head, with the lowest jaw longest; the tail is broad and forked; the colour black above, white beneath, and the lateral line straight and white. It inhabits the Northern Ocean; in the mouths of

January and February, it leaves the deep seas, in order to spawn, and about the month of August the young swarm in many parts of the coast of Scotland, and contribute in a great degree to the sustenance of the population of the Northern and Western Islands. The full-grown fish are likewise taken abundantly, especially in tideways, but are reckoned greatly inferior to the cod and ling. In Shetland, in hard winters, the cattle are fed on them, but the milk then becomes nauseous, and tastes strongly of fish. — **BLENNIES**, *Blennius*, Linn., consist of several species, the *smooth*, the *spotted*, the *crested*; and the most remarkable the *viviparous*. This last is in size about fifteen inches, and is styled in Scotland the *Eel-pout*, and *Greenbone*; the body above is yellowish-brown, marbled with darker spots and streaks, and yellow beneath. It lies at the bottom, preying chiefly on small crabs; and brings forth from two to three hundred living progeny at a time. When boiled, the back-bone turns green. A slimy mucus is smeared over their skin, to which they owe the generic, *Blennius*.

Thoracic Fishes.—The **GOBY** or **SEA-GUDGEON**, **GROUND-LING** or **ROCK-FISH**, *Gobius niger*. The ventral fins of this fish uniting, form an oval concave disc, somewhat like a funnel, which some ichthyologists assert enable it to fix itself to the rocks, and from which feature it has derived the English name of Rock-fish. Dr. Fleming allows the formation, but denies that it acts as a sucker. It is however certain, that the goby lurks among the rocks, and preys on the worms, the ova and the spawn of such fish as seek the same habitats; its depredations cannot, however, be very extensive, as its size does not exceed six inches. The head is large, and the body, thick at the shoulders, declines towards the tail; it is brownish above, and white beneath, variegated with dark streaks and spots. It is found on the English and Scottish coasts in high season in the months of May and June, and its flesh is delicate. — The

FATHER-LASHER, HARDHEAD, or SEA-SCORPION, *Cottus scorpius*, frequents the deep seas, but seeks its prey near the surface. The species found upon our coasts are about nine inches in length, but in those of Greenland are said to measure six feet; the head is large, and armed with stout spines; the body, thick at the shoulder, grows more slender towards the tail; and is of a darkish-brown colour, with dark spots upon the upper surface; the under is variegated with white. It swims with great velocity; is bold and nimble, and persecutes the blennies, codlings, and herrings. It is eaten in Greenland, and when made into soup, is reckoned both wholesome and nutritive. The whimsical title, Father-lasher, has been supposed to originate from the quick and repeated lashings of its tail when caught and thrown upon the sand.

DOREE, or JOHN DOREE, *Zeus*, is called also the Fish of St. Christopher, from a legend of the Greek Church, which tells that it was trodden on by that saint as he was walking across an arm of the sea; but its fame in Britain is more unquestionably established from its having always been a favourite dish with aldermen, and from a singular fact in the annals of epicureanism, that Quin, the comedian, travelled from London to Plymouth in order to eat it fresh and in perfection. In appearance the doree is by no means prepossessing; it grows to about a foot and a half in length; is of an oval shape much compressed at the sides; the mouth is large, and the snout long; the colour is dark-green, marked with blackish spots, having a golden gloss, whence its name; it weighs about twelve pounds. It is common on the coasts of England, particularly about Torbay.

The TURBOT, or BANNOCK-FLUKE, *Pleuronectes maximus*, is a well-known fish, held in high estimation for the sweetness and delicacy of its flesh; it is in length upwards of two feet, and about two broad, and sometimes exceeds twenty pounds weight. The outline of the body is subcircular, of a yellowish colour above, clouded with brown, and

white below ; the scales are small, but both upper and under surfaces are beset with acute tubercles. " These fishes," Linnæus remarks, " present a character which with respect to vertebrated animals is perfectly unique ; it is the total want of symmetry in the head, where both eyes are on one side, those of the turbot on the left, which always remains uppermost when the animal is swimming, and which is deeply coloured, while that where eyes are wanting is whitish." They are common on our coasts, and are caught by bait. Extensive fisheries are carried on in different parts by hook and line, for as they generally lie in deep water, and at the bottom of the sea, no net can reach them ; the bait used consists of portions of herrings, haddocks, muscles, or limpets, but they must be quite fresh, else the fish will not bite.

The **HOLIBUT**, *Hippoglossus*, resembles the turbot in shape, and is frequently sold for turbot in the Edinburgh market ; but it is a perfectly distinct fish, and much inferior in the delicacy of its flesh. The whole body is smooth, without tubercles ; the eyes are on the right side of the head ; and the body tapers towards the tail ; the colour above is dusky-brown, white beneath, and entirely free from spots. It is of enormous size, weighing two hundred, or according to Stewart, sometimes even four hundred pounds.

The **SOLE**, *Solea*, is a gregarious fish, common on all, but especially the more southern coasts of our island. They grow from one to two feet, and weigh from one to seven pounds ; and when in season, are in great requisition for the most luxurious tables, but it is thought that those caught in the northern seas are the most delicate, though smaller in size. It has the quality of keeping sweet and good for several days in hot weather, and is said even to improve in flavour. It is of a narrow shape, rough, with small hard scales ; the upper part of the body is of an olive colour, the under part light ; the tip of the upper pectoral fin is black. It lives on the spawn and young of other fishes, although

shell-fish, partially digested, have been found in the stomach of some which have been examined after death.

The PLAICE or FLUKE, *Platessa vulgaris*, is universally known as an excellent fish for the table. It is generally about a foot in length, and the half, or sometimes more, in breadth; has a smooth body, with six tubercles on the head; and is covered with small soft scales above, of a brownish ash colour, variegated with orange spots; white below.

The FLOUNDER, *P. fessus*, is rather less than the plaice, and has no tubercles, but has a band of small sharp spines on the side line, and at the junction of the dorsal and anal fins with the body; it is covered with small oblong scales, adhering firmly to the skin; the back is of a dark brown, with olive-coloured spots, varied with yellowish green and black; it is white below, shaded with brown and black spots. It frequents the mouths of rivers, and even enters into fresh water. It lives long after being taken. By some, its flesh is esteemed more delicate than that of the plaice.

The BOW-BANDED CHÆTODON, is a singular looking fish, found on the coasts of Brazil, and other parts of South America. It grows from three to six inches in length; the head is large; the eyes, small and placed near the top, have a black pupil, with an iris gold-yellow; the ground colour of the body is brown, inclining to black, and looks like a velvet mantle inlaid with ermine; the lateral line is composed of white dots. During winter they lie in deep holes near the shore, but in spring they are found in shallows near the land; when the summer sun blazes, they retire to the deep. Numbers of them are caught and kept as curiosities in vases. — The BEAKED CHÆTODON, *Chatodon rostratus*, which is frequent on the shores and in the mouths of the rivers in India, is in length somewhat more than six inches; has a small head, with a cylindrical beak; the body is thin and broad, covered with hard scales; the colour is whitish, or very pale brown, with commonly four or five black bands

running across. It is particularly remarkable for the manner in which it procures its subsistence. Flies, and small insects which hover over the water, constitute its principal food, and these being without the reach of its leap, whenever it sees any of them settle on a plant, it approaches slowly and cautiously, and as perpendicularly as possible under the object; puts its body in an oblique direction, with its mouth and eyes near the surface, fixes the latter on the insect, and then darts a drop of water at it, through the elongated tube of its snout, generally with such force and precision, that though its victim be even six feet distant, it seldom fails to bring it to the water; its teeth, in length and tenuity, resemble hairs collected in several rows like a brush. Its flesh is white and well tasted.

The FLYING SCORPION, *Scorpana volitans*, is one of the most singular fishes, uniting in its outlines and decorations the discordant qualities of frightfulness and beauty. It belongs to the family of the *Mailed-cheeks*, so named from the formidable array of spines which defend the head; the mouth is large, and studded with a great number of little sharp teeth; the eyes have a black pupil and a white iris, with blue and black rays; the back is bristled with spines and thorns; the rays of the dorsal fin are spiny, spotted brown and yellow, united below by a dark-brown membrane; the ventral fins are violet, with white spots; the pectoral fins are ample, and similarly coloured, and enable the fish to dart out of the water when pursued by an enemy; the tail and anal fins are beautifully variegated with black, blue, and white. The size of this fish is about that of our perch, and resembles it in the firmness, whiteness, and excellence of its flesh. It is found in the rivers of Amboyna and Japan, and is voracious, feeding on the young of other fish, some of which, two inches long, have been taken out of its stomach.

The FLYING-FISH, *Frigla volitans*, inhabits the Mediterranean and the Ocean in the warmer latitudes. It is long



FLYING FISH.



PERCH.



PIKE.



and slender, with large pectoral fins, which reach as far as the tail, and answer in some measure the purpose of wings, by these it not only pushes a flat course through the waters, but when closely pursued by the dolphin, can raise itself into the air and fly, till its fins become dry, when it must again dip them in its native element; but this double power which it possesses has also increased its enemies, for the sea-birds are always on the watch to make it their prey when it leaves the ocean. It can fly, according to Captain Hall, a distance of at least two hundred yards; and rises, according to another observer, to a height of from two to twenty feet. They frequently fall upon the decks of vessels.

The COMMON PERCH, *Perca fluviatilis*, is in length about a foot, and its average weight from a pound to a pound and a half, though Pennant mentions one taken in the Serpentine River which weighed nine pounds. The colours are beautiful; those of the upper part being a rich olive-green, blending into a golden yellow, and transversed with five black bands; the belly is white tinged with red; the ventral and anal fins of a rich scarlet; the dorsal fin, of a velvety-black, is armed with strong spines, which enable it, when full grown, to swim with safety the same waters with the pike; their general habitat is lakes and streams. They are esteemed rather a stupid fish, and being gregarious, when one is taken the angler may almost be certain of the shoal; the most successful bait is the minnow. Its flesh is firm and delicate.

The COMMON MACKEREL, *Scomber vulgaris*, is a well-known beautiful fish, much esteemed for the delicacy of its flesh. It is in length about fifteen inches; its body is compressed, angular, and slender towards the tail, which is forked; the back is of a lovely green, variegated with blue and black; beneath, of a silvery hue; and when newly caught, and exposed upon the beach to the first rays of the sun, nothing can exceed their brilliancy. In winter, it betakes itself to the deep, but in spring comes in shoals to our

shores, where it is caught either by the net or by the line. The great mackerel fishery on the west coast of England is said to employ a capital of nearly two hundred thousand pounds. Their voracity is boundless; and when they encounter a shoal of herrings they make sad havoc. — The **ALBICORE**, or **TUNNY**, called in Scotland the Mackerel Stoer, or Great Mackerel, is frequent on the west coast of Scotland, and varies in length from three to seven feet; one which Mr. Pennant saw caught at Inverary, weighed four hundred and sixty pounds. It has a round body, slender toward the tail; of a black colour above, and beneath of a silvery hue, tinged with purple. It is extremely voracious, and does not spare even its own offspring, but its chief prey is herrings and pilchards. When boiled, it has something of the flavour of salmon.

The **GURNARD**, *Trigla*. — Of these there are several species. The **RED GURNARD**, *T. cuculus*, which is of a bright red colour in the body; the first dorsal fin with a black spot, the pectorals bluish, the ventrals and anal white; its head is large, and covered with strong bony plates; the nose has three spines on each side; the mouth is large, and filled with sharp teeth, and the lateral lines are strongly serrated. In the water, this fish has an uncommonly brilliant appearance. It is frequent on the southern shores of England, and is a pleasant-tasted fish, somewhat like the haddock. Besides, there are the Grey, the Smooth, the Sapphrine, and the Piper Gurnard.

Abdominal Fishes. — The **SALMON**, *Salmo salar*, the most delicious of fish, alternately an inhabitant of the sea and the rivers, rarely exceeds three feet in length, but ranges from ten to upwards of seventy pounds in weight. The back is of a dark-blue colour, spotted, declining into a silver-grey on the sides, and white on the belly: the fins are comparatively small. Salmon quit the sea and ascend the rivers throughout the summer season; and so strong is the im-

pulse that urges them to this progress, that they ascend the most rapid rivers for several hundreds of miles, and spring up over cataracts to an incredible height. Having reached a suitable station, they pair, and in company proceed to excavate a furrow in the gravelly bed of the shallow or running water at the top or bottom of the deeper pools, and into this furrow the milt and roe are simultaneously deposited, and covered, an operation that occupies nearly a fortnight: the eggs sometimes amount to 20,000. When the fish have spawned, or become kelts, they betake themselves to the deep pools, and then proceed to the sea, the males commencing the journey earlier than the females. The fry leave the spawning-grove about March, retire to pools, and proceed along the easy water at the margin of the river, with their head against the stream, until they reach the tide in the estuary, where they retire to the deepest part of the channel, and disappear in the sea. And these smoults are regarded as the grilse, which reappear a few months in the estuaries, of from three to nine pounds weight, according to the lateness of the season. The salmon is entirely a northern fish, being found both at Greenland and Kamtschatka, but never so far south as the Mediterranean. The principal salmon fisheries in Europe are in the rivers, or on the sea-coasts adjoining the large rivers, of Scotland England, and Ireland. Those in the River Tweed are perhaps the most extensive: these, several years ago, were let at above ten thousand pounds per annum; a rent which it was calculated would require not less than 200,000 salmon to enable tacksmen to pay. In the sea, the food of the salmon is said to be sand-eels; in the rivers, it is minnows and other small fish.—The SALMON BULL-TROUT, *S. eriox*, is little inferior in size to the salmon; the colour nearly the same. It migrates, like the salmon, up several of our rivers, spawns, and returns to the sea.—The SEA-TROUT, or SALMON-TROUT, *S. trutta*, performs migrations similar to the salmon. Its general length is

about eighteen inches, and it weighs about three pounds. The colour above is greenish-black; beneath, white; the sides variegated with irregular purplish spots. The flesh, when boiled, is red, and resembles that of the salmon in taste.—The FINNOCK, or HIRLING, *S. albus*, common in the sea and rivers of Scotland and North of England, seldom reaches a foot in length; it is of a greyish-black colour above, and silvery on the belly: the flesh has a reddish tinge. It leaves the sea in July, and is numerous in the rivers it frequents for the purpose of spawning in August and September. It is a delicious fish.

The COMMON TROUT, *S. fario*, is in length about a foot; of a dusky colour above, with purple and red spots, and grey beneath: it is found in rivers and lakes, and in mountainous and alpine streams. They feed on river flies and other water insects, and are usually caught by artificial flies. It holds the first place among river fish for delicacy of flavour, and affords the most favourite diversion of the angler. They are properly in season in the months of July and August.—The CHAR, *S. alpinus*, is in size about a foot; is black upon the back, bluish on the sides, and fulvous on the belly. It is found in the lakes of the alpine regions of Lapland, Sweden, and Switzerland, and in this island in the lake of Windermere, Westmoreland. It is rarely found in running streams. In autumn it approaches the shores which are shaded with trees, and in February it spawns. It is covered with small scales without any spots: it feeds chiefly on gnats. It is in high repute for the table.

The SMELT, or SPIRLING, *Osmerus eperlanus*, has a translucent head, and the lower jaw is the longest; the back is of a greenish-white colour, the sides are varied with blue, and the belly is silvery; the tail is forked. Its length is from nine to twelve inches. This fish enters the estuaries in the beginning of winter, and ascends the rivers in spring for the purpose of spawning. It emits a strong odour, which has been compared to the scent of the violet, the cucumber,

and the rush ; but its flesh is tender and delicate, and much liked by some persons, who think the odour adds to the relish. Its principal food is shrimps.

The SCHELLEY, *Salmo lavaretus*, is a gregarious fish, and not only migrates from the sea to the rivers for spawning, but is also found in the lakes of Cumberland and Wales, in Loch Neagh in Ireland, and in the Castle Loch, Lochmaben, and Lochlomond, in Scotland. It inhabits the unfathomable parts of the last-named lake, and is never seen except at two seasons, in the month of August and the middle of December, when it spawns; at these seasons it approaches the shores, and that only between sunset and sunrise, for during the day it retires into the deep water. It is esteemed one of the finest of our fresh-water fishes. Its general size is about a foot, but sometimes it grows to the length of fifteen inches, and weighs between three and four pounds. It has large scales ; is blue above, and silvery beneath.

The GRAYLING, *Coregonus thymallus*, at certain seasons said to smell like thyme, delights in clear and rapid streams, which it ascends early in the spring to spawn, and remains there till the approach of winter, when it returns to the sea. It is caught with a fly, to which it rises very freely, and leaps much, especially when struck with the hook. It is in general of a fine silvery-grey, with scales in regular rows, and measures from ten to eighteen inches. It inhabits Europe and Siberia ; and in Lapland, where it is very common, the natives use its entrails instead of rennet, to make their cheese from the milk of the rein-deer.

The PIKE, *Esox lucius*, is the most voracious of our fresh water fish. It frequents rivers and lakes, and is often kept in ponds ; though in a confined piece of water, it soon destroys every other fish except the perch, whose spines protect it. Besides fish and frogs, it devours the water-rat, and will draw down the young ducks when they are swimming about ; nor does it even spare its own fry ; a gudgeon of good size has been found in the stomach of a pike. " I have

been assured," says Walton, "by my friend Mr. Seagrave, who keeps tame otters, that he has known a pike, in extreme hunger, fight with one of his otters for a carp that the otter had caught, and was then bringing out of the water." The body of this fish, which is nearly of equal thickness, suddenly decreasing behind the dorsal and anal fins, is olive above, with yellow spots; and white beneath, with black spots. It grows to a great size. Pennant says, the largest he ever heard of in England weighed thirty-five pounds. Dr. Grierson, however, mentions one taken in Loch Ken in Galloway, which weighed sixty-one pounds. It spawns in February and March. The flesh is white and firm, and considered very wholesome. "There is abundant evidence," Dr. Fleming tells us, "that the pike is indigenous, though considered by some as having been introduced into England in the reign of Henry VIII. in 1537."

The MULLET, *Mullus barbatus*, is an excellent fish for the table, and was considered a rich treat by the ancient epicures. It is upwards of eighteen inches in length, dusky on the back; the sides are marked with broad longitudinal lines, on a silvery ground; the belly is silvery. It is found in the sea and estuaries; it is gregarious, and roots in the sand or mud. When inclosed in a net, they endeavour to effect their escape by leaping over the edges, which they do with great agility.

The COMMON HERRING, *Clupea harengus*, is about a foot in length; dark-green above, and silvery beneath; the scales are deciduous; it has the dorsal fin placed behind the centre of gravity, and the anal fin seventeen rayed. The body is of a fat, soft, delicate flesh, well-flavoured and nutritious. It inhabits the deep water; and when the spawning season approaches, is found in immense shoals near the shore in bays and estuaries. The migration of the herring from the North Pole is now abandoned as an entire fiction. The herring is amazingly prolific, and besides affording food to vast numbers of the human race, is the prey of all the

monsters of the deep, and of the immense flocks of sea-fowl that watch over their progress as they approach the shallow waters. They spawn once a year, about the autumnal equinox; but are somewhat capricious in their movements, occasionally shifting their spawning places. The principal of the British herring fisheries are off the Scottish and Norfolk coasts; the best fish are said to be those caught in Lochfine, in Argyleshire.

The PILCHARD, *C. pilchardus*, is often mistaken for the herring, which it strongly resembles, but is not so delicate in its flesh; it is also rounder in its body, more elevated in its back, and has larger scales. Its dorsal fin is placed in the centre of gravity, so that when taken up by it, the fish exactly preserves an equilibrium; whereas the herring, if lifted by the same fin, dips the head. This fish appears in vast shoals off the Cornish coast, where the pilchard-fishing is an important branch of commerce, averaging annually about fifty thousand pounds.

The SPRAT or GARVIE, *C. sprattus*, is found in the Northern and Mediterranean Seas, and is a frequent visitor in the Frith of Forth. It is between four or five inches in length, and in every respect so like the herring, that several ichthyologists have taken it to be the fry of that fish; but the sprat has only forty-eight dorsal vertebræ, whereas the herring has fifty-six. It abounds on the southern coast of France, where it is caught, pickled, and sent to Britain; and coming from a foreign country is highly prized, while the myriads that swarm on our own coasts have sometimes been caught to dung the land!

The SHAD, *C. alosa*, measures about eighteen inches; is greenish-black above, and silvery on the sides and belly; the tail is greatly forked. It leaves the sea in May, and enters the rivers to spawn, where it is not unfrequently taken in the salmon-nets. The fry is well known in the Thames by the name of white bait. It is very voracious, and Dr. Fleming says he has taken fine young herrings,

about three inches in length, from the stomach of this fish. In Scotland it is called the *Elf-herring*.

The ANCHOVY, *C. encrasicolus*, is found in the ocean, the Mediterranean, and in a few of the English rivers. Its length is about six inches; it is green on the back, and semi-pellucid; the sides and belly are of a silvery hue. It formed a sauce, *garum*, of which the Romans were exceedingly fond, and is also used for the same purpose at present; it also makes a most excellent pickle, when the head is taken off and the intestines extracted. Considerable quantities are imported from the Mediterranean in this state, packed in small barrels; and considerable quantities, cured in the same way, are exported from England to the West Indies.

The CARP, *Cyprinus carpio*, a native of the southern waters of Europe, is said to have been introduced into England by Leonard Maschal, about the year 1514. It is in high repute for the sweetness of its flesh, and its soft roe is esteemed a great delicacy. It sometimes grows to the size of four feet; but those in most request for the table are such as measure little more than twelve inches. It arrives at a great age, and is very tenacious of life, so much so, that it is said to have been seen, after its entrails were abstracted, and it was otherwise prepared for cooking, to have actually leaped "out of the frying-pan into the fire."

"The yellow Carp, in scales bedropped with gold,"

is found in still and gently flowing streams. It is of a thick shape; the scales are large; the mouth has four beards, and the tail is forked. It is amazingly prolific, a fish of three pounds weight producing 237,000 ova. Of its roe is made a species of caviare for the foreign Jews, who detest the sturgeon. These fish, from their cunning, have received the name of the *River Fox*; sometimes leaping over the net and escaping that way — at others, immersing themselves so deep in the mud, as to let the net pass over them; but

at spawning time they become so stupid as to be taken with ease.

The GUDGEON, *Cyprinus gobicus*, is an inhabitant of lakes, congregating in winter in the deep, and in summer frequenting the shallows and the streams which issue from them. It is about six inches in length; dusky on the back, with a white belly, and a row of large black spots on the sides; the body is round, and the tail forked. It spawns in May. It feeds on grass, worms, and other fishes just excluded from the ova, or upon any unfortunate wasps or flies which approach too near the surface of the water. Its flesh is white, of exquisite flavour, and easy of digestion. — The GOLD-FISH or GOLD CARP, *C. auratus*. This lovely fish, so rich in colour, the body golden, and the fins scarlet, is a native of China, a river fish, but kept by the rich in porcelain vessels, was domesticated in England about the year 1691, where it breeds freely in our ponds, and nothing can be more beautiful than to see them glide through the smooth water, reflecting, like a burnished living mirror, the radiance of the sunbeam. They are also kept in glass vessels, where they acquire a kind of tameness, and appear to know the voice of the person accustomed to feed them.

The MINNOW, *Leuciscus phoxinus*, is a pretty little gregarious fish, about three inches long. It is of various colour, but usually the back is dusky olive, and the belly white; the tail is forked, and marked near the base with a dark spot. It is found in small gravelly streams, and is well known to young anglers, being frequently used by them as a bait for many fresh-water fishes.

The DACE has an oblong body, with a small head; is dusky-green upon the back, and silvery upon the sides and belly; the dorsal fin is dusky; the ventral, anal, and caudal, are red; the tail is much forked. It is a very lively fish, and fond of frolicking near the surface of the water. Its flesh is coarse and insipid.

The ROACH, *L. rutilus*, affects clear and still waters with

a sandy or marly bottom, but it is also considered as a lake fish. In the Statistical Account of the parish of Killearn, it is said, "Vast shoals come up from Loch Lomond, and by nets are caught in thousands; their emigrations from the Loch, however, are only for the space of three or four days, about the end of May." It is in length about one foot, similar in colour to the dace, and like it, is coarse in the flesh.

The BLEAK, *L. alburnus*, has a slender compressed body, with pellucid fins; the back is green; the sides and belly silvery, and the lateral line twice bent. The scales are shining, and fall off easily—of them artificial pearls are made. They are beaten into a fine powder, and diluted with water; then poured into a thin glass vessel, which is afterwards filled with melted wax. At certain seasons, these fish seem to be in great agony, tumbling near the surface of the water, incapable of swimming far from the place; but after some time recover and disappear. This disorder seems to proceed from a kind of hair-worm, and in this state they are called Mad Bleaks. Some suppose that the *white bait* is the fry of this fish.

The BREAM, *Brama*, is found in lakes with a bottom of marl, clay, or plants, and in rivers which flow gently. It grows from two to two feet and a half in length, and weighs from four to five pounds. The body is deep and thin; the head small; and the back, which is bluish, is elevated and sharp; the sides and belly white, the latter sometimes yellow. It is considered a fine fish for the table. In Scotland, Mr. Pennant says it is found in Lochmaben; but it is chiefly in the Continental lakes that they abound, particularly those of Prussia, Holstein, Livonia, and Sweden, where it forms an article of food of great importance.

SHELL FISH, OR WATER INSECTS.

THESE are divided into two classes, *Crustaceous*, which have a shell resembling a firm crust, and in some measure capable of yielding; and *Testaceous*, with a shell like a stone, brittle, and incapable of yielding. These shells supply the place of bones in other animals, for supporting the muscles and integuments necessary for life and motion, though by a wonderful inversion, they cover and protect the fleshy substance, without being covered or protected by it. We notice first the Crustaceous kind.

The LOBSTER, *Cancer gammarus*, has a cylindrical body, smooth upon the back; a short serrated snout, with two long antennæ, and between them two shorter ones; it has two large claws terminated by pincers, which enable him to seize on his prey, to fix himself at the small prominences of rocks in the sea, to resist the motion of the waves, and to fight his enemies; besides these he has four pair of small legs, by which he performs his ordinary awkward movements; but when he wishes to make an elegant spring, he uses his tail, which is broad and six jointed, as a fulcrum. They breed in the summer months, and are extremely prolific, between twelve and thirteen thousand having been counted under the tail of a female; these she deposits in the sand, where they are soon hatched. They cast their shell annually, previous to which they appear sick, languid, and restless. They acquire their new covering in a few days, but during the time they remain defenceless, they seek some lonely place, lest they should be attacked and devoured by such of their brethren as are not in the same weak state. At the same time they cast their shell, they also change their stomach and intestines; and it is said, that while moulting the old stomach forms the first repast of the new. Stewart tells us, "they dread

thunder, and are apt to cast their claws at a loud clap;" but it is an ascertained and more wonderful fact, that they possess the power of renewing their claws or feet, if by accident they are torn off. They frequent rocky shores, especially where there is deep clear water; they are taken in wicker baskets resembling a wire mouse-trap, which admits the animal, but prevents his return. —The CRAY FISH, *C. astacus*, is merely the lobster of fresh water, and differs only in this, that the lobster has its mouth dentated with a double tooth above, while the cray-fish has but one tooth on each side. Both fish are in much request for the table.

The COMMON CRAB, *Cancer pagurus*, has a broad shell, with nine notches on each side, and the claws are black at the tips: its colour is a dirty green, but red when boiled. It has two claws armed with nippers, and four legs on either side: it cannot move forwards, but on one side, as suits. It casts its shell and renews its claws like the lobster; and Dr. Darwin says, during the former process, that "a crab whose shell is sound always stands guard to protect them in their defenceless condition from the molestation of marine insects, and though at other times a timid creature, yet he displays great courage in discharge of this duty." Crabs are exceedingly quarrelsome among themselves, and when one has laid hold on another's limb, the captive has no alternative but to relinquish the member, which is done in true military style; it stretches the claw out steadily to receive the shock, when a gentle crack is heard, and the business is done—and the victor is left in possession of the spoil.—What is denominated the LAND CRAB, is a kind of amphibious animal peculiar to intertropical countries. "Their habits," says the abridger of Cuvier, "are a constant source of interest to travellers; but by abstracting from their accounts all improbable or doubtful facts, their history will be as follows. The greater portion of their life is passed on land, where they secrete themselves in holes, from which they never issue but at night. Some in-

habit cemeteries. Once in the year they collect in immense bands, and pursue a direct course to the sea, heedless of all obstacles. After depositing their ova, they return, much enfeebled. It is said they seal up the mouth of their burrow during the time they are casting their shell." They abound in Jamaica, where they are accounted delicious.— The SOLDIER CRAB, or HERMIT CRAB, has the appearance of a lobster divested of its shell. It is usually about four inches long; has no shell behind, but is covered down to the tail with a rough skin, terminating in a point: it is armed with strong hard nippers. Denied a natural shell, the soldier has an almost rational instinct, which directs him to seek some untenanted shell that may fit him: in it he resides, till growing too large for his habitation, he is under the necessity of seeking a change; and it is highly amusing to see how he bustles about, trying first one shell and then another, till he finds what will answer. Should it so happen that two pitch upon the same tenement, a contest ensues till the strongest can seize it. Like the former, it dwells in the mountains, and descends to the sea; not only, however, to produce an offspring, but also to procure a covering. Though intertropical, they are met with on several coasts of England. Its flesh is not valued.

The SHRIMP, *C. crangon*, is a well-known little fish of the lobster kind, having long slender feelers, and between them two projecting laminæ; they have three pair of legs, and a seven-jointed tail. These delicious insects abound in all the sandy shores of Britain, ascend into the rivers, and are found in the ponds of salt marshes.—The PRAWN, *C. squilla*, is very like the shrimp, but larger, and when hoiled is of a beautiful pink colour; its flesh is by some thought equal to that of the shrimp. Its habitation is the ocean; and when it approaches the shore, its haunts are the seaweeds and the vicinity of rocks, seldom entering the mouths of rivers. It swims on its back.

Testaceous.—These are divided into—1. *Univalve*, or *One-shelled*, of which the *PAPER NAUTLIUS*, *Argonauta argo*, affords a remarkable example. This animal inhabits a beautiful spiral shell with one cavity. It is found in the Indian and Mediterranean Seas. In calm weather, it rises to the surface, and spreads out its arms over the shell, which serve it for oars; and raising and expanding a double membrane of wonderful tenuity as a sail, it glides along with the breeze. When danger threatens, it suddenly strikes sail, withdraws into the shell, and sinks to the bottom. Sometimes also it is seen pumping water from its leaking hulk; and when unfit for sailing, deserts its shell entirely. It is often taken by the fishermen among the sea-weed near the rocks on the shore, and sometimes it enters their nets.

The *LIMPET*, *Patella*, is common on our rocks near low-water mark, to which it adheres with great tenacity; not, as has been sagely supposed, by expelling the air, and converting its shell into an exhausted receiver, in which no living creature could exist, but by a mucus spread over the leather-like skin of the animal. The form of the shell is conical, and ridged all round, sometimes of a beautiful purple tint, when properly cleaned. Its average measurement is two and a half inches long, and two inches broad in the aperture, and one and a half in height. It is of value as a bait, and even as an article of food.

2. *Bivalve*, or *Two-shelled.*—The *MUSCLE*, *Mytilus*, consists of two equal shells, joined at the back by a strong muscular ligament, that answers all the purposes of a hinge, by contracting which the animal can open its shell at pleasure, and by thrusting out a muscular substance resembling a tongue, can move itself, though very slowly, from one place to another. But it is chiefly stationary; and by means of a number of threads glutinous at the ends, attached like a beard to the edges of the shells, can bind itself to the rock, and thus, like a ship at anchor, have all the agitation of the water. It is found in extensive clusters along our

coasts, and is not unpleasant to the taste, but is dangerous if taken in large quantities. They are also found in lakes, of a very large size, but these seem to be solitary.

The OYSTER, *Ostrea*, has two roundish-oval shells, varying much in size and shape according to the locality. They grow in beds at the bottom of the sea, generally in hays, and the substance to which the ova are attached has the technical name of *clutch*. They spawn in May, and what we term ova are said to be the young completely formed; and by the help of a microscope, the joinings of the infant shells can be distinctly seen, with all their parts as perfect as the parent animal, though appearing to the naked eye only as a minute point. Oysters are in season from September to April, or according to the vulgar reckoning, in all the months which have the letter *r* in their names. During this period they are procured by dredging, and eaten either in a raw or pickled state, or placed in artificial ponds and fattened. They are sometimes found of a green colour, but this is generally considered a symptom of disease. The British oysters were famous in the days when Rome was ransacking the world for luxuries.—Pearls are incidental to all oysters, as also to some muscles; but that which particularly has obtained the name of the *Pearl Oyster* has a large, strong, whitish shell, wrinkled and rough without, and within smooth, and of a silver colour: from these the mother-of-pearl is taken. The chief fishery is carried on in the Persian Gulf, chiefly by Negroes, or the very poorest of the natives, who are trained as divers, but who seldom sustain the employment above five or six years, even when they are fortunate enough to escape the perils of sharks, rocks or suffocation.

The SCALLOP, *Pecten maximus*, similarly shaped with the oyster, although formerly classed with it, differs materially in having the power of locomotion, which the other has not. When the tide leaves it dry, it gapes as widely as possible, then closing its shells with a jerk, springs forward

five or six inches, and repeats the operation till it regain its proper element. In the water, it is capable of sustaining itself upon the surface, and by the same manœuvre can tumble along with some celerity.

The COMMON COCKLE, *Cardium edule*, has a somewhat globular, greyish shell, and when viewed sideways, has a fanciful resemblance to a heart, whence its name *Cardium*. They are common near the mouths of rivers and inlets of the sea, generally immersed in the sand two or three inches, the place marked by a sunk circular spot. The opening of the shell is protected by a soft membrane, which wholly closes up the front except in two places, at each of which there is a small yellow-fringed tube, through which the animal receives and rejects the water which conveys nourishment to its body. Its size varies from half an inch to five or six inches diameter. It is much esteemed as wholesome food.

3. *Multivalve*. — The SEA URCHIN, *Echinus esculentus*. The shell is a spheroidal hollow vase, resembling a scooped apple, with a number of bony prickles standing out on every side; the mouth is placed downward, the vent above. Besides these spines, it has feet or tentacula, which are the organs of its motion, visible only in the water, as it withdraws them into the body when taken out of it. It is oviparous, and spawns in spring. Its flesh is reckoned as good as that of the lobster, and its eggs are esteemed a great delicacy.

The PHOLADES are perhaps the most remarkable among the mollusca. In general they somewhat resemble a muscle, except that their shell is found composed of five or more pieces; but the most wonderful part of their history is their penetrating into the hardest marble, with no other instrument than a broad fleshy substance, somewhat resembling a tongue, which issues from the bottom of the shell, by which, when small and young, they excavate a narrow entrance into the heart of the stone, and as they increase in size,

they enlarge their habitation, which, when completed, resembles the bowl of a tobacco pipe, the narrow entrance resembling the shank; but besides this, they have also a shell which grows upon them in the heart of the rock. This animal is found in great numbers at Ancona in Italy, Poitou in France, and in some parts of the coasts of Scotland.

MOLLUSCA, OR SOFT SKINNED.

THE animals of this order have soft and naked bodies, most of them with arms or *tentacula*, which serve either for motion, for bringing their food to their mouths, or perhaps as organs of sensation for such of them as have no visible eyes. As specimens,

The CUTTLE FISH, *Sepia*, has an oval compressed body, of a jelly-like substance, usually covered with a coarse skin having the appearance of leather. They have eight arms, furnished with numerous circular cups or suckers, with which they seize their prey or attach themselves to rocks or other hard substances, with such tenacity, that it is easier to tear off their limbs than to make them let go their hold; and if these should happen to be broken off, they are soon afterwards reproduced. They have besides in general two feelers, much longer than their arms, furnished also with circular suckers. The mouth is situated in the centre, horny and hooked like the bill of a parrot, and so strong that it can break to pieces the testaceous fishes on which it feeds. They have two large and brilliant eyes, covered with a hard transparent substance. The dorsal plate is thick, convex, and composed of numerous and parallel calcareous laminae, united by thousands of little hollow columns, running perpendicularly from one to the other. When pursued by any formidable enemy, they eject a dark inky fluid, which not only clouds the water so as to conceal its retreat, but at the same time renders it so bitter as to drive off its

enemies. This fluid when dried, forms a valuable colour, used in the manufacture of Indian ink. The sepia occasionally occur in our seas, but are not common. In hot climates they are said to grow to such an enormous size, that when the Indian goes to sea in his little boat, he always carries an adze, to be ready should any of their huge tentacula be thrown over him, to be ready to smite them off.

The STAR FISH, *Asterias*, so called because its body is divided into rays, generally five, in the centre of which is the mouth. These rays are pierced with hundreds of holes, through which pass a little gut, each one terminated by a small disk, which acts like a cupping-glass; by elongating or shortening these feet, they effect their progressive motion; and by fixing their cups, they can adhere firmly to any substance. Their power of reproduction is very great, as they not only reproduce the rays, which have been separately removed, but a single ray will reproduce all the others, there being two ovaries in each ray, which appear to possess the faculty of self-impregnation. They are often found on the beach after a storm.

The NAKED SNAIL or SLUG, *Limia*, of an oblong body, with four tentacula or feelers above the mouth, black and wrinkled, is well known, and exceedingly common in fields and meadows in summer. It feeds on the leaves and roots of vegetables. There are, besides, the GREAT SPOTTED SLUG, *L. cinereus*, ash-coloured, and the largest of the genus; and the SMALL GREY SLUG, *L. agrestis*, whitish; the tentacula black; all voracious, and found in woods, gardens, meadows, and fields, where they do much mischief. They are eaten by crows, ducks, and other birds and quadrupeds.

REPTILES — *Reptilia*,

ARE cold-blooded animals, whose movements are usually confined to crawling and swimming, though at times some of them jump and run with considerable activity. Their habits are generally lazy, their digestion slow, and their sensations obtuse, and less referred to a common centre than the Mammalia or Birds; for they continue to live, and exhibit voluntary motions, long after losing their brain, and even after the loss of their head; their heart too, will continue to pulsate, hours after it has been torn away. No reptile hatches its eggs. These have been distributed into four orders: — I. TORTOISES, *Chelonia*, distinguished by the double shell in which the body is inclosed, from which project the head, neck, tail, and four feet. The upper shell is composed of eight pair of ribs, united by teeth-like sutures, and plates adhering to the dorsal vertebræ, so that these parts are rendered fixed and immoveable; the inferior shell is formed of pieces usually nine in number. They have no teeth, but only a horny substance instead. They are extremely tenacious of life, and require little nourishment. Some have been seen to move several weeks after their heads had been cut off; and others have passed months, and even years without eating. We shall only notice the LAND TORTOISE, *Testudo Græcia*, found in most of the countries bordering on the Mediterranean, and in Africa. The shell is arched, and so strong that a loaded cart may pass over it without doing it any injury; and their feet can be drawn within. It is generally from one foot to five feet long, from the end of the snout to the end of the tail, and from five inches to a foot and a half across the back. In June it deposits four or five eggs in a hole dug by itself, which, after the rains of September,

produce young the size of a walnut. They burrow in the ground, and sleep during the winter months. At particular seasons the males are said to be very pugnacious, and butt like rams, with a sound which is heard at a considerable distance. They live on vegetable food. The flesh of this species is eaten in the Grecian islands. Its shell is manufactured into several beautiful and ornamental articles.

The SEA TORTOISE or COMMON GREEN TURTLE, *Test. mydas*, is found in every latitude of the torrid zone. Its envelope is too small to receive the head or feet, which are very long and flattened into fins. It is distinguished by the greenish colour of its plates, and is found from six to seven feet long, weighing from seven to eight hundred pounds. The flesh is highly esteemed; it tastes and looks like veal, without any fishy flavour; the fat is quite green and very sweet, and its eggs are also considered nutritious and delicate. They feed in large troops at the bottom of the ocean, on sea-weed, but come on shore to bask in the sun, sleep, seek a change of diet, or deposit their eggs. About sunset, or when dark, the female approaches the beach, and after surveying the coast, when she has found a proper spot scratches a hole in the sand, in which she lays from twenty-five to fifty eggs, and covering them slightly, returns to the water, leaving the eggs to be hatched by the heat of the sun; this process is repeated again in about fifteen days. The number of eggs she lays in a season is variously stated. Stewart rates them as high as a thousand. They are about the size of a hen's, have no shell, but are covered with a thick skin like parchment; and when the young are hatched, which is in about twenty-four or twenty-five days, they immediately and instinctively make for the ocean, not, however, without peril from the clouds of ravenous birds that hover around and mark their progress. They are caught when on land asleep, by turning them on their backs, they not having the power of turning themselves over again. — The HAWKSBILL TURTLE, *T. imbricata*, is less than the

other, and its flesh is not so agreeable; but it is valuable on account of its furnishing the common tortoise-shell, of which such a variety of beautiful articles are made.

II. *Sauria*, or *Lizard-like*, including the CROCODILE, *Lacerta crocodilus*, Linn. This formidable animal, the largest of the lizard tribe, extends from eighteen to the prodigious length of thirty feet, the tail being about five feet and a half to seven. The body is rough, and covered with scales, so hard as to be impenetrable to a musket-bullet. The head is large, and the gape of his mouth wider than that of any other animal. His jaws are furnished with a single row of pointed teeth; but the eye is small in proportion to the bulk of the creature. He has four feet, which are webbed, the anterior with five toes, and the hinder with three; the internal ones alone on each foot being armed with nails. The female lays some hundreds of eggs, as large and hard as those of a goose, in the sand; the greater part of which, however, become the prey of various birds and animals, and even the natives eat them, which prevents the increase of this monster. On land, from the shortness of his legs, the motion of the crocodile is slow, and from the stiffness of his back, he cannot turn quickly, so that his prey can easily escape him: but in the water he is a dangerous acquaintance, as he swims fast and moves rapidly; yet the negroes of Africa fearlessly encounter him. One of the lamented Park's guides across the river Gambia, being seized by a crocodile and pulled under water, the negro thrust his fingers into the animal's eyes with such violence, that he let go his hold; but seizing him again, he repeated the same assault with better success, as the animal immediately released him and swam away. The crocodile is gregarious; and on hot days, great numbers are seen basking on the banks of the rivers; but when disturbed, they generally plunge into the water. The French, while in Egypt, never met with any at a distance from the Nile; but there, parti-

cularly in the neighbourhood of Thebes, they were seen swimming in great numbers together, with their heads just above water, like a number of trunks of trees floating in the stream; they however allowed the boats to pass them with seeming indifference. Like all ravenous creatures, they appear to acquire greater ferocity within the torrid zone, and in the rivers on the coast of Guinea are more voracious and daring than in Egypt. When hungry, they lurk among the reeds by the river side, till some animal approach to drink, upon which they spring and drag it to the bottom, where they hold it till drowned, and then carry it to the bank to devour. In this manner buffaloes, and even tigers, are caught. But the latter seldom die unrevenged: like the negro, they fix their claws in the crocodile's eyes or his belly, which is the most vulnerable part, and many a tremendous struggle ensues, when sometimes the tiger escapes from his blinded opponent, and at others is dragged to the bottom, where his suffocation frees the enemy from his undesirable embrace. Crocodiles haunt the rivers of Africa, India, and of the islands in the Indian Archipelago.

The ALLIGATOR, *L. alligator*, belongs to the American rivers, and is so similar in its appearance and habits, that it has been called the Crocodile of the New World; but it is in general less in size, the largest not exceeding eighteen feet, and its neck is more flat and smooth. It also has a loud and terrifying roar which the other has not, and the female, instead of only covering her eggs slightly with sand, makes a nest in the figure of an obtuse cone, four feet high and four or five feet in diameter, constructed of alternate layers of eggs and of mud, grass, and herbage. When the young are hatched, she tends them as a hen does her chickens; whose cry is like the whining and barking of young puppies. They have, moreover, an unpleasant musky smell.

The LIZARD, *Lacerta*, is characterized by the tongue, which is extensible, thin, and terminates in two threads. The body is elongated, and the tail is generally much longer

than the body. Each foot has five toes, armed with nails. There are numerous varieties of this family, which seem to be chiefly arranged by their colours. One of the most beautiful is the *Green Lizard*, which in warm countries sometimes attains the length of thirty inches, and shines with the most superb brilliancy. The upper parts of the body are of a beautiful green, variegated with yellow, grey, brown, and sometimes red. It is a harmless, gentle creature, and if taken young may be tamed; but if irritated and driven to extremity, it will turn upon a dog, and fasten so firmly on his muzzle, that death only can part them.—The NIMBLE LIZARD, *L. agilis*, is an elegant little animal, about five or six inches long, and exceedingly quick in all its motions. It delights in open dry places, and harbours among rocks and old walls. Its tail, which is twice the length of its body, is brittle and apt to be broken, but can be reproduced. The colours vary with the condition of the skin, which is often renewed; before casting, it is brownish-black, but after the change, dark green and yellow tints prevail. It is sometimes oviviparous. Dr. Fleming mentions a female that he kept, which gave birth to four young ones perfectly formed, measuring an inch and a half in length. Its food consisted of worms and insects, which it never touched except when they showed symptoms of life. — The IGUANA, *L. iguana*, is a native of India and South America; grows to about five feet long, and is as thick as a man's thigh. The skin is covered with small scales, and it has a row of prickles on the back; the jaws are full of sharp teeth, which give a dangerous bite. The males are larger than the females, and ash coloured; the females are green. It lives among the trees or sports in the water, without ever offering to offend. Its food is the leaves and flowers of the herbs that grow upon the banks, and its resting place the branches that hang over the river. Its flesh is considered the greatest delicacy, and it is persecuted by the sportsman as is the partridge or hare in this country

It has been tamed so as to follow a man like a dog. — The CHAMÆLEON, *L. chamæleo*, has a compressed body, shagreened with small scaly granules; a sharp back, about ten inches long, and a round and prehensile tail, nearly the same length; the tongue is fleshy, cylindrical, and capable of great extension. The eyes large, and nearly covered by the skin, have the singular property of looking at the same instant in different directions, one directed forward, while the other is casting a glance behind. It has no visible external ear. It lives in trees, and its feet have each five toes, three extending in one direction and two in another, by which it grasps the branches; but when these are too thick, it has recourse to its tail, which he coils round them, while he forces his claws into the bark. When on the ground, its motions are awkward, evidently showing that it is not at home; its lungs are uncommonly large, and the animal can at pleasure, by inflating them increase, or by exhausting them diminish, the volume of its hulk, which perhaps gave rise to the fiction that the chamæleon fed on air. With more probability it is supposed that this is the cause of the faculty of changing colour which takes place — not, as is thought, in conformity with the hue of the substance on which they are placed, but in accordance with their wants and passions; — as the action of their lungs renders them more or less transparent, compels the blood in a greater or less degree to return to the skin, and even colour that fluid more or less vividly, in proportion to the quantity of air they contain. It is said, however, that a chamæleon, exhibited some years ago in London, did actually change its colour, as it went over several pieces of carpet of various dye, and that it was observed to halt for some time always as it got upon some new colour, before it underwent the change. It feeds on insects, which it takes by means of its long viscid tongue. It is a slow ugly creature, but gentle and harmless. It is brought from Egypt, Barbary, the south of Spain, and India.

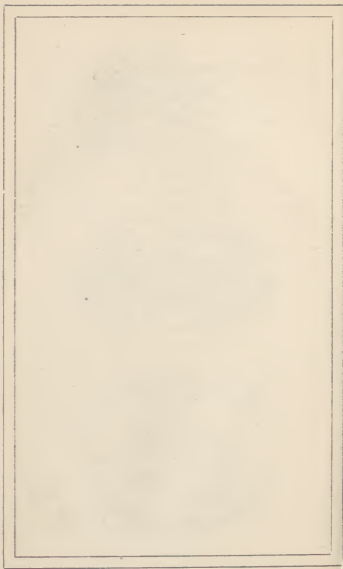


CHAMELEON.



TOAD





The SALAMANDER, *L. salamandra*, Linn., has the general appearance of a lizard in the body and tail, but the body is without scales, variegated with yellow and black pores; the fore feet have only four toes, and the whole have no nails. It lives in mountainous places, and is a harmless animal. The fable of its being able to resist the effects of fire has long been exploded. It is oviparous, and brings forth its young complete.

The COMMON TOAD, *Rana buffo*, has a large body covered with warts, and a swollen head, with a short thick tongue, and no teeth; its anterior limbs have four divided toes, and the hind feet six, webbed. They are nocturnal animals, and their aspect is ugly. They live in dark and close places. Their eggs, when discharged, hang together like a long string of beads. "This well known animal," says Dr. Fleming, "though a devourer of worms, slugs, and wasps, and therefore useful in gardens, though inoffensive in its manners, and destitute of any venomous quality, is despised, hated, and persecuted, by the ignorant. Few individuals, even of education, will venture to take a toad in their hands, or act otherwise than loath it. How surprising that prejudice so unjustifiable should still continue to prevail!" The toad is not only a long liver, but remarkable for living in the hearts of trees, and in the solid marble, where it is difficult to imagine how it could either breathe or be nourished, yet where it must have existed for many centuries. Mr. Pennant mentions a toad which had been domesticated in a gentleman's house in Devonshire, which used to come out of its hole in the steps before the hall-door on an evening when a candle was brought, and was carried into the house, where it used to be fed with insects. It continued to be a curiosity and a favourite, till a mischievous tame raven, one day seeing it at the mouth of its hole, pulled it out, and so wounded it that it died.

The COMMON FROG, *Rana temporaria*, has a light, elegant, and lively appearance. In its perfect state, it has four

legs, the hind ones longer and webbed, hut no tail; the head is flat, the mouth large, with two sacs, one on each side — the organs which chiefly produce the croaking; the tongue is soft, attached to the edges of the jaw, and folds inward; the anterior feet have four toes, the hind ones five, with frequently the endowment of a sixth. In colour it varies, but the most prevalent is yellowish brown, with black spots, particularly a longish dark streak beneath each eye. It spawns in the month of March, when its eggs are laid in clusters in shallow pools or stagnant water, where they lie for a month or five weeks, when the embryo is extruded in the form of a tadpole, which undergoes one of the most curious transformations in nature, gradually bursting through its case, till it assume the entire figure of the frog. During spring it lives in brooks, muddy ditches, and marshy places; during summer, in the fields and meadows. It is capable of taking extensive leaps, to avoid danger, or seize its insect prey. It passes the winter months in the mud, under water, in a state of torpidity.

The EDIBLE FROG, *R. esculenta*. That species which is used in France and Germany for food, is the largest European frog. It lives in fountains, marshes, and lakes; its colour is green, with three yellow longitudinal lines, which extend from the tip of the nose to the extremity of the body. It is a bold animal, and will attack fishes, and even pikes in ponds, leaping upon their backs, and fixing its fingers in their eyes, in which uncomfortable conjunction the carp has often been caught. They are a great staple at Vienna, where it is said a scarcity of frogs is almost as much lamented as a scarcity of corn. They are brought thither in thousands, and sold to the dealers, who preserve them in large holes (covered with a board and with straw), four or five feet deep, dug in the ground, and bring them as they are wanted to the market ready for the cook. These creatures are gathered sometimes in nets by torch-light, and sometimes by hooks baited with flesh. — The TREE

FROG, *R. arborea*, is a pretty little animal, that lives on trees, under the leaves, and sometimes changes colour like a chamæleon. It has so loud a voice, particularly before rain, that it is said to be heard a mile off.

III. *Ophidia*. — SERPENTS, *Serpentia*, are reptiles without either feet or fins, and consequently best entitled to that appellation. In their motions they are like worms. Their head, which is connected with the trunk without any neck, is in general long and flat, usually obtuse, but sometimes wedge-shaped; they breathe by lungs through the mouth, which they can open very wide — the jaws being only connected with the cranium by strong muscles and cartilaginous fulera — and thus swallow an animal almost as thick as themselves. The tongue is long and forked; their voice a disagreeable hissing. The harmless species have three rows of sharp pointed teeth, the venomous only two; but to make up for the deficiency, they have large hollow fangs, through which the poison, secreted by glands at their base, is ejected into the wounds they make. They have no visible ear, yet they hear; for some of them in India are taught to perform evolutions to the sound of music. They breathe by means of lungs, yet can remain under water a considerable time without coming to the surface for air; but only in fresh water, for salt is an effectual bane to the whole tribe. Their bodies are long, circular, and generally covered with scales. They cast their skins in the spring, and the new is often of a different colour from the old. They sleep spirally coiled up, and in cold countries remain torpid in concealed places during the winter. There are a great many genera and species, which our limits do not permit us to enumerate. We select the following as specimens:—

The RATTLE-SNAKE, *Crotalus horridus*. As it is pre-eminently conspicuous for the intensity of its venom, so it is providentially distinguished by the rattle in its tail, which frequently gives the unwary notice of its presence. It is said,

however, that in wet weather the sound is not heard, which makes the Indians cautious in travelling through the woods during rain. The rattle is composed of loose joints, and increases a joint every year after the first two. Some have been found with forty joints. This snake belongs exclusively to the New World. It grows to five and sometimes six feet in length, and is about the thickness of a man's arm; the colour is yellowish brown above, marked with broad black transverse bars. It devours the smaller animals and birds; and such is the terror the sound of its approach occasions, that these poor little creatures are deprived of the ability to escape, which has given rise to the now exploded story of its powers of fascination; but other snakes inspire the same dread by their appearance. Vaillant mentions, that he saw a shrike expire in convulsions at the sight of a snake; he afterwards observed a mouse in similar agony about two yards distant from another, and on frightening away the reptile, and taking up the mouse, it died in his hand. The rattle-snake, however, never attacks man, except when trodden on or provoked, but when it does bite, the unfortunate victim usually expires in a very few hours. It is somewhat strange, however, that hogs devour these noxious animals with impunity. Instances have been known of its being tamed, and becoming exceedingly docile, although we should be apt to consider it rather a dangerous playfellow.

The BOA-CONSTRICTOR, a native of India, the larger Indian islands, and South America, attains the enormous length of thirty or forty feet. It has a compressed body, thickest in the middle, a prehensile tail, small scales on the head, and scuta or undivided plates on the belly and under the tail. The ground colour of its skin is yellowish grey, on which is distributed along the back a series of large chain-like reddish brown and sometimes perfectly red variations, with other small and more irregular marks and spots. It is not venomous, and overcomes its prey by mere force. They prey on dogs, deer, and oxen, which they manage entire.



RATTLESAKE.



BOA CONSTRICTOR.



In the Island of Java, one of these monsters has been known to kill and devour a buffalo. The serpent had for some time been waiting near the brink of a pool, in expectation of its prey, when a buffalo was the first that offered. Having darted upon the affrighted animal, it instantly began to wrap it round with its voluminous twistings, and at every twist the bones of the buffalo were heard to crack, almost as loud as the report of a cannon. It was in vain that the poor animal struggled hard and bellowed — its enormous enemy entwined it too hard to get free; till at length its bones, being mashed to pieces like those of a malefactor on the wheel, and the whole body reduced to one uniform mass, the serpent untwined its folds to swallow its prey at leisure. To prepare for this, and in order to make the body slip down the throat more glibly, it licked the whole body over, and thus covered it with saliva. It then began to swallow it at that end that offered least resistance, while its length of body was dilated to receive its prey, and thus took in at once a morsel that was three times its own thickness. A more extraordinary feat was witnessed in the Island of Ceylon, in which a boa, with equal ease, in presence of one of the British outposts, destroyed and gorged a tyger; but its gluttony caused its death, for after it had swallowed the animal, it became incapable of motion, and was killed without resistance.

The VIPER or ASP, *Coluber haji*, Linn., whose bite is followed by lassitude, torpor, and death, with little or no pain, is generally allowed to be the creature Cleopatra chose for voluntarily terminating her unhappy existence, described by the ancients under the name of the Asp of Egypt, where it was made the emblem of the protecting divinity of the world, and sculptured, on each side of a globe, upon the gates of the Egyptian temples. It is thus alluded to, Deut. xxxii. 33, — “Their wine is the venom of dragons, and the cruel venom of asps.” Its size is variously stated, from twenty inches to several feet; its colour is greenish, bor-

dered with light brown; its scales smooth and flat. The jugglers of Egypt, by pressing on the nape of the neck with their fingers, throw it into a kind of catalepsy, which renders it stiff and immoveable, or turns it into a rod, as they term it. (Query, would these be the rods produced by the magicians of Egypt in their contest with Aaron?)

The VIPER or ADDER, *Vipera communis*, is in length from two to three feet, of a dirty yellow colour; has a stripe of black triangular spots on each side, and a confluent stripe of longish stripes on the back; the belly is dusky, tinged with blue. It produces from twelve to twenty-five young at a birth;* feeds on insects, frogs, and mice, which it swallows entire, and becomes torpid during winter. In confinement it will not eat. The adder is the only poisonous British species: it is found in many parts of the island, chiefly the dry and chalky counties; and it abounds in many of the Hebrides. If applied in time, olive oil will cure its bite; but perhaps the best cure is to suck the wound, which may be done with safety, and then, after rubbing it with sweet oil, to apply a poultice of bread and milk. Its flesh used to be eaten, and its broth was considered medicinal in consumptions, but of late years, it has not been much tried in either way. It is said that young vipers, when suddenly alarmed, seek refuge in their mother's mouth. They attain their full growth in seven years.

The RINGED-SNAKE, *Coluber natrix*, the largest of the British species, being sometimes more than four feet long, has a skin beautifully variegated with yellow, green, and white, intermingled with spots of brown and black, and is perfectly harmless. It feeds on frogs, mice, worms, and various kinds of insects; it lodges among bushes in moist places, and swims well. It deposits its eggs, eighteen to twenty, in dunghills, or hotbeds. It lies torpid during the

* All the poisonous serpents are ovoviviparous, and bring forth their young complete, they being hatched in the body. "Viper" is a contraction of that word.

greater part of winter, and reappears in spring, when it casts its skin. It would appear that it also throws off its mantle before it goes to sleep; for Mr. White tells us—"About the middle of September we found, in a field near a hedge, the slough of a large snake, which seemed to have been newly cast; it appeared as if turned wrong side outward, and as if it had been drawn off backward, like a stocking or a woman's glove. Not only the whole skin, but even the scales from the eyes were peeled off, and appeared on the slough like a pair of spectacles. The reptile, at the time of changing his coat, had entangled himself intricately in the grass and weeds, in order that the friction of the stalks and blades might promote the curious shifting of his exuvizæ."

The HORNED VIPER, *Cerastes*, grows generally from one to two feet, and is characterised by a pair of horns, situated above the eye, and pointing forward, moveable, and about one sixth of an inch long; the colour of the back is yellowish, with irregular spots, the under surface brighter. It inhabits Arabia, and appears to be partially domesticated in Egypt, as it will enter the houses when the family are at table, pick up the scattered crumbs, and retire without injuring any one. Yet it is naturally voracious, and will devour small birds, reptiles, and other prey, till its body becomes extended to twice the ordinary size.

INSECTS — *Insecta*,

ARE animals which have a heart with only one ventricle, and cold white blood, or merely a dorsal vessel analogous to the vestige of a heart, but totally destitute of any branch for the circulation. Their mouths are generally situated either beneath the front part of the head, or below the breast, and the jaws are transverse, or move in lateral directions: but they do not breathe through the mouth; their respiration is carried on by means of two principal pipes, extending parallel to each other throughout the whole length of the body, along the sides, having pores at intervals which admit air. They have all antennæ or feelers, which are supposed to be at once the organs of touch and of smell. They have in general six or more legs, formed variously, according to their different localities: some have the fore legs thick and strong, for hurrowing in the ground; others, the hind legs lengthened, for leaping; and a third, horizontally flattened, to serve as oars for swimming. Most of the insects have wings, and nearly all undergo three curious transformations during their ephemeral existence. From the egg is produced the *larva*, *i. e.* maggot or caterpillar, soft, and without wings; when it has attained its full growth, it changes into a *chrysalis* or *pupa*, covered with a strong skin or hard shell; then, after remaining in this state a longer or shorter time, till it has, in a wonderful manner, completed its parts, attained its utmost size, and put on a very different appearance, the perfect insect hursts its prison:

“ On the gay bosom of some sunny flower,
Amid its bloom to live their little hour;
Their life all pleasure, and their task all play,
All spring their age, and sunshine all their day.”

Although so insignificant in appearance, insects are of vast



1. DRAGON FLY.

2. SPIDER.



3. SCORPION.



4. CATERPILLAR.



importance in the economy of nature, some species spreading devastation throughout a land, and of a fruitful garden making a wilderness; while others purify the atmosphere by consuming putrid animal or vegetable matter; and not a few contribute to diminish the numbers of the more annoying tribes by feeding upon them, while they themselves in their turn furnish the proper food of various birds, amphibia, and fishes. Linnæus arranges them into seven orders, according to the number and different structure of their wings. We shall give specimens of each.

Order I. *Coleoptera*, or wing-sheathed — with crustaceous wing-cases or shells, called *elytra*, which shut together, and form a longitudinal suture on the back — and for the most part two wings.

The STAG BEETLE, *Lucanus cervus*, is the largest which this country produces, measuring sometimes nearly four inches in length: it takes from four to six years to attain its full size. It derives its distinctive appellation from two horns which project from its head, resembling those of a stag, but horizontal, and supplying the place of nippers or jaws, the branches acting as teeth; these are occasionally as red as coral, and bite severely. The colour of the body is a deep brown. In some districts of the South of England it is very common in oak and willow trees, flying abroad only in the evening. It feeds upon the leaves, and is principally seen in the month of July.

The COCKCHAFER, *Scarabæus melolontha*, has no tail; is of a brick colour, with white streaks on the belly. It is also a nocturnal insect, flying abroad in numbers in the evening, and often striking against persons as if it were blind,—whence the English proverb, “as blind as a beetle.” It lives on the leaves of trees, and sometimes appears in such vast numbers, and commits such ravages on vegetable produce, that the locust itself is hardly more destructive. In 1688, the county of Galway in Ireland was infested by innumerable swarms,

which entirely darkened the air, and stripped the trees for a circuit of many miles, spreading at midsummer the gloom and sterility of winter. In their larva state they are little less mischievous, though within more circumscribed bounds. The female having dug a hole about a foot and a half deep, there deposits her eggs, from which proceed larvæ, about an inch and a half long, of a white or grayish colour, with six feet; and in that state they continue four years, during which time they remain under ground, living on the roots of trees and plants, and as they are insatiably voracious, their ravages are often highly destructive. Myriads work between the soil and the turf in rich meadows, devouring the roots of the grass in such a manner that the turf will roll up as easily as if it had been cut with a turfing-knife; and sometimes a large field of fine flourishing grass will become useless, withered, and dry, in a few weeks, through the operations of these unseen miners. They are the favourite food of the rooks and jays, who devour them greedily as they are turned up by the plough, and thus render essential service to the farmer. At the end of the fourth year they assume their chrysalis form, and in the May following appear abroad the perfect insect.

The DEATHWATCH, *Ptinus fatidicus*, so named from the vulgar superstition that its "tick," like the ticking of a watch, prognosticated death, is chiefly found in inhabited houses and granaries. They are about one line and a half in length, with antennæ as long as the body: they are of a brown colour.—The WEEVIL, *Curculio granarius*, is also a small but destructive insect, too well known in our granaries. The body is elongated, and brown; the antennæ strongly bent; its thorax is punctured, and of the same length as its wings. It is in its larva state that it commits the greatest depredations.—The DIAMOND BEETLE, *C. imperialis*, is one of the most splendid among the beetles. The body is of a brilliant golden green, with two black longitudinal bands on the thorax, and there are ranges of golden-

green points on the elytra, impressed upon a black ground. When exposed to the rays of the sun, it sparkles with peculiar effulgence, and seems like a bundle of diamonds and emeralds interspersed and set in gold. — The SILPHA, or GRAVEDIGGER, *Necrophorus, Fab.*, is remarkable for its instinctive habit of burying the bodies of moles, mice, and other small quadrupeds. They are oblong, of a dark grey colour, furnished with six feet, and strong mandibles. When they find a carcase, they scoop out the earth all around and underneath it, into which they gradually descend; in this carcase they deposit their eggs, and thus their larvæ find their food in the very nest in which they are hatched. When about to pass into the state of a chrysalis, they penetrate deeply into the earth, where they construct a cell, which they line with a viscid matter, and where they undergo their other transformations. As they live on carrion, these insects tend to diminish its noxious effluvia, and thus render essential benefit to mankind.

The COMMON GLOW-WORM, *Lampyris noctiluca*, affects grassy places and woods. Its figure is oblong, with a flat, semicircular thorax, surrounding and nearly concealing the head, whose front is almost entirely occupied by the eyes; the body is extremely soft, particularly the abdomen, which has the appearance of being platted. It is about an inch in length, and divided into twelve annuli, of a dark colour, except the last two or three, which are usually yellowish or whitish, and contain the luminous matter that gives this insect its distinguishing characteristic—in some cases common to both sexes, and in others said to be confined to the female only, and lighted by her as the torch of love. The light which they diffuse is more or less vivid, and greenish or whitish, like that of phosphorus; and Cuvier remarks, "It seems they can vary it at pleasure—a fact particularly observable when they are seized or held in the hand. The phosphorescence," he farther observes, "depends on the softness of the matter rather than the life of the animal,

for when separated from the body, the posterior annuli preserve their luminous property, and, when apparently extinct, it may be reproduced with warm water; cold water extinguishes it." The male glow-worm is less than the female, and the light less brilliant, but it has wings, which the female wants.

The SPANISH FLY, *Cantharis vesicatorius*, well known for its medical properties, is from six to ten lines in length; the head a little wider than the thorax, of a glossy golden-green colour, with simple, regular, black antennæ. It abounds about the ash and the lilac, on the leaves of which it feeds, and diffuses around it a highly penetrating, but not very agreeable odour, which leads the gatherers to where the swarm is. After being caught, they are tied in a piece of soft linen cloth, and killed with the vapours of hot vinegar, they are then dried in the sun, and kept in boxes. When dried, they are so light that fifty of them scarcely weigh a drachm.

The EARWIG, *Forficula*, derives its name from the fable of its entering the brain by the ear, and causing death. It is very common in cool and damp places, and in our gardens, where it frequently collects in troops under stones and on the bark of trees. These bands prove very injurious to ripe fruits, devour even their dead companions, and defend themselves with their pincers with great fierceness. The limbs of this insect are solely adapted for running; their wings, which are large, are plaited like a fan, and folded transversely under very short and crustaceous wing-cases. It is said to sit upon its eggs, hatch them, and then to tend its young when extruded with all the affection of a parent, gathering them under her wings as a hen does her chickens — thus affording a singular instance of incubation in the tribe of winged insects.

Order II. *Hemiptera* — or half-winged — with the upper wings half crustaceous and half membranaceous, not divided



5. MOLE CRICKET. 6. LOCUST.



7. FLEA. 8. GRASSHOPPER.



by a longitudinal suture, but crossed or incumbent upon each other; or with four wings.

COCKROACHES, *Blatta*, have an oval body, orbicular and flattened; their head is concealed under the plate of the thorax, and their wings are only plaited longitudinally; their feet are formed for running. They are nocturnal, active insects, which infest the interior of houses, particularly the kitchen, and bakehouses and flour-mills. They are very voracious, and, with their larvæ, devour all sorts of provisions.

The MOLE CRICKET, *Gryllus vulgaris*, is in length about an inch and a half, of a brown colour above, and reddish-yellow beneath, with wings much larger than the elytra; its anterior legs have four sharp teeth like a saw, which, as those of the mole, open a passage for it into the earth, where it burrows. In the months of June or July, the female digs a subterranean nest, about six inches deep, which, with the gallery that leads to it, resembles a bottle with a curved neck, and in this she deposits from two to four hundred eggs. They are nocturnal insects, and in fine weather, about the end of spring, they commence their excursions and their music in the evenings. Their notes are soft and agreeable; but their visits are by no means pleasant to the gardener, as they do much mischief among his tender plants and flowers. — The COMMON CRICKET, *G. domesticus*, has plain legs, and a grey body. They delight in new-built houses, and are particularly fond of warm situations —

“The cricket chirrup on the hearth;”

and they chirp the whole year round, chiefly during the night, when they come out of their holes. They are omnivorous, and eat meat, flour, bread, and especially sugar; they show, also, a great propensity for liquids, and are frequently found drowned in milk-vessels. — The FIELD CRICKET, *G. campestris*, have their wings shorter than their body, which is black. They live in holes in dry soils, making

a curious subterranean abode, with regular cells. They are solitary beings, and sitting in the entrance of their caverns, they chirp, during summer, all night as well as day. As the males only chirp, it is probably a love-note to allure the females.

The GRASSHOPPER, *Cicada*, is of a lively green colour; has four wings and six legs, the hindmost being much longer than the others, enabling it to leap. Its head has been whimsically thought to resemble that of a horse, and its stomach that of a cow; and is by some naturalists classed as a ruminating insect, which opinion derives some countenance from its having three kinds of stomach, or rather three divisions of the stomach. It utters a chirping note, supposed to be caused by the fluttering of its wings; and if roughly handled, bites pretty sharply. It is oviparous, the female towards the end of autumn producing nearly one hundred and fifty eggs, about the size of aniseeds, which she deposits in the earth, in a hole dug by an instrument at her tail, with which she is furnished; then, soon after she has furnished the means for continuing the race, languishes and dies.

The LOCUST, *Gryllus migratorius*, is that destructive insect whose ravages are proverbial—whose approach, from the innumerable myriads that compose their squadrons, is announced in prophetic language as a day of darkness and of gloominess—a day of clouds and of thick darkness; and whose desolating march is thus described: “The land is as the garden of Eden before them, and behind them a desolate wilderness; yea, and nothing shall escape them.” The visitation of a few minutes destroys the husbandman’s hope for the year, and a famine is always the inevitable consequence. In the tropical climates, however, their presence is not attended with such lamentable consequences as in the South of Europe: there the power of vegetation is so rapid and strong, that a comparatively short interval is required to repair the damage; but in Europe, a year at

least is requisite to obliterate their footsteps. Sometimes a strong wind brings deliverance from the pest, and the shores of the Mediterranean have been covered for miles with their dead carcasses; but even then they are not innoxious, for the stench arising from their putrefaction is apt to occasion contagious diseases. The locust is about three inches long, and has two feelers, each an inch in length; the upper wings are brown, with small dusky spots; the under more transparent, and tintured with green; the upper side of the body is brown, spotted with black; the under side purple. The natives of the countries where they most frequently appear, roast and eat them, and in some cases pickle and preserve them, as a small wretched substitute for the better provisions they have destroyed. There are reckoned upwards of two hundred species, of whom several are used by the natives of Africa and India as ordinary food, and are said not to be unpalatable.

The LANTERN FLY, *Fulgora lanternaria*, is one of the wonderful works of God, which eminently show forth his glory in the lower department of animated nature. Luminous as a lighted torch, it not only reflects a lustre on the surrounding objects, but is so clear, that in Surinam, two or three fixed to the head of a pole serve as a lantern for the benighted traveller, and a single one is sufficient to enable a person to read by. It is in size nearly three inches from the tip of the snout to the end of the tail, and about five inches across the expanse of its wings; the body is of a lengthened oval shape, roundish, and divided into several rings; the snout, nearly equal in length to the rest of the animal, is oval, inflated, and bent slightly upwards; it is the depository of that phosphoric material which gives to the insect its splendour and its name. The ground colour of the insect is a bright yellow, tinted with green, and variegated with numerous stripes and spots of red and brown; the wings are also yellow, beautifully undulated with brown lines and spots. It is numerous in China and in South

America, swarming abroad at night — in continual motion, and seldom rising above six feet from the ground. Neither snow nor rain extinguish their effulgence, nor prevent their appearance.

The COCHINEAL INSECT, *Coccus cacti*, Linn., so celebrated for the crimson dye which it furnishes (which, by being combined with a solution of tin in nitro-muriatic acid, produces the most permanent and beautiful scarlet), is in size about a small pea, oval shaped, consisting of several rings, and with six feet. The female is of a deep brown, covered with white dust, flat beneath, convex above; the male is of a deep red, with white wings. They are greatly cultivated in Mexico, and are nourished by the leaves of the nopal, a species of fig-tree, upon which, when placed, they remain till they are killed with boiling water, afterwards they are dried in ovens, on hot iron plates, or by the sun, when they become a valuable article of commerce. The quantity exported from South America was reckoned, some years ago, worth about five hundred thousand pounds per annum.

The BED-BUG, *Cimex lectularius*, is an insect too well known to need much description. It is a nauseous and troublesome inhabitant, where, through inattention, carelessness, or filth, it obtains possession of the chinks of bed-posts or of wooden cornices. The body is flat, round, and about the eighth of an inch diameter, with a small head, and abrupt antennæ. It has a great affection for human blood, although there are some persons that it will not attack. It is extremely prolific, the female laying about one hundred and fifty eggs at a time. It has been asserted that this species sometimes acquires wings; but it is probable that the instinctive cunning they display in dropping from the ceiling or tester of a bed upon the face of the person asleep under it, is all the extent of their flight, or their medium of flying. A strong fumigation of sulphur is said to be the most effectual remedy for clearing a room from

these foul guests, who are always extremely reluctant to quit their quarters.

III. *Lepidoptera*—scale-winged.—This order has four wings, which are covered with scales like powder, with a spiral tongue. It comprises the BUTTERFLIES, *Papiliones*, which bask in the noontide ray, and are divided by Linnæus into six families, containing eight hundred and seventy-seven species; and the MOTHS, *Phalænæ*, which fly chiefly during the night, arranged, in Gmelin's edition of the *Systema Naturæ*, in nine sections, containing one thousand five hundred and thirty-four species; and yet in neither case are the whole families, genera, and species of later entomologists comprehended. Butterflies only sport their gay apparel for a very short period during the sunny season of the year. Soon after they have attained their perfect form, they deposit their eggs, and, having provided for the continuation of their kind, die. Moths are still more fleeting, and mark more strikingly the mortality of man, who, in reference to the eternal duration of spiritual existence, is said to be crushed before the moth. The Butterflies do not feed on the same substances as their larvæ, nor have they any of their voracity; they sip with their small trunks the nectar of the flowers, and, when they become aërial beings, forsake the grosser aliment of the caterpillar. The larvæ of this order are

The CATERPILLARS, *Eruca*, who are almost as numerous and diversified as the species. Our limits forbid more than noticing their general characters. They are of a long, worm-like figure, with many feet; a heart-shaped head, on each side of which are the eyes, and a few short projecting hairs, two of which, the rudiments of the future antennæ, are longer than the rest; the mouth has two simple teeth; the body is divided into twelve segments, each of which has an air-hole, except the second, the third, and the last. Their feet, which vary in number from sixteen to eight, are of

two kinds: the first are horny, with three joints; the hinder feet are thick, and not articulated, but have soft hooks, particularly the two last, which are made for grasping, and by which the caterpillar often supports itself when in a state of repose. The skin is sometimes naked, sometimes hairy, and sometimes set with prickles. Their sole occupation is taking food; and it is in this state that insects commit their most deplorable devastations upon the leaves, roots, buds, and wood of plants. They change their skins generally three or four times; they then assume the chrysalis or pupa state, from which the perfect insect issues. During this process, the insect discharges some drops of a reddish fluid, whence (when great quantities fall on one place, as sometimes happens) has originated the wondrous tales of showers of blood. The fecundity of these insects is such, that they would soon defy the efforts of man, and spread desolation over the vegetable world, were it not that the *Ichneumon* genus of moths, comprising four hundred species, destroy an immense majority, by laying their eggs in the bodies of the caterpillar, and feeding upon its substance. Out of thirty caterpillars placed under a glass, it was found that the ichneumon had made lodgements in the bodies of twenty-five. Their history cannot be separated from that of the perfect insects.

The PAINTED-LADY BUTTERFLY, *Papilio cardui*, in two or three weeks after going into her chrysalis state, appears in her glory. She has indented wings, of a bright orange colour, beautifully variegated with black and white spots; on the under side of the posterior pair are four eyes. Towards the latter end of autumn she lays a single egg on one leaf of the nettle, which forms the food of the larva; but how often she repeats the process before she disappears, is not accurately ascertained. The caterpillar of this butterfly is solitary, brown, and prickly, with yellow interrupted lines along the sides, and is found during the whole summer and greater part of harvest.—The TORTOISE-SHELL BUTTERFLY, *P. urticae*. Her caterpillar feeds also on the nettle,

and is gregarious. Towards the end of June, it crawls to some leaf or branching stalk, where it hangs by the tail, and dropping its skin, remains suspended in its chrysalis state, glittering with golden hues, till, after a fortnight of torpidity, it escapes from its prison a beautiful variegated butterfly, which lives over the winter, and comes abroad early in the spring in good weather; whence Linnæus calls it "*fallax veris nuncius*"—a deceitful messenger of spring. Its wings are of a deep orange colour above, with dark spots, and their base and hinder margin black, with a series of blue crescents.

The genus *Sphinx* may be considered as the connecting link between the Butterflies and the proper Moths. As a specimen, we give the JESSAMINE HAWK-MOTH or SPHINX, *Atropos*. Some of this genus are the largest of their order, and this individual is the largest of the British species. They fly, for the most part, early in the morning and late in the evening. The superior wings are variegated, deep and yellowish-brown with light yellow; the inferior wings are yellow, with two brown bands; the abdomen is yellowish, with black rings. It lives on leaves, and is metamorphosed in the earth. But it is most remarkable for being considered as an insect of ill omen. There is a spot like the figure of a death's-head on its breast; and this, with the sharp sound which it produces, causes it to be considered as the messenger of death, especially when it enters an open window at night, and, like other nocturnal insects, flying to the candle, extinguishes it, as it frequently does with its large wings.

The MOTH, *Phalæna*. The insects of this genus fly chiefly during the night, and even their caterpillars feed only during the night. Of the fifteen hundred and thirty-four species we give a few specimens of the more remarkable; and of these the EMPEROR MOTH, *P. Iris*, is one of the finest known in Europe. Its wings spread horizontally, and are shaded with grey, marked with broad coloured lines, bear-

ing each an eye, transparent at the point, and half encircled by a bright crescent, inclosed within a shining ring. The antennæ of the male is rougher than those of the female, and the base of his posterior wings is light yellow. They are found on beatb, the bramble, the rose, elm, willow, and fruit trees. About the middle of July they spin a case of a very firm consistence, somewhat in the shape of a Florence flask without the neck; and having inclosed themselves in this case, they change into a blackish pupa, and thus remain till the month of April, when the mouth of the case, being an elastic valve, yields to the efforts of the insect to get out, although so constructed as to prevent any voracious insect from entering. Such is the minute and wonderful care of the Creator for the preservation of the most insignificant living things he has seen fit to call into existence.

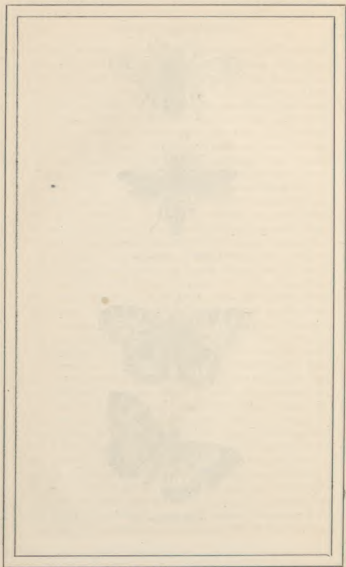
The GREAT TYGER MOTH, *P. carya*, has incumbent wings, which when at rest cover the under wings, and are of a brown colour, with irregular stripes of white; the posterior ones being purple, with black dots. The female lays 1600 eggs. The caterpillar is bairy, and of a blackish-brown colour. It feeds on lettuce and other pot herbs, and is very common in our gardens in spring. When afraid, it rolls itself up like a hedge-bog. The pupa is black, inclosed in a web made of threads, which the caterpillar spins, and attaches to leaves or stalks sometime in the close of spring or beginning of summer, where it hangs for a month or so, when the moth makes its appearance, about the end of June or early in July. — The LARGE MAGPIE MOTH, *P. grossulariata*, has whitish wings, with black rounded spots, and yellow streaks on the primary ones. Its caterpillar is well known, being found plentifully on the leaves of gooseberry and currant-bushes; it is hairy, of an ash spotted colour above, and yellow below. The female deposits her eggs in July, and the caterpillar appears in September; changes its skin twice before winter, and again makes its appearance in spring. The moth appears about the end of June or be-



9. BEE. 10. WASP.



BUTTERFLIES.



gunning of July.—The SURINAM MOTH, *P. strix*, has spreading wings, measuring from tip to tip nine inches, which have the appearance of net-work, being finely reticulated with black and white lines. The caterpillar is black, with blue rings and a yellow lateral line.

The SILK-WORM MOTH, *P. Bombyx mori*, Linn., the most valuable of all the moths, has no pretensions to beauty. The wings are whitish, with two or three obscure and brown streaks, and a crescent-like spot on the superior pair. Its eggs are of a straw colour, and each about the size of a pin's head. Its larva, known by the name of the silk-worm, when first produced, is extremely small, and entirely black, and changes its dress before it assumes the chrysalis state. In this state it commences spinning a cone or cocoon of silk thread, in which it envelopes itself, and though weighing only two grains and a half, measures nine hundred feet. Here it continues about twenty days, till it undergoes its final transformation, when, by an effort at that part of the cone which is always left thin and is easily broken, it emerges from its silken palace to revel in the light and life of an ærial existence. This wonderful insect is found in a native state on the mulberry trees in the northern provinces of China, whence it was introduced to Europe in the reign of Justinian by the Greek missionaries. Some of the first Crusaders brought it from the Morea, and several centuries afterwards it was cultivated in France under the administration of Sully. The art of manufacturing silk was known to the ancients. Pliny says, the cocoons were first unwound and woven by Pamphila, a woman of Coos, the daughter of Latous. When it was introduced into England is not certain, but Queen Elizabeth had a pair of black silk stockings presented to her, in the third year of her reign, which she said was "a marvellous delicate wear," and would never after use stockings of any other fabric.—A characteristic anecdote is told of James I. of England, whilst King of Scotland. Having observed the Earl of Mar

wearing a pair of silk stockings, he begged the loan of them to appear before the English ambassador ; " For ye would not, sure," said he, " that your king should appear as a scrub before strangers." — The GHOST MOTH, *P. humali*, has yellow wings, intersected with broad orange lines. It flies in the dusk of the evening, hovering up and down in one particular spot for a long time together, often in church-yards, whence its English name. It lays very small eggs, which the female discharges with some force, like the pellet from a pop-gun. The caterpillar is of a cream colour, and feeds on hops.

Order IV. *Neuroptera* — nerve-winged — with four membranous transparent wings, which are generally reticulated with veins or nerves, and often an appendage like pincers at the tail; — *e. g.* the DRAGON-FLY, *Libellula*, consists of a great number of beautiful species, of varied and brilliant colours — green, blue, crimson, scarlet, white, and black — and sometimes these hues are all mingled and variegated in one individual. Their bodies are long and slender — that of the Great Dragon-Fly, *L. grandis*, sometimes measuring four inches, and proportionably thick; their wings stand out at right angles. The larvæ are water worms; have six feet, and move with great celerity in the water. Their mouths are furnished with articulated pincers, and as they are very voracious they have been termed the Crocodiles of water insects. They change to the chrysalis state in the water, and as summer advances crawl to a blade of grass, or some dry bit of wood, where the skin grows parched, splits, and the perfect fly escapes to a new element.

The LION ANT, *Myrmeleon formicarium*, has wings clouded with brown, and a white marginal spot behind. Their larvæ have mouths armed with long pincers, and live on ants. With their abdomen they dig cavities in the dry sand, in the shape of a funnel, where they reside to watch their prey and into which when any insect falls, it is immediately

seized and devoured. — The EPHEMERA are those insects which have their appellation from the shortness of their lives after they become perfect, some revelling only through a brief day, and others glancing in the sunbeam for but a few hours, though many of them have existed previously as worms in the water from one to three years. How opposite to man, who first sports his little day, then lives for ever! — The MAY FLY, *E. albipennis*, is the largest of the British species. In the month of June it assembles in myriads under trees near waters, and dances away the few hours allotted to it, ascending and descending in the air, forming mazy circles, and giving life and animation to the loveliness of a halmy summer evening. Their larvæ are the favourite food of the fresh-water fishes, as are also the flies themselves. They are more numerous in running streams than in standing waters.

Order V. *Hymenoptera* — membrane-winged — with four membranaceous wings; the tail furnished with a sting, but some wingless varieties are included.

The genus *Ichneumon*, so called from the service it renders mankind by diminishing the numbers of other insects (*vide* p. 354, as the quadruped after which it has its name thins the ranks of the crocodile), belongs to this order. — The BLACK MOTH, *Sphinx sabulosa*, is perhaps not less useful by consuming putrefying insects; for which purpose the female, instead of a sting, is furnished with an ovipositor or instrument for making an incision in the bodies where she deposits her eggs, and the larvæ, when hatched, devour their habitations. The wings are plain, and fold close to the side, and the sting is concealed in the abdomen; the three last rings of which are rusty coloured, while the rest of the body is black and rough. The account which Ray gives of this insect is too interesting and remarkable to be omitted: “ On the 22d of June 1667, I saw it dragging along a caterpillar three times larger than itself, which, after it had

carried the length of fifteen feet and upwards, it deposited near the entrance of a hole which it had previously dug in the earth. It then removed a little ball of earth with which the entrance was covered, and went in. After a short stay it came out again, and seizing the caterpillar, drew it into the hole and left it there; then taking some globules of earth, it shoved them one after another into the hole, and now and then scraping with its feet, as rabbits and terriers do, it threw the loose earth backwards into the hole, and continued to do so with the globules of earth and dust alternately, till the hole was quite full, descending at times, as I thought, for the purpose of pressing down and consolidating the earth, and once and again flying to a neighbouring fir tree, perhaps to procure turpentine to conglutinate the work. When the hole was filled and the surface levelled, so that the entrance could no longer be discovered, it took two leaves of fir, which were lying near, and placed them close to the entrance, as if to mark the spot!" "Who," adds the pious observer, "can contemplate such things without admiration and astonishment, or attribute them to a mere machine?"

The WASP, *Vespa*, is a social but a fierce and a rapacious insect, preying upon the naked winged tribes, especially bees and flies. It is also fond of honey, and all sweet liquors and ripe fruits. There are enumerated thirteen British species, of which the *Horned* is the most voracious, and the *Vespa Britannica* is with us the most common. The former builds its nest in hollow trees, or under ground; the latter suspends its curious dwelling from the eaves of barns, or the branches of low bushes. The upper part of the hornet is black, with a red breast, and the rings of the body are dotted with black. The general appearance of the common wasp is yellow, striped and spotted with black. Their nests are composed of a substance like paper, formed of wood reduced to paste; the interior of which is admirable in the arrangement of its pillars, galleries, and cells. Their

society consists of males, females, and neuters. The two last build the nest and procure the food; the first is the gentleman, and does nothing but lounge at home to indulge himself. Towards the end of Autumn, when the weather begins to grow chill, they destroy all useless hands; the progeny which had been reared with the greatest tenderness, reward their parents by putting them to death; the cold of winter completes the devastation, and not more than one or two brood females survive to continue the race—so beneficently wise is the regulation of providence for preventing the enormous increase of this mischievous insect. The males have no sting, but the females and neuters are well provided, and both have poison bags, which secrete the poison that causes so much pain when injected.

The BEE, *Apis*, is as useful as the wasp is pernicious, furnishing man with food and light. It is divided into several species, which differ from each other in size and instinct, some living solitarily, and others in society. Of these, the COMMON HIVE or HONEY BEE, *A. mellifica*, is the most interesting as well as the best known. It is covered with down of a greyish colour, inclining to brown on the hinder parts. It has four wings and six legs, the thighs covered with strong bristles. It has besides two remarkable organs—the proboscis or trunk, capable of being folded or extended at pleasure, with which it extracts the nectar of flowers for the production of honey—and a sharp sting, for aggression or defence; but the females and neuters only are possessed of this instrument: it has also two stomachs—one in which the honey is elaborated, and another where the poison is prepared; besides two pouches, in which the wax is secreted. The average number of individuals in a community is computed at from 16,000 to 20,000, of which one only is a female, distinguished by her large size, and denominated the Queen, with a train of about 500 or 600 males, or drones, rather smaller, and from 14,000 to 16,000 eunuchs or labourers, the smallest but the most active of

the whole. The queen has two large ovaries, composed of numerous sacculi or little bags, containing the eggs; and so prodigious is her fecundity, that the whole swarm owe their birth to her, and to her they are so attached, that it has been observed, if a hive be deprived of their queen, all labour ceases, nor do the workers stir abroad even to collect their food; but should another arise, a new soul is infused into the insect nation, and their toils are renewed with renovated spirit. The drones are mere idlers, who live only to impregnate the females, and when this necessary operation is performed, either die immediately or are put to death some short time after by the neuters. Upon these last devolve the various labours of fabricating the combs, making the honey, and feeding the young, carrying out the dead, and keeping the hive clean. The combs are composed of two opposing rows of hexagonal cells, placed parallel to each other, with spaces which allow the bees to pass between them. The cells are thus placed horizontally; and distinguished geometers have demonstrated that their form is the most economical with respect to the expenditure of wax, and the most advantageous with regard to the extent of space contained in each. They are of different dimensions, proportioned to the different classes to which they are allotted—the royal the largest, the males the next, and the neuters the least, serving first as the residence of the larvæ, and then for a receptacle of the honey. The larva is hatched in about five days after the egg is deposited, and in seventeen more the insect is perfect, when they separate themselves from the parental roof, either willingly, or are driven out by the older bees, to seek their fortunes or maintain themselves. If there are more females than one in the swarm, they divide into factions, and contest the rule till one overcome, when the whole unite under the conqueror, and the unsuccessful candidate is destroyed. When settled, they divide into four companies, one of which scours the fields for materials, another constructs the cells, a third polishes

them, and the fourth procures food for the rest, or relieves those who return with their respective burdens ; and such is their assiduity, that in the course of one day, a common swarm will finish a number of cells sufficient to contain three thousand incipient insects.

The HUMBLE BEE, *Apis terrestris*, well known to children, who frequently kill them in order to get at their honey, is the largest of all the insects that go under the name of Bee, being about an inch long. They are black and hairy, with a yellow belt on the back, and the tail white. They inhabit subterranean nests, in communities of fifty, sixty, or sometimes two or three hundred individuals, composed of males, females, and neuters, but the males are the smallest. These cavities are of considerable extent, and wider than high. The ceiling is constructed of earth and moss, which these insects carry thither fibre by fibre. A coating of coarse wax is laid over the walls ; sometimes a simple opening, left at the bottom of the nest, serves for an entrance, and a winding passage, covered with moss, about a foot or two long, leads to it ; the floor is strewed with a layer of leaves for the accommodation of the brood. Each insect makes a separate cell like a small nutmeg, several of which placed together form a comb. The females are few, and it is uncertain whether they have a queen ; but there is one much larger than the rest, which appears to assume some kind of authority. The honey of this insect is not so good, nor is the wax so clean, as that of the common hive bee.

The ANT, *Formica*, or EMMET, belongs, like the wasp and the bee, to the class of social insects ; and like them, especially in eastern countries, affords a striking example of ingenuity, foresight, and industry :—

“ These Emmets, how little they are in our eyes !
We tread them to dust, and a troop of them dies
Without our regard or concern ;
Yet wise as we are, if we went to their school,
There's many a sluggard and many a fool,
Some lessons of wisdom might learn.” — WATTS.

There are several species of this genus. Its body is divided into head, breast, and belly; its mouth has two crooked projecting jaws, in each of which are two tooth-like incisores; it has six hairy legs, each furnished with two small claws; the belly is more reddish than the rest of the body, which is of a brown chesnut colour, shining as glass, and covered with minute fine down. These resemble the former insect, in having three distinct kinds of individuals in their communities, — males and females, which are furnished with wings — and neuters, which have none; the neuters and females, however, have likewise stings, which the males want. The males, when fully formed, do not re-enter the domicile, but content themselves with fluttering round the ant-hill, where the females come out to seek them. Frequently the females of the new race, so soon as their wings are developed, wander to a distance from their birthplace, and having detached their wings by means of their feet, found a new colony; — some of them, however, are arrested in their progress by the neuters, who force them to return to their home, next tear off their wings to prevent them from leaving it, and force them to deposit their eggs there, after which they are unmercifully discarded. The neuters have the sole charge of building the habitation, and managing the domestic economy, gathering the provisions, and rearing the young, which they feed with their mouths, and bring out in fine weather to the side of the hill, to enjoy the air, and at night, or on the appearance of rain, again place them under covert. The form of their nest varies according to the species; — some build entirely under ground, and others raise a cone or dome-like hillock, over the spot where they habitat; while others establish their dwelling in old trees, the interior of which they perforate in every direction.

In common, ant-hills are composed of individuals of the same species. The AMAZON-ANT, *F. rousatre*, however, deviates from the others in this respect; their neuters procure auxiliaries by open violence, of their own caste but

of different species. When the heat of the day begins to lessen, and exactly at the same hour for several days, they quit their nest, and advance in a solid column, more or less numerous according to their population, upon the ant-hill they mean to attack. Into it they soon penetrate, notwithstanding the opposition of the inhabitants, seize the larvæ and nymphs of the neuters peculiar to the invaded community, and transport them in the same warlike order to their own garrison, where they are attended to by other neuters of their own species, who have been either metamorphosed there, or brought as captives from their original dwelling. These constitute what are called mixed ant-hills.

Our northern species differ from those of the torrid zone, in remaining torpid during winter, so that they require no sustenance, and accordingly lay up no store; but the others, which continue active, make provision for the evil day. Their food consists of fruit, insects or their larvæ, dead bodies of small quadrupeds or birds, and sweets of every description within their reach.—One species, the VISITING ANT, *F. cephalotes*, Linn., which inhabits several parts of South America, is of a large size, about an inch. Besides the example it sets to the indolent, it is in other respects of advantage to mankind: it finds its way in troops into the houses of the residents, who gladly receive it, as it consumes or drives away not only the cockroaches and spiders, but even mice and rats.

Order VI. *Diptera*—two-winged—includes all those insects which have but two wings, and behind or below them two globular bodies, called *halteres* or poisers.—The GAD-FLY, *Oestrus*. The insects of this genus deposit their eggs in the nostrils or under the skins of herbivorous animals, where they cause tumours, in which the larvæ are bred, and upon the matter of which they feed. When full fed, they let themselves fall on the ground, and enter the earth, where they change into an oval hard pupa. The perfect insects

resemble large thick-haired flies, with a kind of proboscis and short antennæ, and their feet are terminated in some species by two hooks; they take no food, and have a very brief existence, but when they make their appearance in clouds, the cattle instantly take fright, and try by every means in their power to avoid or get rid of these tormenting parasites, who often occasion very serious disorders.

The COMMON HOUSE-FLY, *Musca domestica*—our plague during warm seasons, invading our houses, attacking our food, and defiling our mirrors, ceilings, and paintings—is of an ashy-grey, with four black streaks upon the upper part of the back; the hinder part is of a blackish-brown, spotted with black below, and yellowish-brown above. The larvæ are bred in dung, carrion, and filth; the pupæ lie parallel to one another. On the approach of winter, they get benumbed, or what is usually called blind, before they finally retire.—The LARGE BLUE FLY, *M. vomitoria*, which is also a great annoyance, has a yellow front, black back, with the hinder parts glossy-blue, streaked with black. It possesses a keen sense of smell, and announces its presence in our dwellings by a loud humming. It deposits its ova in meat; but when the larva is about to become a pupa, it abandons the putrescent matter in which it has lived, which might then prove injurious to it, and penetrates if possible into the earth, or is metamorphosed in some dry and retired spot.

The HORSE-FLY, *Tabanus bovinus*, is the terror of horses and horned cattle, whose skins they pierce in order to suck their blood. They are very similar to large flies, with thin hair on their bodies; brown above, and grey beneath; their head is almost entirely occupied by two eyes, generally of a bright golden-green colour, with purple spots or streaks, which fade after they are dead, but may be partially restored by the application of warm water. The apparatus of their mouth is peculiarly fitted for blood-drawing, consisting of a proboscis, which incloses a sucker composed of six small

pieces in the form of lancets. Beasts of burden, having no means of repulsing them, are most exposed to their attacks, and are sometimes seen covered with blood from the wounds they inflict. They begin to appear towards the close of spring, are very common in woods and pastures, and produce a humming noise when on the wing. Their larvæ, which are long, cylindrical, and attenuated, live under ground; the nymphs ascend to the soil when about to divest themselves of their skins, and assume the form of the perfect insect.—The CLEG, *T. pluvialis*, the most common species of this genus, seems particularly fond of the blood of man, for alighting on his unprotected skin, it inflicts a smart wound, accompanied with inflammation and swelling. Its eyes have four waved stripes, and the legs are partly white.

The GNAT, *Culex pipiens*, or MOSQUITO, is of an ashy colour; has a long body, the hinder part ringed and brown, a small round head with large eyes, and a proboscis in the form of a cylindrical tube, terminated by two lips and a sucker of five points; wings laid horizontally over one another, and long legs. It is frequent in the neighbourhood of water and marshy places; its bite is painful, raising a considerable degree of inflammation; and its piping note is exceedingly irksome where it abounds, especially in the night. The female deposits her eggs on the surface of the water, and places them side by side in a perpendicular direction, the whole appearing like a little boat. In Lapland, the injuries the inhabitants sustain from the gnat are amply repaid by the vast numbers of water-fowl and wild-fowl which it attracts, as it forms the chief food of their young.—The MIDGE, *C. pulicaris*, is the smallest species of the gnat genus, of a brown colour, with white spotted wings. Where it bites, it leaves a brown spot.

Order VII. *Aptera* — consists of such insects as want wings, which come from the egg complete, and have all six

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legs.—The **WHITE ANT**, *Termes fatale*, common to India and Africa, is a formidable and destructive, though very small insect, being only about a line and a half or two lines long; the tip is horny, and divided into four straight stripes; the colour brown above, the wings pale;—the males alone have wings, which they instantly lose on exposure to the sun. The species consists of males, females, and neuters, who live in society, and form communities so numerous as to defy all calculation. The neuters, called also soldiers, who are stouter than the others, but are the fewest in number, defend the domicile, presenting themselves first in case of an attack on their dwelling. It is also said they force the labourers to work. Their habitations are formed under ground, in trees, and in all sorts of ligneous articles, in the planks of ships, the floors of houses, and in household furniture; there they excavate galleries, which form so many roads all leading to the centre of their domicile; and these bodies, thus mined, and retaining nothing but a superficial coat, give way upon the least pressure, or very soon crumble into dust.

The **LOUSE**, *Pediculus*. Of this troublesome well-known little pest, Linnæus has formed one genus; but the species are extremely numerous, and not all fully ascertained, as almost every animal—man, beast, bird, and fish—has one peculiar to itself, though two species are sometimes found on the same bird. They are all small, and live upon blood and the juices of the animals where they habitate.—The **COMMON LOUSE**, *P. humanus*, is divided into three parts, the head, trunk, and abdomen. In the head there are two black eyes, and the mouth is furnished with a sucker or piercer, which it thrusts through the skin to procure its food; the body is flattened, and so transparent, that with the aid of a good microscope we can perceive the whole process of its feeding, and trace the blood as it passes through the intestines of this voracious creature; the legs are short, and terminated by two claws, which enable it

to cling with great facility to the hairs of animals or the feathers of birds. Its motions are slow. Planted on a filthy or diseased subject, it propagates faster than any known insect, but whether there be a distinction of sex has not been fully ascertained. Mercury, in case of disease, is the usual expulsor, but cleanliness in common is both the best preventative and cure.

The FLEA, *Pulex irritans*, is as troublesome and blood-thirsty as the preceding insect, but more active and less ignoble. Its body is oval and compressed, covered with a black, shining, bristly shell; the head is small, with large eyes; the mouth is composed of three pieces, inclosed between two jointed plates, which, when united, form a cylindrical proboscis, with which it perforates the skin; its legs are stout, the last ones particularly fitted for leaping, and at one spring it will clear a distance two hundred times the diameter of its body. Its stomach is proportioned to its strength, for in one day it will devour above ten times its bulk. It is oviparous, and its eggs, which, as well as those of the louse, are called nits, are hardly discernible by the naked eye; the larvæ resemble little worms, first white, then reddish. Stewart mentions that this little creature has even become a favourite pet with some ladies, who have pleased themselves with keeping, feeding, and taming it. A golden chain has been made for it, with a lock and key; and being kept in a box with wool in a warm place, and fed daily, it has been known to live six years. A number of these insects, completely tamed, and taught to drag a little chariot and obey the word of command, were not long ago exhibited in this city; thus evincing that an instinctive perception, of which we could scarcely have formed any idea, resides in these diminutive insects. Fleas are very fond of cats, dogs, horses, &c., but leave them the moment they die, or very soon after.

The CHIGER, *P. penetrans*, has a rostrum as long as the body, and is peculiar to America and the West Indies, where

it was wont dreadfully to annoy the Negroes who worked barefooted in the fields; though every person, Dr. Wright remarks, is liable to have chigres, which are occasioned by this small insect burrowing under the skin, occasioning an intolerable itching and small hard tumour on the part. In a day or two the chigre becomes as large as a duck-shot, and of a yellowish-white colour, the abdomen of the insect being distended with the ova, which, if allowed to burst of itself, the young ones infest the neighbouring parts, and an abscess is often formed, which prevents the use of the limb. Negro women are very dexterous in turning out the insect whole, which saves the patient from farther trouble.

The Spiders and Scorpions, comprehended by Linnæus in the *Aptera*, have latterly been placed in a separate class, *Arachnides*, and distinct order, *Pulmonaria*, which respire by lungs through stigmata, small openings in the posterior and lower parts of the abdomen, thus separating them from Insects, to which in other respects they bear a close resemblance.

The SPIDERS, *Aranea*, Linn., are a numerous family. They have eight, legs composed of seven joints, and terminated by two hooks; their head is always fixed to the thorax; and their eyes, varying in number from four to eight, shine in the dark like those of cats;—so that they probably possess the faculty of diurnal and nocturnal vision. In the posterior part of the abdomen are two small bags, where the fluid is secreted from which their webs are spun, and through whose lips, perforated by minute orifices, silken filaments of extreme tenuity are ejected, which immediately coalesce into a fine glutinous thread upon exposure to the atmosphere, which being attached to a wall or bush are woven into the circular snares for entangling their prey: in hags of this material the female deposits her eggs. The gossamer threads that glitter in our autumnal sunbeams, are supposed to be the first unattached spinings of some of the

young of a species to which the Tarantula belongs. All the spiders secrete a poisonous fluid, which they instil into their victims, but some of the larger kinds only are dangerous to man — especially those of the Mygale family, which cover, when at rest, a space of from six to seven inches in diameter, whose bite produces a violent fever ; sometimes they seize and kill the smaller birds, such as humming birds, small pigeons, &c.

The SCORPION, *Scorpio*, Linn., one of the largest of the insect tribe, has an elongated body, somewhat resembling a lobster, suddenly terminated by a long slender tail, formed of six joints, the last of which forms a pointed sting, whence is ejected a venomous fluid, secreted by small glands, and collected in a bladder near the tail. Below the breast are eight articulated legs, each divided into six joints, the two hindermost of which are covered with hair, and furnished with forceps ; with these they seize the various insects on which they feed, pierce them with their sting, and then devour them. They infest the warm latitudes of both hemispheres, dwelling under stones among ruins, and are not unfrequently unwelcome visitants in human habitations. When they run, they curve their tail over their back, ready to dart it in any direction for attack or defence. Mr. Campbell, in his Travels in South Africa, gives an account of a combat which was exhibited for his entertainment in the Namacqua land : — “ In order to exhibit something of the scorpion, they dug a hole, into which they put four of them. They soon began to fight till they killed one another. Their mode of fighting was curious. Having two claws like a crab's, with these they attempted to seize each other by the head. When one happened to be thus caught, he seemed sensible of his danger from his opponent, and cried out ; but the other, regardless of his cries, turned round his tail and gave him one sting. The one that was stung, as if aware of its mortality, resisted no more, but lay down till he died ; the other, as if aware of the same thing, gave himself no

farther trouble. They all had the same manner of fighting, and all the vanquished acted in the same manner. After which, the surviving conqueror was put to death by Mr. Saas." These scorpions are exceedingly venomous; "and the remedy," Mr. Campbell adds, "which the natives apply when stung by such creatures, is putting a living frog to the wound, into which it is supposed the poison is transferred from the wound, and it dies; then they apply another, which dies also; the third perhaps only becomes sickly, and the fourth no way affected. When this is observed, the poison is considered to be extracted, and the patient cured." There are various species of these troublesome creatures; but the malignity of the European is inferior to that of the African or Indian kinds, which sometimes grow twelve inches long.

THE END.

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