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GOLDSMITH'S

NATURAL HISTORY,

ABRIDGED FOR THE USE OF SCHOOLS,

BY MRS PILKINGTON



REVISED AND CORRECTED
BY A TEACHER OF PHILADELPHIA.

TO WHICH IS ADDED,

AN APPENDIX,

EXHIBITING THE CLASSIFICATION OF LINNÆUS:

AND A NUMBER OF QUESTIONS TO AID THE PRECEPTOR IN THE
EXAMINATION OF STUDENTS

THIRTEENTH EDITION.

Philadelphia:

PUBLISHED BY DESILVER, JR. & THOMAS.

NO. 247, MARKET STREET.

.....
1833.

Eastern District of Pennsylvania, to wit:

***** BE IT REMEMBERED, That on the twenty-second day of
* L. S. * May, in the forty-seventh year of the independence of the United
* States of America, A. D. 1823, THOMAS DESILVER, of the said dis-
trict, hath deposited in this office the title of a Book, the right whereof he
claims as Proprietor, in the words following, to wit :

“ Goldsmith’s Natural History, abridged for the use of Schools, by Mrs. Pilkington. Revised and corrected by a Teacher of Philadelphia. To which is added, an Appendix, exhibiting the Classification of Linnæus: and a number of Questions to aid the Preceptor in the examination of Students.”

In Conformity to the Act of the Congress of the United States, entitled, “ An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such copies during the times therein mentioned.” And also to the Act entitled, “ An Act supplementary to an Act, entitled ‘ An Act for the Encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such copies, during the times therein mentioned,’ and extending the benefits thereof to the arts of designing, engraving, and etching, historical and other Prints.”

D. CALDWELL, Clerk of the
Eastern District of Pennsylvania

PREFACE.

IN abridging a Work of acknowledged celebrity, an Author must, in some degree, be liable to disrepute; for many beautiful descriptions must of course be mutilated, and many interesting remarks necessarily withheld.

Dr. Goldsmith's History of Animated Nature is so *justly* and *universally* admired, that the slightest alteration in the original design may subject the *deviator* to censure or digrace; but whilst the Naturalist must admire his descriptions, the delicate mother may think them *too replete*, and fear that the young mind might be incited to investigate what ought only to be explained in maturer years.

The following Work is presented to the Public, and to those who have the instruction of Youth, as a faithful transcript of the Author's original descriptions, and as being well adapted for the general use of Schools.

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GOLDSMITH'S
NATURAL HISTORY,
ABRIDGED.

CHAP. I.

INTRODUCTION.

THE World may be considered as one large mansion, where man is permitted to enjoy the works of Nature, and to admire the hand which called it into life. Blest with talents, and endowed with sense, he feels himself the lord of earth's domain; but, whilst he contemplates the superiority of his station, he is apt to forget from *whom* it is *derived*.

Amidst the many advantages which the mind enjoys from tracing Nature through her varying course, that of finding it raised with admiration to the Power which formed it, is one of the most beneficial that can be produced; for it is impossible to behold its nice dependencies, without observing an *Almighty hand!*

In taking a view of Animated Nature, and beholding the connexion which exists in every part, we cannot but observe the exact resemblance which subsists between the *human* and the *animal race*. If Providence has bestowed upon *us* the gift of *intellect*, they are endowed with *sagacity*, or *strength*; and so great is the similitude in the formation of our bodies, that we might be termed animals erected on the hinder legs.

This resemblance between man and beasts, though it may degrade the *body*, should elevate the *mind*, and point out the folly of *personal arrogance*, when we reflect that our form bears affinity to a brute's. Man's superiority consists in *virtue*, and of that possession he may well be vain; there he enjoys that pre-eminent distinction, which raises him above every other tribe.—Leaving man to the possession of that

superiority which the benevolent Author of his being has designed, I shall examine into the life of those inferior animals, who, like him, were formed for some important use.

In taking a general survey of Nature, the mind expands at the important sight, and becomes lost in contemplating the wondrous power of Him who could endow such *myriads* with life! Not only the forest, air, and waters teem with animals of various kinds, but almost every vegetable and leaf has millions of minute inhabitants, some of which are found objects of the greatest curiosity. In this seeming exuberance of Animated Nature, ignorance might lie down in hopeless uncertainty, and declare that what required such an immensity of labour to search out, must absolutely be *inscrutable*; but, with the active investigating mind, difficulties are calculated to create exertion; and it begins its task by numbering, grouping, and classing all the various kinds that fall within its notice.

Method is one of the first requisites to be observed in Natural History, and without it very little progress can be made, for it is by that alone we can hope to dissipate the glare which naturally arises from a multitude of objects at once presenting themselves to our astonished sight. Without the aid of system, Nature must have lain undistinguished, like furniture in a lumber room; every thing we wish for is there indeed, but we know not *where* to find it. If, for instance, in a morning excursion, I find a plant, or an insect, the name of which I desire to learn, or perhaps am curious to know whether its species is undiscovered, I can only derive information from examining those methodical systems which Naturalists have arranged in regular course. This single proof of the utility of method will completely evince the necessity of the plan; yet, instead of perplexing the mind by technical expressions, or oppressing the memory with scientific terms, I shall endeavour to make the subject clear and comprehensive to the understanding of those for whom it is designed. In this succinct and elucidating method, I shall adhere to the Author's plan from whom it is abridged, and divide the different Classes under those fourteen heads with which he commenced his intelligent Work.

All quadrupeds (the number of which, according to Buffon, amounts to about two hundred,) may be classed according to the following plan:—

First, those of the Horse kind / This class contains the

Horse, the Ass, and the Zebra. † None of these have horns, and their hoofs are undivided.

† The second class are those of the Cow kind, comprehending the Urus, the Buffalo, the Bison, and the Bonasus, which have cloven hoofs, and chew the cud. †

† The third class is that of the Sheep kind, with cloven hoofs, and chewing the cud like the former. † In this is comprehended the Sheep, the Goat, the Lama, the Vigogne, the Gazella, the Guinea deer, and all of a similar make and form. †

† The fourth class is that of the Deer kind, with cloven hoofs, and solid horns, which they annually shed. † This class contains the Elk, the Rein-deer, the Stag, the Buck, the Roe-buck, and the Axis. †

† The fifth class comprehends all those of the Hog kind, the Peccari and the Barbyrouessa. †

† The sixth class is that numerous one of the Cat kind. † This comprehends the Cat, the Lion, the Panther, the Leopard, the Jagnow, the Congar, the Jagnaretta, the Lynx, the Ounce, and the Catamountain. † These are all carnivorous, and furnished with crooked claws, which they can sheathe and unsheathe at pleasure. †

† The seventh class is that of the Dog kind, carnivorous and furnished with claws like the former, but which they cannot sheathe. † This class contains the Dog, the Wolf, the Fox, the Jackall, the Isatis, the Hyena, the Civitte, the Gibet, and the Genet. †

† The eighth class is that of the Weasel kind; a long small body, with five toes, or claws, on each foot; the first of them separated from the rest like a thumb. † This includes the Weasel, the Martin, the Pole-cat, the Ferret, the Mangoust, the Vansire, the Ermin, with all the varieties of the American Moufettes. †

† The ninth class is that of the Rabbit kind, with two large cutting teeth in each jaw. † This comprehends the Rabbit, the Hare, the Guinea-pig; all the various species of the Squirrel, the Dormouse, the Marmotte, the Rat, the Mouse, the Agouti, the Paca, the Aperea, and the Tapeti. †

† The tenth class is that of the Hedge-hog kind, with claw-feet, and covered with prickles, comprehending the Hedge hog, the Porcupine, the Conando, and the Urson. †

† The eleventh class is that of the Tortoise kind, covered with a shell or scales. † This includes the Tortoise, the Pangolin, and the Phataguin. †

† The twelfth is that of the Otter, or amphibious kind, com-

prehending the Otter, the Beaver, the Desman, the Morse, and the Seal.

The thirteenth class is that of the Monkey kind. And the fourteenth class is that of the Winged Quadrupeds, or the Bat kind, containing the Bat, the Flying Squirrel, and some other varieties.

The animals which seem to approach no other kind, either in form or nature, are the Elephant, the Rhinoceros, the Hippopotamus, the Cameleopard, the Camel, the Bear, the Badger, the Tapir, the Cabiliai, the Coati, the Antbear, the Tataar, and the Sloth.

After having classed the preceding divisions in regular order, and pointed out the method the reader is to pursue, I shall beg leave to draw his attention from the subject intended to occupy the following sheets, and, before I expatiate upon the *animal creation*, give him an epitome of the characters that mark *his own*.

Hitherto I have compared Man with Animals; but I shall now point out the varieties that mark the human race: Hitherto I have considered him as an individual being endowed with excellencies above the rest of the creation: I shall now point out the advantages which civilization bestows, and show that he is little superior to the brute, in an *uncultivated state*.

The Polar regions are universally allowed to exhibit the most marked difference in the human race; the Laplanders, the Esquimaux Indians, the Samoid Tartars, the inhabitants of Nova Zembla, the Borandians, the Greenlanders, and the natives of Kamtschatka, may be considered as a distinct set of people, all resembling each other in their form, stature, customs, and ignorance of mind. Born under a rigorous climate, where Nature's productions are coarse and few, their stature* seems to have been as much affected by the hardness of their fare, as their complexion appears to have been darkened by the severity of the cold. Their persons are as uncouth, as their manners are uncultivated; their face large and broad, the nose flat and short, the eyes of a yellowish brown, inclining to blackness, the eye-lids drawn towards the temples, the cheek bones high, the mouth large, the hair black and straight, and the colour of the skin a dark-greyish. In all these different nations the women

* The height of a Laplander seldom exceeds four feet, and the tallest among them scarcely reaches five.

bear so striking a similitude to the men, that it is difficult to distinguish the difference between them. There is not only a personal resemblance in the inhabitants of these rigid climes, but their manners and inclinations are the same, for they are all equally rude, stupid, and superstitious. Their religion (if such it may be called) is idolatrous; but the Danish Laplanders have a large black Cat, to which they communicate their secrets, and consult in their affairs. Their attachment to their country is carried to such an excess, that they cannot bear to live out of it; their food is principally dried fish, the flesh of rein-deer, and bears; and their bread is composed of fish-bones, pounded, and mixed with the inside tender bark of the pine-tree: their drink is train-oil or brandy, or, when deprived of these, water in which juniper-berries have been infused. They are all hunters, and particularly pursue the ermin, the fox, the ounce, and the martin, for the sake of their skins; these they barter with their southern neighbours for brandy, of which they are immoderately fond. They use skates made of fir, near three feet long, and half a foot broad, and with these they dart forward with such rapidity, over the ice, as to enable them to overtake the fleetest animals. The women are no less hardy than the men, and are equally rude and uncultivated. They have no idea of religion, or a Supreme Being; and with regard to their morals, they have all the virtues of *simplicity*, and all the vices of *ignorance*.

Krantz, in his description of the Greenlanders, observes, "that notwithstanding their rough and unpolished state, they possess the highest notions of *their own excellence*; and nothing is more common, when they meet together, than to turn the manners of Europeans into ridicule. The wretched inhabitants of this rigorous country seem formed by Heaven to endure the severity of their fate; for as their food is both scanty and precarious, it is no uncommon thing for a man to fast three or four days, yet his strength does not seem diminished by this deprivation; and he stems the fury of the waves in a small canoe, which requires more exertion and skill to manage than a European could possibly use. The women are endowed with no less strength, and are capable of enduring the utmost fatigue; the colour of their bodies is a dark-grey, and their faces a kind of olive-brown. They daub themselves over with train-oil; and in all their habits are dirty in the extreme."

The second great variety in the human species seems to be that of the Tartar race. The Tartar country, taken in general, comprehends the greatest part of Asia, and is consequently a general name given to a number of nations of various forms and complexions. All these nations have the upper part of their visage very broad and wrinkled, even during the period of youth. Their noses are short and flat; their eyes little, and sunk in their heads; their cheek bones high; the lower part of their face narrow; their chin long; their teeth of an enormous size, and separated from each other; their eye-brows thick, large, and covering their eyes; their complexion olive, and the hair black; they are of a middle size, extremely strong, and very robust: they all lead a vagrant, wandering life, remaining under tents formed of different skins: their food is that of horse or camel's flesh, which they either eat raw, or sodden, by placing it between the horse and the saddle: their drink is the milk of the mare, fermented with millet ground into meal: their head is shaven, except one lock of hair which is left at the top, and is allowed to grow long enough to form into tresses, which hang down on each side of the face. The women cannot boast of more beauty than the men; their hair is adorned with pieces of copper, or stuck with ornaments no less inelegant. The majority of these nations are equally devoid of religion and morality, and generally subsist by robbery and theft. The chief of their riches consists in horses, of which there are more in Tartary than any part of the world. Of these animals the natives are so fond that they occupy the same house; and so great is the skill displayed in their management, that the creatures seem to understand all their master's designs.

To this race of men, also, we may attach the Chinese, and likewise the natives of Japan; for though their customs and ceremonies may widely differ, it is the formation of the body to which we here attend. It is universally allowed, that the Chinese have broad faces, small eyes, flat noses, and scarce any beard; that they are square-shouldered, and rather less in stature than the Europeans.—These marks are common both to them and the Tartars; and from thence it may be concluded, that they originally formed *one* race. With regard to difference of complexion, that must in a great measure depend upon the effect of climate and of food.

The Japanese bear so strong a resemblance to the Chi-

nese, that we cannot hesitate as to the propriety of ranking them in the same class; the only difference is, that their complexion is browner, which is occasioned by their living in a more southern clime. Their customs and ceremonies are nearly the same; their ideas of beauty exactly alike; and their artificial deformities, of blackening the teeth and bandaging the feet, prove that they originally sprung from the same soil.—The Cochin Chinese, the Siamese, the Tonquinese, and the inhabitants of Aracan, Laos, and Pegu, though all differing from the Chinese, and varying in many instances from each other, yet, in *essentials*, bear so strong a resemblance, that, in former ages, it is to be believed they belonged to the same tribe.

The third variety in the human species is that of the Southern Asiatics, the form of whose features and persons may easily be distinguished from the Tartar race. They are in general of slender shape, with long, straight, black hair, often with Roman noses, and resembling Europeans in stature and shape, though they differ from them in the colour of their skin. The women are both delicate and cleanly, and frequently accustom themselves to the use of the bath; their colour is olive; and the men are allowed to be both cowardly and effeminate, which, in some degree, may be occasioned by the influence of the climate, which by tending to relax and enervate the body, must of course lessen the vigour of the mind: yet there is a degree of humanity amongst some of these unenlightened people, that proves the natural goodness of their hearts; for they not only refuse to eat any thing that has life, but are fearful of killing the meanest insect. Indolence and sensuality are the vices that prevail, and prevent them from exerting the little vigour they possess: in short, since the time of Alexander the Great, there has scarcely been an instance of their success in arms.

The fourth variation in the human species is to be found among the negroes of Africa. This gloomy race of mankind may be said to extend from the southern parts of Africa, from eighteen degrees north of the line, to its extreme termination at the Cape of Good Hope.

Each of the Negro nations, it must be owned, differ from each other; like us, they have peculiar countries remarkable for beauty or deformity. Those of Guinea, for example, are extremely ugly, and have an unpleasant scent attached to their persons; whilst those of Mozambique are allowed to be beautiful, and are entirely free from a dis-

agreeable smell. The negroes, in general, are of a black colour, with a remarkably smooth and polished skin; their hair is short, soft, and woolly, and the beard partakes of the same qualities: their eyes are generally of a deep hazel; their noses flat and short; their lips thick, and their teeth of an ivory whiteness. They are in general allowed to be indolent, mischievous, and revengeful: though many instances might be brought to evince the goodness of their hearts, and to prove that where they are treated with *kindness* and compassion, their *fidelity* and attachment know no bounds.

The inhabitants of America form a fifth race, different in colour as they are distinct in habitation. The natives of America, (except in the northern extremity, where they bear a strong resemblance to the Laplander,) are of a red or copper colour; and although, in the Old World, different climates produce a variety of complexions and colours, the natives of the New Continent scarcely vary, and all have a striking similitude to each other. Amongst the various tribes which people that extensive country, you will scarcely perceive any difference in the colour of their skin; all have thick, black, straight hair; and, in all, their beards are remarkably thin. They have in general small eyes, flat noses, and high cheek bones. These deformities of Nature they endeavour to increase by the injudicious aid of Art; for, as soon as a poor infant is brought into the world, its head is compressed, its nose flattened, and its existence made wretched by unnecessary pain. Both men and women paint their bodies and faces; but they are neither active, vigorous, nor strong. All the race appears to be cowardly, as they seldom are known to face their foes in the field, but watch the moment when they can take an advantage, and make up in *cruelty* what is deficient in *strength*. The wants which they sustain make them patient in adversity; for distress, by being familiar, becomes less formidable: therefore their patience may be considered as the effect of habit, rather than the proof of fortitude or resignation. They all possess a serious air, though few of them are accustomed to reflect or think: and notwithstanding the cruelty of their conduct to their enemies, to *each other* they are uniformly *kind* and *just*. The customs of savage nations are in most countries the same. A wild, independent, precarious life produces virtues and vices peculiar to itself; for patience and hospitality, indolence and rapacity, content and sincerity.

1826 to 1850



Ass.



Horse.



Cow.



Zebra.



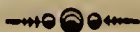
Bison

C. c. v. p. p.

Buffalo

ty, are blended in America in the same degree of proportion as in other uncivilized parts of the globe.

The sixth and last division of the Human Race is comprised under the term of EUROPEANS, a set of people who possess those superior advantages which religion and refinement naturally produce: in these may be included the Georgians and Circassians; the Mingrihans, the natives of Asia Minor and the northern parts of Africa, together with part of those countries that lie north of the Caspian Sea. The inhabitants of countries so remote from each other, of course must vary in their manners and designs; but in their form and persons there is a striking similitude, and little variation in the colour of their skin: in that respect the Europeans have an advantage which no other part of the world enjoys; for a fair complexion (if I may so express it) seems a transparent covering to the soul: impressions of joy vermilion the cheek, whilst sympathy and sorrow turn it pale; and the sensations of the heart may be traced in the countenance, without applying to the aid of speech. Though this *personal* superiority is allowed to be desirable, it is trifling when compared with that of the *mind*; there the European *must feel* his *pre-eminence*, and gratefully acknowledge the blessings of his fate.



CHAP. II.

THE HORSE, THE ASS, AND THE ZEBRA

THE HORSE.

OF all the animals in the Brute Creation, the Horse doubtless claims pre-eminence, whether we consider him beautiful in form, swift in motion, or beneficial to the ease and comfort of mankind.

To have an idea of this noble animal in his native simplicity, we are not to look for him in the pastures or stables to which he has been consigned by man, but in those wild and extensive plains where he has been originally produced; where he ranges without control, and enjoys that freedom bounteous Nature gave. The continual verdure of the fields supplies his wants, and the genial climate seems suited to a constitution which Nature has adapted to bear.

heat. His enemies of the forest are but few, and he finds safety in the society of friends. In that happy state of nature and independence, five or six hundred of these animals herd together; and in the boundless tracts of Africa and New Spain, by care elude the danger of surprise.*

It is not an easy matter to say to what country the Horse originally belongs: the colder climates, it seems, do not agree with him; for, although he is to be met with in those parts of the world, his form is observed to be much diminished, and his nature to be greatly changed. The horses which are found in the remote parts of America, are allowed to have been of the Spanish breed, and transported thither upon the first discovery of that extensive and *new-found* sphere. It is not in the *New*, but the *Old* World, that we are to look for this animal in its natural state. In the extensive deserts of Africa, and the wide-spread countries that separate Tartary from the more southern nations, absolute droves of them appear; but Arabia is the spot where the most *beautiful breed* of this serviceable animal is to be found. There is scarce an Arabian so poor and destitute as not to be in possession of a horse, and so anxious are they to promote the comfort of its existence, that they take no less care of his health than their own. The Arabian and his horse occupy one tent; and husband and wife, mare, foal, and children, are frequently seen stretched upon the ground together. Cruelty and severity are never practised; for an Arabian treats his horse as if he were a friend, and never uses either whip or spur but in cases of absolute need. The Arabian horses are of a middle size, easy in motion, and rather inclined to be lean than fat. They are regularly dressed, morning and evening, with the nicest and most exact care: they wash the legs, the mane, and the tail; but the hair is seldom combed for fear of making it thin: they keep them without food during the day, though once or twice in the course of it they are allowed to drink; but at sun-set they hang a bag upon their heads, which contains about half a bushel of clean barley; this they continue eating the whole night, and the empty bag is removed at the approach of day. So particular are the Arabians about the pedigree of these animals, that they can trace their origin

* In the uncultivated parts of Africa, where these noble animals collect in herds, one of the number always stands as sentinel, to apprise the rest of their enemies' approach.

from the most distant times; and a Welshman is not more vain of the *blood* of his *ancestors*, than they are of that which marks the *dignity* of their *horse*. Those which are found in the deserts are not quite so large as those which are bred up tame; they are of a brown colour; their mane and tail very short, and the hair black and tufted; but their swiftness is incredible; and such is the rapidity of their motion, that in a few moments they can outstrip the fleetest dog. The only method, therefore, of taking them, is by traps hidden in the sand, which by entangling their feet, detain them till the hunter arrives, who either kills them, or drives them home alive. If the horse be young, he is considered amongst the Arabians as a very great delicacy; but if, from his shape and vigour, he promises to be serviceable in his more noble capacity, they tame him by fatigue and hunger, and he soon becomes a useful and domestic friend. But the horses caught in this manner at present are very few, as the value of Arabian coursers, over all the world, has in a great measure thinned the deserts of the *wild breed*. We are told by historians, that the Arabians were the first people who attempted to make this noble animal subservient to the convenience and power of man; and that, as far back as the time of Sheque Ismael, they carried on a trade with different nations, and furnished the stables of princes with the most beautiful of their breed, some of which have been known to be sold at the exorbitant sum of fifteen hundred pounds.

The Arabian breed has been diffused into Egypt, Barbary, and Persia; and, in the latter place, we are told by Marcus Paulus, that there were studs of white mares of the most beautiful form, to the amount of ten thousand. The horses of these countries greatly resemble each other: they are usually of a slender make; their legs fine, bony, and far apart; a thin mane; a fine crest; a beautiful head; the ears small, and well pointed; the shoulder thin; the side rounded, without any unsightly prominence; the croup is rather of the longest, and the tail is generally set high.

In Numidia, the race of horses is very much degenerated, as the natives are discouraged from attending to the breed by the rapacity of the Turks, who seize upon all the good ones they can find, without making the owners the slightest compensation.

The Spanish Genette are allowed by travellers to rank next to the Barbary breed; and though they are small in

size, they are elegant in form, and swift in motion: their usual colour is black, or dark-bay, and they seldom have any white marks; they are said to possess courage, obedience, grace, and spirit, in a greater degree than the Barb: and for this reason they have been preferred, as war horses, to those of any other country in the world.

The Italian horses boast of very little beauty, as they have greatly neglected the breed: they have large heads, thick necks, and are very unmanageable; yet their motion is elegant, and they have a peculiar aptitude to prance.

The Danish horses are so large in size, and so strong in make, that they are preferred, for draught, to any other breed, yet some of them are perfectly well proportioned; but in general they are defectively formed, though they all move well, and are found excellent both for parade and war. There is a great variety of colour amongst them: some are streaked in the manner of a tiger, and others spotted like a leopard.

Though the German horses are originally from the Arabian and Barbary stocks, yet they are small and ill shaped, weak in their bodies, and have very tender hoofs. Hungarian horses are excellent both for the draught and saddle; but the Dutch breed are only calculated for draught, for which purpose they are used in every part of Europe; but those of a superior kind come from the province of Friesland. The French horses are of various kinds, but very few of them are good. The best breed in that country come from Limosin; they have a strong resemblance to the Barb, and, like them, are excellent for the chaise; they require the utmost care whilst young, and must not be backed until they are eight years old.

If we consult the Ancients on the nature and quality of this animal, we shall learn, that the Grecian, and particularly those of Thessaly, had the reputation of being excellent for war; but those of Achaia exceeded all others in *size*. But that Egypt bred the greatest number, and that in *beauty* they would not yield to any other clime.

If the Egyptians were proud of the qualities of this animal, the English have no less reason to be vain; for, so much care has been taken to improve the breed, that they may vie with the fleetest of the Arabian race. An ordinary racer will go over a mile of ground in the space of two minutes; but Childers, a horse that never yet was equalled at Newmarket, performed it within a few seconds of *one*.

The number of horses, (in London alone,) during the time of King Stephen's reign, is said to have amounted to twenty thousand; but, in the reign of Queen Elizabeth, the whole kingdom could not supply above two thousand, even to support the cavalry during war.

At present their number greatly exceeds that which was found in King Stephen's time; but how far this augmentation may be beneficial to mankind, it is doubtless difficult for the historian to pronounce; yet certain it is, that where horses increase in too great a degree, men must proportionably diminish, as that food which is necessary for the supply of the one, might very easily be converted to the nourishment of the other.

It is impossible to conclude the history of the horse, without reflecting upon the advantages he bestows upon man, and lamenting, that, after his strength is exhausted by labour and fatigue, he should be condemned to drag on the remnant of his days under the wanton scourge of cruelty and oppression: and, instead of finding an asylum for infirmity and age, under the care of him who had been the destroyer of his vigour and health, that he should be bartered away to the first unfeeling bidder who may offer a few pounds for the dregs of his life.*

THE ASS.

Although this animal is very easily distinguished from the horse at first sight, yet, upon closer inspection, their similitude is very striking; they have both the same outline in the *external* parts, and in the *internal* the resemblance is equally the same. From this apparent conformation in their shape, it might be imagined that their species were the same; and that the ass was merely the horse degenerated, from a total inattention to its breed; but that this opinion is completely erroneous, has been proved by arguments that admit of no

* The horse (says Linnæus) is single-hoofed, with six cutting-teeth before: a native both of Europe and the East: it is a generous, proud, strong animal, fit either for the draught, the course, or the roads: he is delighted with woods; defends himself with his tail from the flies; protects its young; calls by neighing; sleeps after night-fall; fights by kicking, and biting also; rolls on the ground when hot, eats the grass closer than the ox, and hemlock without injury; does not acquire his canine teeth till the age of five years; and the mare goes two hundred and ninety days with foal.

appeal. I shall therefore consider the Ass as totally distinct from that more noble animal which has been so recently described. The Wild Ass has by some writers been confounded with the Zebra, although they are of a very different race; for the former is not streaked like the latter; neither is he near so beautiful in shape. His figure differs little from the Ass of this country, though the colour of his skin is much more bright, and there is a white streak runs from the head to the tail. He is found in many of the Archipelago islands, but in the deserts of Lybia and Numidia they particularly abound, and are peculiarly remarkable for the swiftness of their flight. So completely wild are they in their nature, that, at the sight of a man, they begin to bray, and stop short all together, until he approaches near, when they all set off with the greatest speed, and are entangled in those traps which are placed for the purpose of impeding their flight. The natives catch them for the sake of their flesh, which they consider as a delicious treat, and of the skins they make that kind of leather which is known amongst us by the name *shagreen*.—The ass, like the horse, was originally imported into America by the Spaniards, where the breed has multiplied into such vast numbers that they often are considered as a nuisance to the States, and regular hunts are formed for their destruction, as if they were of the carnivorous race.

In this state of nature they possess all the fleetness of the horse, for neither precipices nor declivities can retard their career: and when attacked, they defend themselves with their heels and mouth, without even attempting to slacken their pace: but the most remarkable property in these creatures, is, that after carrying their *first load*, their celerity is gone, their ferocity appears totally to have subsided, and they become tame and stupid through the rest of their lives. They always feed together in herds, and if a horse strays amongst them, he insures his fate; for they all attack him without mercy, and either bite or kick him till they have left him dead upon the field.

Such is this animal in his natural state—swift, formidable, bold, and fierce; but the moment he has lost the blessing of *freedom*, his disposition and habit seem totally to change. In a state of tameness he doubtless is the most gentle of all animals, and suffers with constancy and courage all that cruelty can inflict: he is temperate with regard both to the quantity and quality of his provision, and will be contented to fare upon the most neglected weeds: if he give prefer-

ence to any vegetable, it is to the palatine; but he is delicately nice in the choice of his drink, and will never quench his thirst but at a pellucid stream, perfectly free from sediment or soil: as he is seldom saddled, he frequently rolls upon the grass, yet he has a great dislike to wet his feet, and frequently turns out of his way to avoid the dirty parts of the road.

When very young, this animal is sprightly, and rather handsome, but either by age or bad treatment he soon loses those perfections, and generally becomes either headstrong, stupid, or slow. The she ass is remarkable for her attachment to her young, and they show a fondness for their owners greater than can be believed; they will scent them out at the greatest distance, and, when once found, refuse to stir an inch from their side. They walk, trot, and gallop like a horse, yet are totally unable to persevere with speed; for though they may set out very freely upon their journey, they are soon obliged to slacken their pace: it is in vain that their unmerciful rider exerts his whip or cudgel; the poor animal bears it without a groan; and, conscious of his own weakness and imbecility, does not even make a single effort to move.

This humble creature, despised by man, is doomed to drag on a life of torture and pain, and, whilst ministering to the ease of the indolent and idle, is only rewarded with cruelty and stripes. The Spaniards, of all the people in Europe, seem alone acquainted with the value of the ass: they take every precaution to improve the breed, and they frequently attain the height of fifteen hands; of all the animals that are covered with hair, the ass is the least subject both to vermin and disease.*

The Mule, an animal between the horse and the ass, though not equal to the former, either in beauty or speed, is particularly admired for the security of its feet, and in mountainous countries they are thought so essential to the inhabitants, that they sell from fifty to sixty pounds each. When they arrive at the edge of those tremendous precipices, with which the mountainous part of the universe abounds, the animal itself seems sensible of the danger, and stops to survey the best path to pursue; having appa-

* The she ass goes eleven months with foal, seldom lies down to obtain the refreshment of sleep, is four years arriving at perfection, and lives to the age of twenty or twenty-five.

rently prepared for the descent, by examining the different tracks in the road, they place their feet in a secure direction, and slide with velocity along the road. During a journey so full of danger, the rider has only to remain *firm* upon his *seat*, and instead of relying upon the guidance of the rein, entirely to depend upon the sagacity of the mule; for the least check would destroy his equilibrium, and both would be hurled into an unfathomable abyss.

THE ZEBRA.

There are but three animals of the horse kind:—the Horse, which is the most stately and courageous; the Ass, which is the most patient and humble; and the Zebra, which is the most beautiful, though the wildest animal in nature. Nothing can exceed the delicate regularity of its colour, nor can any thing surpass the smoothness of its skin; it is at once timid and untameable, and appears to have a natural antipathy to man. It is chiefly a native of the southern parts of Africa, and herds may be seen feeding near the Cape of Good Hope.

The Zebra, in shape, bears a resemblance to the mule; for it is smaller than the Horse, and larger than the Ass; but at present this animal is chiefly prized for the astonishing beauty and delicacy of its skin. The male Zebra is adorned with stripes of brown and white, with such exact similitude of distance, that it appears the work of art, though probably it would puzzle the most perfect artist if he was required to draw such regular lines; the female Zebra is no less beautiful, only that the stripes are alternately *black* and *white*; and this regular intermixture not only marks the body, but displays itself on the head, the limbs, and the tail.

Hitherto, this creature has disdained the power of man; for neither *force* nor *kindness* have been able to make it *tame*; and whether it may ever submit to his dominion, is a matter which admits both of doubt and dispute. As in form it bears a resemblance to the horse, its nature may probably be the same: if so, under wise and judicious care, the wildness of its disposition might doubtless be restrained.

The Horse, though now so subservient to our pleasure, might probably once have been equally untame; and had not the Arabians taught them subjection, we might have been equally ignorant of their utility and use.

Neither the delicacy of the Zebra's shape, nor the beauty of its form, is regarded by the inhabitants as worthy to be prized; but they frequently destroy them as a luxury for the table, and consider their food as a delicious treat.

Though this animal is found in Europe, Asia, or America, it does not seem attached to the produce of any particular clime; for that which was brought to England some years ago, would scarcely refuse any thing that was offered it to eat. The noise they make bears some affinity to the barking of a mastiff dog, and does not in the least resemble the neighing or braying of the *horse* and *ass*.

The difficulty which attends the getting them into possession, is the means of making them universally prized; and they are absolutely held in such high estimation, as to be thought worthy of being sent as a present to a king.



CHAP. III.

RUMINATING ANIMALS.

OF all the animals in the creation, those which chew the cud* are the most easily subdued; for, as they entirely live upon vegetables, they have no interest in making war with any other tribe. Content with the pastures where they are placed, they seldom show a desire to roam, and unless they are denied a requisite supply, never evince an inclination to change.

As Nature has furnished these animals with an appetite both for coarse and simple fare, she has enlarged the capacities of their intestines, so as to take in a very great supply of food; and has given them four distinct stomachs.

QUADRUPEDS OF THE COW KIND.

Amidst the various animals with which the world abounds, none is more estimable than the Cow; the Horse is in gene-

* Chewing the cud is food returned from the stomach to the mouth, without any appearance of exertion or pain.

ral the property of the rich ; the sheep thrive but in a flock, and constantly require the utmost care : but the Cow is the poor man's pride, his riches and support ; the climate and pasture of Great Britain seem peculiarly to agree with its nature and frame ; for as it is more regardful of the *quantity* than the *quality* of its food, in many countries it finds it difficult to obtain a sufficient supply. In different parts of England great varieties are seen, occasioned by the richness or poverty of the soil ; but in Scotland, Ireland, and the Isle of Man, they very much decrease in size.

The age of this animal is easily known, either by examining the teeth or horns ; the under jaw is furnished with eight cutting-teeth, the two centre ones of which, at ten months, drop out, and are replaced by others, *broader*, but not so *white* ; at the age of sixteen months, the two next disappear, and their place is supplied in the same manner as before : thus, at the end of every six months, the creature loses and regains its teeth, so that when it arrives at the age of three years, the whole set is completely renewed. For some time they remain tolerably white and even ; but as the animal advances in age, their colour and regularity gradually change, and mastication becomes so very difficult, that the creature often dies from not being able to chew a sufficient quantity of food.*

The horns are, perhaps, a more determinate method of ascertaining the animal's age ; for at three years old, it completely sheds them, and new ones arise in their place ; which every year receive a fresh ring, and by that means prove a register of its life.

The pains which the English have taken to bring horned cattle to perfection, have been amply repaid by the superiority of their breed ; for by mixing them with those of foreign countries, they have increased their beauty as well as their strength. The Lincolnshire cattle, which are famous for their size, derive that perfection from the Holstein breed ; and many were formerly imported from Poland : but none are now thought *better* than what our own country will produce.

Among the Elam Tartars, where the pastures are remarkably rich, the Cow becomes of so large a size, that the man must be tall who can reach its shoulder with his hand ;

* The Cow goes nine months with young, and seldom lives longer than fourteen years.

but in France, where the creature is stunted for food, it greatly degenerates both in form and size.

Though the height of this animal so much depends upon the quantity and quality of its food, yet the hair, the horns, and the whole structure, so often vary, that Naturalists sometimes describe them as of a distinct race. Thus the Urus and the Bison, from the want of similitude in their form and make, have been ranked as a separate species of animals, when, from propagating together, they must originally have been the same.

Notwithstanding it may be difficult to account for these varieties, yet we must attribute them to some accidental cause: for the same caprice of Nature that has given horns to some cows and denied them to others, may also have given the bison a hump, and increased the bulk of the urus: it may also have bestowed a mane upon the one, and denied a sufficiency of hair to the other.

THE URUS.

The Urus, or Wild Bull, is chiefly to be found in the province of Lithuania, and grows to a size superior to that of any other animal, if we except the elephant race. The colour of the urus is a fine black, with one stripe of white that runs in a parallel line entirely along the back, from the head to the tail; the horns are short, thick, and strong; the eyes are fierce and fiery; the forehead is adorned with a kind of garland of black curled hair, and some have beards of the same; the neck is short and strong, and the skin has an odour of musk. The female, though not so big as the male, exceeds our largest bulls in size, but the udder and teats are so very small that they can scarcely be perceived. Upon the whole, however, this animal resembles the tame one very exactly, except in some trifling varieties, which his state of wildness, or the richness of the pastures where he is found, may easily have produced.

THE BISON.

The Bison, which is another animal of the cow kind, differs from the rest in having a lump between its shoulders; and the size of these animals varies so completely, that it is difficult to give an idea of their height.

Upon taking a slight survey of this creature, he bears some resemblance to the lion's race; he has a thick, long, shaggy mane, and a beard extending from the throat to the chin; his head is small; his eyes fiery and red, and so full of fury and ill-nature that they absolutely intimidate with their glare; the forehead is extremely wide; the horns large, and placed so far asunder, that three men might easily sit in the space; on the middle of the back there rises a hump, nearly as high as a camel's, and covered with hair, and those who hunt the animal for the sake of its food, consider it as a most delicate and luxurious treat. In a state of nature, this creature is so wild, that the hunters are obliged to fly for safety to those trees where their thick foliage secures them from his sight; and he can only be taken by digging deep pits in the earth, and covering them over with grass and boughs of trees; when the noise of the hunters impels him forward, and he is suddenly precipitated into their snare.

Though this creature seems so untameable in its natural state, it may easily be made subservient to the will of man; and the Hottentots, in particular, have so completely subdued them, that they seem to consider them as domestic friends: they bend their knees to receive all burdens, and are as completely gentle as the most docile of our steeds.

The bisons, or cows with a hump, differ according to the parts of the world in which they are found; though it is generally allowed that the tame ones diminish very much in size when compared with the wild. Some have horns, and some are without; some have them depressed, and others raised; but all become docile and gentle when tamed, and many are furnished both with lustrous and soft hair.

The bisons of Malabar, Abyssinia, and Madagascar, are, from the luxuriance of their pastures, all of the large kind; but those of Arabia Petræa, and most parts of Africa, are small, and appear of the zebu kind.

From this it appears, that Naturalists have given various names to creatures which in reality are the same, or differ in circumstances merely accidental; the wild cow and the tame, the animal belonging to Europe, and that of Asia, Africa, and America, the bonasus and the urus, the bison and the zebu, are doubtless one and the same race; and were they allowed to mix with each other, in a few generations the distinctions would fade

THE BUFFALO.

If we should compare the common cow with the bison, the difference between them will doubtless appear great; but when we draw a resemblance between that and the buffalo, no two animals can be nearer alike; both are equally submissive to the yoke, and both are employed in the same domestic scene, notwithstanding which they have such an aversion to each other, that were there but one of each kind, there would be an end of the race. The buffalo, upon the whole, is by no means so beautiful as the animal which it is like; his figure is more clumsy and awkward, and he carries his head much nearer the ground; his limbs are not so well covered with flesh, and his tail is much more naked of hair; his body is shorter and thicker than the cow, and his legs are longer in proportion to his size; his head is smaller, his horns not so round, and his skin is not near so well covered with hair; his flesh is hard and disagreeable to the taste, and has a very strong and disagreeable smell; the milk of the females is much inferior to the cow's, but in warm countries it is used for butter and cheese. The veal of the young buffalo is equally unpalatable with the beef which is produced from the old, and the most valuable part of the whole animal is generally allowed to be the *hide*, the leather of which is famous for impenetrability and for the softness and smoothness of the wear. The chief use of these animals is for drawing immense burdens and weights; they are guided by a ring thrust through their nose, and then yoked to a wagon in pairs; and their strength is allowed so superior to a horse, that two buffaloes will draw as much as two pair.

The wild buffalo, which inhabit many parts of India, are a very fierce and formidable race, and there is no method of escaping their pursuit but by climbing up into some immense tree; a moderate size would be no security, for they can break down those of inferior growth, and many travellers have been instantly gored to death, and then trampled to pieces by their feet; they run with a surprising degree of speed, and cross the largest rivers with the greatest ease; and the method which the hunters adopt to destroy them, is to fire upon them from some of their thickest trees.

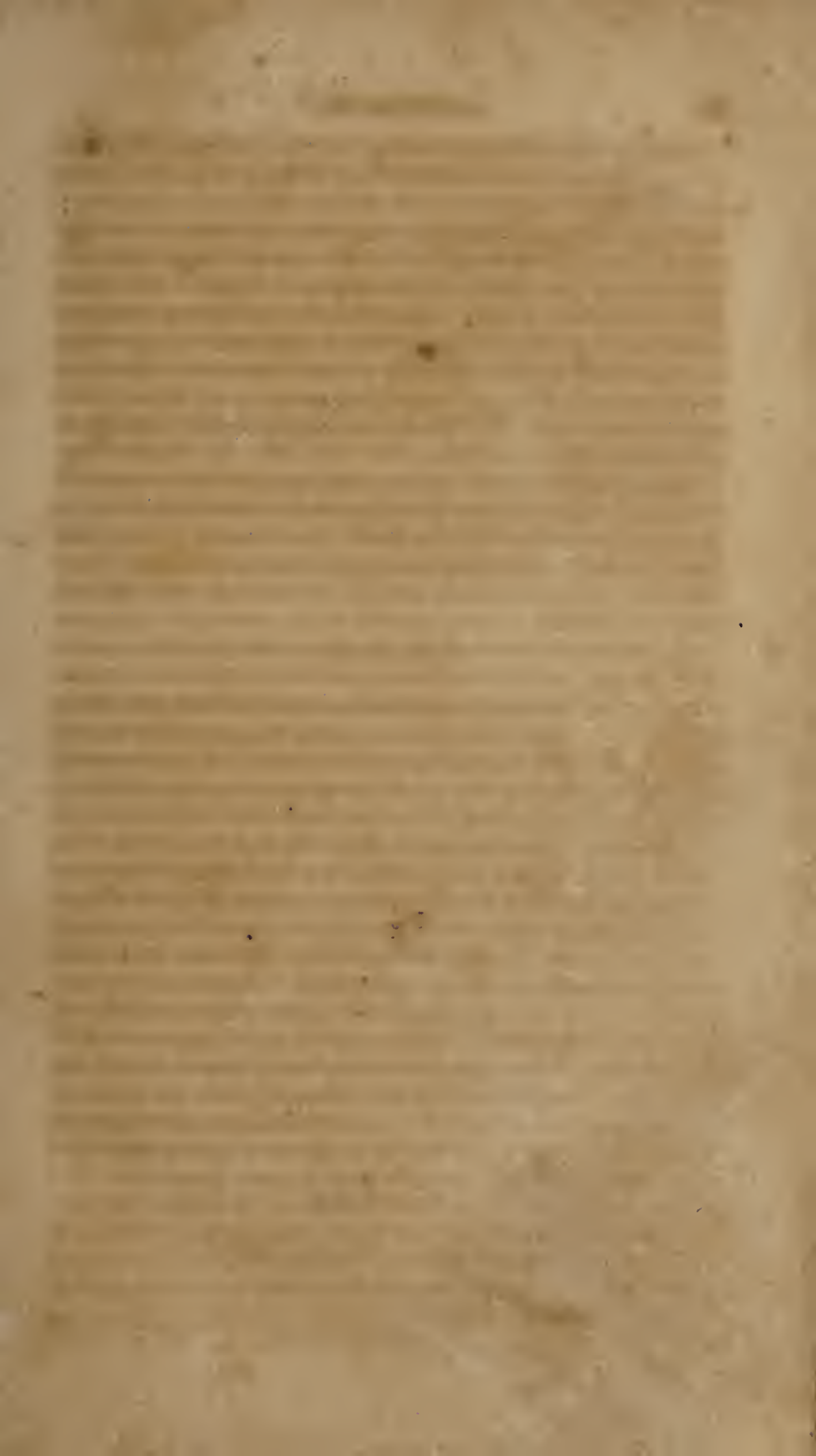
Although so wild in a state of nature, no animal in the world can be easier tamed; and though they are never quite so docile as the cow, yet they are patient, persevering, and have a greater share of strength. Though the torrid zone is properly their native clime, yet in many parts of Europe they are bred; and the lower order of the Italians are so sensible of their value, that they absolutely consider them as a source of wealth. The animal has such a strong antipathy to fire, that the very resemblance of it occasions them alarm and dread; and the inhabitants of those countries where they most abound, avoid appearing either in scarlet or red.

Having endeavoured to describe some of the properties of these animals, I shall give a sketch of the Zebu, or little African cow, which Mr. Buffon believes to be of the race of the bison, altered by climate, cultivation, and food.

THE ZEBU.

The Zebu, in size, resembles the ass, but in figure bears affinity both to the cow and hog; the head, the horns, and the tail, are like the former; but the hair, colour, grunting, and bristles, have given us reason to draw a comparison between that and the hog.

Some few years ago, one was shown in London, the head of which was rather larger than that of a cow; the teeth entirely resembled that animal, and it likewise lived upon the same kind of food; the eyes were placed in the same position, and in colour likewise were very much the same; but the horns were black and rather flattened, and in their direction had the appearance of a goat; the neck was at once short and thick, and the back had a rising in the middle; it was cloven-footed like the cow, yet was only endowed with two teats. It was shown under the name of the *Bonassus*, and was said to have been brought from the East Indies; but as no credit is to be given to interested ignorance, it remains a doubt from whence it came.





C. A. Childs sc.

CHAP. IV.

ANIMALS OF THE SHEEP AND GOAT KIND.

As no two animals are found to be exactly the same, so it is not to be expected that any two races should perfectly correspond in every respect. The goat and the sheep apparently differ in the form of their bodies, their covering and their horns; but if we come to a close examination, and observe the similitude which *internally* may be seen, we shall not hesitate to pronounce that they belong to *one family*, and they frequently unite and blend their race.

THE SHEEP.

In the remote and unpolished ages of antiquity, the office of a shepherd was held in high esteem, and the care of a flock thought no degradation to the man who was possessed both of abilities and wealth. The sheep, in its present domestic state, seems little calculated to struggle either with danger or distress, as its stupidity appears to render it incapable of exertion even to preserve its inoffensive life; therefore if it did not rely upon man for protection, its natural enemies would soon exterminate the race. The moufflon, which is the sheep in the savage state, is a creature at once bold and fleet, ready to oppose all animals which bear some proportion in size, or to fly from those which would conquer by their strength: human art seems to have changed their nature, and totally to have destroyed every appearance of sense; its large eyes, separated far from each other, only exhibit a vacant stare; and it merely appears as a lumpish mass of flesh, supported upon four legs unequal to the weight. No country produces finer sheep than England, though the Spanish wool is allowed to be softer and more fine, and in manufacturing the cloth of this country, a proportion of that wool is usually combined. The Lincolnshire and Warwickshire breed of these animals are particularly admired for the weight of their fleece, and it is no uncommon thing, in these countries, for a hundred guineas to be given for a ram.

Sheep, like other ruminant animals, are destitute of upper front teeth; but like the cow, have eight in the lower jaw, which, at stated periods, they also change. Yet this

animal,* in its domestic state, is too well known to require detail; but if we would see it in an advantageous point, we must seek it in the deserts of Africa, or Siberia's plains. The woolly sheep, as it is seen amongst us, is only found in Europe and some of the temperate provinces of Asia; and when these are transported into warmer climes, they lose the wool, and assume a hairy covering more calculated to make them endure the intensity of the heat.

In Iceland, Muscovy, and the cold climates of the North, in form they resemble the English breed, but they generally have *four* and sometimes *eight horns*, sprouting from different parts of their head; their wool also differs from ours, and is long, hairy, and very smooth: in colour it is of a dark brown, and under its outward coat of hair it has an internal covering that rather resembles fur than wool.

Another variety to be found in this animal, comes under the description of the *broad-tailed sheep*, which is common in Barbary, Egypt, and Syria; likewise in Persia, Tartary, and Arabia: the tail of these creatures is often known to weigh from twenty to thirty pounds, and is obliged to be supported by a board upon wheels, to prevent it from being bruised by rubbing on the ground.

The third variety, which is observable in this species, is in the Archipelago breed: the creature is there called the *Sterpsicheros*, and only differs from our sheep in having straight horns, surrounded with a spiral furrow.

The fourth variety is that of the Guinea sheep, which are generally found in all the tropical climates, both of Africa and the East Indies: their size is large, with a rough hairy skin, short horns, and ears hanging down, with a kind of dewlap under the chin: they differ so essentially in appearance from the rest, that it is to be doubted whether they really were of the same race; but as a proof that they are of one family, they will associate with every other species of the sheep.

The moufflon, or musman, though covered with hair, bears a strong similitude to the ram: like it, the eyes are placed near the horns, and its ears are shorter than those of the goat: the horns also grow in the same manner, and in form, the two animals are very much alike. This creature is so remarkable for its swiftness of flight, that many have believed it to be a species of the deer, but as it never *sheds* its *horns*,

* The sheep supplies us with food, clothing and leather; it goes five months with young, and frequently has more than one at a time.

that opinion must be erroneously formed : the mouffton lives in a kind of a savage state, and either flies from or heroically opposes its foes : they frequently grow to a surprising size, and in their convolutions measure above two ells in length ; the general colour of their hair is brown, but their thighs and belly are of a yellowish white ; their horns grow to an amazing size, and are used as weapons of attack and defence, for they frequently engage in battles with each other, and seldom seem to live in a very harmonious state. Such was the sheep in its primitive situation, a bold, noble, and beautiful creature : and though human art may have destroyed the state of nature, it doubtless has rendered it more calculated for use.

THE GOAT, AND ITS NUMEROUS VARIETIES.

We have seen the services of the ass slighted, because inferior to those of the horse ; and those of the goat are not held in repute, because they cannot vie with the sheep : yet were the horse and the sheep removed from nature, those animals would then be more justly prized ; and the same pains might be taken to render them invaluable, which has been used so successfully with the other breed.

The goat seems, in every respect, much more calculated for a life of liberty than its more indolent competitor the sheep : stronger, livelier, swifter, and more playful, it does not easily submit to be confined, but roams about in search of such provision as it most relishes for general food : its chief delight is in climbing precipices, and it is often seen frisking upon an eminence that hangs suspended over a roaring sea. Nature, it is true, has, in a great measure, fitted it for traversing these declivities with safety and ease, for the hoof is hollow underneath, with sharp edges, so that it could walk securely on the brink of a house.

Sensible of kindness, and grateful for attention, it soon becomes attached to man ; and as it is very hardy and easily sustained, it is generally the property of those who earn their daily bread : fortunately for the animal, this is no hardship, as they neglect the cultivated fields of art, and love to graze on the mountain's rocky sides ; its favourite food is the tender bark of trees, shrubs, and boughs ; and it is capable of enduring the most immoderate heat ; the milk is sweet, nourishing, and medicinal, and not so apt to curdle upon

the stomach as that of the cow : the peculiarity of the animal's food gives it a remarkable flavour, but after a time it is pleasant to the taste.

In several parts of Ireland, and the Highlands of Scotland, the goat is the chief riches the inhabitants possess, and supplies the hardy natives with the few indulgencies their situation permits them to enjoy in life. They lie upon beds made of their skin; their *milk*, combined with oat bread, supplies them with food; their flesh indeed they seldom eat, as they consider it a luxury they ought not to enjoy, for the greatest epicure will allow, that the *kid* is a delicate repast for the most vitiated taste.

The goat is fattened in the same manner as sheep, but in our climate their flesh is not so sweet; between the tropics both undergo a change, for the mutton becomes both flabby and lean, whilst the meat of the goat is relishing and good.

The goat* is an inhabitant of most parts of the globe, but the Angora breed is deservedly most prized: their colour is of the most dazzling white; the hair is long, thick and glossy, and the inhabitants derive from it a most advantageous trade: the stuffs which are manufactured from this commodity are known amongst us by the name of Camlet. The ears of the Angora goat are longer and broader than our own; the horns much of the same length, but black in colour, and turned very differently, springing out horizontally on each side of the head, and twisting round in a cork-screw shape.

The Assyrian goat is somewhat larger than our own, and the ears hang pendant till they nearly reach the ground; the horns are not above two inches long; the hair in colour resembles a fox; and there are two excrescences under the throat, which bear a similitude to the gills of a cock. These animals are driven through the streets of Aleppo for the purpose of supplying the inhabitants with milk.

In America there is another species of this animal, which seldom exceeds the size of a kid, yet the hair is as long as upon the ordinary breed; and the horns, which do not exceed the length of a man's finger, grow inverted, close to the head.

* The goat, like the sheep, goes five months with young, and has sometimes two or three at a birth.

At the Cape of Good Hope there is another animal of this nature, which derives its name from the colour of the hair. The Blue Goat is in shape like the domestic, but infinitely larger, and near the size of a stag. The hair is a beautiful bright blue, though the colour changes as soon as the creature is dead: its beard is very thick and long, but the horns are not by any means proportioned to the size; the legs are longer than the common goat, but the flesh is allowed to be superior in taste. In many parts of that extensive country, great varieties in the species of the goat may be seen, some of which are beautifully marked with spots of red, white, and brown.

The Juda goat resembles ours in form, though in size it scarcely exceeds a hare; it is common in Guinea and the African coast, and is much admired for the delicacy of its taste.

These animals seem all of one kind, or merely vary in a slight degree; for when we know the shape and the *internal* form the *same*, they may justly come under the description of *one race*; but although these are evidently known to belong to one family, there are other animals resembling the goat, which, from the wildness of their nature, we cannot speak of with the same degree of certainty and precision; neither can we determine whether they are quadrupeds of a particular kind, or merely the goat in a state of savage freedom.

The ibex and shammoy are natives of the Alps, the Pyrenees, and the Grecian mountains, where their numbers are so large that they continue to abound both in spite of the hunters and beasts of prey, who seem jointly to endeavour to destroy their race. The ibex, in form, resembles the goat; but the horns are much larger, bent backwards, and full of knots, one of which, it is asserted, is added every year; and some authors have affirmed them to be two yards long: the hair of the animal is brown, but its beard completely black; there is likewise a streak of the same colour, which entirely runs along the back; but the belly and thighs resemble a deer.

The shammoy is an active lively animal, yet requires but little pains to make it tame. In their nature they appear to be peaceable and good tempered, warmly attached to their whole tribe, and generally herd in societies together. Their hair is short, like that of the doe; in spring it is of a light ash; but in autumn it changes to a dun, and in winter to a blackish brown. This animal is found in great abundance in

the mountains of Dauphiny, Piedmont, Savoy, Switzerland and Germany; their flesh is allowed to be wholesome and good; and their suet, boiled in milk, is prescribed as a medicine in pulmonary complaints. The cry of this animal is very faint, or it might rather be said that it scarcely cries at all: yet it makes a violent breathing through the aperture of the nose, when it wishes to warn its companions of danger or affright; it is endowed by Nature with such an exquisite smell, that it can discover a man at the distance of half a league; and its timidity of temper takes instant alarm, and gives notice of his arrival by the breathing just described. The shammy feeds upon the choicest herbage, and selects the buds of the most delicate plants and flowers: in size it resembles the domestic goat, but is particularly remarked for the beauty of its eyes, which are round, sparkling, and full of fire: its head is furnished with two small horns of about half a foot in length, which terminate in a very sharp point: the ears are elegantly placed near the horns; and there are two stripes of black on each side of the face. These animals in summer are so much incommoded with heat that they are never to be found but in the caverns of rocks or stretched upon fragments of unmelted ice, which the shades of a forest may have sheltered from the sun. They go to pasture both morning and evening, but never feed during the heat of the day. They run along the rocks with the utmost facility, and leap from one to another with the greatest ease; neither hunters nor dogs are swift enough to pursue them, and no power is able to impede their flight. They mount and descend in an oblique direction, and will throw themselves down a rock of thirty feet. It is asserted, that when they feed, one stands as sentinel to guard them from being unexpectedly surprised; but certain it is, that whilst they are grazing, two or three always are detached from the rest.

The only method of destroying these animals, is for their pursuers to secrete themselves behind the cliffs of the rocks, and by that means aim their pieces unperceived. They must likewise take care that the wind does not blow from them, or they would instantly be discovered by the quickness of their smell.

Such are the qualities that more peculiarly belong to the goat kind, each of which, it is supposed, would combine and breed. Nature, however, proceeds in her variations, both by slow and insensible degrees, and scarce a

distinguishing line can be drawn between any two animals of a neighbouring race: it is hard, therefore, to say where the sheep ends, or the goat commences; but it is more difficult to fix the boundary between the goat and the deer. In all transitions from one kind to the other, there are found to be a middle race, which seem to partake of the nature of both, and yet cannot precisely be referred to either; and under this description come the Gazells.

THE GAZELLS.

The Gazells, of which there are several kinds, cannot positively be attached either to the goat or deer. Like the former, they have hollow horns that never fall, and prefer feeding upon shrubs to the most luxuriant grass. In size and in form they resemble the roe-buck, and in the colour and nature of their hair: they have likewise the same cavity under their eyes, which so peculiarly distinguishes animals of that race.

Notwithstanding the resemblance which seems to subsist between the gazells, the goat, and the deer, there are several distinct marks to be found, the most striking of which I shall briefly explain. Their horns are annulated or ringed round, and are marked with longitudinal depressions extending from the bottom to the point: they have bunches of hair upon their fore-legs and a streak of black, red, or brown, running along the lower part of their sides; most of them are brown upon the back, and white under the belly, with a black stripe running between. their eyes are so exquisitely soft and expressive, that lovers and poets formerly thought it a compliment to the fair to say their eyes were as beautiful as the animals of that race. The hinder legs of the creature are longer than the front, which enables it to ascend and descend with ease; and they are cloven-hoofed like the sheep. Naturalists vary in their opinions respecting these animals. Mr. Buffon conceives there are twelve different kinds; the first of which he terms the *Gazella*, which resembles the roe-buck in shape and size: though the horns are black and hollow like the goat's, and like that animal's are never shed. The second he calls the *Kevel*, a creature somewhat less than the former, with eyes large, and horns flattened on the sides. The third is the *Corin*, very much resembling

the two former, except that it is still more diminutive in size, and is sometimes marked like the tiger, in streaks. The fourth class is the *Zerin*; the *horns* only of which he had seen, from whence he concludes it to have been larger than the rest. The fifth and sixth he calls the *Koba* and *Kob*, which only vary in their height, though their muzzles are much longer than the generality of those animals, and they have no depression under their eyes. The seventh he names *Algazet*, which is distinguished by the immense length of its horns. The eighth is termed the *Pazan*, and by some the *Bezoar* goat, famous for a concretion which its intestines contain, that once was thought to possess such medicinal virtues, that it used to sell for an enormous price; it is a native of Egypt, Arabia, and Persia. The ninth is called the *Ranguer*, which slightly differs both in shape and colour from the rest. The tenth variety is the *Antelope*, so well known to the English, who gave it the name. This animal is like the roe-buck in size; the horns are about sixteen inches long, and at the bottom nearly join, but gradually spread as they rise in height; the back is brown, the belly white; but those colours are not separated by the same black streak which is to be found in the rest of the gazell race. The eleventh he terms the *Lidme*; and the twelfth the *Indian Antelope*; the horns of the former are extremely long, but of the latter, very small.

To these may be added three or four more varieties; the first and most striking is the *Bubulus*; an animal which bears an affinity to the cow, the goat, and the deer: it resembles the stag in the size and figure of its body; but is like the cow in the formation of the bones of its head; and its horns are permanent as the goat's; it is very common in Barbary, and has frequently been mistaken for the Barbary cow.

The second anomalous animal of the goat kind is the *condoma*, which is equal in size to the largest stag, the horns of which are three feet long, and at the extremity two in width; entirely along the back there runs a white list, which is crossed by others that pass round the body, and terminate at the end of the tail.

The third is the *guiba*, which differs from the gazells by the hair under the belly being *brown* instead of white; its horns likewise are not marked with annular prominences; but, like the *condoma*, the body is covered with several broad white stripes.

The African wild goat is the fourth variety, the colour of which is a dark ash, and in the middle of the head is a tuft of thick hair, which stands upright; on both sides of the head, between the eyes and the nose, are cavities which contain a liquor in appearance like oil, but which in time coagulates into a black substance, and then has a smell between civet and musk. To this may be added the chevrotin, or the little Guinea deer; a creature which, for beauty and symmetry of form, is not to be exceeded in the animal race; in height it is allowed to be about seven inches, and twelve from the point of the nose to the insertion of the tail; its legs are not thicker than the shank of a tobacco pipe, and it appears exactly like the miniature of a stag, if we except the shape of the horns; its colour is no less beautiful than its shape, for the hair is as bright as the most polished gold; and the whole body takes that hue, all but the under part of the body and throat, both of which are delicately white; they can only exist in the tropical climates; and in Java and Ceylon they chiefly abound.

If we compare the gazells with each other, we shall find there is a very slight difference between them, and that the only distinction which Naturalists have discovered, is in the size of their horns, and spots on their skin; they are, in general, inhabitants of warm climates, and feed in herds on the sides of mountains, or in the shade of forests and woods; in their nature they are shy and timid, and fly from the sight of a human being with a degree of velocity it is scarcely possible to conceive. The hunting of gazells forms a principal amusement for the Arabians, the Persians, and the Turks; but unless they were aided by the swiftness of the falcon, the animal would easily evade their pursuit. This bird is early trained to the employment; and the moment the hunters espy their prey, they instantly point the falcon towards it, who darts forward like an arrow, and fixes its fangs in the creature's throat. In vain the poor animal tries to escape; the torture it endures soon arrests its speed. When the hunters come up, they seize their victim, and at once put an end to its misery and life.

CHAP. V.

THE MUSK ANIMAL.

THE *Moschiferus*, or Thibet musk animals, inhabit the Alpine mountains of Asia, Tonquin, and Siberia; they are also found near lake Baikal and the rivers Jenesei and Argun. Their favourite haunts are the tops of mountains covered with pines, where they delight to wander in places the most difficult of access. In their habits and manners they resemble the chamois, and other mountain goats, springing with great celerity, and, when pursued, taking refuge among the highest and most inaccessible summits. They are only hunted for the sake of their perfume, which is contained in a receptacle about the size of a small egg, hanging from the middle of the abdomen, and is peculiar to the male animal.

The musk animal has no horns; but eight lower fore-teeth; the upper tusks are solitary, and projecting. There are seven species; the *Moschiferus*, or Thibet musk; the *M. Indicus*; the *Pygmeus*, or Guinea musk; the *Javanicus*, or Java musk; the *Brazilian musk*; and the *Delicatulus*, or *Leverian musk*. This animal measures about forty inches in length, and twenty-seven in height from the top of the shoulders to the bottom of the fore-feet; thirty-three inches from the top of the haunches to the bottom of the hind-feet. The upper jaw being considerably longer than the lower, is furnished on each side with a curved tusk about two inches long; and consequently exposed to view, when the mouth is closed. These tusks resemble a pair of crooked knives; their substance is a kind of ivory. The ears are long and narrow, of a pale yellowish cast in the inside, and deep brown on the outside. The general colour of the whole body is a kind of deep iron gray; the tips of the hairs being of a ferruginous cast, the remainder is blackish, growing much paler, or whitish, toward the roots; each hair is somewhat waved or undulated throughout its whole length, and is of a strong and elastic nature, growing rather upright on the animal, and very thick. The female is smaller than the male, and wants the tusks.

The musk is a soft, unctuous, substance, of a brownish cast, but of the most powerful and penetrating smell As





Hind.

Stag.



Fallow Deer.

Roe Buck.



Roe Deer.

of Ohio's Deer

Elk.

soon as the animal is slain, the hunters cut off the receptacle or musk bag, and tie it up ready for sale; the perfume is found in these animals at all seasons of the year, but not in those which are young; the quantity is about a quarter of an ounce. The celebrated traveller, Tavernier, purchased, in one of his eastern journeys, no less than seven thousand six hundred and seventy-three musk bags.

The penetrating nature of the musk perfume is generally known; its colour is brown, with an unctuous and granulated appearance. At a distance, the scent is agreeable; but when brought too close, and in large quantities, it produces alarming effects. It has been known to force the blood from the nose, eyes, and ears, of those who have imprudently or accidentally inhaled its vapours.



CHAP. VI.

ANIMALS OF THE DEER KIND.

THE STAG.

THE stag is one of those innocent and peaceable animals that seems calculated to embellish the forest, and animate the solitude of nature. The easy elegance of his form, the lightness of his motions, those large branches that seem rather made to ornament than defend his head, added to his size, beauty and swiftness, render him one of the most *elegant*, if not one of the most useful, animals in creation.

The stag or hart (whose female is called a *hind*, and whose young a *calf*;) differs both in size and horns from the fallow deer; he is much larger and his horns are round; but in the fallow kind they are broad and palmated. The first year the stag has no horns, but a small excrescence on the head, which is short, rough, and covered with a hairy skin: the next, they bud out single and straight; the third they attain two antlers; three, the fourth; four, the fifth; and five, the sixth: this number is not always to be relied upon, for sometimes there are more, and at others less; therefore the animal's age may be more accurately estimated by the size of the antlers, and the thickness of the branch that sustains them, than by the number to which they amount. During the time of shedding their horns,

which with the old ones is in the beginning of March, but with the young ones not till the middle or latter end of May, they regularly divide from the rest of their class, and instead of herding together in forests, wander solitary over the plains, in an apparent state of dejection and imbecility, and seeming most cautiously to guard their heads.

As soon as these natural ornaments are renewed, the creature returns to its old habits of life, again rejoins his sportive companions, and seems sensible to the pleasures of social delights. Of all the animals that are natives of England, none can boast of such beautiful eyes as the stag; they are at once sparkling, soft and intelligent, and his senses of smelling and hearing are no less to be admired. Whenever he ventures upon unknown ground, he stops at its skirt, both to examine and attend; then turns against the wind and snuffs up the current, and by that means discovers an enemy's approach.

The stag is five years arriving at perfection, and seldom exceeds thirty-five; if he attains the age of forty, he exhibits manifest symptoms of infirmity and age. The original colour of the English stag was red, but the generality of them now are between a yellow and a brown; some few amongst them are perfectly white, and those have the appearance of being most domestic and tame.

The passion for hunting was formerly carried to such an excess, that in the reigns both of Rufus and Henry I. of England, the life of a stag was thought so estimable, that the same criminality was attached to their destruction as to one of the human race; but, as the arts and civilization were introduced, these sanguinary laws were gradually abridged, and the *great* no longer purchased their gratifications at the expense of their *probity*, or the poor man's peace.

Though there are very few varieties of the red-deer in this country, and they are generally of the same colour and size, yet in opposite parts of the world they greatly differ in form, in colour, and in size. The stags of China are not larger than a house-dog, and their flesh, whilst young, is very much admired; but as soon as they arrive at maturity, it then becomes both dry and tough. The Corsican stag is likewise very small, and totally devoid of elegance in its make; the hair is of a dark brown; and the body and legs both short and thick. In the forests of Germany there is a kind of stag which the natives call the bran-deer; the colour

is darker than the common stag, and it has long white hair upon its neck and throat, which gives it rather the appearance of a goat. There is likewise a very beautiful stag called the Axis, which some Naturalists believe to be a native of Sardinia, but Mr. Buffon thinks it comes either from Africa or the Indies; the hair of this animal is of four different colours, brown, white, black, and gray; along the back there are two rows of spots in a right line, but in the other parts of the body they are irregularly placed.

Although this species is not subject to any great variation, yet their race seems diffused over all parts of the world; the new continent of America, where neither the sheep, the goat, nor the gazell were *originally* bred, is known to have been the *native abode* of the deer. The Mexicans have a breed that are perfectly white; but in Canada they bear such a strict resemblance to our own, that the only variation is in the size of their horns, and the direction in which they are placed.

The swiftness and activity of this elegant animal greatly depend upon the quality of its food, as no creature requires so rich a pasturage to promote its vigour and increase its growth.

The form of the hind* is less than that of the stag, and its head is neither ornamented with antlers nor horns: the fondness for its young is scarcely to be equalled by any other of the animal race; from the moment this attached creature becomes a parent, fear and apprehension take possession of her mind, and to preserve the object of her affection from danger, seems the principal care and business of her life. Her apprehensions for its safety are well founded, for numerous are the enemies by which it is pursued; the eagle, the falcon, the osprey, and the wolf, all seem leagued against the victim's life; but what is still much more unnatural, the stag is one of its greatest foes, and she is compelled to hide her young from his sight. Man is likewise a professed destroyer, whom perhaps she has still more reason to fear; and, when hunters and hounds are in search for her concealment, she frequently presents herself to their view, and, by leading them from the spot where her young are treasured, preserves their existence by the forfeiture of her own.

* The hind goes between eight and nine months with young, and generally brings forth in May or June.

THE FALLOW-DEER.

Though the stag and fallow-deer bear so striking a resemblance, no two animals are more distinct in their kind; and such a determined animosity seems to subsist between them, that they never will herd in the same place. As the size of the fallow deer is not equal to the stag, so it never acquires so much vigour or strength; it is seldom found wild in forests, but is at once the ornament and luxury of the great. The trifling variation between the stag and the buck chiefly consists in the formation of their horns; those on the former, spreading flat like the palm of the hand; and those on the latter being circular, and in every part round: the tail of the fallow-deer is likewise rather longer, and the hair on the body not quite so dark. The buck, like the stag, is an animal for the chase, but is not allowed to afford equal sport; when hardly pressed, it will seek security in the water; but neither in flight nor swimming can it compare with the stag. Dissensions about pasturage frequently occur amongst these animals, when the herd immediately divide into two parts, and commence an engagement for the land of preference, which the victorious party ever after retain. In England there are two sorts of the fallow-deer, the spotted kind, which is supposed to have been brought from Bengal; and the very deep brown, which is so common in this isle, which were originally introduced from Norway by James I. The Spanish fallow-deer are as large as stags; and in Guiana, a country of South America, the fallow-deer are totally without horns; their flesh is allowed to be excellent eating, but not equal to that which England can produce.—This animal comes to maturity in the space of three years, but does not live half the age of the stag.

THE ROE-BUCK.

The Roe-Buck is the smallest animal of the deer kind, and with us the breed is nearly extinct; but in the Highlands of Scotland they frequently abound. In height it does not measure more than two feet, and in length seldom exceeds three: the horns are from eight to nine inches long, upright, round, and divided into three branches: the body is covered with very long hair, adapted to the rigour of its mountainous abode. The make of this little creature is

extremely elegant ; and it is to be equally admired for its agility and speed : its hair is smooth, clean, and glossy ; and its courage is superior to that of the stag. The method by which it eludes the hunter's pursuit, proves that it possesses both cunning and art ; for, instead of pressing forward with rapidity like the stag, it continually returns and makes zig-zag tracks, until the hounds become confused by the windings of its path, and are totally at a loss which to take.

The roe-buck differs from the rest of the species in the domestic habits it is led to pursue ; for, instead of assembling in herds together, each resides separately with his young ones and their dam. The constitution of this animal is very delicate, and it requires variety both in the air and food ; in consequence of which, those that are confined in a park, do not live near so long as those which run wild.

The cry of the roe-buck* is neither so loud nor frequent as that which is made either by the fallow-deer or stag ; but the young ones have a particular manner of calling to the dams, which the hunters imitate with great success ; and by that means the poor creatures are often drawn into the snare which has been insidiously spread. In America, this animal is extremely common, and there are great varieties in the breed ; with us only two sorts are known, the largest of which is red, and the smallest brown.

THE ELK, OR MOOSE-DEER.

Of all the quadrupeds, (the elephant excepted) none in size exceeds the Elk ; it is an inhabitant both of the old and new continent, though in North America, it is allowed chiefly to abound. Naturalists vary in their description of this animal ; and some of them declare that it grows to the height of eleven feet. That it doubtless is a creature of immense magnitude, may easily be ascertained by the size of its horns, many of which have been dug up in Ireland, and could only have been supported by an enormous head.

The European elk and the American moose-deer in size and appearance are very much the same ; one of the former kind was caught in a forest of Red Russia, and exhibited some years ago at Paris, as a sight. As the creature was

* The female goes rather better than five months with young, and generally produces two at a time. They seldom exceed the age of twelve or fourteen years ; and if kept tame, scarcely live half that time.

universally allowed to be very young, it was impossible to say what would be its height; but it was then near seven feet from the ground, and ten from the nose to the insertion of the tail: the hair was long and coarse like that of a wild boar, and its ears were a foot and a half in length; the upper jaw was six inches longer than the under; and like other ruminating animals, it wanted the cutting-teeth: it had a long beard under the throat, and in the middle of the forehead a prominent bone as large as an egg; and it made use of its fore-feet as weapons of defence. Those who showed it, asserted, that it could run with rapidity, and swim with an equal degree of ease. They gave it thirty pounds of bread every day, besides an amazing quantity of hay; and eight buckets of water were scarcely sufficient to quench this astonishing creature's thirst. It was gentle and good-humoured to people in general, and perfectly obedient to its keeper's word.

These animals delight in cold countries; in the summer they feed upon grass, but in the winter upon the bark of the trees. When the whole country is covered with snow, the moose-deer herd together under the tall pines, strip them of their bark, and remain in that part of the forest until they cannot find any thing more to eat. At that time the natives prepare to hunt them, as their flesh is both nourishing and pleasant food; and their hide, when tanned, makes most excellent leather, for it is durable, pliant, and smooth to the touch. The horns likewise are very useful, and are used for the same purpose as those of the stag. The animal is said to be troubled with an epilepsy, and frequently falls down when it is pursued, and by this means becomes an easy prey to those whose business it is to attend to the chase.

THE REIN-DEER.

Amidst the many striking marks which are every where exhibited of the supremacy of that power that called us into life, in no instance do we trace stronger proofs of his beneficence than in the formation of that animal called the rein-deer.

In a country where the beauties of Nature are unknown, and sterility and barrenness have established their seat, how dreadful would be the situation of its wretched inhabitants but for the advantages they enjoy from this domesticated friend! The severity of the climate, which is fatal

to many quadrupeds, is the means of increasing this animal's strength ; for whenever it has been transported into a more genial country, the change shortly proves destructive to its life.

The comforts of the Laplander absolutely depend upon the services he derives from this useful race of animals ; they conduct him over tracts that would otherwise be impassable, supply him with an abundance of wholesome food, and afford his body a covering from the severities of the cold.

The horns of the rein-deer resemble the American elk ; and they likewise have antlers springing from the brow ; it is not so tall an animal as the stag, though it is much stronger, and more calculated to endure fatigue. When they first shed their coat, their colour is brown ; but as the summer approaches, it begins to grow light, and varies until it becomes nearly gray ; the hair upon its body is thick and long, calculated to defend it from the severity of the clime ; and contrary to the rest of the deer species, the female is adorned both with antlers and horns.

There are two kinds of rein-deer in Lapland ; the one *wild*, and the other *tame* ; the latter are chiefly used for drawing the sledges, as the former will seldom submit to their guide. The sledges are built remarkably light, and their bottoms covered with a young deer's skin, with the hair placed in a proper direction to glide over the congealed snow. The person who sits on this vehicle guides the animal with a string fastened round the horns, and encourages him to proceed by the sound of his voice, or compels him forward by the assistance of a goad. The wild breed, when harnessed, are sometimes so refractory, that their drivers find it impossible to make them proceed, and are obliged to hide themselves under their conveyance to avoid the attack it would make upon their lives. There is scarcely a part of this animal but what is serviceable to the inhabitants, and proves the benevolence of that Power by whom it was made ; its flesh, as I observed, supplies them with food ; and though it does not give milk* in *large* quantities, yet it is both nourishing and sweet. As to butter, they seldom make any ; but they

* The Rein-deer, like the hind, goes better than eight months with young, and generally brings forth about the middle of May ; it yields milk from that time to the end of October, and is driven from its pasture to be milked both morning and night. It does not come to perfection until it is four years old, and never lives longer than fifteen.

boil the milk with sorrel, which makes it coagulate and grow thick ; they then put it into casks, or skins, and bury it in the earth as a winter's regale ; but the skin is the most valuable part of this animal ; it supplies the inhabitants with bedding, clothing and shoes : nay, even the blood is preserved in small casks, to make sauce with the marrow of those which are killed in the spring. The horns are sold for the purpose of making glue ; the sinews are dried, and converted into thread ; the intestines themselves are cleaned like tripe, and are considered as an excellent, if not a delicate, kind of food. Thus the Laplander finds all his necessities amply supplied from the means of an animal he has so much reason to prize ; and those who are in possession of a herd of these creatures, envy not the honours or riches of the great.

The fatigue which the rein-deer is able to undergo, increases the estimation in which it is held, for it can trot fifty miles upon a stretch, without requiring either to stop or bait ; though sometimes its strength is so far exhausted, that at the close of a journey it falls sick and dies.

Though the appearance of the country is barren and uncultivated, it naturally produces the rein-deer's food ; and as far as the eye can reach, even in the midst of summer, nothing is to be seen but fields covered with white moss, on which the animal totally subsists. The inhabitants, who, during summer, reside upon the mountains, in the winter drive their cattle into the plains, which, during the warm weather, they were unable to reside in from the immense swarms of gnats and flies. If these insects prove an annoyance to the natives, they are still much more so to the poor deer ; and at the annual period of shedding their horns, settle in myriads upon their head. The glutton, a little animal about the size of a badger, frequently proves a most formidable foe, for, concealing itself amongst the thickest branches of the trees, it springs suddenly from thence upon the rein-deer's neck, and, fixing its teeth and claws just below the horns, never quits its hold till the animal dies.





Wild Bear

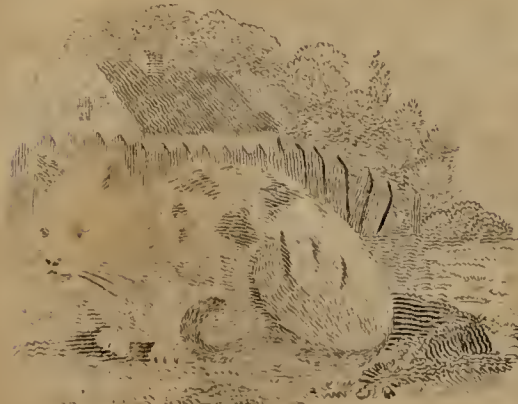
Boar



Pecary



Barbary ox



Cat



Wild Cat

Childs sc.

CHAP. VII.

ANIMALS OF THE HOG KIND.

THE WILD BOAR.

ANIMALS of the hog kind seem to unite in themselves all those distinctions by which others are separated. In the number of their teeth, which amount to forty-four, they resemble a horse; in the length of their head they do the same, and in having but a single stomach. Like the cow, their hoofs are cloven, and their intestines are placed in the same form. But in their appetite for flesh, their numerous progeny, and not chewing the cud, we trace a similitude to the claw-footed kind. Thus the species serves to fill up the chasm between carnivorous animals, and those which feed on grass.

The Wild Boar, which is the original of all the varieties that we find in this race, is neither so stupid nor filthy an animal as that we have reduced to tameness: he is smaller than the hog, and does not vary in his colour in the same way that the domestic kind do, but is always found of an iron-gray, rather inclining to a black; his snout is more pointed; but his ears are not so long; and the feet and tail are entirely black: his tusks exceed those of the tame hog, and frequently grow near a foot in length; these spring out from the upper and under jaw; but with the latter they are capable of being most mischievous. The wild boar can neither be properly called a solitary or gregarious animal; the three first years, the family follow the sow, and all live in a herd together; they are then termed beasts of company, and join their forces against the invasions of the wolf: and upon this combination of numbers their safety depends. In those countries where this animal abounds, the hunting it constitutes the chief amusement of the rich; and the dogs provided for this sport, should always be of a slow and heavy kind. When the boar is *reared* (which is the expression used for driving him from his covert,) he goes forward at a very deliberate pace; at every half mile stops and faces his foes, and seems to invite them to commence the attack. The wary animals, sensible of his ferocity, draw back till the boar begins to be fatigued; they then close in upon him

from behind, but the first assailants generally pay the forfeiture of their lives ; the hunters, however, soon come up, and the creature falls a victim to their darts or spears.

THE HOG.

This animal, in its natural state, chiefly exists upon vegetables and roots, seldom attacks any other quadruped, but is contented with those provisions it can most easily obtain. Yet, if it happens to meet with a dead animal, with its flesh reduced to the most putrid state, it will immediately begin feasting upon the carcass, and not leave it until satiated with the quantity of its food. The awkwardness of its form seems to influence its appetites, and all its sensations appear to degrade its kind. Yet we must consider, when this animal is domesticated, it no longer shows itself in a natural state ; for, possessed of an appetite eternally craving, it may be compelled to feed disgustingly from wanting sufficient food. Linnæus assures us, that, in a state of nature, the hog is peculiarly *nice* in its food, and rejects a greater variety of vegetables than any animal we can name. In the orchards of peach-trees in North America, where it is enabled to enjoy such profusion of delicious food, it will even refuse those which have fallen a few hours, and merely eat such as it observes come to the ground. The creature, however, is by nature stupid and inactive, and its life is doubtless spent between eating and sleep ; and whenever it shows any marks of sensibility, it is when the cries of its species give symptoms of distress, or the whistling wind is the herald of an approaching storm. The coarseness of the hair, and the stubborn texture of the hide, united to the thick coat of fat immediately under the skin, seem to render it insensible to the hardest blows. The ample supply of food derived from this animal is almost superfluous even to name ; yet, from the ease with which the flesh becomes impregnated with salt, it is peculiarly calculated as food for those who take long voyages by sea.

As the hog is a native of almost every country, there is not much variety to be found in the breed ; but, about Upsal, it is single-hoofed, like the horse ; and, in Guinea, the colour of the hair is red.

THE PECCARY, OR TAJACCA.

This animal is a native of South America ; and though at first view it seems to resemble the hog, yet upon minuter examination there is a wide difference between them. The body is not so bulky, the legs are not so long, and the bristles on the back are so much stronger than those of the hog, that they have rather the appearance of porcupine's quills than hair ; it has no tail, but a small fleshy protuberance arises in the head ; upon the back there is an orifice from which issues a liquor somewhat resembling that which distils from the civet, though not possessing the same sweet scented quality ; the hair is of a grizzly colour, and of so stout and strong a texture, as not to adhere to any part of the body ; on the head, between the ears, there is a large tuft of black bristles ; the ears of the animal stand erect, and are about two inches and a half in length ; the feet, hoofs, and tusks, are like those of the hog ; but its flesh is much drier and not so sweet. They generally associate together in herds, and prefer mountains to marshy grounds ; they subsist upon wild fruits, roots, and vegetables ; but lizards, toads, and serpents, are their favourite food.

THE CAPIBARA.

Though the Capibara is ranked amongst animals of the hog kind, yet it doubtless belongs to a distinct race ; it resembles a hog in the form of its body, and in the coarseness and colour of the hair ; the neck of this animal is short and thick, and it has a rounded bristly back ; the snout is split like that of a rabbit, and whiskers are substituted in the place of tusks ; like the peccary, it is without a tail ; and instead of being cloven-footed, it is webbed like a duck. The water is this creature's favourite element, but it feeds as much upon fruit and corn as it does upon fish. Its cry resembles the bray of an ass ; and it will sit upon its hinder parts, and beg like a dog. Even in a state of wildness, it appears to be gentle ; and when taken young, is easily tamed. The capibara is a native of South America ; its flesh is strong and acquires a flavour of fish.

THE BARBYROUessa, OR INDIAN HOG.

The Barbyrouessa is an animal still farther removed from the hog than the peccary or the capibara, yet most travellers who have described this animal do not scruple to class it under that race. This quadruped is a native of Borneo, a well-known island in the East Indies, and as its figure bears a stronger resemblance to the hog than that of any other animal, it has universally been attached to this race. The body of the barbyrouessa is not so clumsy as that of the hog, the legs are longer, and better formed; and the hair, instead of being harsh and bristly, is soft in texture, and resembles wool; though the length of the snout is not equal to the hog's, the tusks are of a much more formidable size; those which extend from the under jaw are a foot in length, and those which issue from the upper are allowed to be half a yard; these four enormous tusks distinguish the barbyrouessa from every other quadruped, and though they give an appearance of *ferocity* to the animal, it ought doubtless to be classed amongst the *harmless race*. When pursued by the hounds, it frequently turns upon them, and wounds them mortally with the tusks in its lower jaw; but when left quiet and unmolested, it is naturally too peaceable to commence an attack. The barbyrouessa is hunted the same as the wild boar, though, from being fleetier in its motions, it is not so easily killed; and when it finds itself closely pressed by the hounds, it always endeavours to reach the sea, where, from the facility with which it both dives and swims, it is certain of eluding the pursuit of its foes. The flesh of this animal is allowed to be good; and there is little difficulty required in making it tame. The method of securing themselves from the attacks of larger animals during the hours which are devoted to sleep, is one of the most striking marks of the power of instinct which the animal creation can possibly display; as the upper tusk of the animal grows in a curve towards the head, it exactly answers the purpose of a hook, and with it they suspend themselves to a branch of a tree, and thus avoid the invasion of their foes.

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Lioness.

Lion.



Panther.

Tiger.



Ounce.

engraved by

Leopard.

CHAP. VIII.

ANIMALS OF THE CAT KIND.

WE have hitherto been describing a class of harmless animals, that serve as instruments to the happiness of man, or at least that are not at warfare with his tribe; but we are now to turn to an unrelenting race, whose sanguinary tempers deal in blood. All the classes of the cat kind are chiefly distinguished by their sharp and formidable claws, which they can hide or extend at pleasure; they lead a solitary, ravenous life, neither uniting for their mutual defence, like those which feed on vegetables, nor like the dog, for mutual support. The dog, the wolf, and the bear, are sometimes known to live upon farinaceous food; but all of the cat kind, such as the lion, the tiger, the leopard, and the ounce, refuse the sustenance that does not teem with blood.

In other animals, many alterations are produced by the arts and assiduity of man; but these creatures remain inflexibly the same, and neither climate nor control can change them.

The cat, which is the smallest animal of the kind, is the only one that has been taken under human protection; the lion and the tiger may be tamed, and rendered obedient to command; but even in their humblest moments they are to be dreaded, as their strength is so great, and their tempers so capricious, that they have frequently been known suddenly to turn upon those to whose authority they had appeared to submit.

THE CAT.

Of all the animals when young, there is none more prettily playful than the kitten; but, as its years increase, it seems gradually to lose its sportive habits, and the innate treachery of its class prevails. From being naturally ravenous, education teaches it to disguise its appetites, and to watch a favourable moment for seizing its prey. Supple, artful, and insinuating, it disguises its intentions until it can execute them without danger; and, instead of making an

open attack, conceals itself in *ambush*, like a *designing foe*. The weapons of this animal are both its teeth and claws; the former of which amount to thirty, and are calculated for *tearing* rather than *chewing* its food; their claws are remarkable both for sharpness and strength, and they never suffer any thing to escape that once comes within their grasp. The cat* has only the *appearance* of *attachment*, and it may easily be perceived, by its timid approaches, and sidelong looks, that it either dreads its master, or distrusts his kindness; it is assiduous rather for its own pleasure, than to please; and often obtains confidence, merely to abuse it. The form of its body, and its temperament, perfectly correspond with its disposition; active, cleanly, delicate, and voluptuous, it shows a peculiar fondness for comfort and ease; it is timid and mistrustful, because its body is weak, and its skin more tender and thin than a dog's, therefore they appear to be constantly in dread of blows. One of the marks which this animal exhibits of the natural ferocity and malignity of its disposition, is that of sporting with the object it means to devour; and instead of putting an end to its sufferings by an immediate death, lengthening them out by an appearance of release; and when the poor victim fancies it has escaped its tyrant, a sudden spring renews its captive chains, and sets it once more trembling for its life. The cat is seldom known to make an attack upon those animals which are capable of defence, but birds and mice are its favourite food; it also eats the young of rabbits and hares; and, when very hungry, will devour bats, moles, toads, and frogs.

Although the cat is an inhabitant of our abode, it cannot be called a dependant upon man; for it gives no proof of pliancy or obedience, but follows its own inclinations and pursuits. It appears to have a natural antipathy to water; and is fond of rubbing itself against those who carry any kind of perfume; it likewise shows an excessive partiality to the smell of valerian, marum, and cat-mint; it is seldom known to sleep sound, and often imitates that lifeless appearance, for the purpose of deceiving the unsuspecting object of its prey. There is something peculiarly remarkable in the pupil of this animal's eye, which in the dark seems to

* This animal goes fifty-six days with young, and generally produces four or five at a time, which she carefully hides in some concealed spot, and for some weeks entirely supports them upon milk; afterwards, she carries them whatever she has made her prey.

expand over the whole ball, but contracts into a small compass when presented to the light. It is remarkably cleanly in its nature, its hair is glossy, smooth, and sleek; and, when forcibly rubbed in the dark, emits electrical sparks.

The Wild Cat is something larger than the tame kind; but, from the fur being longer, it appears much superior in size; its teeth and claws are much more formidable; its head is bigger, and its face more flat. The general colour of this animal in England is a yellowish white, intermixed with gray. It inhabits the most mountainous and woody parts of the island; feeds only by night, and lives in trees. It is one of those few quadrupeds which are common to the *new* as well as to the *old continent*; for when Columbus first discovered that country, a hunter brought him one that he had found in the woods: they are common likewise in many parts of Africa and Asia, and the colour of some of them is inclining to blue. In Chorazen, a province of Persia, there is a species of this animal with a most beautiful skin; the colour is a grayish blue, and nothing can exceed the lustre and softness of its skin: the tail curls upon the back like a squirrel's, and the hair upon it is at least six inches in length. Another variety of this creature is called the *lion cat*, or, more properly, the *cat of Angora*; these are larger than either the tame or the wild cat: their hair is longer, and hangs about their head and neck so as to give the creature the appearance of a lion; in general, the animal is white, though sometimes it takes a dun hue.

THE LION.

Though man can endure both heat and cold, and his constitution in general is not materially affected by the clime, yet all inferior animals in the creation derive health and vigour from their native air. The rein-deer thrives but in its fields of ice, and the lion degenerates when removed from beneath the line. Most animals are found larger, fiercer, and stronger, in a warm than in a cold and temperate clime; they are likewise allowed to be more enterprising and courageous, as their dispositions seem to partake of the ardour of the soil. The lion, produced under the burning sun of Africa, is of all creatures the most undaunted; those, however, that are bred in more temperate countries, or near the top of cold and lofty mountains, are far less dangerous

than those which are bred in the valleys beneath. The lions of Mount Atlas, the tops of which are covered with eternal snows, have neither the strength nor the ferocity of those which are natives of Bildulgerid or Zaara, where the plains are covered with burning sands.

Fierce and formidable as this animal appears, he seems instinctively to dread the attacks of man; and in those countries where he is frequently opposed, his ferocity and courage gradually decrease. The usual manner in which the Negroes and Hottentots make war upon this animal, is, first, to find out the place of its concealment, when four combatants, with iron-headed spears, provoke the creature to commence a fight, in which their number makes them prove victorious; but, in the burning sands that lie between Mauritania and Negroland, and in the uninhabited countries to the north of Caffraria, where man has not taken his abode, the lion's strength is found more fierce, and his propensities more keenly cruel.

This alteration in the animal's disposition, proves at once that it is capable of being tamed: and, in fact, nothing is more common than for the keepers of wild beasts to amuse themselves by playing with the lion, and even to chastise him without a fault; yet the creature bears it all with calmness; and very rarely are instances found of his revenging these unprovoked sallies of ignorance and cruelty. Labat, however, informs us, that a gentleman was weak enough to keep a lion in his chamber, and a domestic purposely to attend it, who occasionally *tortured* and *caressed* it. This ill-judged association continued for some time, till one morning the gentleman was awakened by an unusual noise in the room, and, withdrawing the curtains of his bed to see what had occasioned it, beheld a sight that chilled his blood with horror; the sanguinary animal was growling over the dead body of his keeper, and tossing the dissevered head about the room in sport; terrified and alarmed by so dreadful a spectacle, he instantly sprang out of the room, called in assistance to secure the beast, and prevented it from doing farther ill.

Notwithstanding this instance of treachery or revenge, the lion on the whole is a generous-minded beast, and has given frequent proofs both of the courage and magnanimity of his disposition; he has often been seen to spare the lives of those animals that have been thrown to him for food, to live with them in habits of sociability and friendship, and willingly to share with them the subsistence that was given for his

own sustenance and support. Another superiority which the lion possesses over every other animal of the carnivorous kind, is, that it kills from *necessity* more than *choice*, and never destroys more than it is able to consume.

The outward form of the lion seems to speak the internal generosity of his nature. His figure is striking, his look bold and confident, his gait proud, and his voice terrible: his stature is not overgrown, like that of the elephant or rhinoceros, nor his shape clumsy, like that of the hippopotamus, or ox; it is compact, well-proportioned, and sizeable; a perfect model of strength, combined with agility; his face is broad, and some have thought that it resembles the human kind; it is surrounded with a very long mane, which gives it a most majestic appearance; the top of the head, the temples, the cheeks, the under jaw, the neck, the breast, the shoulder, the hinder part of the legs, and under part of the body, are all furnished with long hair, whilst the other part of the body is covered with very short; the tongue of the animal is rough, and beset with prickles; its eyes are bright and fiery, nor even in death does this terrible look forsake them; the length of the mane increases with its years, yet is neither coarse nor rough like that of the horse; but is of the same pliancy of texture as that which covers the other part of the body; the general colour of the hair is yellow; and the formation of its eyes resembles a cat's; for this reason he seldom appears in open day, but prowls about for food by night, and boldly attacks all animals that come in his way.

The roar of the lion is so loud and tremendous, that, when re-echoed by the mountains, it resembles the sound of distant thunder, and all the animal creation fly before the sound. This roar is the creature's natural note; for when enraged, he has a different growl, which is short, broken, and reiterated; he then lashes his sides with his tail, erects his mane till it stands up like bristles, and his eye-balls seem to emit sparks of fire. When he is roused, he recedes with a slow, proud step, never measures his paces equally, but takes an oblique course, going from one side to the other, and bounding rather than running. When the hunters approach him, they either shoot or throw their javelins, and in this manner disable him before he is attacked by dogs. He is sometimes taken by pit-falls; the natives digging a deep hole in the ground, and covering it slightly over with sticks and earth, which instantly give way

to the lion's tread, and he is unexpectedly hurled into a deep abyss.

The lioness,* though naturally less strong, less courageous, and less mischievous than the lion, is no less to be dreaded when she is possessed of young; for as her maternal sensations are ardent to an excess, she commits every kind of depredation to supply her cubs with food, and brings it home, reeking, to their den.

The lion, as was observed, is an inhabitant of the torrid zone, and is always found to be more formidable there; yet he is capable of subsisting in more temperate climates; and there was a time when even the southern parts of Europe were infested by them; at present he is only found in Africa and the East Indies, in some of which countries he grows to an enormous height. The lion of Bildulgerid is said to be nearly five feet high, and between nine and ten from the tip of the nose to the insertion of the tail; the ordinary height, however, is between three and four feet: the lioness is not so large, and is destitute of that striking ornament, the mane.

THE TIGER.

If a beautiful form could compensate for a depraved disposition, the tiger would obtain pre-eminence over the animal race. Unfortunately, however, this creature's propensities are all of so vicious and malignant a kind, that though we may admire its *external* covering, we must despise that which it internally contains; and believe that Providence bestows beauty upon so despicable an animal to prove, that when it is not attached to merit, it neither *deserves* to be *estimated* or *prized*.

The chief and most remarkable difference in the tiger, from every other animal of the motley kind, is in the shape of its colours, which run in streaks or bands in the same direction as his ribs. The leopard, the panther, and the ounce, are all in a certain degree marked like this animal, only that the lines are broken by round spots which cover the whole surface of the skin; whilst those on the tiger stretch *lengthwise*, and seldom, if ever, are any round ones to be seen.

* The lioness goes five months with young, and never brings forth more than two at a time. Naturalists vary in their opinions as to the length of the lion's life, but one was kept in the Tower of London upwards of seventy years.

The tiger is likewise a larger animal, though more slender than the others in proportion to its size; and its form so completely resembles a cat's, that we can hardly believe them to be of a different race.

Though the tiger is generally ranked next to the lion, it is destitute of those qualities for which that animal is admired; yet it possesses all those noxious propensities for which it is universally condemned. To pride, courage, and strength, the lion joins greatness, clemency, and generosity; but the tiger is fierce without provocation, and cruel without necessity. The lion seldom ravages except when excited by hunger; the tiger, on the contrary, though glutted with slaughter, is never satisfied, but still continues the carnage, and seems to have his courage inflamed by not meeting with resistance.

Happily for the rest of nature, this animal is by no means common, as its species is confined to the warmest provinces of the East. The tiger is found in Siam, Malabar, and Bengal; and in all the countries where the elephant and rhinoceros reside; and some authors are of opinion that it lives in habits of friendship with the latter; be that as it will, there is no doubt but they are often seen together at the sides of lakes and rivers, though probably impelled by the motive of quenching their thirst; and the tiger may be prevented from making an attack, from the knowledge of the rhinoceros's amazing strength and size.

When the tiger has killed any larger animal, such, for example, as a buffalo or horse, he drags it to some remote part of the forest, for the purpose of devouring it with the greater ease; and bounds along with a rapid motion, unchecked by the enormous load he sustains. From this alone we may judge of its strength: but to form a just opinion, we must attend to the account which different travellers have given of its size.

Mr. Buffon has been informed by a gentleman in the East Indies, that he saw one that measured fifteen feet in length, and allowing four for the creature's tail, from the insertion to the nose, it must have been eleven feet long. What an immense leap such an animal may take, we can easily conceive from what the cat can perform; and how difficult it must be to escape from a creature capable of making such an astonishing bound.

The tiger is the only species of quadrupeds whose spirit absolutely refuses to be tamed: neither force nor constraint,

neither cruelty nor kindness, makes the slightest impression upon its stubborn heart; it snaps at the hand which supplies it with food, with the same ferocity as that by which it is chastised; and although confined by bars and chains, is continually making efforts to prove the malignity of its heart.

There are three kinds of tigers in the Sundah Rajah's dominions, which vary in size as well as strength; and captain Hamilton gives a most extraordinary instance of the uncommon vigour one of the larger sort possessed; a poor peasant in that country had the misfortune to have a buffalo fall into a quagmire; and, not being able to extricate it by himself, ran home to procure the help of his neighbours and friends. The man returned, accompanied by several of his companions, prepared to lend him assistance and aid; but the first object that presented itself to their sight, was the buffalo thrown across a tiger's back, who was hastening with it towards the woods, for the purpose of uninterruptedly enjoying its prize. The moment it saw the men, it let fall its prey, and fled precipitately from their sight; but it had killed the poor animal and sucked his blood, or probably it would not have resigned the prize.

The disposition of the tigress is allowed to be as malignant and as insatiable for blood as that of the male; and, during the time she has the care of her young, her fury and ferocity are known to increase. The exact number of cubs that she produces, has never yet been positively ascertained, though it is generally believed that she has four or five. In China, their skins are highly esteemed, and are used as coverings for all the mandarins' seats: but in Europe, though they are not often to be met with, they are not by any means equally prized.

THE CONGAR.

Of all the animals that infest the *new world*, the congar justly excites the greatest degree of dread; and so much in its disposition does it resemble the tiger, that the inhabitants have given it the same name, though the colour is between a dark brown and red.

The red tiger, or, more properly speaking, the congar, is very common in South America; and, where towns are bordering upon woods and forests, makes frequent incursions into them during night, for the purpose of carrying off fowls, dogs, or other domestic creatures that may unfortunately be

wandering through the streets. They are, however, weak and contemptible, when compared to the great tiger; and are capable of being vanquished by a single man, if properly armed with a lance and cimeter, which are the common weapons they use in fight.

Though this animal is seldom victorious in his combats with the negroes, who provoke him to action for the sake of his skin, yet he will frequently attack the crocodile, and conquer a creature of much greater might. When the congar, impelled by a thirst that seems to consume it, comes down to the river side to drink, the crocodile, which makes no distinction in its prey, raises its head above water in order to secure a perfect hold; then the congar instantly darts its claws into his eyes, whilst his adversary plunges beneath the waves, where they continue for a length of time together, though the congar is frequently known to escape.

This animal is common in Brazil and Paraguay; likewise in the country of the Amazons, and in several other parts of South America; they often climb trees in quest of prey, or to avoid their pursuers. Like the tiger, they have an antipathy to fire, which the natives kindle near their flocks and herds, to deter them from venturing to approach.

THE PANTHER.

This animal has been mistaken by many Naturalists for the tiger; and, in fact, it approaches nearest to it in size, fierceness, and beauty, of any quadruped that is known. It is distinguished, however, by one obvious and leading feature, that of being *spotted*, not *streaked*; for in this particular, the tiger differs from the panther, the leopard, and almost all the inferior ranks of this mischievous race.

THE LEOPARD.

Next to the panther, is an animal which Mr. Buffon terms the leopard; or, as it is sometimes called, the *panther of Senegal*, where it is chiefly to be found. The difference between this creature and the panther consists in its size, and the distribution of the spots upon the skin.—From the tip of the panther's nose to the insertion of its tail is generally about six feet; but the leopard seldom measures more than four; the leopard's skin is more bright and shining, and the spots are disposed in *clusters* instead of *rings*.

THE JAGUAR, OR PANTHER OF AMERICA.

To these two animals, whose difference is so small, a third may be added, which is called the Jaguar; this in every respect resembles the two former, except in the disposition of the spots, and that the marks upon its neck and head are rather striped than round; it is also said to stand lower on the legs, and to be rather less than the leopard of Senegal.

THE OUNCE.

The Ounce, or the *onca* of Linnæus, is much less than the panther, not being more than three feet and a half in length; the hair, however, is much longer, which deceives the eye as to the creature's size; and the tail frequently measures more than the whole body besides. The ounce is of a cream colour, and the disposal of the spots resembles those upon the panther, except that on the haunches it is marked with stripes; the disposition of this creature is more gentle, and without much difficulty it may be tamed; and is used in the East for hunting the gazells.

THE CATAMOUNTAIN.

The Catamountain is an American animal, about two feet and a half in length from the tip of the nose to the insertion of the tail; it is extremely like a cat, except that it is larger, yet more slimly formed; the colour is reddish, interspersed with black spots and stripes, which have a beautiful effect upon the creature's skin; its disposition is savage, and neither blows nor caresses can make it tame.

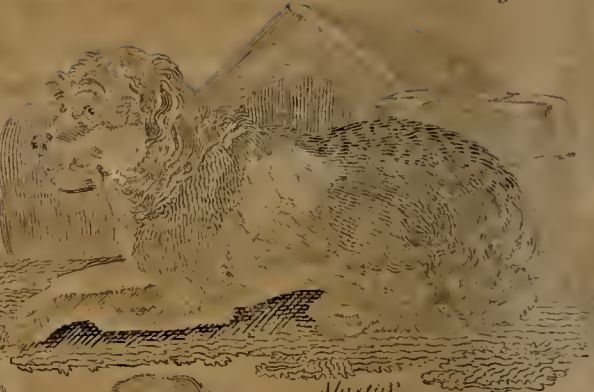
THE LYNX.

The first striking distinction between the Lynx and other animals of the panther kind, is in the length of the tail, which is not half so long in proportion as those which have just been described. The spots upon the skin are confusedly mixed; its ears are much longer, and tipped with tufts of black hair; each hair of this quadruped is of three different colours; the root is of a *grayish brown*, the middle *ash*, and the ends *white*, yet they are so disposed upon the body, that the middle colour seems to prevail; therefore the skin appears of a

John ...
...



greyhound.



Mastiff.



New-Foundland Dog.



spaniel.



Shepherd's Dog.



Fox Hounds.



Fox.



Wolf.

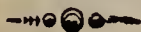
silver hue. The size of the animal resembles the ounce, with the little alteration of being stronger made, and possessing only *twenty-eight* teeth, whereas *thirty* is the number attached to the cat kind.

THE SIAGUISH.

The Siaguish is a native of the East Indies, and resembles the lynx in size and form, and even to the tuft at the end of its ears; only that the latter is a native of frigid climes, and the former exists but in those which are warm. Like the ounce, this creature is made use of in hunting, yet is allowed to be more ardent in the pursuit; for if that animal does not seize its prey at the first spring, it appears dismayed, and will not exert itself again; but the siaguish perseveres in the attempt. The method adopted in hunting with these animals, is to carry them hoodwinked to the spot where they expect to find the game; and the moment the creature's eyes are unbound, it darts forward with the rapidity of an arrow's flight, leaps upon the gazell or antelope between the shoulders, and instantly begins scratching out its eyes, by which means the hunters find them an easy prey.

THE SEWAL.

The Sewal is a native of Malabar, and resembles the panther in its spots, but the lynx in size; yet in habits and disposition bears such an affinity to the siaguish, that a separate description of their nature would rather tire than please; indeed, from the whole of what has been said of this rapacious kind; we may observe a strong affinity in their dispositions, from the lion to the cat, and they may all be considered as the most formidable enemies with which mankind can possibly engage.



CHAP. IX.

ANIMALS OF THE DOG KIND.

THE second class of carnivorous animals is neither so numerous nor so rapacious as the former; they are peculiarly

distinguished by their claws, which have no sneath like those of the cat kind, but adhere to the point of each toe, without the power of being either extended or drawn back: there likewise are internal distinctions; and their eyes are not formed for seeing clearly in the dark. By comparing the habits and propensities of the two classes, we shall find that whilst the savage selfishness of the cat's disposition prevents it from deriving any pleasure from society, the dog seems to find its gratifications increased by associating with the species to which he belongs; and in countries where they are permitted to range with freedom, they are always observed to hunt in packs.

Though the claws of this animal are not calculated for climbing, and of course, it is not able to pursue its game like a cat, yet its sense of smelling is allowed to be much more exquisite, and enables it more easily to discover its prey.

The dog is allowed to be the most intelligent of all quadrupeds, and one that doubtless is most to be admired; for, independent of his beauty, his vivacity and swiftness, he gives the most manifest proofs of his attachment to mankind. In his savage state he may have been a formidable enemy, but to view him at present, he seems only anxious to please; he willingly crouches before his master, and is ready to lick the dust from his feet; he waits his orders, consults his looks, and is more faithful than half the human race. He is constant in his affections, friendly without interest, and grateful for the slightest favour he can receive; easily forgets both cruelty and oppression; and disarms resentment by submissively yielding to the will of those whom he studiously endeavours to serve and please.

His sagacity can only be exceeded by his fidelity; for he will discover a beggar by the appearance of his clothes; and when at night he is put in charge of the house, no sentinel can protect it with greater care. If he happens to scent a stranger at a distance, his voice instantly sounds the alarm; and, if they attempt to break in upon the territories, they are in danger of forfeiting either their limbs or life. From hence we may see of what importance this animal may be considered to the human race; it protects them from rapine, guards them from invasion, and shows an attachment that must at once both delight and please. It assists them in the destruction of such animals as are obnoxious to their interest, aids them in conquering those which contribute to their delight, and even when worn out

by age or exertion, their skin is capable of being converted into use.

The dog, thus serviceable in himself, when taken into a participation of empire, exerts a degree of superiority over all animals that require human protection. The flock and the herd obey his voice more readily than even that of the shepherd or the herdsman; he conducts them, guards them, keeps them from danger, and seems to consider *their* enemies as *his own*. Nor is he less useful in pursuit, when the sound of the horn or the voice of the huntsman calls him to the field; he testifies his pleasure by various little arts, and pursues with avidity that spoil, which, when taken, he knows he must not share.

Although the Wild Dog is at present unknown to us, yet there are a few instances of some, that, from a domestic state, have turned savage, and fled from the society of the human race to the inmost shades of the impervious woods; and in America, where they were originally brought and abandoned by Europeans, they have multiplied to such a degree that they spread in packs over the country, and boldly attack what animal chance may happen to throw in their way. Yet these creatures, when taken home, are easily tamed, and submissively acknowledge their master's power. Though the dog's compliance of temper can only be equalled by its fidelity, yet no animal in the creation is so susceptible of change; for climate, food, and education, are capable of producing alterations in its colour, habits, hair, and shape. The wolf and the fox, though so different in disposition from the faithful animal which we are about to describe, yet are internally the same; and the shepherd's dog still bears a strong resemblance in form and figure to the wolf. The dogs that run wild in America and Congo have a strong similitude to those of our shepherds' kind; and those of Siberia, Iceland, Madagascar, and the Cape, likewise resemble them in a very great degree. In more polished and civilized places, dogs, like men, appear to grow refined: yet the shepherd's dog may be considered as the *stock* from whence all varieties in the breed have sprung, and makes the stem of that genealogical tree which has branched out into so many quarters of the globe. The hound, the harrier, and the beagle, may all be considered of the same kind; and, when any of them are transported into Spain or Barbary, (where the hair of all animals becomes soft and long,) they soon become the land and water spaniel.

The gray matin hound, which is in the second branch, transported to the north, becomes the great Danish dog; and the same animal, sent into the south, becomes the gray-hound, of different sizes; and, if banished into Ireland, Ukraine, Tartary, Epirus, and Albania, becomes the great wolf-dog, known by the name of the Irish wolf-dog.

The mastiff, which is the third branch, and chiefly a native of England, when transported into Denmark, becomes the little Danish dog.

With regard to the dogs of England; their varieties are so great, and their number so rapidly increasing, that it is almost impossible to describe them; but, as Dr. Cairns has divided them into three classes, we shall endeavour to adhere to his plan. The first he terms the generous kind, which consists of the terrier, the harrier, the blood-hound, the gaze-hound, the leymmer, and the tumbler; all these are used for hunting; the spaniel, the setter, and the water spaniel, for fowling; and the spaniel-gentle, or lap-dog, for amusement. The second is the farm kind, consisting of the shepherd's dog and the mastiff; the third is the mongrel breed, which includes the wappe, the turnspit, and the dancer.

The terrier is a small kind of hound, with rough hair, used for the purpose of forcing the fox or badger out of its hole.

The harrier, the beagle, and fox-hound, are used for hunting all other animals, as their sense of smelling is remarkably keen.

The blood-hound was formerly in high esteem, both for recovering any game that was lost, or tracing the footsteps of robbers and thieves.

The gaze-hound hunted, like gray-hounds, by the eye, and not by the scent; but this species of the animal is now totally lost.

The gray-hound was formerly held in such high estimation, that it was considered as forming a part of a gentleman's estate; but, since times and people are become more refined, he is merely estimated for his use.

The leymmer is an animal totally extinct; it used to hunt both by scent and sight, and was conducted to the game in a *leyme* or *thong*, from which it originally derived its name.

The tumbler was an animal less than the hound, and appears to answer the description of the modern lurcher: it seemed neither to depend upon its fleetness nor scent,

but hunted with carelessness, and seized its prey with a spring.

The land and water spaniel, in disposition, are much alike, and each of them have long and soft hair: the province of the one is to crouch down when it espies the game, and the other will *dire*, if it should fall into a stream.

The lap-dog was originally a Maltese breed: but now different countries produce the kind; and the more awkward and extraordinary they are, the more they are thought worthy of being prized.

The shepherd's dog has already been mentioned; and the *strength* of the *mastiff* is proverbial; for history relates, that in the beginning of the sixteenth century, four would subdue a lion, and three a bear. To these may be added some other varieties, such as the bull-dog, the harlequin, the pointer, and the Dane, with a number of lap-dogs that are *too insignificant* to merit either the historian's attention or time.

Amongst the great variety in this class of quadrupeds, the *great Irish wolf-dog* must not be omitted to be named: for though that race of animals is very much diminished, a sufficient number remains to prove that they still exist. This animal, which is very rare, even in the only country in which it is to be found, is rather kept for *show* than *use*, there neither being wolves, nor any other formidable beast of prey in Ireland, that seem to require so powerful an antagonist. The wolf-dog is, therefore, bred up in the houses of the rich, as an object either of curiosity or show, and, in appearance, is doubtless both beautiful and majestic.—The form of the wolf-dog resembles that of the gray-hound, except that his limbs are more robust: his eye is peculiarly mild and placid, and the hair in general is perfectly white. His disposition appears to be remarkably gentle; yet he is endowed with an uncommon portion of strength; and, though he is never known to provoke the mastiff to combat, he is sure to conquer if they engage.

It is very probable that many of the nobler breed of dogs, of which the ancients have given such beautiful descriptions, are now entirely extinct; for, though the bull-dog is both courageous and brave, none of them would venture to engage either with a lion or a tiger. The historian Ælian, in his description of these animals, gives a remarkable account of their fortitude and strength, which, whilst it proves the barbarity of the Indian's disposition, inclines us to condemn all experiments, which are attended with pain; yet it

naturally leads us to admire an animal capable of enduring it without murmur or complaint.

“When Alexander was pursuing his conquest in India, one of the provincial men of the country was desirous of convincing him of the real bravery and value of the dogs, and, for this purpose, ordered one of the most fierce and generous of the tribe to be put into an enclosure, and to turn in to it a stag. The dog gazed upon it with the most contemptuous indifference, as he considered it an object beneath his power; and, after regarding it with attention for some moments, turned his head deliberately away. A wild boar and a bear were successively admitted, each of which seemed too insignificant for the hero to engage; but the moment he beheld a lion approaching, his dormant faculties seemed all aroused, and, darting forward with the rapidity of lightning, he caught the lion by the throat, and prevented him from making the least resistance. The Hindoo, still anxious to give Alexander a greater proof of the animal’s *fortitude* than of its *magnanimity* and *strength*, ordered one of his attendants to cut off its tail. This cruel operation the creature patiently submitted to, without even appearing sensible of the pain; and the inhuman Hindoo then commanded each of its legs to be separately broke. This severe and exquisite torture the dog supported without quitting his hold; and, even when his persecutor directed the head to be severed from the body, the jaws seemed unwillingly to relinquish their grasp.”

At present the breed of dogs in India is very much inferior to what that story seems to imply; and in many parts it is merely valued for contributing to the food which the inhabitants require. In every part of China there are dog-butchers, and shambles erected for disposing of their meat: and, along the coast of Guinea, they are considered as a great delicacy, and thought of as much value as a full-grown cat.

The female goes nine weeks with young, and brings forth three or four at a time; it seldom lives more than twelve years; and, though capable of abstaining several days from food, it requires a plentiful supply of drink. We cannot conclude the account of this sagacious animal, without inserting two anecdotes, related by the ingenious Mr. Pratt, which strikingly evince the force of its fidelity, and display an attachment that would do honour to the human race.

“A few days before the overthrow of Robespierre, a

revolutionary tribunal, in one of the departments of the north, on a *pretence of conspiracy*, condemned an upright magistrate and a most estimable man. This gentleman had a water spaniel, which had been faithful to his master for the space of twelve years ; and, at the moment when, from *fear*, his dearest friends had forsaken him, showed an attachment that at once must affect and please.

“ This faithful creature was with him when he happened to be seized, but was refused admittance into his cell ; and, after remaining at the door some time, in the hope of obtaining entrance, retired disconsolate to the house of his master’s friend.

“ Daily he returned to the doors of the prison, and remained stationary there for several hours at a time, and gave such indubitable marks of affection as absolutely to penetrate the keeper’s heart. The faithful animal was permitted to enter, though the man dared not allow him to remain long : but at the same hour each day, he sought admission, and his pleadings were too powerful for the keeper to withstand.

“ When the day of receiving sentence arrived, notwithstanding the crowd, which power, love, and curiosity collected, the dog contrived to force a passage into the hall, and, penetrating through the guards which surrounded his master, laid himself down between his feet, when the fatal fiat was pronounced against him, and the next day he was doomed to a disgraceful death ! Though the attached creature was prevented from re-entering the prison, yet he remained at the door during the whole night ; and in the morning, when the unfortunate man was destined to pass through it, he was greeted by the caresses of this unalterable friend, who alone remained *firm* in the hour of exigence, and refused to be separated even by the power of death.

“ The lifeless body was no sooner stretched upon that element where it was destined for ever after to remain, than the afflicted animal walked sorrowfully round it, and testified his distress by the most moving complaints ; and when concealed from his eyes by the earth that covered it, he refused stirring from the side of the grave. In vain was he attempted to be attracted from that asylum where the sorrows of his master were peaceably laid ; for though he would occasionally partake of the food prepared for his sustenance, he always regularly returned to his melancholy retreat.

“ At length the friend of his master, in whose house he had been cherished, allured him from the spot where his afflictions were confined, and prevented him from displaying such marks of attachment as were ultimately calculated to destroy his life. But what manacles are capable of confining the affections? He soon broke through the fetters by which he had been restrained, and rushed towards the grave that contained the ashes of his master, as if forming the resolution there to remain. Without attempting to *force* him from his favourite haunt, different kinds of food were offered to him to eat, but in vain they tried to induce him to partake of it, for he refused touching any kind of meat. Four-and-twenty hours did this faithful creature employ in attempting to scratch the earth from the body it contained, when nature, exhausted by exertion and attachment, found each attempt grow still more weak and vain; a sudden shriek testified his anguish; a convulsive motion shook his frame; and, stretching himself upon the ashes that concealed the object of his affections, he relinquished a life of fidelity and pain!”

“ A French merchant, having some money due from a correspondent, set out on horseback to receive it, accompanied by his dog; and, having settled the business to his satisfaction, placed it in the bag that contained his clothes. Finding himself rather fatigued with his journey, he resolved to repose under a hedge, and, untying the bag from the front of his saddle, placed it carefully under his head.

“ After having remained some time in this situation, he found himself entirely recovered from fatigue; and, wholly absorbed in some pleasing reflections, he remounted, without even a thought of the bag. The dog, who had witnessed this mark of inattention, attempted to recall his recollection by barks and screams; and, finding the bag too heavy for his utmost exertion, ran howling after him, and caught the horse by the heels. Roused by this mark of what he thought *sudden madness*, he resolved to watch the animal's motions when he approached a stream, and, perceiving he did not attempt to quench his thirst as usual, was absolutely confirmed in the belief that he was mad. ‘ My poor animal,’ said the afflicted merchant, ‘ and must I, in justice, take away thy life? alas!’ continued he, ‘ it is an act of necessity, for there is no one to perform the office in my place.’ So saying, he drew a pistol from his pocket, but from affection to his favourite, averted his head; the ball, however, performed its embassy, for the dog was mortally wounded, though not dead. The bleeding

animal endeavoured to crawl towards its master, whose feelings revolted at the affecting sight, and spurring on his horse, he pursued his journey, with the image of his expiring favourite strongly impressed upon his mind. ‘How unfortunate I am!’ said he, mentally; ‘I had rather have lost my *money* than a dog I so much prized!’—when, stretching out his hand as if to grasp the treasure, neither bag nor money was to be seen. His eyes were instantly opened to conviction: ‘And, what a wretch I have been!’ he suddenly exclaimed; ‘Poor faithful creature! how have I rewarded thy fidelity? Oh, madness of recollection, how severely am I to be blamed!’

“He immediately turned his horse, and set off with the fleetest motion, and soon came to the spot where the proof of his folly was displayed; and every drop of blood that he saw seemed to reproach him with injustice, and every feeling of his heart was severely pained. These sanguinary drops proved a sufficient direction for the faithful creature’s footsteps to be traced, and he was found stretched beside the treasure he had been so anxious to take care of, and which had been the primary means of depriving him of life.

“When the merchant beheld him still guarding his possession, though struggling with death and agonized with pain, his sensations of remorse were very much heightened; but all hopes of preserving his existence proved vain. The poor animal no sooner perceived his master approaching, than he testified his joy by the wagging of his tail; and absolutely expired in licking the hand which caressed him, as if in token of forgiveness for having taken away his life.”

In several convents, situated among the mountains that divide France and Italy, travellers assure us a custom prevails that does honour to human nature. In the sequestered and uninhabited parts of the Alps, strangers and travellers are not only hospitably entertained, but a breed of dogs are trained to go in search of those wanderers, who, from the obscurity of the paths, may have lost their way, which are every morning sent from the convents with an apparatus fastened to their collars, containing refreshments for their use, and directions to the travellers to follow the footsteps of the sagacious animals, who will conduct them to an abode where they will be hospitably entertained; and many lives are said to be preserved in that wild and ro-

mantic country, merely by this benevolent and judicious plan.

THE WOLF.

Though the wolf and the dog bear an internal resemblance, in habit and disposition they totally disagree; and no two animals in the creation entertain towards each other more antipathy and dislike. The wolf, likewise, goes a hundred days with young, and the dog not more than fifty-nine; the existence of the former is protracted to the space of twenty years, whilst the latter seldom attains the age of fifteen.

The body of the wolf measures three feet seven inches, whilst that of the largest mastiff is scarcely known to exceed three feet, which proves that the external form of these animals greatly varies, though the internal conformation may happen to agree.

The colour of the wolf's coat is a combined mixture of black, brown, and iron-gray; and the hair is of a rough and hard consistence, blended towards the roots with a kind of ash-coloured fur; he is in every respect much stronger than the dog; but the length of his hair tends to increase the appearance of his size. The feature which principally distinguishes the two animals, is the eye; which, in the wolf, opens slantingly upwards in the same direction as the nose; but that of the dog opens in the same manner as those of the human race.

The wolf is one of those quadrupeds whose appetite for animal food is the most voracious, and whose means of satisfying it are most easily obtained; for nature has furnished him with strength, cunning, agility, and all those requisites which can fit him for pursuing, overtaking, and conquering his prey; yet so powerful are the claims of hunger upon him, that he frequently dies from wanting *sufficiency* of food: though naturally dull and cowardly in his disposition, *necessity* seems to make him *bold*; and he will undoubtedly attack any animal that is immediately under the protection of man, particularly lambs and sheep; and, when the calls of hunger are very *pressing*, he will venture to assail both woman and man; yet, having been for ages proscribed, and a large reward offered for their head, they are obliged to fly from human habitations, which only the urgency of hunger impels them to approach. King Edgar was the first who attempted to free

England of these animals ; and for certain crimes, the criminal was pardoned by producing a stated number of that creature's tongues. Some centuries afterwards, they increased to such a degree, as to become objects of royal attention ; and Edward the First appointed a superintendent, to endeavour to extirpate the obnoxious race. They are said to have infested Ireland some time after they were destroyed in England, but for a length of time they have been entirely free.

The species of this animal is very much diffused in different parts of the world, for it is to be found in Europe, Asia, Africa, and America. Besides the common wolves, which abound in France and Germany, there are some whose hair is of a yellow hue ; these never approach human habitations, but live entirely by the chase. The wolves of Senegal resemble those of France, except that they are fiercer, and stronger in their make ; but in northern climates they degenerate in size, and some of them are black, whilst others are white. In the eastern parts they are trained for show, taught to dance and play a variety of tricks, yet can never be made completely tame : they are wholly incapable of any attachment ; and as they grow in years, generally contrive to return to their native woods.

The dog has been described as a sociable animal ; but wolves assemble merely to *destroy* ; and whenever a pack combine together, it is a proof they are in pursuit of some creature greatly superior to them in size ; but the moment their design is completed, each sullenly returns to his private haunt.

The wolf grows gray as he gets old, and his teeth decay with his years ; he sleeps as soon as satisfied with food ; but, like the dog, his slumbers are light. Although so voracious, he can pass several days without food, provided he can find a supply of drink ; his chief strength seems to lie in his teeth and jaws ; and he can carry off a sheep with the greatest ease ; he plunders for days and nights together, and of all animals is the most difficult to be hunted down ; and it sometimes happens, that a whole country is called out for the purpose of extirpating these dangerous invaders. The wolf is remarkable for its sense of smelling, and can discover a carcass at the distance of three leagues, yet prefers those animals he destroys himself, to those that he may find dead upon the field. Though the skin of the wolf is both warm and durable, yet it is so coarse

and inelegant, that it merely keeps out the cold. In countries where they abound, they may be hunted by grayhounds and harriers ; but neither of them seems to be eager after the sport.

THE FOX.

Although the fox *internally* resembles the wolf and dog, yet *externally* it is very much unlike : the fox is more slender in form than the wolf, and infinitely less in height and size ; the tail is likewise much more bushy, and greatly exceeds the wolf's in length ; it differs from the dog, in having its eyes situated in an oblique direction, like the wolf's ; its ears are formed in the same manner, and its head is proportionably large in size.

The fox has ever been famous for *cunning*, and contrives to elude the shepherd's care ; and, instead of *openly* attacking his prey, makes his depredations by art and surprise. His chief study seems self-preservation ; for, although nearly as indefatigable, and actually more swift than the wolf, he does not entirely depend on either industry or speed, but forms in the earth a secure asylum, to which he retires in time of distress. This animal generally contrives to make his kennel at the edge of a wood, yet as near as possible to some neighbouring cottage, that he may hear the crowing of a cock, and cackling of the hens, to which he is a most inveterate foe : upon his entrance into the farm-yard, he begins levelling all the poultry without remorse, and then deliberately takes away his spoil, which he carefully conceals in different places.—Young hares and rabbits likewise become his prey ; and partridges or quails, that are nurturing their young, he leaps upon, and catches by surprise : in short, nothing that can be eaten comes amiss to this invader. The hedge-hog in vain rolls himself up into a ball, for this determined glutton teases it until it is obliged to appear uncovered, and then satiates himself with the spoil.

The chase of the fox requires less preparation than that of the wolf, and is much more pleasant and amusing ; for the dogs are eager in the pursuit of the former, though they appear to have a natural repugnance to the latter. The moment the animal finds itself pursued, he flies to his kennel for refuge and protection, when one of the little harriers follows and drives him to the mouth of the hole ; he is then caught, put into a bag, and carried to

some open part of the country, where he is let loose before the hounds.

Though the fox* is such a greedy and voracious animal, it is remarkable for its fondness and attachment to its young; a singular instance of this occurred some few years ago; a female, possessed of but *one* cub, was unkennelled by a gentleman's hounds near Chelmsford, in the county of Essex, England, and pursued by them with the utmost speed. The poor animal, at the moment of their approach, instantly thought of the safety of its young; and, snatching it up in her mouth, fled before her pursuers for several miles, panting under the weight of her burden, yet resolved to preserve it at the hazard of her life. At length, exhausted by fatigue and fear, she was attacked by a mastiff in a farmer's yard, and unable to support her charge any longer, dropped it from her jaws at the farmer's feet, who kindly saved it from the mastiff's power, whilst the mother fortunately preserved her life.

THE JACKAL.

The Jackal is diffused throughout Asia, and in many parts of Africa is likewise to be found; it ranks in Natural History between the wolf and the dog, though in form it is said to resemble the fox: like the wolf, it is sanguinary, fierce, and savage; yet will approach human habitations with the familiarity of a dog; its cry is between a howl and a bark, and bears some resemblance to a person in distress. Jackals never seek their prey alone, but combine together, forty or fifty in a pack; and have so little dread of being attacked by mankind, that they will pursue the game even to their abode. They not only attack the *living* but the *dead*, and tear up bodies from new-made graves: human flesh, indeed, is their favourite food; and, when once they have tasted it, they are ever watching for a fresh supply. They hide themselves in holes during the day, and break open the sacred mansions of the dead by night; and, after dragging the body from its earthly bed, share amongst them the hallowed spoil. They are said to follow armies in their march, for the sake of being glutted with the blood of the slain. They may be

* The female goes six weeks with young, and brings forth from three to six at a time; the cubs are born blind, and live from twelve to fourteen years.

called the vulture of the quadruped kind, as they will indiscriminately devour whatever possesses life.

As they regularly howl when in pursuit of prey, the lion and the tiger are often attracted by the sound ; and frequently, when the jackals have seized either antelopes or gazells, the lion or tiger will approach the spot, and take possession of the prize.

THE ISATIS.

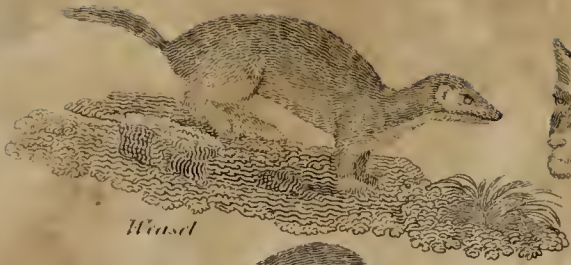
As the jackal is a sort of intermediate species between the dog and the wolf, so the Isatis may be considered as placed between the dog and the fox ; it is common in those countries bordering upon the Icy Sea, and exists only in the coldest climes ; for in the mountainous and naked regions of Norway, Siberia, and Lapland, this frigid animal is chiefly to be found.

In the form of its body it resembles the fox, and likewise in the length of the tail ; but the head is made like that of a dog, and the eyes are placed in the same state ; the hair of this animal is remarkably soft, and varies in its hue at different times of the year : some are blue, others white, and the latter often changes to a russet-brown. The fur is of no value, unless the creature be killed in winter ; for about the middle of May it begins to fall off, and by the end of July the clothing is renewed, but does not come to perfection till the weather is severe.

THE HYÆNA.

The Hyæna is nearly of the size of a wolf, and has some similitude to that animal in its form and shape : the head is somewhat broader, the nose not brought so much to a point, and the eyes are placed more like those of a dog : its hair is of a dirty grayish colour, disposed in waves, and marked with black : its tail is short, though the hair is long, which deceives the eye as to its length ; and near the insertion there is a kind of pouch, which contains an odour in *appearance* like civet, but very different in point of smell.

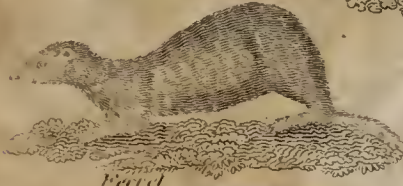
The figure of this animal is completely uncouth, and its disposition the most savage of the quadruped kind ; a constant *growl* betrays the ferocity of its nature, which is scarcely suspended whilst receiving food : the legs of this creature are longer than the wolf's, and the hinder ones



Weasel



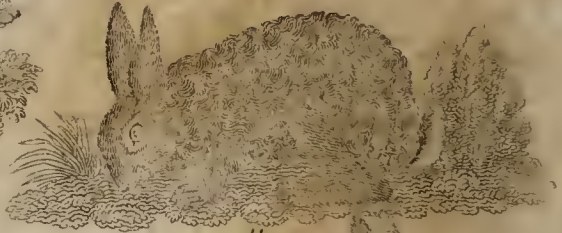
Hyena



Ferret



Sables



Hare



Tiger



Rabbit



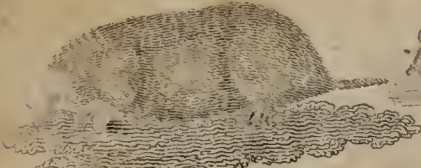
Bat



Guinea Pig



Squirrel



Mole



Mouse



Armadillo



Bat



Porcupine

W. Mearns

exceed the front in length: it carries its head towards the ground like a dog upon the scent, which gives a prominent appearance to the back. When this sanguinary animal is feeding upon its prey, the eyes glisten like two balls of fire; the bristles upon its back are all erected, and with a horrid grin, it shows its extended teeth: its courage can only be equalled by its ferocity, for it defends itself against the lion, is a match for the panther, and seldom fails to conquer the ounce.

The hyæna is an obscure and solitary animal, who resides in caverns in the most desolated rocks; though taken at its birth, it can never be tamed, and makes equal depredation upon man and beast. Many fabulous tales have been told of this animal, which is chiefly to be found in the torrid zone; but without increasing its ferocious propensities by *fiction*, it has been painted sufficiently *obnoxious*, by adhering to *truth*. Like the jackal, it ransacks the new-made graves, and delights in feeding upon the bodies of the dead.



CHAP. X.

ANIMALS OF THE WEASEL KIND.

HAVING described the bolder ranks of carnivorous animals, we come now to the more numerous and minuter kind. The species of the weasel is particularly distinguished by the length and slenderness of their bodies, which enable them to twist in the form of worms through the smallest aperture after their prey, and is the reason of their having frequently been ranked amongst the *vermin* kind.

From the shortness of their legs, they are not calculated for pursuit; they are, therefore, obliged to have recourse to theft and cunning, for the support and preservation of their lives. In disposition they are cowardly, rapacious, and cruel, and destroy whatever they are able to overcome.

THE WEASEL.

The weasel is the smallest of this numerous tribe of quadrupeds, its length not exceeding seven inches from the tip of the nose to the insertion of the tail; the length

however is disproportioned to the height, which is little more than an inch and a half; the tail is bushy, and about two inches long; the colour of the body is a bright red; but the throat and the under part of the body are delicately white, and resemble fur rather than hair.

Like the cat, this animal has long whiskers; but its claws can neither expand nor be withdrawn; the eyes are small, fierce, and black; and the ears are formed with a kind of fold, which gives the creature the appearance of having two pair.

Diminutive as the weasel is in size, it is capable of doing a great deal of harm; it is an insidious enemy to the farm-yard, and will even suck the blood of young lambs. It is naturally a timid but untameable animal, and seems to have an instinctive dread of the human kind; when confined in a cage, for *experiment* or *show*, it appears in a constant state of agitation, and, unless there is a sufficient portion of wool or hay for it to conceal itself from observation, it would soon expire from alarm and fright. Like most of the species, it has a fetid smell, occasioned by some glands near the tail being filled with a substance resembling pomatum. The female prepares an easy bed for her young, and carefully lines it with hay or moss. It is as great an enemy to rats and mice, as it is to the young fowls; and it is always observed, that in making depredations upon a hen-house, it never attacks the cocks and hens; but, with a true epicurean taste, prefers those which are *delicate* and *young*. It likewise has a great fondness for eggs, and sucks or destroys all that it can find.

THE ERMIN, OR STOAT.

The Ermin, or stoat, differs from the weasel in size, the body of it being about nine inches in length; the tail is always tipped with black, and, instead of fur, is covered with hair.

The fur of this little animal is highly esteemed, both for its downy softness and warmth. In summer its coat is of a lightish brown, but in winter becomes a cream coloured white, and at that season of the year is peculiarly admired. In the north of Europe, and Siberia, their skins make a valuable article of trade; and they are either shot with blunted arrows, or taken in traps.

The ermin is sometimes found *white* in Great Britain, and is then called the white weasel; but the fur is not con-

sidered of the least value, as it possesses none of those qualities for which, in colder climes, it is so deservedly admired.

THE FERRET.

This animal exceeds the weasel about four inches in length, but resembles it in form, and the shortness of its tail: it is said to have been originally brought from Africa into Spain, in consequence of that country abounding so much in rabbits, to which the ferret is a determined foe.

As this little creature is a native of the torrid zone, it requires to be kept warm in a more rigorous clime. The chief purpose for which the ferret is used, is to hunt in warrens where rabbits abound, and to drive them out of those secure hiding-places, where they are completely concealed; for this purpose the animal is muzzled, or its natural fondness for killing and sucking the blood of the rabbit, would induce it to remain at the bottom of the hole, and lead a rapacious solitary life, till the severity of the weather closed its doom; for such an instinctive enmity have they to the race, that if a dead rabbit be presented to a very young ferret, who had never beheld the species before, it flies upon it with the greatest fury, and instantly endeavours to suck its blood.

THE POLECAT.

Though the polecat has frequently been ranked with the ferret, it doubtless is of a different race, for it has one rib less than that animal, and, in form, exceeds it six inches in length; its body is not so slender in proportion to the size; and the nose is not sharp pointed, but rather blunt.

The polecat, in general, is of a deep chocolate colour, though round the mouth it changes to white; the ears are short and rounded, and at the edges tipped with white.—This animal is destructive to every species of young game; and, like the ferret, is the rabbit's most inveterate foe; and it has been asserted, that an individual polecat is sufficient to destroy a whole warren; their thirst for the animal's blood is carried to such excess, that they are constantly destroying without attempting to devour; and it is no uncommon thing to see twenty dead rabbits taken from the same burrow; and pigeon-houses afford this creature a delicious supply; though, like an epicure, it is peculiarly

fond of their brains ; in short, the polecat is a destructive animal, whose skin even is rendered useless, from its fetid smell.

THE MARTIN.

Of all the animals of the weasel kind, the martin is allowed to be the most pleasing : all its motions show grace and agility ; yet it will attack quadrupeds that are five times its size : it is four or five inches longer than the polecat ; and, unlike the rest of its species, it sends forth a *pleasant smell* ; its head is small, and elegantly formed ; its eyes animated, and full of fire ; its ears are broad, open, and rounded : and the back and sides are covered with a thick downy fur, intermixed with longer hair, the colour of which, at the root, resembles ash, at the middle becomes a bright chesnut, and at the points terminates in black, though the breast and throat are perfectly white.

The *yellow-breasted* martin is another species of this animal, which seems only to vary from the former in the fur upon the breast ; yet it is seldom to be met with in England, though often found in different provinces in France ; but, even there, the *white* is the most prevalent.

The *white* martin generally chooses its residence near human habitations ; but the *yellow* confines itself entirely to the woods, and lives upon animals equally wild ; for whilst the white martin attacks poultry, rabbits, and hares, the yellow subsists upon *squirrels* and birds, and frequently takes possession of that habitation which the industrious squirrel had formed to protect its young.

The martin is more numerous in America and the northern parts of Europe, than in England or in France ; and above twelve thousand of its skins are said to be annually imported from Hudson's Bay into England, and thirty thousand from the Canadian shores.

THE SABLE.

Of all the animals of the weasel kind, the sable is the most admired ; for a single skin, though not above four inches broad, is valued in England at from forty to seventy dollars.

This little quadruped, which is so highly prized, resembles the martin in point of size, and the weasel in the num-

ber of its teeth;* its mouth is adorned with large whiskers; and, like the rest of its species, it has five claws on each foot.

The skin of the sable is of a brownish black, and the fur possesses the uncommon quality of lying perfectly smooth, rub it which way you please; and the darker the colour, the more it is admired. This animal seems to be peculiarly fond of shade, as it generally is an inhabitant of the most impervious woods: it bounds with agility from tree to tree, and always seeks its food by night.

The sable is a native of Siberia; and very few are to be met with in other parts of the world. The hunting this little lively animal generally falls to the lot of condemned criminals, who are sent from Russia into those wild extensive forests, and compelled to endure the rigours of the clime for the purpose of ministering to the superfluities of the rich.

THE ICHNEUMON.

The ichneumon, which some have injudiciously denominated the *Cat of Pharaoh*, is one of the boldest and most useful animals of the weasel kind; and in Egypt it is held in high estimation for the destruction it makes amongst the crocodile's eggs. The ichneumon resembles the martin in size, though the hair is much rougher, and of a grizzly black; others are streaked with a mixture of colours, in the same manner as the domestic cat. Rats, mice, birds, serpents, and lizards, all become the ichneumon's prey; the most poisonous reptile it will undoubtedly attack, and it is said to find an antidote in a certain root; it is not only destructive to the eggs of the crocodile, but makes an attack upon all the young, and for this cause was, formerly, so highly estimated by the Egyptians, that they absolutely worshipped it, believing that every thing which proved serviceable to mankind was an emanation of the Divine Power.

THE SQUASH.

This animal is about the size of the polecat, and is chiefly in North and South America; its hair is long, and of a deep brown, with a streak of white running along the back. The most remarkable thing about the squash is

* The martin has thirty-eight teeth, but the weasel only thirty-four.

THE SQUASH.

the fetid and disgusting smell, which is extremely obnoxious both to man and beast. The habitudes of this quadruped resemble the rest of the weasel kind, as it preys upon animals that are less than itself: like the polecat, it burrows in the clefts of the rocks, for the purpose of bringing forth its young; it often steals into the farm-yard, and kills the poultry for the sake of their brains, seldom tasting any other part.

THE GENET.

From the Squash, which is the most offensive animal in nature, we come to one which affords a most agreeable perfume; and though not quite so strong as that of the civet, is generally thought more pleasing.

The Genet is somewhat less than the martin, though they sometimes vary very much in size; the fur of this animal is beautifully soft, and is a mixture of red and gray, spotted with black; along the back it has a kind of mane of long hair, which forms a black streak from the head to the tail; it appears to resemble the martin in disposition, except that it seems more easily tamed; for, at Constantinople, it runs about the houses with as much familiarity as our domestic cats, and prevents the appearance either of mice or rats. The species of the genet is not much diffused, and is chiefly to be found in Turkey and Spain.

THE CIVET.

The Civet is much larger than any of the weasel kind, and peculiarly esteemed in consequence of its perfume, which is contained in glands near the tail, and sold at about twelve dollars an ounce. Mr. Buffon is of opinion that there are two kinds of this animal, and calls them by a different name; but we are inclined to believe that the zibet and the civet are one and the same race, altered in appearance by climate and food.

Though the body of the civet bears a strong resemblance to all the animals of the weasel kind, yet the head is shaped like that of a fox, and the tail and ears like those of a cat; its colour varies, though it is chiefly ash, sometimes *spotted*, and at others *streaked* with *black*.

Those who breed these animals for the sake of their perfume, keep them confined in a long box, too narrow for

them to turn round, which opens at the end, when they catch the creature by the tail, drop a bar before it which prevents it from moving, and take out the civet, which has the appearance of pomatum, with a wooden spoon.

This composition has so powerful a smell, that it is impossible to bear any quantity of it in a room: and no person could even support the scent of the animal, unless there was a free circulation of air.

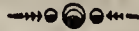
Though the civet is a native of the warmest climates, it will exist in cold ones, if treated with great care; and the civet of Amsterdam obtains the preference to that of any other part of the world.

THE GLUTTON.

The Glutton, so called from its voracious appetite, is an animal which is found in the north of Europe, Siberia, and the northern parts of America; its body is about three feet long, and proportionably thicker than the generality of the weasel kind; its legs are short, its tail bushy, and its fur is held in the highest estimation, both for the softness and beauty of the gloss; in colour it is of a reddish brown; but along the back of a shining black.

From the shortness of the legs, it is unable to pursue its prey; yet its claws are peculiarly calculated for climbing trees, where it frequently watches whole days together in expectation of some animal's approach. The elk and rein-deer are its favourite food; and, when they pass under the tree, it darts down upon their back, sticks its claws between their shoulders, and there remains fixed and unmoved; in vain the frightened animal increases its speed, or tries to dislodge it with its branching horns; the glutton still adheres more firmly to his station, and keeps eating away all the flesh upon the neck until it arrives at the large blood-vessels, and then quaffs at the stream till the exhausted creature falls: its voracity then appears insatiable, and it devours the victim till it can no longer move, and then falls into a state of torpidity by the side of the hapless animal it has just killed: in that situation it remains two or three days, until its vigour is restored, and it can again begin to gorge upon the remains of the carcass, which it does not quit until it has completely devoured it even to the bones; it then returns to its hiding-place in some unbrageous tree, or pursues the beaver into its hole.

The glutton, like all the species of the weasel, is a solitary animal, yet does not appear to have any dread of the human race ; for we are told by the historian Gmelin, that one of them close to several peasants who were at work, gazed upon them with the greatest composure, and did not attempt to move, until he had received several blows, which soon terminated its adventurous life : like the hyæna, it is fond of human flesh, and will frequently scratch the bodies from their graves.



CHAP. XI

ANIMALS OF THE HARE KIND.

If we were methodically to distinguish animals of the hare kind from each other, we might say that they have but two cutting-teeth above, and two below ; that they are covered with a soft downy fur, and that they have a bushy tail : the combination of these marks might perhaps distinguish them tolerably well from the rat, the beaver, the otter, and any other animal nearly approaching them in form ; but, as we have declined all method that tends to *embarrass* rather than *enlighten* history, we shall class all those animals together, where we find a resemblance in their natural habits, in the form of their body, or shape of their heads. We call the squirrel an animal of the hare kind, because we find some similitude between them, and include the paca in the same class, because it resembles a rabbit in its form.

Animals of the hare kind, like all others that feed entirely upon vegetables, are both timorous and inoffensive ; for, as Nature furnishes them with an abundant supply, they have not that rapacity after food which those animals possess which do not find it so easily attained.

THE HARE.

The Hare is the largest and most persecuted quadruped of the timorous race to which it belongs ; all its muscles appear formed for swiftness, and all its senses seem calculated to assist its flight ; its eyes are prominent, and placed so back in its head, that it can almost see behind it as it runs ; the ears are moveable, and easily directed to

any quarter from whence they think they hear a sound, and are remarkable for their uncommon length: the hinder legs are longer than the fore, which enables it to make a more rapid flight.

An animal, so naturally formed for escape, might be supposed to enjoy a length of life; but as every rapacious creature is its well-known enemy, it seldom dies from decay and years: dogs of all kinds pursue it by instinct, whilst the cat and weasel are its ambushed foes: and, did it not multiply faster than it is destroyed, there would soon be an end of this inoffensive race.

The hare seems a general inhabitant of the globe, and not attached to any particular place; in the northern countries they become white in winter, and in the southern ones, diminish in size; their fur forms a considerable article in the hat manufacture, and vast numbers of their skins are imported into England from those parts of the world where the animal most abounds. This timid creature sleeps in the day, yet still its eyes are never closed; and night is the period when it refreshes itself with food; it lives upon roots, leaves, fruits, and corn; but prefers such plants as are furnished with a milky juice: in winter they will strip the bark from trees; but they are particularly fond of the birch; when kept tame, they are fed with lettuce and parsley; but their flavour is not equal to those which run wild.

Though this animal* may be tamed, it can never become attached, and, at the first opportunity, will return to its original wild state; yet some of them have been taught to sit like a dog, to beat a drum, and even to dance; but their natural instinct for self-preservation is much more extraordinary than these artificial tricks; and their form, or bed, is made with as much ingenuity as if they were endowed with reason and sense. This form they contrive to make in that part of the grass which the sun has tinged to the colour of their skin; in the winter it opens towards the south, but in the summer that aperture is to the north.—When the hare first hears the hounds at a distance, it flies forwards with the utmost speed, always makes towards a rising ground, and, when it has gained the eminence, stops to look whether its

* The hare goes but thirty days with young, and produces three or four at a birth, and generally breeds several times in the year: the young ones are brought forth with open eyes; the dam suckles them about twenty days, and then leaves them to themselves; but they seldom live more than seven years.

pursuers are near; though for some time it is able to outrun its foes, it leaves a fatal scent behind, which completely directs them in their course, and generally enables them to gain their prize. In vain the frightened animal doubles its ground; the powerful assailants still pursue; sometimes it flies to the sheep-cote for protection; at others, creeps into a furze-bush; and often starts a fresh hare, and seeks its safety in its form, or bed. Hunting the hare has long been a favourite amusement, as much for exercise, as the delicacy of its food

THE RABBIT.

Though this animal bears a striking resemblance to the hare, yet they are entirely of a distinct race; and, if confined in the same spot, invariably disagree. The rabbit is more prolific than the hare, and has a greater number of young in each breed: and, as it is more able to defend itself from danger and destruction, the species abound to a much greater degree. The hare entirely depends upon its fleetness for preservation, and the dogs can easily discover its abode; but the rabbit relies upon *concealment* for its *safety*, and makes its habitation far beneath the ground, where it remains completely secure from the attack of the dog, the fox, and the kite; and where it would increase to the destruction of all vegetation, if the ferret did not lessen this prolific breed.

Though this retreat is both safe and convenient, the animal is not fond of remaining constantly there, but seems to prefer the sunny field and open pasture to the gloomy caverns it forms in the earth; and, when it has no cause to dread disturbance, brings forth its young in a shallow and detached hole, at a distance from the warren where its companions reside. This bed she carefully lines with fur torn from her own breast, and, for the two first days, never quits the habitation even to seek the necessary supply of food; she then only leaves them for a few moments, and carefully conceals them from the male, by covering the hole with grass and moss; there she remains for one month, and suckles her young during that time; she then permits the male to see them, who takes them between his paws, and begins licking their eyes and skin.

The rabbit, though less in form than the hare, generally lives a longer time; for, as they pass their lives unmolested, they have nothing to interrupt the course of their health;

the flesh of them is therefore allowed to be much fatter, though not so delicate or so fine.

Although this animal thrives so well in England, it is said originally to be a native of Spain; and, in the isles of the Mediterranean, they were once so abundant as to become a nuisance which required the utmost exertion to abate; the colour of its skin greatly varies, but the most common are the white and brown.

The tame rabbit multiplies as fast as the wild, and brings forth seven or eight at a time; and, what is very remarkable, they all seem to pay attention to the father of the family from whence the rest of the progeny were derived; if dissensions arise amongst them, his presence makes them calm, and they obey his signal when they are summoned to receive their food; in short, he seems to be as much respected, as if, with increased years, he acquired *experience* and *sense*.

The fur of this animal, like that of the hare, is very useful in the manufacture of hats; and, when the skin is dressed, it answers as a substitute for the ermine. The Siberian rabbit, like all other animals bred in that country, is remarkable for the length of the hair, which it sheds once a year. Norfolk, Cambridgeshire, and Lincolnshire, are the counties in England where rabbits most abound.

THE SQUIRREL.

The Squirrel in form resembles the rabbit, though with shorter ears and a different tail, which is extremely long, bushy, and beautiful, and serves as an umbrella to protect it from the injuries of heat and cold; and, when extended, assists it in its rapid bounds.

So great is the variety in this animal, that in an abridgment it is impossible to give an account of them all; we shall therefore confine ourselves to the description of the *common squirrel*, which is less than a rabbit, and rather more of a reddish brown, though the breast and belly are delicately white: the ears are ornamented with a tuft of hair, deeper in colour than that upon the back; the eyes are large, black, and lively; the legs are short, like those of a rabbit, but with rather sharper claws.

This beautiful little animal, though in its nature wild, is gentle and harmless in its ways: its usual food is fruits, nuts, and acorns, which it eats erected upon its hinder legs, whilst its fore paws answer the purpose of hands.—From its agility

and lightness, it seems to approach the nature of birds, and will easily bound from one tree to another at the distance of thirty or forty feet. Provident and sagacious in the time of plenty, it always takes care to lay in a good supply of winter's store; and, in the hollow of the same tree wherein it builds its nest, it secures a future support both for itself and young. The nest is generally formed amongst the upper branches of a large tree, composed of moss, twigs, and dried leaves, so completely combined together as to resist the impressions of the most violent storm; in this nest there is a small opening at the top, just large enough for the little creature to enter; but over it there is a kind of canopy or cone, which projects out beyond the ingenious dwelling, and completely secures the aperture from the rain. In this retreat the tender parent brings forth and cherishes her young, though it is sometimes attacked by a most rapacious foe. The martin, unable to form a dwelling for itself, frequently makes incursions upon the squirrel's abode, and first destroys the ingenious architect, and then takes possession of her house.

The squirrel is never found in open fields, or in low copses of underwood; but chooses its residence amongst the tallest trees, and never descends to the ground but when driven thither by a storm. In Lapland and North America they change their habitation at the approach of winter: and travellers of known veracity positively declare, that thousands migrate in bodies at a time; neither rocks, rivers, nor forests impede them; and if they find the waters too wide for them to attempt to pass, the whole company returns to some neighbouring forest, to provide themselves, separately, with a piece of bark. In this manner the little fleet puts out to sea, each fanning the air with its bushy tail; but it often happens, that these adventurous mariners are unable to contend with the fury of the waves; and, instead of reaching the wished-for port, are suddenly entombed in a watery grave. Their lifeless bodies are washed upon the shore, and the Laplander seizes them as a desirable prize; for their flesh is esteemed as a great delicacy, and he disposes of their skins for a small trifle.

THE FLYING SQUIRREL.

The Flying Squirrel is a much more uncommon animal than the one we have just described; it is much less than

the common squirrel, and not a great deal larger than the field mouse: its skin is soft, and elegantly adorned with dark fur, which is shaded, or rather intermixed with light; its eyes are large, prominent, and sparkling; its ears are small, and its teeth very sharp; and its tail, when it does not leap, lies close to its back.

What distinguishes the flying squirrel from every other animal, is the formation of the skin, which extends from the fore to the hinder feet, so that when the animal stretches out his legs, the skin is extended between them, somewhat like that between the legs of a bat; and, the surface of the body being thus increased, it is enabled to remain some time buoyant in the air, in the same manner as a paper kite, and frequently to take a leap of a hundred yards at a time.

It is not near so lively as the common squirrel, and spends the greater part of the day in inactivity and sleep; it does not seem fond either of nuts or almonds, but lives chiefly upon the sprouts of birch and the cones of pine; it is but seldom seen in Europe, though it is common in the United States of America.

THE MARMOUT.

Though the Marmout does not bear a striking resemblance to the hare, it certainly is more like it than it is to the rat; yet some Naturalists have classed it amongst that species. This animal is not quite so large as a hare, though much more corpulent in its make; the shape of the head is almost the same, but its ears are not near so long: the legs of the marmout are so extremely short, that the body seems to rest upon the ground: the hair is a mixture of black and gray, exceeds both the former animals in length, and gives the body a larger appearance than in reality it does possess: the tail is tufted and well furnished with hair, and it has *five* claws behind, but only *four* on its front feet: like the hare, it has four large cutting-teeth; and it is peculiarly fond of gnawing into wood: yet it is a harmless inoffensive animal, easily tamed, and soon taught a variety of playful tricks. It sits upon its hinder parts like a squirrel, feeds itself with its fore feet, and eats indiscriminately of flesh, bread, fruit, herbs, roots, pulse, and insects; though it has a peculiar fondness for milk and butter.

The marmout, though a native of the highest mountains, where the snow is never melted, feels the influence of cold

in a greater degree than any other animal; and is so completely affected by it, as to seem entirely to lose the power of sensation. This extraordinary suspension of life and motion, for at least one half of the year, is one of those singular phenomena in nature which calls forth our astonishment, without being able to satisfy our reason.

About the beginning of October, this singular little animal digs itself a secure retreat on the side of a mountain, which is sufficiently spacious to contain several families, without either interfering with, or molesting the rest. The form of this dwelling resembles the letter Y, the two branches being two openings, which terminate in the general apartment at the bottom of the hole, which is warmly tuccoed round with moss and hay. This laborious undertaking is performed during the summer; and the whole community unite their endeavours to accomplish the work. Upon this occasion, we are told that one of the animals lies upon its back, permits the hay to be heaped upon its belly, at the same time keeping its paws erect for the purpose of making greater space; and, when it is completely laden, the rest take hold of its tail, and in that manner drag it to the bottom of the hole: and this is one reason given for the hair upon the back being worn away, which is usually the case. In this snug and convenient habitation, the marmout generally passes three parts of its life; it is its refuge in times of danger, its safety when it dreads the approach of a storm, and its sanctuary during the severity of the cold. As soon as they perceive the first approaches of winter, they unremittingly labour to close up the two entrances of their habitation, which they perform in so solid a manner, that it is easier to dig in any part of the rock than where they have closed it up. At the time of their entrance into this subterraneous mansion, they are so completely fat as generally to weigh above twenty pounds; but by the return of spring, this nutritious covering is entirely wasted, and the animal is discovered rolled up in the form of a ball, apparently devoid both of sense and life; a gradual warmth revives them by degrees; but instant death would be the consequence of their being suddenly brought near a fire.

Whenever these animals venture abroad, either for amusement or in quest of food, one of the community places itself upon an eminence, for the purpose of guarding and protecting the clan; and whenever a man, a dog, or a bird of prey approaches, instantly gives a signal to the

rest, by a shrill and loud whistle ; upon the hearing of which, the terrified party instantly make a rapid retreat.

The marmout* is chiefly found in the Alps, though the same animal has been discovered in Poland, under the denomination of the *boback*; in Siberia, under that of the *jevraska*; and in Canada, by the appellation of the *monax*: in each of these parts of the world, the creature passes the winter months in the torpid manner we have just described; and, during that period, does not take the slightest portion of sustenance. The flesh of the marmout is sometimes eaten; but it is neither a pleasant nor delicate kind of food.

THE AGOUTI.

This animal is found in great abundance in the southern parts of America, and has frequently been termed the rabbit of that country. Though in many respects we may trace a resemblance between the agouti and the rabbit, yet it differs in still more, and is allowed to be a creature peculiar only to the *new world*. In size and form it doubtless is like a rabbit, though its ears are not near so long; and, instead of being covered with downy fur, the hair rather resembles that of a hog, and the colour is a reddish brown; the tail likewise is shorter than the animal's it has been compared to, and entirely destitute of hair; it has only three claws upon its hinder feet; and its appetite is so great that it will eat any kind of food, though it prefers potatoes, yams, and fruit.

The sight of the agouti is remarkably good, and its hearing very acute; it has four cutting-teeth, like the hare; and, like that animal, is hunted for the sake of its food. When taken young, it is easily tamed, and plays harmlessly about the house; in a savage state, it resides in the woods, and fixes its abode in the hollow of some tree, as distant as possible from human habitations.

THE PACA.

The Paca is likewise an inhabitant of South America; and, like the agouti, has been termed the rabbit of the New World; in size, it is rather larger than the hare, but much fatter; and in form, resembles a sucking pig, and makes a

* The marmout produces but once a year, and brings forth three or four at a time, but seldom lives longer than nine years.

grunting noise like that animal. The paca is covered with a thick coarse hair, of an amber colour, but beautifully marked with ash spots; the form of the head resembles a rabbit's, but the ears are not so long; it also burrows in the ground like that animal, and from that habit probably derived its name. The flesh of the paca is greatly admired, and it is eaten with the skin, in the same manner as a young pig.

THE GUINEA-PIG.

Though the Guinea-pig is originally a native of Brazil and Guinea, with attention it will thrive in almost every clime. This little animal is less than a rabbit, though it bears some resemblance to it in form, except that its legs are not near so long, and its head is placed so close to the shoulders that it does not appear to have any neck; the ears are short, thick, and transparent; and the hair is like that of a sucking pig. When it moves its body, it lengthens like a rabbit; and when it is at rest, it gathers itself up in the same way; but it has only four toes on its front feet, and three on those behind.

Though the Guinea-pig possesses such natural timidity as almost to dread the approach of a mouse, and seems to tremble at the sight of any animal even less than itself, yet they seem to have an instinctive animosity to their race; and they will frequently fight and quarrel with each other, until victory is decided by death or defeat.

Cleanliness is as essential as *warmth* to their preservation, for they appear to possess a natural antipathy to filth; and if any of the young ones by accident get any mud upon their coat, the mother immediately takes such an aversion to them that she will never suffer them to approach her more. The constant employment of these little animals is to smooth and lick each other's skin; and, when they are kept tame, it is absolutely necessary that they should regularly be provided with clean hay.

What is very extraordinary in these little creatures* is, that the male and female never sleep at the same time: whilst he reposes, she watches; and, when tired, rouses

* The Guinea-pig is a most prolific animal; the first time she litters, she brings forth four or five; the second, five or six; the third, seven or eight; and did they not frequently destroy each other, they would overrun those countries in which they abound.

him, and takes possession of his bed, when he in his turn becomes sentinel, and remains by her until she awakes.

Their usual food, when kept tame, is bran, parsley, or cabbage leaves: but there is scarcely a vegetable in our gardens that they will not gladly devour, though the carrot top and sallad are their favourite regale.



CHAP. XII.

ANIMALS OF THE RAT KIND.

WERE it necessary to distinguish animals of the rat species from all others, we might describe them as having two large cutting-teeth in each jaw, like the hare kind; as covered with hair, and *not* ruminating. These distinctions might doubtless serve to guide us, had we not too intimate an acquaintance with this noxious race to be mistaken in their kind.

THE GREAT RAT.

The animal best known in England, at present, and in every respect the most mischievous, is distinguished by the name of the *great rat*: this rapacious creature is by some Naturalists supposed to have been a native of Norway, but is now known to have been brought from the Levant, and was first landed upon the coast of Ireland in those ships that traded in provisions to Gibraltar.

The great Rat, which is called the *serrmalot* by Mr. Buffon, is about nine inches in length; its eyes are large, black, and fierce; and the colour of the head and body a light brown, mixed with a tawny ash: the end of the nose, under part of the body, and throat, of a dirty white, and the tail is as long as the rest of the body. It is chiefly in the *colour* that this animal differs from the *black* or *common* rat, which, from superior strength, it has completely extirpated; but it is not against the *black rat* alone that this creature's rapacity is directed, but towards every animal it can get within its power. Poultry, rabbits, and game, all fall victims to this sanguinary foe; and, as it swims and dives with the

greatest facility, fish and frogs* become its prey. The same insatiable appetite that impels them to indiscriminate carnage, excites them to the destruction of each other, and by that means prevents the country from being overrun, which would be the case but for their domestic animosities; as the female brings forth three times a year, and produces from fifteen to thirty at a time. Besides their natural enmities to each other, all carnivorous quadrupeds that are stronger than themselves seem to have a fixed antipathy against them. One species of the dog kind are purposely trained for their destruction; and the cat appears to be their *instinctive foe*, although she rejects them as food. The weasel is a still more powerful enemy; because, from the size of its body, it is able to follow the rat into its hole, where dreadful combats frequently ensue, but in which the weasel always comes off victorious.

The depredations of this animal are as much to be dreaded in the barn as they are in the hen or pigeon-house; for it not only eats immense quantities of corn, but destroys still more; and were it not for ferrets, cats, dogs, and poison, this obnoxious creature would be the destruction of half the necessaries of life.

To the species of the great rat, may be added the *black one*, which is now nearly extirpated by the superior strength of its more powerful rival. The length of the body of this animal is about seven inches, and the colour a deep iron-gray, bordering upon black; and to this may be subjoined the black water-rat, that is about the same size, which never frequents either barns or houses, but is usually found on the banks of rivers, ditches, and ponds, where it burrows and breeds, and feeds upon fish, frogs, and insects.

THE MOUSE.

The Mouse is an animal equally mischievous with the rat, though from its size, not capable of doing so much harm; fearful by nature, but familiar from necessity, it is constantly making depredations upon the pantry; yet it never ventures far from its abode, from an instinctive dread

* It is said that this great rat has been the total destruction of all frogs in Ireland; and that none of the species are at present to be found, though they had been carried into that country for the purpose of rendering the waters more wholesome.

of encountering some foe ; as the cat, the hawk, the weasel, the snake, and even the *rat* itself, are its destroyers.

Though the mouse is capable of being very destructive in the house, it is still more so in the barn, where they frequently breed in such immense numbers, as absolutely to overrun a whole stack of corn. Aristotle gives us an idea of the rapid multiplication of these animals,* by informing us, that he put a mouse with young into a vessel of corn ; and, upon examining it some time afterwards, he found a hundred and twenty had sprung from that stock.

The long-tailed *field-mouse* is another species of this animal ; it attaches itself entirely to nurseries and gardens ; it is rather larger than the domestic mouse, and in colour resembles the great rat. To this may be added the *short-tailed field-mouse* and the *shrew-mouse*, neither of which differs very *essentially* from those already described : the former resides wholly in the fields, and feeds upon corn, acorns, and nuts ; the latter dwells chiefly in stables and barns, but is fonder of putrefied meat than it is of grain ; and to this partiality we may ascribe its fetid smell.

THE DORMOUSE.

*The dormouse, like the marmout, is a torpid animal, unable to encounter the severities of cold ; and, previous to the approach of the winter season, they form a little magazine of stores. This food, which they collect and put carefully into their nests, consists of nuts, beans, and acorns, which they keep in reserve in case of feeling a temporary renewal of their appetite ; but, if the season proves very cold and intense, they remain rolled up like a ball during the whole of the time, without refreshing their bodies by sustenance of any kind.

The eyes of this little animal are remarkably brilliant, and its tail is tufted like that of the squirrel ; it never approaches human habitations, but resides entirely in a coppice or high wood, and makes its nest, which is lined carefully with moss, in the hollow of some decayed tree. There are different species of this animal, which Mr. Buffon distinguishes by the *loir*, the *lerot*, and the *muscardine* ; the former of which is nearly the size of a rat, and the latter, which is the most

* The mouse brings forth several times in the year, and its usual number is from six to ten, which in less than a fortnight are able to provide for and protect themselves.

common, not bigger than a domestic mouse ; it never has more than three or four young at a time, and that only once in the year.

THE MUSK-RAT.

Of this animal there are three species, each possessing that powerful smell from which they have originally derived their name. The *ondatra* is a native of Canada, and nearly the size of a small rabbit ; but what renders it different from every other quadruped, is, that it is capable of enlarging or contracting its body at pleasure ; this effect is produced by a large muscle lying directly under the skin, upon the hide, which possesses the power of contraction ; and its ribs are capable of such a degree of elasticity as to enable the *ondatra* to creep into a hole which a much smaller animal could not enter.

This quadruped, in some measure, resembles the beaver in its habits and disposition ; they both live in society during winter, both form houses of two feet and a half wide, in which several families reside together ; yet they do not lay up a store of provision like the beaver, but merely form a kind of covert-way under the snow, from whence they may issue to procure water and roots. During the summer they emerge from these subterraneous dwellings in pairs, feed voraciously upon different fruits and vegetables, and then grow extremely fat ; they are then held in high estimation by the natives of the country, not only on account of their skins, but for the delicacy of their flesh, which at that period of the year is thought excellent food. The *desmen* and the *pilori* are the two other species of this animal ; the former is a native of Lapland, and the latter of the West Indies.

THE CRICETUS.

The *Cricetus*, or German rat, resembles the water-rat in size, though the colour is rather a deeper brown : but the striking features in this animal are two large pouches by the side of its under jaw, in which it conveys the winter's deposit to the ingenious habitation it forms under the ground : each of these habitations consist of different apartments, according to the number of the family who are to take up their abode in them, each of which communicates with the other, and

occupy at least twelve feet in the diameter of ground. About the latter end of August they begin to fill these store-houses with peas, beans, and different kinds of corn; and, when they have completed their labour, they close up the mouth with so much ingenuity, that its entrance cannot be found.

The appetite of this quadruped is so very voracious, and they are capable of devouring such immense quantities of corn, that government holds out rewards for their destruction, from the dread that they should absolutely overrun the land; but, like the other species of this animal, they decrease their number by making war upon themselves.

THE LEMING.

The Leming, which is a native of Scandinavia, is often seen to pour down in myriads from the northern mountains, and, like a pestilence, destroys all the productions of the earth. The leming is described as being rather larger than a dormouse, with the same kind of bushy tail, though not so long; the body is of a reddish brown, with black spots; the eyes are small, but very black; the ears are round; and the hinder legs are longer than those before.

The astonishing multiplication of this destructive little animal is as surprising as its migration; and, as all the species of the rat kind are known to increase more in damp than in dry situations, it is generally after moist and rainy seasons, that the country is annoyed by these desolating pests.

As they never make their appearance but after very heavy and long-continued rains, the ignorance of the Laplanders is so great, that they believe they fall from the clouds; and indeed so many millions combine together in a troop, that they deluge a whole plain with their numbers; they generally move in lines, which are about three feet from each other, and exactly parallel; their march is always directed from the north-west to the south-east, and they frequently cover above a mile of ground, travelling by night, and resting during the day.

Wherever their motions are directed, nothing can stop them; if a lake or river happens to interrupt their progress, they altogether take to the water, and swim to the other side; and it seems as if they were impelled to push forward by some secret power which prevented them from

altering their course, or even going out of the way; for, if a fire impedes them, they instantly plunge into the flames; if a well, they dart down it; and if a hay-stack, they begin eating their way through it. Happily for mankind, they do not eat any thing that is prepared for human subsistence; and, if they make their passage through a house, they will merely eat what roots and vegetables they meet with in their way; if their journey happens to lie through a meadow, they destroy its verdure in a very short time, and give it an appearance of being burnt up, and strewed with ashes; if they be interrupted in their course, and a man should imprudently venture to attack one of them, the little animal is no way intimidated by the disparity of strength, but furiously flies at its opponent, with a barking noise like a young puppy, and does not easily relinquish its hold.

An enemy so numerous and destructive would soon render the countries where they appear, utterly uninhabitable, did it not fortunately happen that the same rapacity that animates them to destroy the labours of mankind, at length impels them to devour each other: after having committed devastations that appear incredible, they divide into two bodies, commence hostilities, and continue fighting until one of the parties can obtain a victory over the other; when the conquerors always quit the field, which is often impregnated with putrid exhalation from the myriads of dead bodies that remain upon it.

THE MOLE.

Though the mole is so prevalent a quadruped in England, in many other countries it is totally unknown, and it is said to be a stranger even in Ireland. In size, this little animal is between a mouse and a rat, though in form very different: its eyes are so small as to be scarce discernible; and, instead of its ears, it has two small holes; its nose is long, like that of a hog; and its neck is so extremely short, that the head seems absolutely united to the back; the body is thick and round; and its legs so extremely short, that they scarcely raise the animal from the ground; the skin is black, smooth, and shining; and it is singular, that it should not have been converted to some use.

The formation of this animal is most admirably contrived for the singular life it is destined to lead; the smallness of the eyes (which induced the ancients to think it blind,) is the

greatest advantage it could possibly possess; as a more extensive sight would only have served to show the horrors of its prison, while nature had denied it the means of an escape: the form of the body is equally well calculated for the constant exertions it is obliged to make; for the fore part is thick and very muscular, and gives great strength to the action of the fore feet, which enables it to dig its way with astonishing facility; and what must otherwise be laborious, it performs with ease; the sense of smelling and hearing it enjoys in great perfection, and by that means is enabled to escape its enemies and discover its food.

As the mole very seldom comes above ground, it has very few enemies to excite its fear; and those which it has the greatest reason to dread, it evades by retiring to its ambushed abode. Their greatest calamity is an inundation; for whenever that happens, thousands perish; and, were it not for destructions of this nature, their numbers would be very injurious to the land. The ingenuity with which this little animal forms its habitation, is extremely curious to behold; and the female's apartment is remarkably commodious, and peculiarly calculated to defend her young.



CHAP. XIII.

THE HEDGE-HOG, OR PRICKLY KIND.

ANIMALS of the hedge-hog kind, require but very little accuracy to distinguish them from all others: that hair which serves the generality of quadrupeds for ornament and warmth, these creatures are, in great measure, without; while its place is supplied by sharp spines, or prickles, that serve for their defence; and this characteristic forms a more striking distinction than any that can be taken from their teeth and claws; instead, therefore, of classing the hedge-hog with the mole, or the porcupine with the hare, as some Naturalists have done, merely because there was a *similarity* in their *fore teeth*, we shall prefer making them a distinct race by themselves.

The hedge-hog, though its appearance is very *formidable*, is one of the most harmless animals in the world; unable, or

unwilling to offend, all its precautions are only directed to its own security; and it is armed with a thousand points to keep off the enemy, but not to invade him.

The hedge-hog is an animal about six inches long from the tip of the nose to the insertion of the tail, which is not more than an inch in length; the head, back, and sides, are covered with prickles; but the nose, breast, and belly, with a fine soft hair; its legs are short, and almost bare; but the toes are long and separated, and it has five upon each foot; each prickle is about an inch in length, and extremely sharp at the points; the eyes are small, and placed high in the head; and the mouth is very well furnished with teeth, though the creature only uses them for chewing its food; for, in cases of danger, it relies entirely upon its spines; as soon as it perceives itself attacked, it instantly withdraws its vulnerable parts, rolls itself into a complete ball, and presents nothing to the enemy but its defensive thorns; and the cat, the weasel, the ferret, and the martin, soon decline the combat; and even the dog himself generally spends his time in empty menaces, rather than effectual efforts.

Like most other wild animals, the hedge-hog sleeps by day, and ventures out at night; it generally resides in small thickets, hedges, or ditches, covered with bushes; there it makes a hole about six or eight inches deep, and covers itself up with grass or moss; it lives upon roots, fruits, worms, and insects; they sleep during the winter season, and are able to remain a long time without food.

THE TANREC, AND TENDRAC.

These little animals are both natives of the East Indies, and covered with prickles like the one we have just described. The tanrec in size resembles the mole; but the tendrac is still less, and has prickles only upon its head and shoulders, the rest of the body being covered with thick coarse hair, not unlike the bristles of a hog.

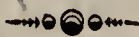
Neither of these quadrupeds avoid the attack of their enemies, by rolling themselves up in round balls; they are very fond of being near the water, and spend more time in that element than they do upon the land; they multiply in very great numbers, make themselves holes in the ground, and sleep in them for several months at a time; their flesh is soft, fat, and stringy; yet the East Indians consider it a delicious kind of food.

THE PORCUPINE.

Those arms which the hedge-hog possesses in miniature, the porcupine has in a more enlarged degree; for, though the prickles of the former are not more than an inch, those of the latter are extended to the length of two feet.

Although this animal is a native of the hottest climates of Africa and India, yet it will both live and multiply where the heat is less intense; for in Persia, Spain, and Italy, they are frequently found. This singular creature is about two feet long, and between fifteen and sixteen inches in height; the legs are very short, the eyes small, and the muzzle resembling that of a hare; the quills are about the thickness of those which are taken from the goose, but sharp and tapering at both their ends, and capable of inflicting a mortal wound. Some Naturalists have asserted that it discharges these weapons into the bodies of animals it wishes to attack; but this opinion is erroneous, for experience proves that the quills are immoveable, and that the porcupine uses them merely as a defence.

In its natural state, this animal feeds chiefly upon vegetables; but will live upon fruits, and bread and milk; as they do not refuse meat when it is offered to them, it is believed that they occasionally partake of animal food.—When the porcupine* is hunted, either by a wolf or dog, it seeks its safety by instantly climbing up a tree, and never quits the secure asylum, till the objects of its terror are out of sight. The American Indians hunt this animal for the sake of its flesh, as well as its quills, with which they embroider their dress and furniture with peculiar elegance, and uncommon skill.



CHAP. XIV.

OF QUADRUPEDS COVERED WITH SCALES,
OR SHELLS, INSTEAD OF HAIR.

THOUGH the name of *quadruped* seems to imply a four-footed animal covered with hair, that of a *bird*, a creature

* The porcupine goes about seven months with young, and never brings forth but one at a time, which she suckles for the space of a month, and then teaches it to sustain itself by vegetables and bark of trees.

with feathers, and a *fish* with scales, yet nature sometimes combines these destructive characteristics, and refuses to be directed by general laws

THE PANGOLIN.

The Pangolin, which has usually been called the *scaly lizard*, is doubtless an animal of a distinct race; for the lizard is known to be the produce of an egg, whilst the pangolin, like other quadrupeds, comes *alive* into the world. The lizard is entirely *covered* with scales; the pangolin has none either on the breast, belly, or throat; and, like the porcupine, is able to erect those weapons which nature has bestowed to repel its foes.

The pangolin is a native of the old continent, and exists only in a torrid clime: it is between three and four feet in length, or from six to eight including the tail; the head, like the lizard's, is very small; the neck thick, and the body long; it has no teeth, but on each of its short legs it is armed with five very long claws; the scales of this singular animal vary in their size, and are stuck upon the body somewhat like the artichoke leaves; the largest of them are three inches wide, and not less than two in length. Thus, defended against the force of its enemies, it is enabled to repel all their attacks; for it rolls itself round in the manner of a hedge-hog, and presents to its antagonists its flinty scales; in vain the most furious invaders of the forest endeavour to penetrate the armour bestowed for its defence: it resists the force of every antagonist, and has only reason to dread the attacks of man. The African negroes, by the power of perseverance, beat it to pieces with immense clubs, considering its flesh as the greatest delicacy which their country is able to produce.

Formidable as this animal is in appearance, in nature and disposition it is perfectly mild: it lives entirely upon insects, as it cannot masticate vegetables from the want of teeth: this defect is wonderfully supplied by the singular construction of this creature's tongue, which doubles back into the mouth, and is capable of being extended to a most extraordinary length. When the pangolin approaches an ant-hill, for those are the insects on which it chiefly feeds, it lies down near it, concealing as much as possible the place of its retreat; and, stretching out its tongue among the ants, keeps it for some time immoveably still; these little animals, allured by its appearance, and the unctuous

substance with which it is spread, collect upon it in great numbers, when the pangolin, feeling it completely covered, suddenly withdraws it into its mouth, and so entraps the unsuspecting tribe.

The phatagin is another species of this animal, though by no means equal to it in size; but both are found in the most obscure parts of forests, and bring forth their young in the clefts of rocks.

THE ARMADILLO.

The Armadillo is chiefly an inhabitant of South America, and, like the tortoise, its body is covered with shells, which lie over each other like the tail of a lobster, and are connected together by a thick membranous skin. These shells, which appear to be a bony substance, cover every part of the body; but the breast and throat are separated by a variety of divisions, which enables the animal to move in what direction it may please.

The moment the armadillo perceives itself attacked, it withdraws its head under its shell like a snail, tucks the feet close to the body, unites the extremities of the head and the tail, and presents to its antagonists a callous ball, upon which no impression can possibly be made. The size of this animal varies greatly; some are one foot, and others three in length; the tail is long, the nose pointed, and on each foot it has four very strong claws, with which it burrows deep in the earth: and, when pursued, always tries to secure itself in its hole. The flesh of the armadillo is thought very delicate, as they live chiefly upon melons, and different kinds of fruits.

There are several other different species of these animals, which merely vary in size and divisions in the shell; some are larger than the armadillo, and others rather less; the former generally reside in a dry soil, while the latter prefer that which is low and damp. The tatu apara, the encoubert, the tuetta, the pig-headed armadillo, the kebasson, and the weasel-headed armadillo, are the different names under which they are described.

ANIMALS OF THE BAT KIND.

Though many Naturalists have classed the bat as a bird, they are no longer allowed to belong to that tribe; for their hair, their teeth, and bringing forth their young alive, entitle them to a place in the quadruped class.

The bat most common in England is about the size of a mouse; and those membranes that are usually denominated wings, is an extension of the skin round the body, stretched out like a sail, and supported by the toes; this skin, which sustains it in the air, when expanded, bears a strong resemblance to the wings of a bird. The body is covered with a short fur, of a mouse colour, tinged with red; the eyes are very small, and the ears are exactly like those of a mouse.

In the dusk of the evening, at the approach of summer, this little animal seems to rouse from its torpid state, and flies about in pursuit of different insects, though it does not reject either bacon or meat. Even in summer, the bat passes the greatest part of its time in sleep; and in winter, wholly confines itself either to some damp or dreary abode. Decayed castles, or mouldering caves, are the cheerless dwellings which this animal prefers; where, sticking its hooked claws into the sides of their walls, it hangs suspended till the approach of spring, when the power of the sun renovates its faculties, and in some degree restores it to activity and life.

In this country, there are some varieties of this animal, which are distinguished by the following names; the long-eared bat, the horse-shoe bat, and the rhinoceros bat; which are all perfectly inoffensive, and incapable of doing any injury to mankind; but in the East and West Indies, the bats are considered as formidable foes, and individually, from their size, are capable of much harm; but when they unite in flocks, they then become dreadful, and, like locusts, seem to overspread the land.

Of all the creatures of this species which Naturalists have described, the great bat of Madagascar seems to be the most destructive; for, though it resembles our bat in the form of its wings, manner of flying, and *internal* make, it differs from it in habits, disposition, and size. When the wings of this formidable animal are extended, they are very near four feet in breadth; the body is about one foot long, and the form of its head resembles that of a fox.—When these enormous creatures are put in motion, nothing can be more formidable than the appearance they make; they are seen in clouds darkening the air, and devouring whole orchards of ripe fruit. Nothing is safe from their depredations; every species of domestic animals become their prey; and, if they cannot find sufficient to satisfy their hunger, they will even attack the human race. Their din, or howling, is both shrill and

loud, and may be heard at the distance of a couple of miles ; and, when echoing through the forests, during the stillness of night, impresses the mind with horror at the sound.

An animal not so formidable in size, but still more mischievous in its pursuits, is the vampyre, which, instead of confining itself to woods and forests, prefers the cheerfulness of cities and towns, and, after sunset, appears in such immense numbers, as to form a perfect canopy over the streets. These creatures are no less a pest to the *human*, than to the *animal race*; for, as the inhabitants of tropical climes are obliged to sleep with their windows open, the vampyres enter, and if they happen to find a person sleeping, with any part of their body uncovered, they instantly fasten upon them, and begin sucking their blood, which they have the power of doing without inflicting any acute pain ; and if they should not providentially happen to awake, their *slumbers* assuredly would terminate in *death*.



CHAP. XV.

AMPHIBIOUS ANIMALS.

ALTHOUGH Historians may endeavour to arrange each animal in its separate class, there are some intermediate tribes between the terrestrial and the aquatic, which it is difficult to attach to any rank, because they lead amphibious lives, and are capable of existing either upon water or land. All quadrupeds of this kind, though covered with hair like the general race of that species, are furnished with membranes between their toes, which assist their motion in the water ; for their paws are broad and their legs short, by which they are completely calculated for swimming. Others still nearer resemble the inhabitants of the deep, by having their hind feet stuck to their bodies like fins ; and some are totally devoid of those supporters.

THE OTTER.

In the first step of the progression from land to amphibious animals, we find the otter, resembling those of the terrestrial kind, in shape, hair, and internal conformation ; and

those of the aquatic, in its ability to swim, and living upon those small fish with which the watery element abounds. The form of this animal resembles a large weasel; the skin is brown, and peculiarly soft: its usual length is about two feet from the tip of the nose to the insertion of the tail; the head and nose are broad and flat; the mouth is formed like that of a fish; the neck is short, and very thick; the eyes small, and placed near the nose; the tail long, and broad at the insertion, but gradually tapering towards the point; the legs are short, yet the joints are so pliant, that the animal is able to turn them quite back; and, by bringing them upon a parallel with the body, makes them answer the purpose of fins.

This voracious animal is never to be found but at the sides of rivers and lakes, as it is not fond of fishing in a running stream; and, though it is able to devour an uncommon quantity of food, it kills a great deal more than it can eat; for it carries its victims to the banks of the stream, and leaves them whilst it goes in search of fresh prey; but in winter, when the lakes are frozen over, the otter is compelled to resort to grass and weeds; and though naturally timid, from hunger grows courageous, and will sometimes venture even to attack a sheep.

This singular animal is capable of being made domestic, and contributing to the advantages and comforts of mankind; for, when properly taught, they will dive into the watery element, and, instead of devouring, merely bring out the fish, and attend to the instructions of its master, with a docility similar to the spaniel race. The otter* is to be met with in most parts of the world; in North America they are usually found to be white; but in Brazil they are larger than ours, and the colour of their hair between a brown and black.

THE BEAVER.

If we examine the beaver merely as an individual, and *unconnected* with others of its kind, we shall find many other quadrupeds that exceed it in cunning, and almost all in the powers of annoyance and defence. The beaver, when separated from the rest of its companions, and kept in a solitary state of confinement, appears to be a mild, gentle animal,

* The otter goes about nine weeks with young, and brings forth in autumn three or four at a time.

devoid of passion, but incapable of attachment, and naturally of a morbid and melancholy cast.

Though solitude and confinement have an effect upon this animal, society produces a most astonishing change; for, in its natural state, we behold it ardent and persevering, and offering an instructive lesson to mankind.

About the months of June and July, the beavers begin to assemble for the purpose of forming that social compact which is to continue the greatest part of the year; and these communities generally consist of two hundred of this skilful and ingenious race. The place where they assemble is always by the side of a river or lake; and if the current of the former happens to be strong, or it is subject to falls and floods, their first object is to form a dam across the stream, which they sagaciously contrive in the most shallow part; and if a tree be accidentally placed near the spot, they instantly resolve to fell it down, and in this enterprise succeed by gnawing it at the root, and dividing it from the support by which it was sustained. As soon as the body has fallen into the river, they begin stripping it of those branches which prevent it from lying close; it then serves as a support to that fabric, which with so much labour they are about to rear; and occasions a stagnation of the water which surrounds their dam.

Whilst some of these industrious animals are employed in forming the different branches of the tree into stakes, with the intent of driving them into the ground, others are busied in bringing clay for the purpose of plastering between each of the spaces, which are previously entwined with small branches and twigs, so as to sustain an immense quantity of earth.

This dike, or causeway, is frequently twelve feet thick at the foundation, and descends in a declivity on that side next the water, which gravitates upon the work in proportion to the height, and presses with a prodigious force towards the earth; the opposite side is erected perpendicular; and, though the base of this causeway is twelve feet broad, it diminishes as it elevates, and at the top is not above two.

As soon as this astonishing fabric is completed, and the clay so thoroughly plastered that the water cannot find a passage through, they begin to form their various apartments, some of which are round, and others of an oval shape; and divided into three different stories, to which they repair as the water increases in height. At the bottom of each apart-

ment are two apertures, through which every thing that could defile them is regularly conveyed, as their cleanliness can only be equalled by their contrivance; and each room has a regular communication with the rest.

These curious habitations are generally completed by the end of August, or the beginning of September, at which time they are all employed in collecting the winter stores, which chiefly consist of the wood of birch and plane, which they contrive to soften by steeping it in the stream. In summer, it is true, they regale themselves luxuriously, and compensate for the coarseness of their winter fare, by feasting upon the choicest fruits and plants which the country they inhabit can possibly afford.

The beaver is very common in the northern parts of America, but in the southern it is very rare; and wherever it exists in the old continent, it seems to prefer the colder climes. This animal is about two feet long, and not quite one in height; in form it is allowed to resemble a rat, except in the singular appearance of the tail, which differs from that of every other quadruped, by being entirely covered with thick scales. This extraordinary phenomenon in nature, serves the creature for a double use; for, as it is both broad and flat, it answers the purpose of a conductor for the clay, and acts as a rudder when it swims. The fore feet of the beaver are formed like those of other quadrupeds; but the hinder have membranes between the toes; the colour of the hair is a light brown, and of two different kinds; the one much longer than the other, and not near so soft and pleasant to the touch: the teeth are formed like those of the rat, though stronger in make, and larger in size, and calculated for the destruction they make amongst the trees. It is curious to observe these industrious animals collecting their winter store, and cutting down branches from different trees, which sometimes measure ten feet in length; if they are at the trouble of dividing these branches, each animal takes a separate piece in its mouth, and arranges it in piles in its curious habitation, in readiness for its future support and food. When they are employed in this necessary undertaking, each approaches the habitation by a different route, that they may neither jostle nor interfere with each other, but persevere in their object without any delay. When large pieces of wood are to be removed to the repository, the exertions of these laborious animals are combined, and they

jointly contrive to carry a piece of timber that it appears incredible they could even move.

Those who are accustomed to hunt the beaver, are aware of their fondness for green wood; they therefore make a point of planting it near their habitations, and, when the animal comes out to eat, take them by surprise.

THE SEAL.

The Seal, in some respects, resembles a quadruped, but in its habits and manner of living, bears greater affinity to a fish. The head is round, like that of a man; but the nose is like that of an otter; and the teeth resemble those of a dog; the eyes are large, full, and sparkling; and, instead of external ears, it has two holes in the head; the neck is well proportioned, and the body is thickest at the part where it joins, and from thence decreases down to the tail. It is impossible to say positively the size of this animal, as the difference between them is so very great; some measure only four feet in length, whilst others are known to exceed nine; the body is covered with a thick, bristly, shining hair, which gives it the appearance of being rubbed over with oil; some are black, others spotted; but yellow is the colour which chiefly prevails; the feet are placed so close to the body that they apparently seem much more like fins, and are covered with a membrane which conceals their shape; the hinder feet are turned backwards, and are totally useless when the creature is upon land, notwithstanding which it moves very quickly whenever it perceives that it is pursued; the tongue is forked, like that of a serpent; and the blood is able to circulate without passing through the lungs, which enables the animal to dive under water, and yet in that situation freely respire.

Indeed the water appears to be the seal's natural station, as it chiefly exists upon what that element will produce. This animal is found in every climate, but in the northern seas it particularly abounds; and on the rocky shores they are seen basking by thousands, whenever the weather happens to be fine. Though the generality of quadrupeds contentedly remain attached to the spot where they first drew breath, unless fear or necessity impels them to roam, the seal appears to delight in change; and, like birds of passage, migrate at stated periods of the year. On the northern coasts of Greenland, they retire in July, and, before

the end of September, generally return; and the object of their excursion is supposed to be food. In the beginning of March, they likewise disappear, and return again in about ten weeks, accompanied by their young; and, previous to their setting out upon this expedition, whole droves of them are seen together, making towards the north, and bending their course near that part of the sea, where their passage seems least likely to be impeded by the ice. By what route, or in what manner they return, is a circumstance utterly unknown; but it is observed that they are very fat when they leave the coast, and remarkably thin when they re-appear.

The females bring forth in winter, and rear their young upon some sand-bank, or rock, where they remain with them from twelve to fifteen days. These little animals, at the time of their birth, are white, and their hair has the appearance and flexibility of wool: whilst they are sucking, the female erects herself upon her hinder feet, and the young ones cling close to her sides: they are remarkable for docility and gentleness; and at the greatest distance, discover their parent's voice. Upon land, the seal* is a very timid creature; though they are extremely courageous in the sea; and, in those parts where herrings are found in shoals, whole herds of these animals always reside. The skin of the seal sells for about one dollar, and is used for shot-pouches and covering of trunks; but the Greenlanders chiefly pursue them for the sake of the oil, which they easily extract from the creature's fat.

THE MORSE.

The Morse is an animal of the seal kind, but differing from it by having two large tusks, or teeth, diverging downwards from the upper jaw, from two to three feet in length; and the ivory is preferred to that of the elephant, from being harder and much whiter. The morse generally frequents the same places as the seal, though their number is not equal to one in ten: and the destruction amongst them, for the sake of their teeth, has latterly so completely diminished the race, that the Greenlanders, who

* It is supposed that the seal goes about eight months with young; but its migration prevents it from being positively known: its length of life likewise has not been completely ascertained, but it is supposed not to exceed fifteen or sixteen years.

used to derive from them an ample stock of food, now find a very insufficient supply.

THE MANATI.

We come, in the last place, to an animal that terminates the boundary between quadrupeds and fishes. Instead of a creature preying upon the deep, and retiring upon land for repose or refreshment, we have here an animal that never leaves the water, and is only enabled to exist there. It cannot properly be called a quadruped, because it has only two legs; neither can it reasonably be classed amongst the scaly race, as it is thinly covered with short hairs.

The manati, in shape, resembles the seal, but in size infinitely exceeds that animal, as it is no uncommon thing to see them twenty-six feet in length. The fore feet are short and webbed: but it has no more than four claws: the tail exactly resembles that of a fish, and spreads out like a fan; the skin is extremely tough and hard; and, when cut, is as black as the finest ebony: the eyes are very small in proportion to the head; and the ear-holes are of so diminutive a size, that it is scarcely possible to conceive that any sound could penetrate through them: as a substitute for teeth, it has a solid white bone running from the extremities of each jaw, which enables it to chew, though not tear its food: and the tongue is so short as scarcely to be perceptible: the breasts of the female are placed like those of a woman, and she carries her young in her paws, presses it to her bosom, and never parts from it until it is able to protect itself.

The manati can scarcely be called an amphibious animal, as it never entirely quits the water, merely extending its head and neck out of the stream, to reach the grass and vegetables which grow upon its sides, upon which it feeds. This animal chiefly inhabits South America, though it is sometimes met with in the Kamtschatkan seas: and now and then it is found in the bays of India, quietly reclining among the turtles, with which they abound.

The fat of the manati, when exposed to the sun, sends forth a remarkably pleasant smell, and the taste of it resembles the oil of sweet almonds: the lean is like beef, but of a redder colour, and may be kept a long time in the hottest climate, without acquiring any taint; and is thought to possess the flavour of beef, while the flesh of the young ones looks like veal, and in taste is not unlike. Upon the

whole, the flesh is allowed to resemble turtle; and, if equal pains were taken in dressing, might probably be as great a delicacy.



CHAP. XVI.

ANIMALS OF THE MONKEY KIND.

QUADRUPEDS may be considered as a numerous group, terminated on every side by some that scarcely come under the denomination or the name. On one quarter we see a tribe covered with quills, or furnished with wings to exalt them in the air; on another, we behold a diversity clothed with scales and shells, to rank with insects; and still, on a third, we seen them descending into the waters, to live among the mute tenants of that element; but we now come to a numerous tribe, that, leaving the brute creation to themselves, seem to make approaches to the human race, and discover some faint efforts at intellectual sagacity.

THE OURAN OUTANG, OR WILD MAN OF THE WOOD.

This name seems to have been given to various animals, agreeing in one common character of walking upright; but, by coming from different countries, vary greatly both in proportion and size; for the troglodyte of Bontius, the drill of Purchase, and pigmy of Tyson, have all received this general name.

Of all animals in the creation, the ouran outang makes the nearest approaches to the human race; sagacious, imitative, and obedient, it easily becomes subservient to the dictates of man, and follows his instructions with that zealous kind of compliance, that seems to result from a combination of reflection and sense. Though several of these animals have been brought into England, none of them have been of the largest kind; and though some travellers describe them to be seven or eight feet, those we have been acquainted with have never exceeded four or five. Doctor Tyson, a learned historian and physician, gives the following description of one of the species which had been brought from Angola, and which he had frequent opportunities minutely to observe.



Beaver.



Otter.



Seal.



Orang Outang.



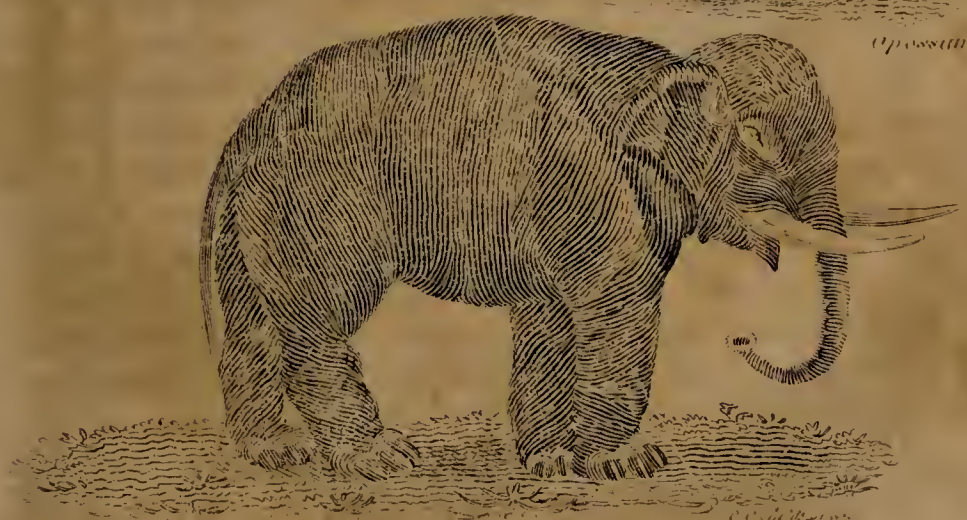
Long armed Ape.



Baboon.



Opossum.



Elephant.



“The body was entirely covered with hair, the colour of which was perfectly black, and the texture of it bore a greater resemblance to the human than to that of the brute: that which grew upon the head and chin was considerably longer than any of the rest; the face was like that of a man, the forehead longer, and the head round: the upper and lower jaw were not so prominent as in monkeys, but flat like those of the human race: the ears and teeth likewise had a greater similitude to the man than the brute: the bending of the arms and legs was the same: and, in the whole figure of the animal, an affinity might be traced. The face, hands, and soles of the feet, were without hair; and in the palms of the hands it had similar lines to those found in the human race. The internal conformation was equally similar, except that it had *thirteen* instead of *twelve* ribs. In its passage to England it made many friends on board, towards whom it would show evident marks of tenderness, and used frequently to embrace them with the greatest affection. Monkeys of a lower species it seemed to hold in absolute aversion, and would avoid that part of the vessel in which they were confined. As soon as it was accustomed to the use of clothes, it became very fond of them, and would dress itself in part without any assistance, and carry the remaining to some of its friends, and make signs for them to complete the ornament. It would lie in a bed, place its head upon a pillow, and then pull up the bed-clothes to its neck, in the same manner that human beings are accustomed to do.”

Mr. Buffon informs us that he saw one of this singular race of animals sit at a table, wipe its mouth with a napkin after drinking; pour the wine into its glass; use a fork and spoon to carry the victuals to its mouth; put sugar into its cup; pour out the tea, and leave it to cool; in short, so exactly imitate the human manners, that it was astonishing to see how *sagacity* could be substituted for *sense*.

Such are the powers and habitudes of the smaller class of these extraordinary creatures! but we are presented with a very different picture in those of a larger stature and more muscular form, which, in the East Indies, Africa, and Borneo, are considered as the most redoubtable rivals of mankind. It is absolutely impossible to take any of these formidable animals alive, as they always travel in companies; and their strength is so great, that ten men would scarcely be a match for one of them. They generally sleep under large trees, though they build themselves sheds, to which they occasionally

retire; and when any of the species die, the rest cover the body with leaves and branches of trees: they walk in an erect posture, and carry a large club in their hands by way of defence, with which they will even venture to attack the elephant.

In the Island of Borneo, where they chiefly abound, the inhabitants hunt them in the same manner as they do the elephant and the lion; and it becomes a diversion which both the king and his courtiers follow with great avidity; and its resemblance to the human form obtains it neither pity nor protection.

THE LONG-ARMED APE.

Next to the ouran outang, this animal bears the nearest resemblance to mankind; like that, it walks erect, and has no tail: the visage is flat and encircled with hair; the eyes large, and sunk in its head: but the most striking part of this extraordinary creature is the arms, which, when it stands upright, absolutely touch the ground; it is a native of the East Indies; but chiefly found on the Coromandel coast; it is tractable in disposition, gentle in manners, and, like the lesser species of the ouran outang, fond of imitation.

THE BABOON.

Descending from the more perfect of the monkey kind, we come to the baboon and its varieties; a large, fierce, and formidable race, that, mixing the figure of the man and the quadruped in their conformation, seem only to possess the defects of both.

The baboon is generally from three to four feet high, very strong built, with thick body and limbs: its tail is thick and crooked, and about eight inches in length; its snout, for it can hardly be called a face, is long and thick; and on each side of its cheeks it has a large pouch, into which, when satiated with eating, it carefully puts the remainder of its food: the body is covered with long thick hair, the colour of which is a reddish brown; it generally walks upon all fours; and its hands and feet are armed with long sharp claws, instead of the broad round nails which those of the ape kind possess. Though these animals are naturally both mischievous and ferocious, in their methods of plunder they adopt a more systematic plan;

for, when they set about robbing either an orchard or vineyard, it is curious to observe the regularity of their design. On these occasions a part of them enter the inclosure, whilst one stands sentinel to prevent surprise; those which stand on the outside of the fence, form a regular line to some secure retreat, when those which are within commence their operation, and throw the fruit to their companions which are placed on the outside, whilst each throws to his next neighbour, until the vineyard or garden is nearly stripped.

Though the bite of the baboon* is very dreadful, it is never occasioned by its fondness for animal food; for it entirely lives upon the production of the garden: therefore its attacks are the effect of malice, and not from a desire of obtaining food.

THE MANDRIL.

The Mandril is the largest of the baboon kind, and the most frightful of the whole race. The hair upon the body is of a bluish colour; and it is from four to five feet in height; the muzzle is much longer than that of the baboon; and from the nose there issues a glutinous stream, which makes it peculiarly disgusting to the sight. The mandril is a native of the Gold coast, generally walks in an erect position, and, when offended, is said to weep like a child.

THE WANDEROW.

This animal is rather less than the former, with a prominent muzzle like the rest of the kind; but what peculiarly distinguishes the wanderow, is the long white hair which surrounds the head, and immense beard of the same colour, which descends from the chin; the rest of the body is either brown or black; and it is both fierce and untractable in its natural state.

THE MAIMON.

The Maimon approaches the monkey in size, as it seldom exceeds that of a cat: its chief distinction, besides the prominent muzzle, is in the tail, which is between five and six

* The baboon brings forth but one at a time, which it carries at the breast, until it is able to protect itself.

inches long, and curled up like that of a hog ; it is a native of Sumatra, and does not well endure the rigours of a northern clime. Edwards, the Naturalist, had one some time in his possession ; and another arrived in London during that time ; and, upon introducing the two animals to each other's acquaintance, it was interesting to behold the excess of their joy ; they met like two friends that had long been separated, and scarcely knew how to testify their delight.

THE MONKEY.

The varieties of the largest kind of monkey are but few ; but, amongst the smaller, the distinctions are so abundant, that it would be impossible in this work to enumerate the whole tribe. There is scarcely a country in the tropical climates that does not swarm with these animals, or a forest that does not teem with different creatures of this race.

The ferocity of this animal's nature seems gradually to decrease with its size ; for, when taken wild in the woods, they are easily tamed, though they must frequently be corrected before they can be subdued.

The negroes consider monkeys as an absolute pest ; for they do infinite damage to their fields of Indian corn, and are no less destructive to their sugar-canes and rice. Their method of plundering resembles that which is practised by the baboon : they have a sentinel to give notice if an enemy appears in sight, upon which they instantly throw down the greatest part of their load, and only retain as much as they can keep in their left hand, and scamper quickly away upon the three supporters which remain.

The Europeans, along the coast of Guinea, frequently derive amusement from shooting these little animals in the woods ; for they have so completely the power of annoying travellers, by throwing dirt at them, and dry branches of trees, that self-defence compels them to decrease the number of this *insignificant* yet tormenting little tribe.

Were we to place implicit confidence in what some travellers assert respecting the government, politics, and subordination that are preserved amongst these animals, we might either be taxed with credulity or exaggeration ; but we can positively assert that they are under some regular kind of discipline, and that *one* exerts a commanding *authority* over the rest.

The general food of this sagacious tribe is fruit, the buds

of trees, or succulent roots and plants; and they are particularly fond of the sugar-cane and palm-tree's juice. Their method of managing an oyster is curious and entertaining, and has been too well attested to admit of a doubt. The moment these cunning little animals perceive the shells of the oyster extended, they instantly slip a stone in between them, to prevent them from again being closed; and then take the fish out with their hand, which is very easily performed, as the oyster in tropical climates is much *larger* than those which are found in our own.

It is very pleasing to witness the very great attachment which both the male and female testify for their young; they alternately fondle it in their arms, press it to their bosoms, and endeavour to instruct it in those little sagacious arts by which they are enabled either to procure amusement or food: if the young one appears disinclined to profit by their example, or stubbornly refuses to imitate their designs, each parent chastises it with severity, until its obstinate propensities are completely subdued.

The monkeys of the *new continent* are very easily distinguished from those of the *old*, by three very striking marks; those of the latter are universally found to have a naked callous substance behind, upon which they sit: their nostrils are formed like those of a man; and they have pouches on each side of their jaws, for the purpose of preserving different kinds of food. The American monkey has *not* a callous substance behind, is destitute of pouches to its jaws, and the nostrils open on each side, instead of *downwards*, as in those of man.

Mr. Buffon, who has examined this race of imitative beings with a greater degree of accuracy than any other Naturalist, tells us there are *nine* different species belonging to the *old* continent, and *eleven* to the *new*. The first, which is an inhabitant of the old world, is the macagno, in size and strength resembling the baboon, with a frightful wrinkled face, and a very long tufted tail; this animal is a native of Congo.

The second is the patas, usually brought from Senegal, not quite so large as the macagno, much less frightful in the features of its face, and the hair upon the body of a beautiful bright red.

The third is the malbrouk: of this species he supposes the bonnet chinois to be a variety; the one is remarkable for a long tail and beard, and the other for a cap of hair which covers the crown of the head, from which the animal

derives its name ; both are natives of the East Indies ; and the Bramins, who extend their charity to every thing that possesses life, have absolutely erected hospitals for the reception of those that are disabled or sick.

The fourth is the mangabey, a native of Madagascar, remarkable only for having naked white eye-lids.

The fifth is the mona, the hair of which is composed of a mixture of black and red, though the tail is ash or light gray ; it is a native of the northern parts of Africa.

The sixth is the callitrix, or *green* monkey of St. Jago ; so termed from the colour of its hair, though that upon the breast is perfectly white, and upon the face it is rather inclining to a black.

The seventh is the moustoe, or white nose, a very beautiful little animal, a native of the Gold coast ; the face of it is a deep blue, though the nose and lips are *delicately white*.

The eighth is the talapoin, a native both of the East and Africa ; the hair is a mixture of green, yellow, and white ; and that which grows under the eyes is infinitely longer than the rest.

The ninth, and last of the monkey race which are inhabitants of the old continent, is the douc, a native of Cochin China, in which seems to be united the distinct species of the monkey and baboon ; in size and face it resembles the latter, and bears affinity to the former by the length of its tail.

Monkeys of the new continent are divided into two classes, from the different constructions of their tails, and are distinguished from each other by the muscular strength which enables the animal to suspend itself from the branches, or of hooking round each other until they form a link long enough to extend to different trees ; and thus by composing a kind of chain with their tails, they swing from tree to tree, without touching the ground. These animals are denominated sapajous, to distinguish them from the sagoins, whose tails are not formed with that degree of muscular strength.

The first species of the sapajous is the *waren*, the largest of all the race ; the hair is coarse, long, and black ; and the voice is allowed to be most singularly loud.

The second is the coaiti, differing from the rest in having no thumb upon its two fore paws ; this defect, however, is supplied by the tail, with which the creature clings round different branches of the trees.

The third is the sajou, distinguished from the rest of its tribe merely by a yellow flesh-coloured face.

The fourth is the sai, or the *bewailer*, from the peculiar plaintive tones of its voice.

The fifth, and last of the sapajou species, is the samiri; an animal much more beautiful than the rest; the hair is a bright orange, with two circles of flesh-colour round the eyes.

The first of the sagoins is called the saki, remarkable for the length of hair upon its tail; the size of this animal differs so greatly, that some are often twice as large as the rest.

The second is the tamain, which is usually black, though sometimes the hair is of a darkish brown, covered over with yellow spots.

The third is the wististi, remarkable only for tufts of hair upon its face, and for its annulated tail.

The fourth is the marikina, with a mane round the neck, and a bunch of hair at the end of the tail.

The fifth is the pinch, with the face resembling a black, and white hair descending from each side of the face, exactly like that which grows upon a man.

The last, least, and most beautiful, is the mico; the hair of which is a bright silver, whilst that upon the tail is a deep brown: the ears, cheeks, and lips, are of so bright a vermilion, that it appears as if the animal had been indebted to art.

THE MAKIES.

The last species of the monkey kind are the makies, which have no other right to be placed amongst this class but from the use they make of their hands, both in climbing trees and plucking fruit. The macoco, a native of Madagascar, is a beautiful creature, about the size of a cat, though the body is more slender, and of a longer make: the tail is at least double the length, and alternately marked with black and white rings: its eyes are large, and encircled with black; and their long nose bears some resemblance to a dog's: the hind legs are much larger than the front, and the head is covered with dark ash-coloured hair; but upon the body, it inclines to red: and the whole is remarkably glossy and smooth. It is a very harmless little animal; and, though constantly in motion, it does not seem to delight in mischievous tricks.

The second animal of this kind is a native of the same country as the first ; it is known by the name of the mongoy, and is not quite so large as the macoco : the hair is extremely soft and glossy, and a little curled towards the ends : the eyes are black, with orange-coloured circles round the pupils ; and the tail is of one shade, instead of being ringed.

The vari is much larger than either of the former animals ; the hair longer, and particularly round the neck, where it grows in the form of a ruff. It differs in disposition from the rest of its species, from being savage, fierce, and ill-humoured, whilst all the others are completely inoffensive and tame ; the voice is extremely deep and loud, and thought to resemble a lion's roar.

To this tribe may be likewise added a little animal called the lori, peculiar to the island of Ceylon, which, of all quadrupeds, is the longest in proportion to its size ; it is very little longer than a squirrel ; but has not even the appearance of a tail : the nose is long, like the makies ; and it resembles them in the form both of its hands and feet.

THE OPOSSUM, AND ITS KIND.

The Opossum is a native both of North and South America, and is about the size of a small cat ; its head resembles that of a fox ; but its form and tail are like those of a rat ; the fore legs are not above three inches in length, whilst the hind ones measure upwards of four : the feet of this animal are shaped like hands ; but the thumb of the hinder ones is entirely without nails ; the eyes are small, clear, and lively ; and the ears formed like those of a rat : but that which distinguishes this animal from all others, and at the same time excites the astonishment of mankind, is a peculiar construction of the belly, in which it cherishes and conceals its young until they are able to defend themselves.

Under the body of this singular female is a bag composed of a thick skin, completely lined with soft hair, and, at the same time, covering the animal's teats, which it can extend and close at pleasure, and where the young ones are at once both nurtured and concealed ; for, as they come into the world in a state of imperfection, they require being cherished with peculiar care ; and, as soon as they gain possession of this abode, they instantly fix them

selves upon the teats, where they remain in a state of inactivity, until, from the nourishment they receive, they begin to acquire strength. The opossum at its birth is remarkably small, but remains snug in its habitation, until it acquires some degree of strength, when it quits it to go in search of different kinds of food, but returns to it again when it requires the aid of sleep. This animal chiefly subsists upon birds, which it has a peculiar art of seizing by surprise: it likewise eats a variety of vegetables, and shows the greatest fondness for the sugar-cane. It is easily tamed, but is an unpleasant domestic, as well from its figure and stupidity, as from its disagreeable scent.

The marmouse is an animal which resembles the opossum, though it is not of so large a size: and, instead of having a bag underneath, it has two longitudinal folds of skin near the thighs, in which the young are comfortably concealed; and where, like the young opossums, they remain until they acquire strength; they are likewise natives of the new continent; and, when first born, are said not to be much larger than a bean.

The cayopolin is somewhat larger than the marmouse, though, from its habits and disposition, supposed to be of the same race: the snout is doubtless more pointed, and the tail grows to a greater length.

To this number may be added the phalanger, which resembles the two former in every thing but size, which does not exceed that of a rat; the thumb and fore finger are joined together, except close to the very end.

The last animal of this species is called the tarsier, and differs from the others in the extraordinary formation of its hinder legs, which are longer than the whole body: the tail is entirely naked in the middle, though the two extremities are covered with hair; the bones of that part of the foot called the *tarsus* are of such an extraordinary length, that from them the animal has derived its name: the hair is extremely soft and woolly, and the colour of it is a deep ash.

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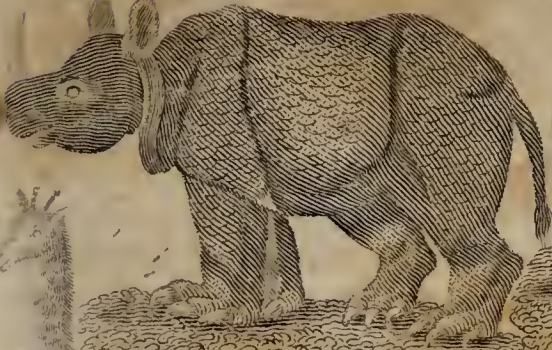
CHAP. XVII.

ANIMALS OF A DISTINCT RACE, THE ELEPHANT, THE RHINOCEROS, THE HIPPOPOTAMUS, &c.

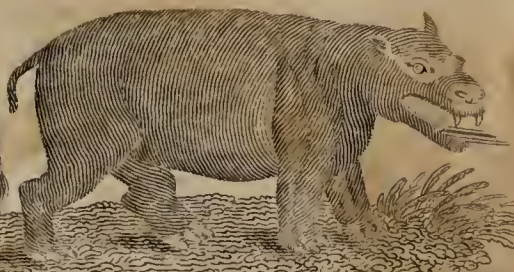
THE ELEPHANT.

HAVING gone through the description of those quadrupeds, that, by resembling each other in some striking particular, admit of being grouped together, and considered under one point of view, we now come to those insulated sorts that bear no similitude to the rest, and that to be perfectly understood, must be separately described. Foremost of these is the elephant, an animal which at first sight appears an enormous mass of misshapen flesh, scarcely calculated to perform the common functions of life: yet, when we come to examine it more minutely, we find it endowed with so large a portion of sagacity and perfection, as induces the historian to rank it next to man.

It is difficult to describe the exact size of these animals, as they have been seen from seven to fifteen feet; and no description can convey a just idea of their magnitude, unless the creature itself has been presented to the sight. The forehead is very high and rising; the ears large and hanging down; the eyes small, the back rather elevated, and the body extremely round and full, indented with various scars and scratches, which it receives in its passage through the woods: the feet are completely round at the bottom, and on each there are five flat horny risings, which appear to be the extremities of the toes: the hide is only covered with a few scattered hairs; but there is a tuft a foot and a half long, at the end of the tail: the trunk, or proboscis, properly speaking, is the *snout*, lengthened to a most singular extent; for, in an elephant of fourteen feet high, it frequently measures eight feet in length, and five and a half in circumference near the mouth; at which part it is much thicker than any of the rest. This fleshy tube is completely hollow, and divided by a partition within side, and is composed of such a variety of muscles and nerves, as enables the creature to move it in any direction it may please: through this trunk the elephant breathes,



Rhinoceros



Hippopotamus



Camelopard



Camel



Dromedary



Bear

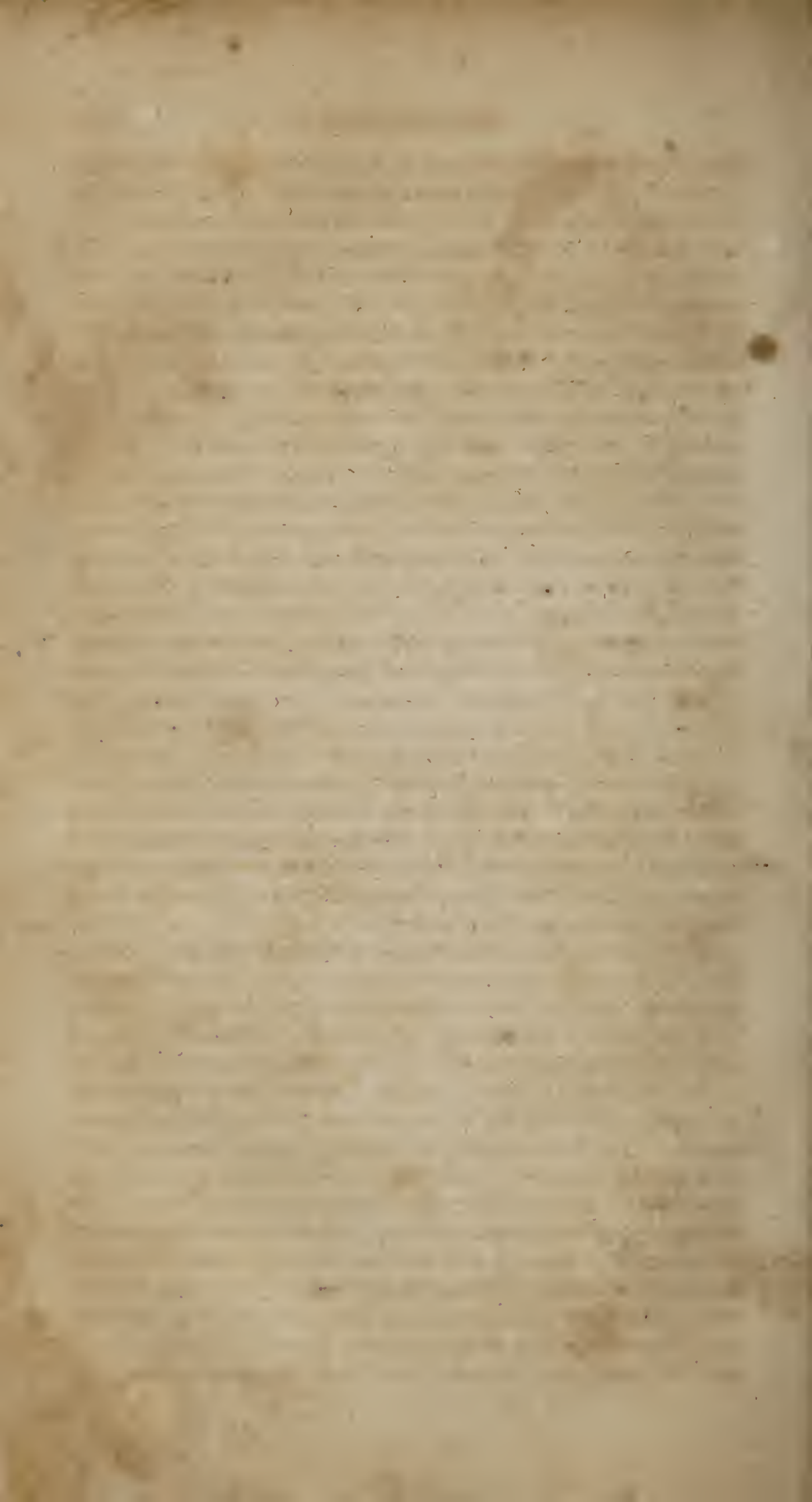


Racoon



Nyl Ghau

W. H. Sc.



drinks, and smells; and, at the point of it, just above the nostrils, there is an extension of the skin about five inches in length, formed exactly like a finger; and answering all the purposes for which it is used: with it the animal can take up a pin, untie a knot, unlock a door, and even write characters with a pen.

Though the elephant is thus admirably supplied with a trunk, yet, with respect to the rest of its conformation, it is helpless and unwieldy; the neck is so short that it can scarce turn the head, and must wheel round to survey an enemy in the rear; the legs are likewise very stiff, and will scarcely bend at all when the animal is far advanced in age; and, when that period arrives, it always stands to repose: the feet, upon which these massy columns are supported, form a base that is but little broader than the legs; and, though they are divided into five toes, they are entirely concealed by a covering of skin. The enormous tusks which the creature uses as a defence, frequently annoy it by the immensity of their weight, and it is obliged to make holes in the walls of its stall, where they may rest, and by that means enable the animal to support the cumbrous weight. These tusks, which proceed from the upper jaw, sometimes grow six feet in length; but the method of choosing the best ivory from them belongs rather to the artist than the Naturalist to describe. Though the lips and tongue assist other creatures as well in drinking as eating their food, to the elephant, in those cases, they are wholly useless, as the trunk completely supplies their place.

The chief sustenance of these quadrupeds is of the vegetable kind: and they seem to have an antipathy to every species of animal food. When one of the number happens to light upon a fertile spot of ground, he instantly gives a loud signal to the rest, by way of inviting them to partake of his luxurious fare, though extensive, indeed, must be the pasturage that would afford to any number a competent supply: it is not merely the quantity they consume, but, from their enormous weight, they are destructive to the land, and tread in more corn than they are able to eat. In their natural state, they delight to live along the sides of rivers, and always disturb the water before they begin to drink; they divert themselves by filling their trunks to the brim, and then spouting it out like a fountain or stream: the extremes of heat and cold seem equally to affect them; and, to avoid the former, they seek the most impervious

shade, or retire to the banks of some well-known river, and for hours together either swim or bathe.

Though the elephant is the strongest as well as the largest of all quadrupeds, yet in a state of nature it is neither formidable nor fierce; but, mild and peaceable in its disposition, it neither exerts its force nor strength. In its native deserts this animal is seldom seen alone, but appears to be a social friendly creature. The oldest of the company always conducts the band, whilst the next in seniority leads up the rear. This order is merely preserved when they are upon their march, directing their course towards cultivated grounds, where they expect to have their progress impeded by the proprietors of those lands they are going to lay waste.

Although the eyes of this animal are peculiarly small, yet they are completely expressive of what the creature feels, and, when turning them upon an affectionate master, it is astonishing to observe how much tenderness they reveal. Its sense of smelling is likewise allowed to be delicate, and it evinces a great fondness for odoriferous flowers: the hearing is also remarkably acute; and no animal is so exquisitely affected by the touch.

We have hitherto been describing this sagacious quadruped in the state in which Nature intended it to be placed; we are now to behold it reduced to human obedience, and trained to the arts of war, by the instruction of man. In order to take them wild in the woods, a spot of ground is fixed upon, which is surrounded with a palisade made of the thickest and strongest trees, secured by cross bars, which tend to increase their strength. These posts are fixed at such a distance from each other, that a man can easily pass between; and there is only one great passage left open, through which the elephant can easily come, which is contrived upon such a principle as to close upon the creature as soon as it has passed. To decoy the animal into this snare, it is necessary to conduct a tame female into the woods, which its keeper compels to set up a cry that instantly attracts the attention of one of her male friends, and induces him to follow the alluring sound until he finds himself entrapped beyond retreat. The deceiving object of his solicitude still continues to lament and cry, and he pursues her into so confined a passage that it is impossible for him either to proceed or return: but, when he perceives her let out at a private door, he begins to show violent marks of *indignation* at the *deceit*. The hunters in the mean time fix

CHAP. XVIII.

THE CAMELOPARD.

THE Camelopard is only found in the deserts of Africa, and is as singular in shape as it is in size: the head somewhat resembles that of a deer, with two round horns near a foot in length; the neck is extremely long and slender; and, from the top of the head to the shoulder, it measures between seven and eight feet; and, from the ground to the top of the shoulder, never less than ten or eleven; the hind legs are near a foot and a half shorter than the front, which gives a most singular appearance to the animal's shape. The form of this creature is light and slender, and bears some resemblance both to the camel and the deer; the hair is of a deep brown, beautifully marked with spots of white; it lives entirely upon vegetable diet; and in disposition it is gentle, timorous, and wild; it flies to its native forest upon the least alarm.

THE CAMEL AND THE DROMEDARY.

The Camel and the Dromedary, though bearing different names, and varying in their form and bunches upon their back, are supposed to have been originally of the same race; but the dromedary at present is the most numerous, though it is neither so large nor so strong as the camel, which has only one bunch upon its back. The dromedary is an inhabitant of Arabia, the southern parts of Africa, Persia, Tartary, and a great part of the East Indies; whilst the camel is seldom found but in Turkey, and the countries of the Levant. The one inhabits the sultry parts of the torrid zone, whilst the other delights in a *warm* but not a *burning* clime.

In those vast deserts, where the earth is every where dry and sandy, where there are neither birds nor beasts, insects nor vegetables, where nothing is to be seen but hills of sand and heaps of bones, there the camel is capable of travelling for several days together, without the sustenance of drink or food. Nothing can be more dreary than the aspect of these sandy plains; wherever the eye turns, dust and sterility are alone presented to its sight; here and there may be found a few spots of verdure, and to those the poor animal is permitted to retire, after the toilsome labours of the day.

The Arabians consider the camel as a most sacred treasure, without whose help, life could not be endured ; its milk supplies them with nourishment, its flesh with food, its hair which is regularly shed once a year, with clothing, and its strength enables them to transport their merchandise through dreary plains, parched by excessive heat. This tractable and useful creature easily becomes subservient to man ; the young ones, a few days after their birth, are accustomed to have their legs bent under them, and a slight weight placed upon their back, which, as their strength and growth augment, is gradually and proportionably increased. The large camels are capable of carrying from a thousand to twelve hundred weight : but frequently the poor creatures are so unmercifully laden, that they find it absolutely impossible to rise ; when they sagaciously remain in a recumbent posture, until a part of their burden is removed.

In Turkey, Persia, Arabia, Barbary, and Egypt, their whole commerce is carried on by the means of these useful animals. Travellers and merchants form themselves into a body, for the sake of securing their persons and property from the formidable banditti which infest these plains. This assemblage is called a caravan, and is said sometimes to muster ten thousand strong. In these trading journeys, they travel but slowly, never exceeding thirty-five miles a day ; though, when the camel is not heavy laden, it is capable of going at a much greater rate. Every evening, when they arrive at the end of their stage, the animal is permitted to eat, if it can find a supply of food ; and its favourite fare is the cassia, thistles, and those coarser kinds of vegetables which other animals reject and disdain. Contrary to the generality of ruminating quadrupeds, the camel's stomach is formed peculiar to itself ; and whilst they have four distinct stomachs for their nutriment, the camel *alone* is endowed with a fifth, which serves as a reservoir to contain a quantity of water, which, by a contraction of the muscles it can throw up into the mouth, and by that means is enabled to swallow the driest food, and go, for several days together, without a fresh supply of drink.

The patience of this animal* is most extraordinary, and it is to be feared its sufferings are likewise in the extreme ; for, when loaded, it sends forth the most piteous complaints,

* The camel goes with young about twelve months, and only brings forth one at a time ; and its life is protracted to forty or fifty years.

though it never offers to resist its oppressor's power : at the slightest sign it falls upon its knees, and lies flat upon its belly to receive the load, and remains in that posture until the driver is mounted, when, at the word of command, it will instantly rise. If the driver begins singing, it seems to animate its spirits ; and it pursues its journey, without resting, until night, when it submissively bends its knees, to be unladen after a toilsome and fatiguing day.

THE LAMA.

As almost all the quadrupeds of the new world are smaller than those they resemble in the old ; so the lama, which bears a strong affinity to the camel in size and proportion, is infinitely less. Though this animal is a native of America, it is not to be found in every part ; but chiefly abounds upon those mountains that stretch from New Spain to Magellan's Straits ; and in Potosi, and the other provinces of Peru, they are highly estimated, and thought excellent food. Over the most rugged and dangerous paths, they are capable of carrying burdens with the greatest safety, provided they do not exceed a hundred weight ; and we are told there are more than three hundred thousand of them employed in transporting silver from the valuable mines of Potosi. Their hair, or rather wool, is generally of a brown colour ; though some few are black, and others white ; the texture of it is both fine and glossy, and it is spun into a beautiful kind of cloth.

The lama is about three feet in height, and the neck nearly as many in length ; the head is formed like the animal's it so nearly represents : the eyes are large, the nose long, the lips thick, the upper one divided ; and, like all animals that feed upon grass, the upper jaw is destitute of cutting-teeth.

Though the lama is by no means equal to the camel, either in exertion, perseverance, or strength, yet as it thrives without trouble or care, and is satisfied with the coarsest vegetable food, the Americans find it the most useful of their steeds, and it can even go longer than the camel without water and food. When this animal* is either overloaded, or driven beyond its strength, it is said

* The lama seldom produces but one at a time, and never l'ves more than ten or twelve years.

to lie down upon its stomach and discharge a quantity of saliva from its mouth, of so acrimonious a quality as to corrode whatever it happens to touch. It is neither able to travel more than fifteen miles a day, nor to proceed on a journey more than four or five together, without having an intermediate one allowed it, by way of recruiting its exhausted strength; yet in a state of nature it is known to be both strong and fleet, and to bound over its native mountains with an agility that could scarcely be exceeded by the stag.

The guancoes and the pacoës are two American animals of the lama kind, though not equal to it either in size or strength: the wool of the paco is in high estimation, and is formed into stuffs not inferior to silk either in beauty or in price.

THE NYL-GHAU.

This animal is a native of India, and has but lately been imported into Europe; it seems to be of a middle nature between the cow and the deer, and carries the appearance of both in its form: in its size it is as much smaller than the one as it is larger than the other; the body, horns, and tail, resemble those of a bull; the head, neck, and legs, those of a deer; and the general colour is ash or gray: along the top of the neck the hair is darker, thicker, and stands erect, and has the appearance of a horse's mane: the horns are about seven inches in length; and though thick at the base, terminate in a blunt point.

The nyl-ghaus which have been brought into England, have been most, if not all of them, received from Surat or Bombay; and very few of the race are to be met with in Bengal. Those which we have seen, appeared harmless and inoffensive, but in a state of nature they are said to be both formidable and fierce.

THE BEAR

Of this animal there are three distinct kinds: the brown bear of the Alps, the black bear of North America, and the white bear, famous in the Icy Seas. These, though different in their form and appearance, were doubtless originally of the same race, and owe the distinction which now marks them, merely to the effect of climate and food.

The brown bear, in its nature, is both savage and solitary ; and either resides in the hollow of a tree, in some unfrequented wood, or takes up its abode in those mountainous precipices that are so difficult of access to the human foot : in these solitary retreats it passes several months in the winter, in a state of torpidity, without motion or sense ; and never quits them until it is compelled by hunger to search for a fresh supply of food. At the commencement of the winter, the bear is so fat that for six or seven weeks it sleeps without a supply of food ; but the nutritious covering of fat being exhausted, it is again compelled to seek for more.

Savage and surly as this animal is in disposition, when taken young, it submits, in a certain degree, to be tamed : and by being taught to erect itself upon the hinder legs, moves about to the instrument in an awkward kind of dance ; though, at the method adopted to produce this motion, both feeling and humanity ought to blush ; for the poor creature is set upon plates of hot iron, and, from the agony produced, naturally withdraws its paws.

In Canada, where the black bear is very common, they reside towards the top of some old tree, where they would bid defiance to every kind of molestation, did not the hunters judiciously set fire to their retreat ; the old one is generally foremost to make her escape, whilst the hunters watch her appearance with their muskets cocked ; and in attempting to escape from one danger, she falls into another, from which there is no retreat. The young ones, as they descend, are caught in a noose, and are either tamed to be exhibited, or killed to eat ; their paws are considered as a great delicacy, and their hams are universally known to be good.

The white Greenland bear differs, both in size and proportion, from the two animals already described ; the brown bear of the Alps is seldom above six feet, and the black bear never is equal in size ; whilst that of Greenland, and the icy regions, is often known to be thirteen feet in length. The brown bear is formed strong and sturdy like the mastiff ; whilst the figure of the white one, though concealed under its long hair, is infinitely more slight and slender, and rather resembles the grayhound in shape. All other species of animated nature diminish in figure as they approach the poles ; but the bear, being unmolested in those desolate climates, increases in size from the abundance of its food. As they entirely live upon fish and seals, their flesh has a

strong and unpleasant taste; and, though their destruction is attended with great danger, the skin, which is valuable, is the only reward.

THE BADGER.

The Badger is a solitary, slothful animal, apparently averse to cheerfulness and light, and digs itself an abode deep in the earth, which it only quits at the approach of night. The legs of this quadruped are very short; and, from the length of hair, the belly seems almost to touch the ground.

As the fox cannot dig so expertly as the badger, it frequently watches an opportunity to take possession of its hole; this treacherous innovation the animal submits to, and sets about forming another retreat. The badger, like the fox, is a carnivorous quadruped, and does not reject any thing that has life; but is particularly fond of young rabbits, and regales its young with the honey formed by wild bees: she first accustoms them to the breast, and weans them from it by procuring them a supply of young birds, and such food as she thinks most delicate to the taste. The poor, in some countries, eat their flesh; but it is certainly a rank, if not an unwholesome food.

THE TAPIR.

This animal may, in some measure, be termed amphibious, as it chiefly resides in rivers and lakes. The figure bears some distinct resemblance to a mule, with a long snout that it can contract or dilate at pleasure: the ears are small and pendant, and the skin is so thick that an arrow cannot pierce it, and covered with a light brown hair. The tapir is an animal of the new world, and considered both as a delicate and wholesome food.

THE RACCOON.

The Raccoon, which some authors have called the Jamaica rat, is about the size of the small badger: the body is at once short and bulky; the tail long, and encircled with rings; the fur is fine, long, and thick; blackish at the surface, but gray towards the root: the nose is shorter and more pointed than that of a fox; the eyes are large and yellow; the teeth resemble those of a dog; and, like the

squirrel, it uses its paws for eating its food; and though it is a very clumsy animal, yet, from its pointed claws, it is enabled to climb with rapidity the most elevated trees.

The raccoon is a native of the southern parts of America, but in Jamaica it particularly abounds. It is peculiarly destructive to the sugar plantations; and the breed is so numerous, that they cannot be destroyed. In a domestic state it is perfectly harmless, and amuses its master by a variety of playful tricks.

THE COATIMONDA.

This animal bears some resemblance to the raccoon, though the neck and body are somewhat longer, and the snout extends to a very great length. Like the former animal, it sits upon its hinder legs, and in that attitude eats every kind of food: frequently it devours part of its tail, which exceeds the raccoon's in length. When sleeping, it rolls itself into a ball, and enjoys its repose for fifteen hours at a time.

THE ANT-BEAR.

The Ant-bear is a native of the new continent, and utterly unknown to the inhabitants of the old. The larger and smaller tamanda are a species of this animal, and wholly exist upon the same food, though they differ greatly in size; the larger tamanda being near four feet in length, whilst the ant-bear does not exceed seven inches from the tip of the nose to the insertion of the tail; the hair of this animal is of a beautiful red mixed with yellow; the tail is long and tufted, and capable of being turned, like a squirrel's, on the back; the snout is so disproportioned to the rest of the body, that it forms a fourth of the creature's length; the tongue is so extremely long and slender, that the animal always keeps it doubled in its mouth; and when it approaches the ant's dwelling, it generally contrives to hide itself with dried leaves, or creeps softly along upon its belly, and then stretches out its tongue near the insects' abode; who, taking it for a piece of raw flesh, crawl upon it, and are instantly ensnared, as it is covered over with a slimy kind of fluid, which, like bird-lime, prevents the possibility of retreat.

THE SLOTH.

Of this singular animal there are two species, one called the Unan, having two claws upon each foot, and no tail; and the other named the Ai, with a tail and three claws. Some quadrupeds may be indolent from choice; but these are so from necessity; for nature has constructed them with such *apparent* inutility, that they never move without symptoms of violent pain; yet the sloth may possess many stores of comfort, which to us short-sighted mortals are quite unknown; and that piteous cry, which it sends forth when in motion, may be the result of habit, not of pain.

The sloth, in size, bears some similitude to the badger; the fur is extremely coarse and straggling, and in appearance resembles dried grass; the tail is so short as scarcely to be perceptible; and the mouth extends from ear to ear; the eye is dull, stupid, and vacant; and the feet and claws are longer than the legs, which are placed upon the body in such an extraordinary direction, that a few paces is often the journey of a week. When the animal is *compelled* to make a motion, it seems to do it with the utmost difficulty and pain, and never changes its place and station but when forced to seek a fresh supply of food.

Of all the animals that chew the cud, the sloth appears the most helpless and forlorn; it lives entirely upon vegetable diet, and, when it has devoured the fruit, strips the bark from the trees. To ascend and descend is a task of danger; and, in the latter, the unfortunate animal is often violently bruised, as the only method by which it can reach the ground, is to drop from one of the lower branches of the tree. As this creature finds so great a difficulty in procuring its food, it is often obliged to go several days without any supply; and we are informed that one remained suspended to a pole across two beams, without any sustenance, for forty days.

THE GERBUA.

The Gerbua is about the size of a large rat; but the head is formed somewhat like that of a rabbit; the tail is long and tufted at the end; and the teeth resemble the rat kind; the head, back, and sides, are covered with ash coloured hair, whilst that upon the breast and belly is white; the fore legs are not more than an inch in length;

but the hinder ones measure two and a half, and exactly resemble those of a bird, having only three toes on each, and the middle one exceeding the others in length; upon the front teeth there are four claws and a thumb; and with these it in some measure supplies the place of hands, as in running it only makes use of its hind legs.

The gerbua is a lively, harmless little animal, and is found in Egypt, Barbary, Palestine, and Aleppo, and is often seen by travellers, as they pass along the deserts, jumping and bounding six or eight feet at a leap, and going forward with such amazing rapidity, that scarcely any other quadruped can overtake their flight. A variety of this animal is likewise found in Siberia and Circassia; and, in all probability, it is common throughout Asia. The gerbua feeds entirely upon vegetables, resides under ground the same as rabbits, and makes its burrows deeper, and with greater facility, than those animals are capable of doing. It is a remarkably provident little creature; cuts grass during summer for its winter fare, and, when properly dried, carries it to its subterraneous home.

Mr. Banks describes an animal that is a native of New-Holland, which, in form, bears a striking resemblance to the gerbua, though they differ greatly in size. This quadruped he calls the Kangaroo, some of which are as large as a tolerably sized sheep, and the construction of the head differs from that of the animal just described; yet as the legs are formed upon the same principle, and it moves precisely in the same manner, taking bounds of ten or twelve feet at a time, we are inclined to rank it amongst the same species; and, with this singular and last discovered animal, we shall conclude the history of the quadruped race, which is the most interesting part of the Naturalist's employment, from contributing so largely to the convenience of life. Without their aid, what a wretched and forlorn creature would he have been! The principal part of his food, his clothing, and his amusement, is wholly derived from them; and he may be considered as a great lord, sometimes cherishing his humble dependants, and sometimes terrifying the refractory by his power, so as to *compel* them to *contribute* to his *delight*.

The horse, the ass, the elephant, the camel, the lama, and the rein-deer, distinctly minister to his comfort and support: by their assistance he is transported from different places; by their exertions he is saved from labour and fatigue; and to them he is frequently indebted for his health. Yet these

benefits are too often enjoyed without gratitude; and cruelty and oppression are the reward they receive!

The cow, the sheep, and the deer, are equally necessary to his sustenance and his wealth; their flesh forms the principal support of his table, and their milk is often the means of renovating his health: their wool defends him against the inclemencies of the weather; and even their horns and skins are converted into use.

But were we to expatiate upon the benevolence of Providence, in having created such multitudes of creatures for our use, the glorious theme would far exceed the limits necessarily prescribed to this kind of book. Let us, then, without enumerating his mercies, suffer them indelibly to be impressed upon our hearts, and avoid practising the slightest mark of cruelty and oppression towards beings that have been created by an Almighty hand.

BIRDS.

CHAP. I.

OF BIRDS IN GENERAL.

WE are now come to a beautiful and loquacious race of animals, that embellish our forests, amuse our walks, and exclude solitude from our most gloomy retreats. From these, mankind have nothing to fear; their pleasures, their desires, and even their animosities, only serve to enliven the general picture of Nature, and give meditation an additional pleasure and delight.

No part of Nature appears destitute of inhabitants; the woods, the waters, the depth of the earth, all have their respective tenants; while the yielding air, and those tracts of space where man never can ascend, are also passed through by a multitude of the most beautiful beings in creation; whilst Providence, with a directing hand, adapts them all for their peculiar sphere.

The bird seems entirely calculated for a life of escape; and every part, examined anatomically, proves how completely they are formed: the shape of their body is sharp before, for the purpose of piercing and making their way through the air; it then rises, by a gentle swelling, to its bulk, and falls off in an expansive tail, that helps to keep it buoyant, while the fore parts are cleaving the air by their sharpness. From this conformation, they have often been compared to a ship making its way through the water; the trunk of the body answers to the hull, the head to the prow, the tail to the rudder, and the wings to the oars.

What we are next called upon to admire, in the external formation of birds, is the neat position of the feathers, all lying one way, and at once answering the purpose of warmth, speed, and security; they mostly tend backward, and are laid over one another in an exact and regular order, armed with warm and soft down next the body, and more strongly fortified and curiously closed externally, to fence off the injuries of weather; but, lest these feathers should spoil, by their violent attrition against the air, or imbibe the moisture of the atmosphere, the animal is furnished with a gland behind, containing a proper quantity of oil, which can be pressed out by the bill of the bird, and with which it carefully anoints the injured feathers.

In all birds, except nocturnal ones, the head is smaller, and bears less proportion to the body, than in quadrupeds, that it may more easily divide the air in flying, and make way for the body, so as to render its passage more easy; their eyes also are more flat and depressed, though they are much more calculated for distant vision than any part of the brute creation; and they are capable of discerning things at a distance, which are absolutely impenetrable to the human sight. All birds are destitute of an external ear, though all are furnished with holes which convey different sounds into the auditory canal; and the extreme delicacy and quickness of this organ are proved by the ease and facility with which they either acquire a tune, or pronounce words frequently repeated in their presence. If the eye of these animals be peculiarly calculated for distant perception, and the ear for accurate sound, their wings are no less admirably formed for the purpose of aiding and assisting their flight. In order to move these conductors with ease and facility, all birds are furnished with two very strong pectoral muscles, which lie on each side of the breast-bone, and by means of

these, a bird can move its wings with a degree of strength, which, when compared to its size, appears incredible. The flap of a swan's wing would break a man's leg asunder; and a less violent stroke from an eagle, stretch him lifeless upon the ground. The sense of smelling, in birds, is remarkably acute, and they are known to possess it in so eminent a degree, that those who are in the habit of attending decoys, make a point of keeping a piece of turf burning near their mouths, upon which they breathe, lest the ducks should smell them and fly away. Their legs and feet likewise are admirably calculated for the different purposes for which they are designed; light, and elegantly formed, they are rather calculated to assist than to retard their flight: the toes of some are webbed to fit them for the waters, whilst those of others are constructed for their security upon trees.

To this animated and entertaining race of creatures, the return of spring is the season of delight; for those vital spirits, which the severity of winter had locked up, then begin to break forth and expand: vegetables and insects supply an abundance of food, and the bird, having more than a sufficiency for its own maintenance, is impelled to transfuse life, as well as to maintain it: then those warblings, which had been hushed during the intense severity of the cold, again begin to animate the fields, and every grove and bush resounds with the alluring notes of love. Then it is that these affectionate little animals fondly combine together in pairs, and evince towards each other such marks of attachment as might serve as lessons to the human race! How pleasing it is, to watch the happy pair anxiously employed in making preparations for their young, and frequently plucking the down from their own breasts, to defend them from the severities of the cold! With what care do they mutually watch over the tender infancy of their unfledged brood! and, whilst the fond mother nurtures them under her fostering wing, her affectionate mate either beguiles the hours of confinement by the sweetness of his melodious notes, or, careless of fatigue, searches his native woods around in pursuit of food for these dear objects of his love and care.

Although birds are so completely formed by nature for a wandering life, yet the greater numbers remain fixed to the district where they first were bred. The rook, if undisturbed, never desires to quit his native grove; the blackbird

still frequents its accustomed hedge; and the redbreast, though seemingly so mild and gentle in its nature, maintains possession of its native spot, and drives out those which would invade his rights.

Notwithstanding the fondness which many of the species testify for their native woods and plains, there are others, which are called birds of passage, that regularly migrate to distant climes; and, though this periodical flight has for many ages excited the curiosity of the learned and intelligent, yet no one has been able thoroughly to investigate the cause; but it is generally believed either to proceed from a scarcity of food at that period, or, from their nature requiring a change of clime. The starling, in Sweden, at the approach of winter, finding subsistence no longer in that kingdom, annually descends into Germany; and the hen chaffinches of the same country fly every year through Holland, in large flocks, to pass their winter in a milder clime; others, with a more daring spirit, prepare for journeys that might even intimidate human perseverance. Thus the quails in spring forsake the burning heats of Africa, for the milder sun of Europe; and, when they have passed the summer here, wing their flight backward to their native plains.

Amongst the vast quantity of water-fowl that frequent our shores, it is amazing to reflect how few are known to breed amongst us; the number ascertained is only FIVE, the tame swan, the tame goose, the sheldrake, the eider-duck, and a few of the wild ducks: the rest contribute to form that astonishing multitude of water-fowl, which annually repair to the dreary lakes of Lapland, from the more southern countries of Europe.

It has often been a subject of astonishment, how animals, to all appearance so dull and irrational, should be able to perform such immense journeys, know which way to steer their course, and at what period it is proper for them to begin the arduous undertaking; but it is to be supposed that the same directing Power which bestowed wisdom upon us, gave instinct to them, and that they rather follow the *weather* than the country, and bend their course either from colder into warmer climates, or the reverse, as the air and their constitution may direct.

That swallows, at the commencement of our winter, regularly migrate into warmer climes, and return again at the summer's approach, is a circumstance too well known and

attested to admit of a doubt; but that a number of them should remain in a torpid state, like bats, is a circumstance that has neither been thoroughly accounted for, nor properly defined.

Linnæus divides all birds into six classes, namely, birds of the *rapacious kind*, which he distinguishes by their hooked beak, which is strong, and notched at the end; by their legs, which are short and muscular; and by their talons, which are sharp, crooked, and calculated for tearing their food. Birds of the *pie kind*, the bill of which differs from the former, and rather resembles a wedge; their legs are short, and calculated for walking; their body is slender, and they eat promiscuously of every kind of food. Birds of the *poultry kind*, which have their bill rather convex, for the purpose of picking up grain; they make their nest upon the ground, without any art, and show excessive fondness for their young. Birds of the *sparrow kind*, in which are comprehended all that beautiful and vocal class, which enliven our groves and fields; their bills may be compared to a pair of forceps, that catches hold of every thing; they live chiefly in trees, and are remarkable for parental and conjugal affection. Birds of the *duck kind* use their bill as a kind of strainer to their food; their legs are short, their toes webbed; they live in water, but generally build their nests upon land. Birds of the *crane kind* have their bill calculated for the purpose of searching to the bottom of pools; their legs are long, and formed for wading; their toes are not webbed; their thighs are half naked; their body slender; they live in lakes, and chiefly build their nests upon the ground.

This plan of Linnæus, as far as the *division* goes, we shall follow, though we shall not arrange the birds in the same order, for he has combined the humming-bird, the raven, the rail, and the ostrich, all under the same class. But before we enter into a systematic detail, we shall give the history of three or four birds, that do not well arrange in any system: these, from their great size and incapacity of flying, lead a life which differs from the rest of the feathered race

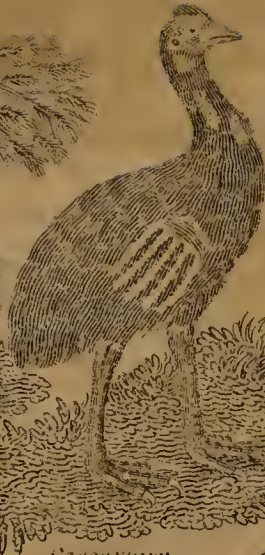




Ostrich.



Duck.



Cassowary.



Eagle.



Vulture.



Falcon.



Owl.



Kite.

of birds &c

CHAP. II

THE OSTRICH, THE EMU, THE CASSOWARY
AND THE DODO.

THE OSTRICH.

THE Ostrich is allowed to be the largest of birds, and in appearance, bears some resemblance to the camel; the internal conformation of this extraordinary creature bears as near a similitude to the race of quadrupeds, as to that to which it peculiarly belongs. The head and bill somewhat resemble those of a duck: the neck though infinitely longer than the swan's, is formed very much in the same shape; and the legs and thighs are not unlike those of a hen. This gigantic creature generally measures seven feet from the top of its head to the ground, three of which are allowed for the head and neck, as from the back it is only four: but, when the neck is stretched out in a line, it measures six feet from the head to the rump: each wing, without the feathers, is about a foot and a half in length; but when they are on, they are at least double.

The plumage is generally a mixture of black and white, though upon the tail and wings, the latter colour prevails; and the bodies of some are said to be gray. The feathers upon the tail and wings are held in such high estimation, that the creature is hunted merely for their sale. The sides under the wings, and the thighs of this animal, are all totally devoid of feathers; the latter are extremely large and fleshy, covered with a white skin of a pinkish hue, which is drawn up in wrinkles somewhat like a net, whose meshes will admit of a finger between; the legs are covered with large scales; the end of the foot is cloven, and has two very large toes, one of which is near seven, and the other four inches in length.

The ostrich is a native of the torrid regions of Africa, and was never known to breed out of that clime. It prefers the most solitary and unfrequented places, where barrenness and sterility jointly reign. The Arabians assert that it never drinks, but its appetite is more inordinate than can possibly be conceived: it will voraciously devour leather, glass, iron, stones, tin, lead, and cork: in short, their stomachs are filled

with such an assemblage of incongruous substances, that it is astonishing to think how they are contained.

The ostrich has been represented as wanting natural affection; but this is an accusation unfounded and untrue; for, so far from leaving its eggs to be nurtured by the sun, it is never absent from them for any length of time; but in a country where the heat is so penetrating, there is no necessity for the female remaining *constantly* upon her *nest*; and it has been authentically proved, that the male ostrich alternately participates in this tender care. For several days after the young ones are hatched, they are neither able to stand nor walk, and during that period the old ones watch them with a mixture of solicitude and delight, constantly supplying them with that kind of food which instinct teaches them is most proper for their age. The eggs of this bird resemble those of the crocodile, and generally weigh near fifteen pounds.

Though some nations hunt the ostrich for its flesh, yet it is by no means a pleasant or delicate food; and the Scriptures particularly express that it should not be eaten in any shape. The Romans, however paid no attention to their authority, for we are told that Heliogabalus had six hundred killed, and their brains formed into *one dish*. The fat of the ostrich is held in high estimation, and, when used as an emollient, has performed wonderful cures; the egg-shell, also, when powdered and taken inwardly, has been said to produce good effects.

The Arabians train up their best and fleetest horses for the purpose of hunting the ostrich, and though it is allowed to be a very laborious, yet it is thought a very entertaining amusement. Of all creatures that make use of their legs, the ostrich has the character of being the fleetest; his wings, as well as his legs, keep in motion like two oars to waft him along; and, did he keep forward in a direct line, instead of a circular chase, he would find no difficulty in outstripping his pursuers. When the poor animal is completely exhausted, he darts his head down into the sand, as if he thought that by burying his head the rest of his body of course must be concealed.

The inhabitants of Dara, and Lybia, are said to breed whole flocks of these birds, which they tame with very little difficulty, and convert them to domestic use: for Adamson asserts, that, at the factory of Podore, he saw an ostrich, with two negroes upon its back, that ran swifter than any racer he had ever seen.

THE EMU.

The Emu is a native of the new continent, and is by some termed the American ostrich; in magnitude it doubtless ranks next that bird, as it generally measures six feet high from the head to the ground: the legs are about three feet long, and the thigh as thick as that of a man: the neck is long; the head small, and the bill flattened like that of an ostrich; but in all other respects it resembles the cassowary. The form of the body appears round, the wings are short and unfit for flying, and it is entirely without a tail: the feathers are long, and gray upon the back; but upon the belly they are white. In running it always holds up each wing alternately, which to the observer has a most singular effect, and the motion of it is so completely swift, that no dogs are able to keep up to its pace.

The history of this bird is very imperfectly known, therefore *fiction* may possibly supply the place of *fact*; but it is asserted that the male compels twenty or thirty females all to deposit their eggs in one nest; and then he drives them all away, and seats himself upon what they have produced, first rolling two of the eggs out, which he suffers to remain on the outside until those he sits upon are hatched, when he breaks those that are become addled, which immediately attract vast numbers of flies, with which he supplies the young brood with food until they are able to provide for themselves. The young ones, as soon as they are hatched, are very familiar; and their flesh is said to be delicate food.

THE CASSOWARY.

The Cassowary is a native of the island of Java, and was first brought from thence by the Dutch; and, though not so large as the ostrich and the emu, yet measures about five feet and a half in height: the neck of the cassowary is proportionably much shorter than the preceding animals, but the size of the body is quite as thick, in consequence of which it appears infinitely stronger than either of those just described; the wings are so small, that they do not appear, being entirely covered by the feathers on the back. In birds, in general, part of the feathers serve for flight, and are different from those which are merely meant as a covering for the skin; but in the cassowary, they are all of the same kind,

and outwardly of the same shade ; they are generally double, having two long shafts growing out of the short one, which is fixed in the skin ; and some of these are fourteen inches in length, particularly those which grow near the tail ; the stem, or shaft, is black, knotted, and shining ; and from each knot there proceeds a beard, which towards the end is perfectly black, but near the root of a tawny gray ; the wings, when deprived of their feathers, are not more than three inches in length, but the ends of them are adorned with five prickles, the longest of which measures about eleven in length : the head, though small, and bare of feathers, is armed with a helmet, composed of a horny substance, that extends from the root of the bill over the greatest part of it : this helmet, which is black in front and yellow behind, consists of several plates one over another, like the horn of an ox, and gives the wearer a very fierce and formidable appearance : the eye is a bright yellow, large, and fiery, encircled with small hairs, which answer the purpose of a lid ; and above it there is a second row, darker, which bears some resemblance to the human brow ; the beak extends to an amazing width, and on each side hang two fleshy substances, not unlike the gills of a cock ; the neck is violet colour, but on the back part there are spots of red ; and the skin upon its breast is both bare and hard, in consequence of its being the resting place on which the creature leans.

The cassowary has been said to possess the head of a warrior, the eye of a lion, the defence of a porcupine, and the fleetness of a horse ; and though Nature seems to have given it weapons that might terrify others, nothing can be more timid than itself : it never attacks any other animal ; and, when assaulted, depends more upon its fleetness than strength : its method of running is very peculiar, as it seems to kick up behind with one leg, whilst with the other it makes a bound, and is generally able to outstrip pursuit. The appetite is equal to that of the ostrich ; and it will swallow glass, iron, and very large stones without appearing to suffer either injury or pain. The cassowary's eggs are between an ash and green colour, measure fifteen inches one way, and about twelve the other.

THE DODO.

The Dodo is a native of the Isle of France, unwieldy in form, and deficient in strength ; its body is massive, and al-

most round; and two thick clumsy pillars seem to supply the place of legs. What the sloth appears amongst animals, the dodo is with birds, a stupid, heavy, inanimate creature, scarcely endowed with sufficient vigour and activity to perform the common functions of life, and equally incapable of flight or defence. The neck is large, thick, and puffy, and attached to a head of most uncouth make; the opening of the jaws extends beyond the eyes; so that when the creature gapes, it seems going to swallow all within its reach: the bill resembles two pointed spoons, that are laid together by the back; it is extremely long, and bordered with feathers, which give it the appearance of a hood or cowl: in short, the whole figure presents a picture of deformity, at once displeasing and disgusting to the sight.



CHAP. III.

BIRDS OF RAPACIOUS KINDS IN GENERAL

THE EAGLE AND ITS AFFINITIES.

THE Golden Eagle is the largest and the noblest of all the class of birds that bears the name; and as the lion obtains pre-eminence amongst animals, so the eagle is allowed to possess it amongst birds: it weighs between twelve and thirteen pounds; and the wings, when extended, measure upwards of seven feet: the eye is of a bright hazel, and both the sight and smelling are remarkably acute: the head and neck are clothed with narrow sharp pointed feathers, of a deep brown colour; but those on the crown of the head, as the bird increases in age, become white: the wings, when clothed, reach to the end of the tail; the quill feathers are of a chocolate colour, and the shafts white; the tail is of a deep brown, irregularly barred, and blotched with an obscure ash; the legs are yellow, short, and very strong, three inches in circumference, and feathered to the very feet: the toes are covered with large scales, and armed with the most formidable claws, the middle of which are two inches in length.

The eagle obtains pre-eminence amongst birds, from magnanimously disdaining to take advantage of those ani-

mals, which from their inferiority in strength and size, could easily become its prey; and it is not until having for a length of time been provoked by the taunting cries of the rook and magpie, that this generous creature is induced to punish their temerity.

The eagle likewise refuses to share the plunder of any other bird; and when once it has made a meal of any animal, it never returns to it again, but leaves it to be devoured by those rapacious birds, whose appetites may be less delicate than his own.

The eagle is naturally a solitary animal; and it is as extraordinary to see two pair of eagles on the same mountain, as two lions in the same forest; both bred for war, they are enemies to society, and are alike fierce, proud, and incapable of being easily tamed. Great patience and perseverance are necessary to make this bird in any degree subservient to man; and after the utmost labour and assiduity on the part of the falconer, when carried into the field too often defies control, and either turns its force against the hand that restrained it, or takes its flight and never returns to him again.

Of all the animals that fly, the eagle is allowed to ascend the highest, and from that circumstance the ancients have called him the bird of heaven; yet as he has but little suppleness in the joints of his legs, he finds some difficulty in rising from the ground, though his strength is so great, that he is able to carry off geese, cranes, hares, lambs, and kids; and even infants themselves, when left unattended, have fallen victims to their rapacity and strength. An instance is recorded in Scotland, of two children having been carried away by two eagles, who were pursued in their flight, and had only time to lodge them in their nests, before they were overtaken; and the little innocents by that means were restored to the arms of their affrighted parents, without the least appearance of hurt.

Smith, in his history of Kerry, tells us, that a poor man in that country procured a comfortable subsistence for his family, during a season of scarcity, by robbing an eagle's nest of the food provided for the support of the young; and, fortunately, he was never surprised by the old ones in the commission of this act of plunder and depredation, or the consequence must have been fatal to himself.

The eagle's nest is usually built in the most inaccessible cliff of a mountain or rock, and often shielded from the weather by some jutting crag that hangs over its side.—

One of these was found in the Peak of Derbyshire, which Willoughby describes in the following words: "It was made of great sticks, one end of which rested upon the rock, and the other upon two birch trees: upon these was laid a layer of rushes, and over them a layer of heath, and upon the heath another coat of rushes, upon which reposed a young one; and by its side lay an addled egg, a hare, a lamb, and three heath-poults; the nest was about two yards square, and had no hollow in it."

The eagle is said to be a very long-lived animal, and though they often attain a hundred years, yet seldom die from age and infirmity, but from the beak turning inward upon the under mandible, by which they are prevented from taking any food.

In the rear of this formidable bird, follow the ringtailed eagle, the bald eagle, the white eagle, the roughfooted eagle, the erne, the black eagle, the osprey, the sea-eagle, the crowned eagle, the eagle of Brazil, the Oronoko eagle, and the eagle of Pondicherry.

THE CONDOR OF AMERICA.

The Condor possesses all the formidable qualities of the eagle, yet in a much higher degree; for it is not only an enemy to the bird and brute creation; but, when violently pressed with hunger, will make its attack upon mankind. Fortunately, the species of this rapacious invader is scarce, or his depredations would be terrible indeed; for the Indians assert, that it will carry off a deer or calf in its talons, with as much ease as an eagle will a lamb. When their wings are extended, they are said to measure eighteen feet across; though one, which was shot by a gentleman in Peru, which he measured with the greatest exactitude, was only twelve; the great feathers upon the wings were a beautiful shining black, measuring two feet four inches in length; those upon the breast and neck were of a light brown, and those upon the back were rather of a darker shade; a short down of the same colour covered the head; the eyes were black, and surrounded with a circle of reddish brown; the beak was about four inches in length, hooked downwards, and the extremity white; the thigh bone measured ten inches, the leg five, the toes three, and the claws near one; and both the legs and toes were covered with large scales.

The condors generally confine themselves to their native

mountains, or occasionally fly to the sea-shore in search of a greater supply of food. It is supposed that the roc, a bird which the Arabian writers have given a most marvellous description of, is a species of the condor; and the great bird of Tarnapor, in the East Indies, in all probability is of the same race.

THE VULTURE AND ITS AFFINITIES.

The first rank in the description of birds has been given to the eagle, not from its being stronger or larger than the vulture, but because it is more generous and bold. The eagle, unless violently pressed by famine, will not stoop to carrion, and never devours but what it has earned by its own labour and pursuits: the vulture, on the contrary, is indelicately voracious, and seldom attacks living animals when it can find a supply from those that are dead: in short, the vulture appears amongst birds what the jackal and hyæna are amongst quadrupeds; for it delights in the most noxious putridity, and is frequently known to root up new-made graves.

The vulture may easily be distinguished from every species of the eagle kind, by the nakedness of their heads and necks, which are without feathers, and only covered with a very slight down, or a few scattered hairs; their eyes likewise are more prominent, and their claws are shorter, and not so much hooked.

The golden vulture seems to take pre-eminence in this rapacious and carnivorous race; this animal, together with the brown and the ash-coloured, are natives of Europe; the spotted and black vulture, of Egypt; but the bearded, the Brazilian, and the king of the vultures, all belong to South America. The golden vulture measures four feet and a half in length, from the extremity of the beak to that of the tail; the lower part of the neck, the breast, and belly, are red; but towards the tail the colour becomes more faint; on the back, the feathers are black, and those on the wings of a yellowish brown. All birds of this class are both indolent and cruel; and their intestines are formed different from those of the eagle kind; their sense of smelling is acute beyond conception; their beaks are straight at the beginning, but hooked towards the point.

The vulture, though extremely common in many parts of Europe, and well known on the western continent, is fortunately a stranger upon the English shores; yet not

withstanding their carnivorous and rapacious propensities, at Grand Cairo not one of them is suffered to be killed, as they devour all the carrion and filth of the city, which would otherwise corrupt and taint the air; they are generally attended by the wild dogs of the country, who share without contention their putrid prey.

Though the vulture permits the wild dogs to become participators of their plunder, no two animals are at greater enmity with each other than the vulture of Brazil and the crocodile: the female of this amphibious creature grows in that part of the world to the size of twenty-seven feet; and lays to the number of one or two hundred eggs, in the sand by the side of the rivers, and covers them up with the greatest precaution, when the intense heat of the sun supplies the want of maternal care. During this period, the vultures, in large bodies, regard their motions; and, as soon as she has completed her business, and retired to the refreshing coolness of the stream, they alight upon the spot where the eggs had been concealed, scratch away the covering maternal solicitude had placed, and greedily devour the whole of her brood.

These birds, at least those of Europe, seldom lay more than two eggs at a time, and that only once a year; they make their nests in the most inaccessible cliffs, and in places so remote that it is difficult to find them out.

Such are the habits of this bird in general; but there is one kind called the king of the vultures, a native of America, and not of the East Indies, as some persons have erroneously supposed; the size of it exceeds that of the turkey cock; but it is chiefly remarkable for the odd formation of the skin, which covers the head and neck; this skin arises from the base of the bill, of an orange colour, and stretches on each side of the head; from thence it proceeds like an indented comb, and falls on either side according to the motion of the head; the skin round the eyes is of a beautiful scarlet, and the back of the head is of the same; the iris of the eye has the lustre of a pearl, and very nearly resembles it in colour; behind the head arises a little tuft of black down, from whence issues a wrinkled skin which extends round the throat, below which grows a collar of long ash-coloured feathers, in which the bird is fond of concealing its head. Though the appearance of the king of the vultures differs from the rest of their tribe, yet in habits and dispositions it is very much the same; it lives

chiefly upon lizards and serpents ; but does not refuse carrion when it comes in the way.

THE FALCON AND ITS AFFINITIES.

Every creature becomes more important in the history of Nature in proportion as it is connected with man. As falconry constituted the principal amusement of our ancestors, this bird may be considered of more consequence than either of the former race ; and, though much more diminutive in size, becomes more interesting to the curious mind.

In former ages, a man of rank scarcely went out without being attended by his hawk ; and so much was it considered as a mark of distinction, that the nobility were generally drawn with their favourite bird perched upon their hand. In the reign of Edward III. of England, it was made felony to put a hawk to death ; and, to steal the eggs, imprisonment for one year.

Before the invention of guns and gunpowder, the hawk was not only valuable on account of the diversion it procured, but as being the instrument by which many delicacies were obtained. So many were the falcons which were used for this purpose, that we shall merely think it necessary to insert their names, and close their history by a description of the method the falconer adopted to make them obedient to his will.

The gyr-falcon, the falcon, the lanner, the sacre, the hobby, the kestrel, and the merlin, are considered as the most generous or useful of the tribe, and may be distinguished from the goss-hawk, the sparrow-hawk, the kite, and the buzzard, by the peculiar length of the feathers upon their wings ; from which circumstance they are enabled to fly with more velocity and strength ; their disposition is more docile, and they are more easily attached.—The gyr-falcon is nearly as large as an eagle ; and the top of its head is perfectly flat ; the beak is extremely strong and thick, and the colour of it is a dark blue ; the feathers are of a pale ash, marked on the back and wings with spots of black, in shape resembling a small heart ; it is a remarkably bold, courageous bird, and would not fear attacking the eagle himself. The rest of the species diminish in size until we come to the merlin, which is not much larger than a thrush, yet his courage and intrepidity render him

formidable to birds which are nearly ten times as large as himself.

In order to train up a falcon to the pursuit of game, it is necessary to possess both perseverance and skill; and, the first method the falconer adopts, is to bind straps round the creature's legs, to which there is fastened a ring and some small bells, on the former of which is engraven the owner's name. If he appears stubborn, or attempts to bite, his head is plunged into cold water, and he is deprived of food, and not suffered to sleep; whilst his eyes are blinded by a hood, or cowl; for the darkness contributes to make him tame; and his master judges of his success in the undertaking, by the manner in which he submits to have the bandage placed upon his head.

Worn out with hunger and want of sleep, its ferocious propensities gradually decrease, and by way of exciting its appetite to the utmost degree, small balls of flannel are placed within his reach, which, instead of satisfying the hunger by which he is devoured, only increases the desire for food. At this period, the falconer produces an ample supply, which the famished animal greedily seizes from his hand, and grateful for the seasonable boon, becomes imperceptibly attached for the succour he has obtained.

When these lessons have so far succeeded as to produce signs of affection and docility in the bird, his master carries him out upon a green, uncovers his head, and offers him food, to obtain which he must fly upon his hand.—When he is so confirmed in this habit as to fly upon the hand whenever desired, the falconer is prepared with a stuffed bird, like the one he is to pursue, which he holds at a small distance from the hawk, and to which is fastened whatever food the bird has shown the greatest desire to eat; this he receives as the reward of his obedience, and as an incitement for him to fly at the representation again. Each day this lure is placed at a greater distance, and the falconer prepared with a longer piece of string; and, previous to his being permitted to take his flight, the living object of pursuit is held in the master's hand. The falconer likewise accustoms him to the sound of his voice, and to fly at the bait whenever he is desired.

By this method of instruction, the falcon may be taught to fly at any game whatsoever; but the falconers have chiefly confined their pursuit to such as are attended with the greatest gain; and as hares, quails, and partridges, come

under that description, they have generally become the objects of their prey.

THE BUTCHER BIRD.

Before the history of rapacious birds is concluded, I shall give the character of one that might, from its appearance, be classed amongst the sparrow kind ; but from its appetite for slaughter, and its crooked beak, it is placed amongst the carnivorous kind.

The butcher bird is very little larger than a lark, and the smaller species are not so big as a sparrow ; yet, diminutive as these little animals are in size, they make themselves formidable to the birds of four times their dimensions, for they will attack the pie, the crow, and the kestrel, with the same courageous intrepidity as if they were equals in strength. Nothing can more completely prove the advantages of *courage*, than the benefit which this apparently insignificant bird enjoys ; for, instead of becoming the prey of more powerful and rapacious animals, it boldly enlists into their train, and is seen flying in company with the falcon and the lanner, with as much security as if it was their equal in size.

Though the butcher bird will occasionally feed upon corn and insects, yet it is only when it cannot find a full supply of food, for its favourite sustenance consists of small birds, which it seizes by the throat, and in a moment kills, and then sticks them upon the point of a thorn ; and, thus singularly spitted, begins pulling them to pieces with its bill ; for it is conceived the claws have not sufficient strength either to tear them to pieces, or secure the hold.

During summer, such of them as constantly reside amongst us, always adhere to the mountainous parts of the country, and in the winter, descend into the plains ; the larger kind choose the highest trees to build in, but the smaller prefer bushes for the security of their young.—The nest, on the outside, is composed of white moss, interwoven with very long grass, and the inside is made warm by a lining of wool : they generally lay about six eggs, of a whitish colour, marked towards the bigger end with a ring of brownish red. The female feeds her young with caterpillars and insects, and by degrees accustoms them to carnivorous food. Neither parent attempts to force the little ones from their abode, but all dwell together in the utmost harmony and peace. Each family

lives apart, and generally consists of the male and female, with five or six of their young. They may easily be distinguished by their manner of flying, which is never direct, or sideways, but always up and down. There are thirteen or fourteen different kinds of the butcher bird; and the feathers are generally ash colour, with either red or brown upon their backs. Their common name is *shrike*.



CHAP. IV.

RAPACIOUS BIRDS OF THE OWL KIND,
WHICH SEEK THEIR PREY BY NIGHT.

ALL birds of the owl kind may be considered as nocturnal robbers, who, unfitted for taking their prey whilst it is light, surprise it in those hours of security and rest, when Nature requires invigorating by sleep.

The formation of the eye, in this nocturnal depredator, bears a strong resemblance both to the tiger's and the cat's, for there is a quality in the retina, that takes in the rays of light so copiously, as permits them to see in places that are nearly dark: but though their sight is dazzled by the glare of day, they cannot distinguish their prey in the *total gloom* of night. Their most successful time for plunder is by the light of the moon; and, when they cannot enjoy the benefit of her beams, they begin their depredations at the dusk of the evening, and conclude them before it is entirely dark; and, if they have not sufficient food to supply them till the next evening, they renew their incursions when the morning begins to break.

All birds of the owl kind may be divided into two sorts; those that have horns, and those which are without.—These horns are nothing more than a few feathers placed over the ear, and standing up on each side of the head, which gives the bird the appearance of having two horns. Of this species, the great horned owl has pre-eminence; as it, at first view, appears equal to the eagle in size, but, when observed more closely, proves to be infinitely less: his legs, body, wings, and tail, are shorter; but his head much larger, broader, and more thick: his horns are composed of feathers near three inches in length, which he can raise or depress

at will: his eyes are large and transparent, encircled with an orange-coloured iris round: his ears are large, and very deep; his plumage of a reddish brown, marked on the back with black and yellow spots; but on the abdomen the latter colour prevails, and from the extremity of each wing, it measures five feet.

Next in size to this, is the common horned owl, which, when the wings are extended, measures only three feet. The horns of this bird are composed of six feathers, which are not more than an inch in length. There is still a smaller kind of horned owl, very little larger than the blackbird in size: the horns of this consist of only one feather erected on each side of the animal's head.

To these succeed the tribe without horns, which bear the following different names:—The *owlet*, which is the largest, has dusky plumes and black penetrating eyes.—The *screech owl*, with plumes of iron gray, and eyes rather inclining to blue. The *white owl*, with plumage according to its name, and a yellow cast of the eyes. The *great brown owl*, with feathers of that colour: and the *little brown owl*, with eyes yellow, and an orange-coloured beak. To this catalogue might be added others of foreign denomination; but I shall only mention the *harfang*, or great owl of Hudson's Bay, which is the largest of all the nocturnal depredators, and as white as the snow which surrounds the place.

All this tribe of animals, though they may differ in size and plumage, agree in the practice of taking their prey by night. Their bodies are formed with a degree of muscular strength, and their stomachs calculated for digesting their food, which consists of birds, mice, and lizards, all of which they are said voraciously to eat; for one owl is thought equal to half a dozen cats in devouring the mice which so often prove destructive to wheat.

As these birds are incapable of supporting the glare of day, they are fond of concealing themselves in obscure retreats; and the cavern of a rock, the ruin of a castle, the battlement of a church, or the hollow of a tree, are generally the cheerless mansions where they dwell, where the hollow wailing of their discordant voice impresses a kind of gloomy sensation on the mind; for the screech owl's scream has, by the superstitious, been considered as the presage of misfortune and the forerunner of distress. Various and melancholy as are the notes of the owl, yet it never is known to make them when in search of prey, for that important pur

suit is always attended with silence, as if they were fearful of disturbing the little creatures they intended to surprise. When they have been fortunate in surprising their victims, they soon return to their solitary abode; but if success has not crowned their endeavours, they frequently continue their pursuit till the approach of day, which so completely dazzles and bewilders them, that they are unable to return to their gloomy retreat, but take shelter in the first hedge or tree that offers to conceal them from observation and sight; there, if they happen to be discovered, they are sure of being attacked by a host of little foes, who seem conscious that the brightness by which they are dazzled will protect them from becoming the victims of wrath; and the blackbird, the thrush, the jay, the bunting, and redbreast, all employ their arts of insult and abuse to annoy their unresisting enemy, who quietly submits to their arrogance and spite. Some of them insult him with the loudness of their cries, whilst others attack him with their beak or wings, and frequently they continue to torment and harass him, until the declining sun proclaims the approach of night: in that case they are sure to suffer for their temerity, for with *darkness* all the owl's faculties appear to be renewed, and he seizes alternately upon the bold intruders, who pay for their insolence by the forfeiture of their lives.

The usual place where the great horned owl breeds, is either in the cavern of a rock, the hollow of a tree, or the turret of some castle falling to decay; the nest is nearly three feet in diameter, composed of sticks bound together by the fibrous roots of trees, the inside of which is lined with leaves. The female seldom lays more than three eggs at a time, which are rather larger than those of a hen: the young ones, as soon as hatched, are very voracious, and the parents are indefatigable in their endeavours to supply them with food.

The lesser owl of this kind never takes the trouble of forming a nest for itself, but takes possession of one that has been made by another bird, where it deposits four or five eggs, and generally produces a milk-white brood, which, in the course of a fortnight, becomes tinged with a yellowish brown. Every species of this animal is completely indocile, and difficult to be tamed; if, after a certain age, they are shut up in an aviary, they will refuse all sustenance, and pine themselves to death.

CHAP. V.

OF THE POULTRY KIND.

FROM the most rapacious and noxious kind of birds, we are making a transition to those which are most tame, and which not only contribute to the delicacies of the table, but, as articles of traffic, prove of the most essential use.

Under birds of the poultry kind, we rank all those that have *white* flesh, and bodies bulky, when compared with the size of their head and limbs: in this class are included the *common cock*, the *peacock*, the *turkey*, the *pintata*, or *guinea-hen*, the *pheasant*, the *partridge*, the *grouse*, the *bustard*, and the *quail*. As Nature has formed the rapacious class for *war*, so she seems equally to have fitted these for *peace*, and given them a fondness for social enjoyments, which carnivorous animals are not calculated to taste: their wings are short, which prevents them from wandering, and may be the means of impelling them to seek for happiness at home; and their bills are incapable of annoyance or destruction, though completely calculated for picking up grain: their legs, indeed, are strong; but their toes are made for scratching up, and not for holding or tearing to pieces food, whilst the fleshy plumpness of their bodies would be an additional impediment against their flight: accordingly, we generally find them in society, and seldom engaged in any violent disputes; slight contentions may occasionally happen amongst them, but harmony and affection more frequently prevail.

Liberty, which to the generality of birds seems equally dear as life, the species I am describing appear willingly to resign: for they increase in flesh by constant confinement, provided they have a plentiful supply of food; and, like epicures, absorbed in the luxuries of an entertainment, are unmindful of those that are left at home. When the wilder species of birds are either cooped or caged, they appear to languish after their liberty and friends, and reject the food, however delicate, that is offered under the idea of giving them a treat: but poultry, in general, from the first moment of confinement find real enjoyment in having plenty to eat.



Turkey



Peacock



Cock



Grouse

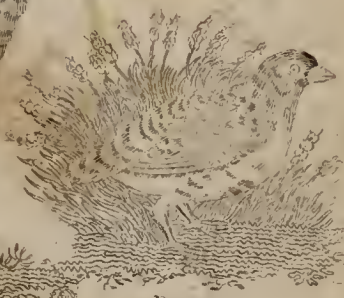
Bustard



Pheasant



Quail



Partridge



Raven



Magpie



Jackdaw

Successor



THE COCK.

All birds, taken under the protection of mankind, are not only altered in their habits, but their very form; for the variation of clime, food, and captivity, is capable of producing a most wonderful change.

Of all birds whose history may be represented, the cock seems to be the oldest companion of mankind, and is allowed originally to have been a native of Persia, imported into Europe many centuries ago. Few animals of the flying species exhibit so many varieties as the cock, there being scarcely two birds of this description that resemble each other in plumage and shape; the tail, which makes such a beautiful figure in the generality of this species, some of them are entirely without; and others seem still more imperfect in their formation, as they have not the slightest appearance of a rump; the toes, which in other birds of the poultry kind do not amount to more than four, are increased to five in this animal; and there is a species which comes from Japan, which, instead of feathers, is kept warm by a covering of hair.

In the island of Tinian, and many others in the Indian ocean, the cock is found in his native state; his plumage there is a black and yellow, and his comb and wattles of the latter colour and purple combined. On the coast of Malabar, they likewise bear the same appearance; and, when boiled, a strange effect is produced upon their bones, for they all become as black as ebony, instead of presenting, like ours, a pinkish kind of white.

Upon the first introduction of the cock into Europe, those with a reddish plumage were the most highly prized, not merely from knowing them to be more courageous than the white one, but from finding the species more likely to increase. In China, India, and the Philippine Islands, cock-fighting is a principal amusement amongst the rich; and even kings and princes participate in an enjoyment which casts an indelible stain upon humanity. In England, it was formerly a favourite diversion; but, to the credit of the present age, it is very much disused, and it is to be hoped the period is not distant, when the cruel enjoyment will be totally restrained. The cock is thought to be a short-lived animal, but seldom dies from infirmity and age: its courage and perseverance are not to be restrained, for it frequently fights until it drops down dead.

THE HEN.

As a parent, this bird excites admiration; for at those periods she seems to acquire both fierceness and strength: and, though remarkably timid when her affections are unoccupied, when she has young ones to take care of she becomes very bold.

The number of eggs which a domestic hen will lay in a year, if she be well supplied with water and food, is said to amount to more than two hundred, though she seldom hatches more than one brood, as those who make a trade of this animal's productions, find her eggs a more profitable article than her young. The nest of a hen discovers no ingenuity, as a hole scratched in the ground, or made amongst bushes, is the receptacle she chooses for the place of her retreat, where she displays a degree of patience and perseverance that proves how tenderly she is interested in the welfare of her brood. For some days she remains fixed in her habitation, and does not even quit it to seek a supply of food; and, when the calls of hunger are too urgent to be neglected, she impatiently returns to her interesting seat, turns her eggs, and changes their situation, that every part may be equally benefited by their heat. After having been carefully nurtured for three weeks, the young ones give symptoms of invigoration and life; and, with their little bills, attack the walls of their confinement, until they make an opening by which they may escape. The hen, proud of her little progeny, soon conducts them from the place of her retreat, selects the choicest food for their sustenance, and invites them to partake of it by a clucking sound. Whatever animals she thinks likely to invade her possessions, she flies at with the most undaunted spleen, and will attack the horse, the hog, the mastiff, and even venture to fly at the fox himself.

Ten or twelve eggs are as many as this animal is able to nurture and carefully breed; for, if a larger number be suffered to remain in the nest, some of them generally become addled and decayed. At Grand Cairo, every spring, six or seven thousand chickens are hatched, without the least assistance from the hen; for, by placing the eggs in stoves erected for their reception, and constantly supplying them with a regular degree of heat, they are brought into the world in as great a degree of perfection as if parental warmth had been the means of calling them into life.

THE PEACOCK.

When the Peacock appears with its tail expanded its plumage represents the greatest variety of shades; but to form a conception of the beauty of its appearance, the living object must be presented to the sight. Although the form of this bird is so completely elegant, and its feathers diversified by the most brilliant tints and shades, its voice is so thoroughly hoarse and disagreeable, that it may be heard at the distance of two or three miles; it is likewise allowed to be an insatiable glutton, and the most offensive of all the domestic tribe.

The first peacocks that were introduced into England are said to have been brought from the East Indies; vast flocks of them are still in the Java and Ceylon Isles; and it was formerly considered as the finest delicacy that could be brought to the tables of the rich. This practice, however, has long been discontinued, and they are seldom seen but at an alderman's feast. Like other birds of the poultry kind, the peacock chiefly feeds upon corn; but barley is allowed to be its favourite grain. Insects and tender plants are often eagerly sought, if it happens not to find a sufficiency of its accustomed food; it will then lay waste the labours of the gardener, root up all his choicest seed, and nip the buds of his most curious flowers. The peacock is said to live about twenty years, but its plumage does not acquire complete beauty until it has attained its third.

THE PEAHEN.

In temperate climes, the Peahen seldom lays more than six eggs, though Aristotle informs us, that in its native clime it generally lays twelve before it attempts to sit, which is always a time of much solicitude to the poor animal, as she is obliged to conceal her retreat from the male, to prevent him from disturbing her, or destroying her eggs.

In the kingdom of Cambaya, near the city of Baroch, travellers assert that whole flocks of them overspread the fields; but even there they are shy and timid, and conceal themselves in the hedges if a human form is seen. They perch by night upon the highest trees, and those who wish to take them must choose that period to decoy the unsuspecting bird in their snare. To succeed in this undertak

ing, a banner is held up, with a peacock on each of its sides, to which is attached a noose and a torch, that the animal may see what is supposed to be one of its race. The peahen, when roused from its peaceful slumbers by the effect of the light, and the noise that is made, instantly flies to the senseless impostor, and is easily caught in the prepared string.

There are several varieties of this curious bird, some of which are crested, and others white; but that which is known as the *peacock of Thibet*, is allowed to be the most beautiful of the feathered race; its colours are a mixture of blue, yellow, red, and green, all blended with the most artificial exactness, and forming the most pleasing combination to the sight.

THE TURKEY.

Though the natal place of the cock and peacock has, without any difficulty, been positively ascertained, the clime which gave birth to this useful race of animals is by no means so absolutely known; as some are of opinion it was brought from the East Indies, and others that it was not known until the discovery of the New World.

Those who contend for the latter opinion, observe, that among all the descriptions we have of eastern birds, the history of the turkey is nowhere to be found; and it is very well known, that in the new continent hundreds of them are running wild about the woods.

When young, they are peculiarly tender; and it is with the utmost difficulty that a whole brood of them are reared in England; but in Canada and the United States, where the forests are covered with snow three parts of the year, they thrive without the slightest attention or care. Their size infinitely surpasses the European breed, and their feathers are much more beautiful to the sight; the colour of them is generally dark gray, bordered at the edge with the brightest gold.

Hunting the turkey is one of the amusements which the aborigines of the country have the means to enjoy; they form their feathers into ornamental garments, and sometimes they are made into umbrellas and fans; whilst their flesh supplies food for themselves and families when they return from the pleasures of the chase. As soon as the hunter discovers the place of their concealment, he encourages his dog

to dart in amongst them, whilst they fly before their enemy with the utmost speed, who, though at first he cannot overtake them, soon compels them to take refuge in the neighbouring trees, from whence the hunter knocks them down with a long pole, with which he always takes care to be prepared.

Turkeys, in England, are heavy, stupid animals, that mope about without the appearance of health; though the turkey-cock is allowed to be a quarrelsome companion, and has a peculiar aversion to the colour of red: it likewise frequently attacks both dogs and children, who, if they had courage to retort, would soon put him to flight; for, though he is a *tyrant* where he fancies he may *conquer*, he is a *coward* where there is a chance of a defeat.

The female appears of a more gentle disposition, and is continually hunting in quest of insects or grain: she lays from eighteen to twenty eggs, before she seems desirous of having any young. When they are hatched, they should be fed with chopped curd and dock-leaves until they are several weeks old.

The eye of this bird is allowed to be very penetrating; for, at the utmost distance, it can espy a hawk, when the poor hen, alarmed for the fate of her offspring, announces her terrors by the most fearful cries; whilst the little animals, conscious of their danger, stretch themselves apparently lifeless on the ground, until roused from their state of torpor and trepidation by the altered tones of their mother's voice, who, the moment she perceives her enemy has passed them, animates their spirits and represses fear.

The egg of the turkey is much larger than that of a domestic hen, and marked with spots like a freckle in shape. With us, they frequently weigh from twenty to thirty pounds; but in the East Indies, they are often double that weight.

THE PHEASANT.

Pheasants were originally brought into Europe from the banks of the *Phasis*, a river of Colchis, in Asia Minor, and from whence they still retain their name. Next to the peacock, the pheasant is doubtless the most beautiful of birds, not only for the vivid colour of their plumes, but for the elegant manner in which they are blended and combined. We are told that when Cræsus, king of Lydia, was seated on his throne, adorned with royal magnificence and state, he asked

Solon, "if he ever beheld any thing so fine?" The Greek philosopher, no way moved by the pomp and pageantry of the objects around him, replied, "that after having seen the beautiful plumage of the *pheasant*, no other finery could astonish his sight." Not any thing, doubtless, can be more lovely than the whole appearance of this beautiful bird; the eyes are surrounded with a bright scarlet, sprinkled with small specks of black; the feathers upon the head are different shades of purple, blue, and bright green; those upon the breast, the shoulders, the middle of the back, and under the wings, have a dark blackish ground, but tinged at the edges with a purple exquisitely bright, with transverse streaks the colour of gold; the tail, from the middle of the feathers to the root, is about eighteen inches long; and the legs, feet, and toes, are the colour of horn; they have spurs upon the legs, rather shorter than a cock's; and two of their toes are united by a membranous skin.

It is not merely for the beauty of the plumage, that the pheasant is held in such high esteem; for its flesh is considered as one of the choicest delicacies that can possibly adorn the table.

When wild in the woods, the hen-pheasant lays from eighteen to twenty eggs in a season; but, in a state of domesticity, seldom above ten; in the former situation, she is both a vigilant and careful mother; but in the latter, she becomes totally inattentive, and her young are frequently obliged to be committed to the care of the cock, to prevent them from suffering from her neglect.

Of the pheasant, as of all domestic fowls, there are a great many varieties; amongst the number are the white pheasant, the crested pheasant, the spotted pheasant, and the golden pheasant, which is a native of China; and infinitely more beautiful than any of the rest.

THE PINTATA, OR GUINEA-HEN.

This is a very remarkable bird, and in some measure unites the characteristics of the pheasant and the turkey, as it has the fine delicate shape of the one, and the bare head of the other. In size it resembles a common hen, but its legs are much longer than those of that bird; the head is covered with a kind of casque; the back is round, and the tail turns downwards like a partridge; the plumage is black or dark gray, covered over with white spots; and both the

cock and hen have wattles under their chin; the former of which are of a bluish cast, whilst the latter is inclining to red.

The guinea-hen is common in Europe and America, but it is supposed originally to have been an inhabitant of Africa, as in that country they are seen together in large flocks; they are known by the name of the Barbary hen, the Tamas-bird, and the bird of Numidia. In our climate, they seldom lay above five or six eggs, which are spotted in the same manner as their feathers; but, in their native regions, they are said to be much more prolific. They are a difficult bird to rear; and many do not consider them as delicate food.

THE BUSTARD.

The Bustard is the largest land bird that is a native of Britain, though they were once infinitely more numerous than they are at present, occasioned by the extreme delicacy of their flesh, and the increased cultivation of the lands, as the woods used to serve them for shelter and retreat.

The bustard, in appearance, is much larger than a turkey, as the legs are near a foot and a half in length, and the male generally weighs near twenty-seven pounds: the neck is at least a foot long; but the wings are not proportioned to the rest of the body, as when extended to the utmost they do not measure more than four feet: the head and neck of the male are ash-coloured; the back is barred transversely with a bright black and rust colour; the abdomen is white; and the tail, which consists of twenty feathers, is marked with broad black bars.

It may at first appear singular, how a bird of so large a size could possibly find shelter in so cultivated a country as England; but the wonder will cease, when we are told that they are only to be found in the most open parts, where they can at a distance discover the appearance of an enemy before there is a possibility of their approach. Salisbury Plain, the heaths of Sussex and Cambridgeshire, the Dorsetshire uplands, and as far as East Lothian, in Scotland, are the places where these birds chiefly abound: their food is composed of the berries that grow among the heath, and large earth-worms, that appear in great quantities on the downs, before sun-rising, in summer. It is in vain that the fowler creeps forward to approach them: they always have sentinels placed on eminences, which are ever on the watch

to warn the flock of the slightest appearance of danger. Though these enormous birds seldom fall a prey to the sportsman's skill, yet they are often run down by grayhounds; they are voracious in their eating, and become so fat and corpulent, that they are unable to rise in the air without the utmost difficulty.

As their food is replete with moisture, it enables them to live upon those dry plains, where there are scarcely any springs of water, for a length of time, without drinking.— Besides this, Nature has given the males a large pouch under the tongue, which is said to contain near seven quarts of water. This provident provision was probably not only made for the use of the animal to which it belongs, but to supply the hen when sitting, or the young before they can fly.

The bustard makes its nest upon the ground, only just scraping a hole in the earth, and sometimes lining it with a little grass. The female lays only two eggs, about the size of those of a goose, of a pale olive brown, marked with spots of a darker colour; they usually sit about five weeks; and the young ones run about as soon as they are hatched.

THE GROUSE AND ITS AFFINITIES.

The cock of the wood, the black cock, the grouse, and the ptarmigan, are all birds of a similar nature, and chiefly found in heathy mountains and piny forests, at a remote distance from mankind.

The cock of the wood is sometimes near the size of a turkey, and often weighs near fourteen pounds. The black cock, the male of which is completely black, though the female is the colour of a partridge, is about the size of a hen. The grouse is about half as large again as a partridge, and its colour resembles that of a woodcock, though rather of a redder cast. The ptarmigan is somewhat less, and the feathers of a pale brown or ash colour; they are all distinguishable from other birds of the poultry kind by a naked skin of a scarlet colour above the eyes, in the form of an eyebrow.

In winter, these birds reside in the inmost parts of woods; but, in the summer, they venture from their retreat, and make frequent depredations upon the farmer's grounds. The cock of the wood feeds chiefly upon the cones of

pinus, and seems to be peculiarly delicate in the selection of his choice. The others appear to prefer the heath-blossoms, cranberries, and different kinds of corn; their flesh is reckoned remarkably delicate: but the cock of the wood is the most preferred. The female of this bird is so different from its mate, that it might easily be mistaken for another species; she seldom lays more than six or seven eggs at a time, which are about the size of a common hen's; she generally lays them upon dry ground; and, when compelled to seek for food, covers them carefully with moss. As soon as the young ones are hatched, they follow their mother, who soon teaches them to search for ants' eggs and mountain berries for food.

THE QUAIL.

With the Quail, we shall conclude the history of the poultry species, and then direct our attention to a more irregular tribe. The quail is allowed not to be above half the size of a partridge; and the feathers upon the head are black, edged with a rusty brown; the breast is of a pale yellowish red, spotted with black; the back is marked with lines of a faint yellow, and the legs are of a pale hue.

That the quail is a bird of passage, has been completely ascertained; and Bellonius informs us, that when he sailed from Rhodes to Alexandria, in the time of autumn, the quails flew from the northern to the southern parts of the globe, and were taken in passing over the ship. He likewise adds, that the same circumstance occurred in spring, when these birds flew in a contrary direction, and took their flight from a southern to a northern shore.

Notwithstanding the account of this creditable author, many Naturalists are of opinion, that they do not migrate very far, but merely quit the inland counties, and shelter themselves amongst the weeds upon the sea-shore. The flesh of this bird is considered as a great delicacy, and the method of obtaining them is generally by a net. The female never lays more than six or seven eggs, of a whitish colour, with rusty looking spots.

CHAP. VI.

BIRDS OF THE PIE KIND.

IN marshalling our army of the feathered creation, we have placed in the van a race of birds long bred to rapine and war; in the centre we have placed the slow and heavy-laden, that are usually brought into the field to be destroyed; and we now come to a kind of light infantry, that partake something of the habits of the two former, and yet do not properly belong to either.

Under this class of birds, we may arrange all that noisy, restless, chattering, teasing tribe, that lies between the hen and the thrush; that, from the size of the raven, down to the woodpecker, flutter round our habitations, and make free with the fruits of human industry.

Of all the numerous varieties of birds, this class seems to be that which least contributes to the services of man; the falcon hunts for him; the poultry tribe supplies him with luxurious food; and the little sparrow race delight him with the melody of their warblings; the crane kind make a studied variety in his entertainments; and the class of ducks are not only delicate in their flesh, but extremely useful in their feathers; but, in the species of the pie kind, there are few, except the pigeon, that can any way be considered as beneficial to mankind.

THE RAVEN, THE CROW, AND THEIR AFFINITIES.

The Raven, the Crow, and the Rook, are birds so completely known, that a prolix description of them must be considered as superfluous. The raven is the largest of the three, and distinguished from the rest, not only by his size, but by his bill being somewhat more hooked than any of the others. As for the crow and the rook, they so strongly resemble each other, both in make and size, that they are not easily distinguished asunder; the chief difference to be found between them, lies in the bill of the rook, which, by being thrust frequently into the ground to fetch out grubs and earth-worms, is bare of feathers as far as the eyes, and appears of a whitish colour; the feathers of this bird have likewise a glossy, purple hue; whilst those of the crow are all



Cuckoo



Bird of Paradise



Woodpecker



Dove



Parrot



Bullfinch



Sparrow



Pigeon



Linnet



Goldfinch

W. Hey sc.



Thrush



of a dingy black ; yet, upon an inaccurate view, the similitude is so strong between them, that the harmless rook, which lives upon corn and insects, is frequently destroyed for the crow, which feeds upon young poultry, birds, and putrid flesh.

The habits of the raven and the crow are exactly similar : they both feed upon carrion ; they both fly in pairs, and destroy young birds when they can take them by surprise. But very different are the manners of the rook, the daw, and the Cornish chough, which may all be ranked in this class of birds ; they are sociable and harmless, live only upon insects and grain ; and, instead of injuring other birds, they seem to act as sentinels for the whole feathered creation.

The raven is a strong, hardy bird, capable of enduring the severest climes ; and though, like several other creatures, it becomes white from the intensity of cold, yet neither the frigid nor torrid zone has any effect upon its frame, as it seems wholly uninfluenced by the weather's change. This bird, when taken into the service of man, may be trained to fowling, like the hawk ; taught to fetch and carry like a spaniel ; speak, like a parrot ; and even sing, like a human being ; yet, to counterbalance these diverting qualities, he is naturally prone to the commission of theft ; and tea-spoons, rings, and pieces of money, are frequently found in his hole or nest.

The raven generally builds her nest in high trees or old towers, and lays five or six eggs, of a palish green, marked with small brown spots. The longevity of this bird is said to be very great ; for Hesiod asserts, that they will live nine times as long as the human species ; and many have been known to exist a hundred years. The Romans held the raven in high estimation, as being the bird which God selected to supply the prophet Elijah with food.

The crow resembles the raven in its appetites ; it only differs by being less docile, and less favoured by mankind.

The rook has not a carnivorous appetite, but feeds entirely upon insects and corn. These singular birds have a natural antipathy to every stranger of their own race, and, if they presume to encroach upon their habitation, drive them away, with the appearance of the most inveterate spite. The rook seems attached to human society, and frequently establishes its habitation amidst their abode ; for they generally prefer a grove in the *centre* of a *city*, to one that is more remote from bustle and noise. During the winter, the rookery is deserted, or only inhabited by a few, to guard

it from being seized; but at the commencement of spring, its possessors return, and soon deposit their eggs in the nests they had formerly made. The young ones, which had been hatched the preceding year, make frequent depredations upon their parents' nests; and, to prevent the trouble of searching far for materials, fly away with the choicest of her sticks. These daring encroachments upon their property are always punished as they deserve; for the old ones join in a league against them, and severely punish them for what was illegally gained.

The Royston crow, in size, resembles the former; but the breast and back are of a pale ash colour, whilst the head and wings are glossed with a beautiful blue. It is allowed to be a bird of passage, which visits England in the beginning of winter, and quits it again at the approach of spring.

The jackdaw is a black loquacious bird, not above the size of a pigeon; they build their nests in old castles and steeples, and seldom lay more than five or six eggs. The Cornish chough resembles the jackdaw, but is nearly the size of a crow, and is only to be found along the western coast.

To this tribe of the crow kind might be added several others; but we shall only take notice of one, which is called the colao, or horned Indian raven, which exceeds the common one in size, and in habits of pillage and depredation. The beak of this bird is long and curved; and there is a horn springing from the top, which has a singular effect: the head is so large as to be disproportioned to the body; and the whole of its appearance is calculated to disgust.

THE MAGPIE AND ITS AFFINITIES.

There are such a variety of birds that may be classed under this head, that it would be tedious to give a description of them all. A straight strong bill, body about the size of a pigeon, party-coloured plumage, and an incessant chattering noise, are the general characteristics of this numerous tribe, which, near the equator, amount to such numbers, that they stun the ear with their noise.

With us, the magpie is too well known to require being particularly described. The magpie bears a great resemblance to the butcher bird, in the shape of its bill, the shortness of its wings, and the form of its tail; the combi-

nation of black, white, purple, and green, which adorn the feathers of this bird, would doubtless make it much admired, did not its noisy and destructive propensities render it rather a nuisance to mankind.

No food comes amiss to this bird : it shares with the raven, in its carrion ; with the rooks, in their grain ; and with the cuckoo, in birds' eggs ; yet it has a provident care about it, seldom to be found amongst the glutton tribe ; for, when it has once satiated its appetite, it always takes care to hide what remains of its food ; and small birds that by chance are wounded, and young chickens, frequently become its prey. In the formation of its nest, it is peculiarly sagacious, and contrives to erect it in a spot where it is not discernible by any of its foes ; amongst the number of which, the crow, the sparrow-hawk, and the kite, are justly to be guarded against, and 'most to be feared, though they frequently plunder in retaliation of the magpie's unjust attacks upon their own abode.

The body of this bird's curious habitation is composed of hawthorn branches, with the thorns sticking out ; within, it is lined with fibrous roots and wool, and plastered round with clay and mud : the body of the nest being thus firm and commodious, the next work is to erect a canopy to defend it from rain ; this is composed of the sharpest thorns, wove together in such a manner as to obstruct all entrance into their retreat, except through a small aperture or door, just big enough for its inhabitants to creep into. In this snug and secure habitation, the male assists the female in hatching and bringing up their young, though the wanton schoolboy often defeats their tenderness, by robbing the nest either of its eggs or young.

In this tribe of birds we may include the jay, which is universally allowed to be one of the most beautiful of British birds. The forehead is white, with black streaks ; and the head is covered with long feathers, which it can erect at will ; the neck, back, and breast, are a faint purple, intermixed with light gray ; the wings are barred with black, white, and a beautiful blue ; the tail is black, and the feet brown. Like the magpie, it will destroy small birds, but may easily be made docile and tame.

The chatterer, which is a native of Germany, in size is something less than the jay ; the feathers of this bird are beautifully variegated with a mixture of ash-colour, chesnut, red, and yellow : and it has horny appendages from the tip

of seven of the lesser quills, which mark it to be of a separate and distinct race.

The roller may be distinguished from every other of the species by naked tubercles or warts, which are placed near the eyes: the feathers of this bird are remarkably beautiful, for the breast and abdomen are blue, the head green, and the wings variegated with black, blue, and white.

The toucan is a native of South America, and there are four or five distinct kinds of this curious race; though the history of one will be quite sufficient to give the reader an idea of the singularity of its shape. The red-beaked toucan is about the size of a jackdaw; the bill, from the angles of the mouth to the extremity, is about seven inches in length; and in width, near the upper part, measures two: the head is completely disproportioned to the body, but quite adequate to the size of the bill: the nostrils are almost covered with feathers, which made some Naturalists believe it was destitute of one sense: the bill, though apparently so very formidable, is of too thin a substance to do material harm: and, though it scoops out its nest in the hole of some tree, yet the tongue is supposed to assist in the work, and, by pressing hard against the bill, gives it additional strength. When seated in its retired abode, it seems to threaten destruction to whatever should attempt to invade its seat; for its enormous bill is placed at the entrance of the nest, to guard it from every attack upon the young, notwithstanding which it may easily be tamed; and it is asserted that it will frequently form its nest in the house.

The upper chap of the toucan is of a bright yellow, edged with a scarlet of a glossy hue; the under is of the same colour, with a lively purple at its base; round the eyes, on each side of the head, is a bluish skin devoid of feathers: the hinder parts of the neck, back, wings, and tail, are black; but the under part of the head, throat, and breast, are all of a delicate white: between the white on the breast, and the black on the abdomen, is a space of red feathers, in the form of a new moon: and the toucan is as much valued for the delicacy of its food, as for the plumage, which forms a part of the Indian's dress.

THE WOODPECKER AND ITS VARIETIES.

Of this bird there are many kinds; for they form large colonies in the forests of every part of the world: they dif-

fer in size, colour, and appearance ; but agree in having a strong, angular pointed bill, and a long tongue, with a sharp, stiff, bony horn at the end : their legs, likewise, are short and strong ; two of their toes stand backwards, and two forwards ; which, as they live upon insects, enables them easily to climb up trees.

The green woodspite, or woodpecker, is about the size of a jay ; the throat and breast are of a pale green colour ; but the back, neck, and wings, are of a darker hue. As this bird feeds upon insects, the tongue is peculiarly calculated for the destruction of that tribe ; for the bony tip is dentated on both sides, and it can dart it out at least four inches from the bill, when the insects become transfixed and drawn in by its attractive power ; by this means it contrives to rid the tree of that which is calculated to obstruct its growth.

The woodpecker, however, does not confine its depredations solely to elevated bodies, but frequently makes an attack upon the dwelling of the ant ; when, after making a hole with its beak, it stretches its tongue into the hole, where it keeps it immoveably fixed until it is completely covered with the desired food, when, with a sudden jerk, it withdraws it, and at one mouthful destroys some hundreds of lives.

As this industrious little creature frequently makes *small* holes in trees, to search for the eggs of insects, it forms *large* ones, for the purpose of hatching its young ; this abode is neither lined with feathers, grass, nor straw ; but the eggs are deposited in the hole, without any thing to keep them warm, except the heat of the parent's body. The woodpecker generally lays five or six eggs, white, oblong, and of a middle size.

In the warmer regions of Guinea and Brazil, the woodpecker composes his nest of a fibrous kind of moss, which it glues together by some viscous substance, extracted from the trees ; these are curiously suspended from the extremities of the different branches, having a small hole on one side, just big enough for the little artist to enter, and cherish its young.

This method of suspending the nest from the termination of the branches, proves the instinctive faculty with which the bird is endowed ; for were they to form them in the interior parts of the tree, their young ones, if not themselves, would doubtless fall victims to the monkeys or snakes with which those countries abound.

In the Philippine Islands, there is a little bird of the cross

beak kind, that makes its nest in so curious a way, that there is no opening *but* from the bottom, and the creature ascends to its abode through a funnel like a chimney, till it comes to the door of the nest, which is placed on one side.

THE BIRD OF PARADISE, AND ITS VARIETIES.

The gréat beauty of this bird's plumage, and the deformity of its legs, have been the means of giving rise to a variety of fabulous tales. The savage inhabitants of the Molucca Islands, of which the bird of paradise is a native, perceiving the eagerness with which the Europeans purchased this favourite bird, resolved to make it appear different from any other of the feathered race ; and, by cutting off the legs with some degree of ingenuity, asserted that it lived wholly in the *air* ; and this *improbable invention* was actually believed.

Of this bird there are two kinds, the most common of which is about the size of a pigeon, and the other not larger than a lark : the head, throat, and neck, are of a pale gold colour, though the hinder part of the former is of a shining green ; the body and wings are a beautiful brown, intermixed with purple and gold ; the upper part of the tail feathers are a pale yellow, but the under ones, which are longer, are a delicate white. Yet, what chiefly excites the observation of the curious, are two long naked feathers, which spring from the upper part of the back, near the tail : these feathers are usually three feet in length, bearded only at the beginning and end ; the shaft of which is a deep black, but the feathered part is changeable, like the mallard's neck.

These birds, which for beauty exceed all others of the pie kind, associate in large flocks in the Molucca Isles ; but, in the island of Aro, they are still more abundantly found : and, as the country where they breed has its tempestuous seasons, when rains and thunder continually disturb the atmosphere, they are supposed at those periods to seek a more tranquil clime, and are never seen in the air until it becomes composed.

The natives, who make a trade of killing and selling the bird of paradise to Europeans, hide themselves in those trees to which they resort, and contrive to conceal their persons, by forming a bower of the branches which are

over their heads, from which they shoot at their prey with reedy arrows, that only slightly damage the beauty of their plumes; they then take out every part of their entrails, and run a hot iron up their body, which dries up the juice; and, after filling them with salts and spice, they offer them for public sale.

It is asserted by the natives, that each flock of these curious birds is under the dominion of one, that is considered as *king*, and that this is distinguished by a peculiar brilliance of plumage, which the natives themselves can easily discern; and if the fowlers are able to destroy their *monarch*, the rest of the flock quickly become their prey.

THE CUCKOO AND ITS VARIETIES.

This singular bird, which is somewhat less than a pigeon, shaped like a magpie, and of a grayish colour, is distinguished from every other, by having round prominent nostrils. Though there is the greatest monotony in the voice of the cuckoo, yet its notes never fail to impart a pleasing sensation to the susceptible mind, from knowing it to be the harbinger of spring, as it migrates into a warmer clime during the severities of winter, and does not return until the country is enlivened by the verdant appearance with which that season is crowned.

The female cuckoo may be considered not only as an indolent bird, but as a depredator upon the property of those of a different species; for it never is at the pains of forming an *abode* for its young, but plunders the nests either of the water-wagtail or hedge-sparrow, destroys their eggs, and substitutes its own in their place. It seldom lays but one at a time, which is speckled, and resembles the blackbird's in size: and, when the little architect returns to its abode, it has not sagacity enough to discover the cheat, but nurtures the egg of her insidious invader with the same care and tenderness as if it was her own, and when the young one is hatched, does not discover the cheat.

It was once doubted whether the cuckoo was carnivorous; but Reaumur was at the pains of breeding up several, and found they would neither eat bread nor corn, but that flesh, and insects, were their favourite food.

When the young bird is fledged, and ready for flight, it for a short time follows its supposed parent in search of food; but as its appetite for insects increases with its age,

it soon takes leave of its tender nurse, and goes in search of its natural and favourite food. At the approach of winter, the cuckoo disappears, and regularly migrates into a more congenial clime. Brisson, the naturalist, assures us that there are no less than twenty-eight different kinds of this bird; he tells us, that in Brazil they have one which makes such a horrible noise, that the forests absolutely ring with their sound.

THE PARROT AND ITS AFFINITIES.

Of all foreign birds, the Parrot is best known to us; it is at once both beautiful and docile, and with very little difficulty is taught to speak. A grave writer assures us, that one of these birds, at command, would repeat a whole sonnet from Petrarch; and a distiller, who had been greatly injured by the malevolence of an informer that lived opposite to him, taught his parrot the ninth commandment, which the bird was continually repeating, to the entertainment of those neighbours who were acquainted with the ungenerous part the despicable man had played.

Willoughby tells us, that a parrot, belonging to King Henry VII., who then resided at Westminster, in his palace by the Thames, had learned many words from the passengers who took water at that place. One day, sporting on his perch, the poor bird fell into the stream, at the same time calling, as loud as he could, "A boat! twenty pounds for a boat!" A waterman, hearing the cry, made to the place where the parrot was floating, and, taking him up, restored him to the king. As it was known the bird was a favourite, the man insisted that he ought to have a reward rather equal to his services than his trouble; and as the parrot had cried *twenty pounds*, he said the king was in *honour* bound to grant it. The king agreed to leave it to the parrot's determination; which the bird hearing, instantly cried out, "*Give the knave a groat.*"

It is in vain that our Naturalists have attempted to arrange the various species of this bird: Linnæus makes their number amount to *forty-seven*; whilst Brisson extends it to *ninety-five*. Those who usually bring up these birds, are content to confine their distinctions to three or four; the large kind, which are the size of a raven, are known by the name of the *mackaw*; the next size are simply called *parrots*; the succeeding ones are termed *white lories*; and the lesser

size of all are called *paroquets*. The difference between these, is rather in size than conformation; as they all have two toes before, and two behind, calculated for climbing or clinging to trees; strong hooked bills, for breaking open nuts and other hard substances, on which they feed; and loud voices, which fill the woods with harsh and discordant sounds.

The toes of the parrot serve the purpose of hands; for with them they generally take up their food they support themselves upon one leg, whilst, with the hinder toes of the other, they turn their provender towards their mouth.

In other birds, the upper chap is immoveable, and is firmly connected with the skull; but, in the parrot, there is merely a membrane which unites them, and by that means it can extend or depress it with ease. As their legs are not formed for hopping from bough to bough, they climb up a tree by the help of their toes and beak, which they alternately fix into the bark, and, by the aid of these, attain any eminence they please.

The tongue of the parrot somewhat resembles that of a man, which is assigned as a reason for the facility of its speech; though the organs, by which those sounds are communicated, are known, in a great measure, to be connected with the throat. The parrots in France speak with great clearness; but this is to be ascribed to the attention of the ladies, who generally devote too much time to the instruction of these birds; but in Brazil, they are allowed to articulate with greater clearness than in any other part of the world.

Though some of these birds are tough and ill-tasted, yet the tribe of paroquets are very delicate food; but even the flavour of these is improved, or injured, according to what they may happen to eat. When the gnava is ripe, they are in high season; and, if they feed upon the acajon-seed, they imbibe a garlic taste; if upon spices, the clove and cinnamon prevail; and if upon berries that are bitter, their flesh acquires that unpleasant taste.

The paroquet of Brazil is allowed to be the most beautiful of the kind, and they are so numerous, that the fowler can scarcely distinguish them from leaves; and did they not continually hop from tree to tree, he would never be able to take an accurate aim. On the coast of Guinea, they are likewise in great abundance, and annoy the inhabitants with continual screams: travellers have asserted, that on the continent of Africa, a hundred different kinds of the parrot may be seen.

There is a peculiar disease attached to these birds, greatly resembling an apoplectic fit, which occasions them to drop senseless from their perch ; and their beak frequently grows so hooked as to prevent them from being able to open their mouths ; otherwise the parrot is a long-lived creature.

THE PIGEON, AND ITS VARIETIES.

The tame Pigeon, and all its beautiful varieties, derive their origin from one species, namely, the *stock-dove*. This bird, in its natural state, is of a deep bluish ash colour : the breast dashed with a fine changeable green and purple ; the wings marked with two black bars ; the back white ; and the tail, near the end, streaked with black.

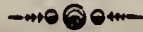
The stock-dove, in its native woods, differs from the ring-dove, a bird that has never been reclaimed, from breeding in holes of rocks and hollows of trees. All other birds of the pigeon kind, build like rooks, in the topmost branches of the forest, and choose their abode as far as possible from man. The dove-house pigeon, if properly supplied with food, always breeds once a month, but never sits upon more than two eggs ; and, during the period of hatching, the male regularly assists in nurturing the eggs ; the young ones, when hatched, for three or four days require no food, but find their bodies nourished by their mother's warmth ; after that period, the old one takes a double supply into her crop, and ejects it into the young one's mouth ; and so great is the produce of this bird in a domestic state, that, in the space of four years, near fifteen thousand may be produced from a pair.

The fidelity of the turtle-dove is absolutely proverbial, and has been the theme of poets for ages past. The stock-dove differs greatly from the domestic pigeon, as it only breeds twice in the year ; but its attachment to its young appears infinitely stronger than that which the pigeon ever displays. It is from the species of the stock-dove that those pigeons which are called *carriers*, and which are used for the purpose of conveying letters, are produced ; these are distinguished from all others by a naked white skin that encircles their eyes, and by being of a dark blue or blackish cast. It is from their attachment to their native place, and particularly where they have brought up their young, that these birds are employed in several countries as the most expeditious carriers in the world ; for they have been

known to perform a journey of forty miles in the space of an hour and a half. The letters are fastened under the bird's wing, and the little creature appears instantly to ascend into the clouds; they fly to a height that seems inconceivable, and which but few of the feathered creation are able to attain.

The varieties of the tame pigeon are so numerous, that it would be a vain attempt to endeavour to mention them all; but the pigeon-fanciers are able to match the pairs so well together, that they can produce the *young* of whatever *colour* they *please*. The names by which the different breeds are distinguished, are, croppers, carriers, jacobins, powters, runts, and turbits. There are many species of the wild pigeon, which, though bearing a strong affinity to the stock-dove, are nevertheless sufficiently different to deserve being distinctly named; of this number is the ring-dove, which is infinitely larger in size, and has never been able to be rendered tame. The turtle-dove is a much larger bird, and may be known by the yellow tint of the eye, and by its being surrounded with a circle of bright crimson. The fidelity of these birds is so great, that if a pair are put in a cage, and one dies, the other soon pines away with grief.

To this list might be added a long catalogue of foreign pigeons: but we shall merely name the ocotzimtzcan, which is a Mexican bird; the plumage of which is a combination of purple, green, and yellow; and it is considered as the most beautiful of this numerous race.



CHAP. VII

BIRDS OF THE SPARROW KIND.

BIRDS of this class chiefly live in the neighbourhood of man; but all of the larger species seem to dread approaching his vicinity, and either keep to the thick darkness of the forest, or confine themselves to some craggy precipice's brow.

The small birds dwell near human habitations, from being more easily supplied with an abundance of food; and instinct leads them to avoid the recess of the forest, from knowing that their most formidable enemies dwell securely there. All birds, even those of passage, seem content with a certain dis-

trict to supply themselves with food; the redbreast and wren seldom leave the field they have been brought up in; and even though hunted, fly along the hedge, as if reluctant to quit their native abode.

At some particular seasons of the year, most of the small birds migrate either from one country to another, or from the inland provinces towards the shore; and there are several persons who get their livelihood by catching them in nets, whilst they are upon their flight. These nets are a curious piece of mechanism, and generally made twelve yards in length; and the unsuspecting little warblers are allured within them, by the notes of some that are trained to invite them to the snare; these the bird-catchers place in small cages, to induce the others to alight near them by the sound of their voice.

The nests of small birds are much more delicately contrived than any of those of the larger kind; for, as their bodies are much smaller, they cannot contain so much heat; yet this deficiency is supplied by lining them with wool or down. As these little creatures live chiefly upon insects, they are of the utmost service to the farmer, in clearing his ground of those pernicious swarms of vermin which devour the budding leaves, and even sometimes penetrate to the very root.

Willoughby has divided into two classes, those that have slender bills, and those that are short and thick; those of the former live chiefly upon insects, and those of the latter upon fruits and grain. Among slender-billed birds he enumerates the thrush, the blackbird, the fieldfare, the lark, the starling, the titmouse, the water-wagtail, the nightingale, the red-start, the robin-redbreast, the beccafigo, the stone-chatter, the winchat, the goldfinch, the white-throat, the hedge-sparrow, the pettichaps, the golden-crowned wren, the wren, the humming-bird, and several other small birds of the sparrow kind.

Birds of the sparrow kind, with thick short bills, are the grossbeak, the greenfinch, the bullfinch, the crossbill, the house-sparrow, the chaffinch, the brambling, the goldfinch, the linnet, the siskin, the bunting, the yellow-hammer, the ortolan, the wheat-ear, and several others.

This class of small birds, like the great ones, has its wanderers, that leave us for a season, and then return; some take their flight into a different part of it: but there are many that make much longer excursions: the fieldfare and

the redwing pass their summers, and breed in Norway, or some other cold clime; the hawfinch and the crossbill, migrate at uncertain times. Swallows of every species disappear at the approach of winter; whilst the nightingale, the black-cap, the fly-catcher, the willow-wren, the wheat-ear, the winchat, and the stone-chatter, quit us long before it arrives: but the siskin and the linnet only leave us when it is remarkably severe; and all the rest support the changes of our clime.

In Egypt, and the island of Java, the swallow never disappears: larks, which in England are stationary companions, in Sweden, at the approach of winter, instantly take their flight: and the chaffinch quits Carolina and Virginia at the summer's approach.

THE THRUSH AND ITS AFFINITIES.

With the thrush we may rank the redwing, the fieldfare, the blackbird, the ring-ouzel, and the water-ouzel, as being the largest of the sparrow kind; and distinguished from the rest by their bills rather bending at their point, and the outermost toe adhering to the middle one, as far as the first joint. The stare, or starling, may be likewise added to the class, though its bill is of a different make.

The missel-thrush is the largest of any bird that is endowed with a harmonious voice; it differs very little from the throstle, except that the spots on the breast are of a larger size. It builds its nest among bushes, or on the side of some tree, and never lays more than four or five eggs.

The blackbird is the deepest toned warbler of the woods, but its voice is thought rather too loud for a cage; it whistles during the whole of spring and summer, and though black in England, upon the Alps it is frequently seen white. It lays four or five bluish eggs in a nest plastered with straw and clay, generally at the stump of some old hawthorn tree.

The bluebird is a native of the Alps, and resembles the blackbird in the sweetness of its notes, though it is more docile, and soon becomes tame; for, if waked at midnight, it will begin to speak or whistle, if commanded to do so by any well-known voice. About the beginning of winter its feathers change, and it becomes black instead of a beautiful blue: it resides in the highest parts of rocks and precipices, and forms its nest in a very deep hole. It never produces

more than four or five young; and for its beauty and sweetness is universally admired.

The fieldfare and redwing are but transitory visitants, and are stupid and insipid birds; though in northern climates they are known to sing very sweet and melodious strains: they build their nests in hedges; and their eggs are a bluish green, spotted with black.

The stare is distinguished from the rest of this tribe, by the hue of the feathers changing from glossy green to purple, according to the light in which the bird is placed; the voice of the stare is rougher than that of the two former, but with the greatest facility it is taught to speak: it forms its nest in hollow trees, eaves of houses, towers, and rocks; and in winter they assemble in very large flocks, and seem fond of associating together in a tribe: in spring, the greater part of them leave the country, whilst the rest remain here and breed up their young.

It is impossible to describe the variety of foreign birds which might be included in the thrush kind, the beauty of whose tints are so completely striking, that at once they please and gratify the sight. The American *mocking-bird* particularly charms by the sweetness of its note; this bird, in size, resembles the thrush; it is of a gray and white colour, with a reddish bill; but that which renders it so extraordinary, is its being able to imitate the voice of bird and beast, and that with such a degree of exactness, that it is impossible to distinguish the *original* from the *cheat*.

THE NIGHTINGALE, AND OTHER SOFT-BILLED SINGING BIRDS.

The Nightingale is not only famous amongst the moderns, but was celebrated by the ancients for the sweetness of its strains; and Pliny tells us, that for fifteen days and nights, it continues its notes, concealed in the thickest shades. The tones produced by this enchanting little warbler, are modulated into the softest and most delightful strains; at once so plaintive and melodious, that it is impossible to listen to them and remain unmoved.

This most famous of the feathered tribe visits England in the beginning of April, and in August takes its flight; but it is only to be found in the southern parts of the country; and in Scotland, Ireland, and North Wales, it is never to be seen. Their favourite haunts are low coppices and thick

hedges: and for weeks together, if undisturbed, they will remain on the same tree.

In the beginning of May, the nightingale prepares its nest, which is composed of moss, straw, and leaves; and as it is concealed at the bottom of the thickest bushes, it generally escapes the plundering hands of boys. Whilst the female continues sitting, her mate soothes her with his voice from some contiguous bush, whilst she listens to his enlivening sound; and if he apprehends any danger approaching, he warns her by short interruptions in the notes. She generally lays four or five eggs, but in this country the whole number are seldom nurtured into life.

The nightingale's song, when under captivity, is by no means so pleasing as in its natural state; but Gessner asserts, that they will converse with facility, without being instructed in the art of speech.

The redbreast is a bird well known in our climate for the softness and sweetness of its notes; during spring, it may be heard in every grove and garden, but when it is about to breed, it retires to bushes that are remote. As winter approaches, it seems to claim man's protection, by chirping and flying around his abode; and when it can no longer find worms and insects, solicits what falls from his hospitable board.

The lark, the sky-lark, the wood and the tit-lark, are all distinguished by the length of their heel, and their voices are much louder than the nightingale's, though not so soft, and exquisitely sweet; yet, to hear this bird warbling upon the wing, raising its note as it soars, and at length is out of sight; to see it then descending with a swell as it comes from the clouds, yet sinking, by degrees, as it approaches the spot where all its affections are centered and confined, affords the mind those pleasing sensations which inanimate objects can never produce.

The lark builds its nest upon the ground, under some turf that shelters it from sight; the eggs are four or five in number, in colour resembling those of the plover kind. Whilst sitting, the male entertains his mate with his song; and, even when risen above the human sight, keeps his eye fixed upon the abode of her he loves. As winter approaches, their harmony begins to cease, and they assemble together in large flocks, when they fall victims to those who make bird-catching their trade, for the purpose of supplying the tables of the luxurious.

The black-cap and the wren, though diminutive in size, astonish by the shrillness and loudness of their note;* the latter is termed the mock-nightingale, from the sweetness of the sounds that issue from its throat.

All soft-billed birds, that are prized for singing, may be brought up in the same way; they ought not to be taken until almost full-feathered, and the nest should be placed in a basket, and covered up warm; every two hours, they ought to be fed with sheep's hearts, chopped fine, and mixed with hard eggs; or raw meat, minced carefully, and every particle of fat taken away. As they grow older, they should be put in a nightingale's cage, lined at the bottom with straw or dry moss, and the utmost cleanliness constantly preserved. In autumn, for a fortnight, they will often abstain from food, unless they have two or three meal-worms twice or thrice a week; saffron should likewise be added to their water, and a spider or two given them in the course of every day. When their legs are cramped, they should be anointed with fresh butter; and when they grow melancholy, and refuse to sing, white sugar-candy must be put in their water, and their food be a mixture of sheep's heart and eggs, with the addition of meal-worms and ants' eggs.

THE CANARY, AND OTHER HARD-BILLED SINGING BIRDS.

The Canary Bird is now become so common, and has continued so long in a domestic state, that its native habits, as well as country, seem now scarcely to be known. From the name, it appears that they came from the Canary Islands, though Germany is the place where they now chiefly are bred, and absolutely may be considered as an article of traffic, which produces no trifling sum by the sale.

The Canary bird, in its native islands, is totally different from those which Europeans see; for, instead of either bright or combined colours, its feathers are all of a dusky gray. The high piercing notes of this sweet little songster, are, by many persons, thought too powerful for a cage; whilst others devote their attention to their *breeding*, and for the benefit of those we shall establish a few rules.

* The lungs of all birds extend throughout their body, which accounts for their being able to produce such powerful strains; but in quadrupeds, they are confined to the breast.

In choosing the Canary bird, those are always best that appear with life and boldness, and stand erect upon their perch; not apt to seem frightened at every thing that stirs, nor with eyes that appear either inanimate or dim.

Towards the end of March, the cocks and hens should be put together, in a room that has the benefit of the morning sun, and, instead of glass, the windows should be wired, as air is necessary to the preservation of their lives: the floor should be kept remarkably clean, occasionally sifted over with dry gravel, or red sand; there should also be perches, at proper distances, for the birds to settle upon as they fly, and a large tree, in a tub, in the middle of the apartment, in the branches of which they may be able to form their nests: hair, cotton, wool, and fine hay, should be dispersed in different parts of the room. The male will take his turn in building the nest, sitting upon the eggs, and feeding the young. They are generally two or three days in building their nests, which usually contain five eggs, which in a fortnight are nurtured into life.

THE SWALLOW AND ITS AFFINITIES.

In this tribe may be included the goat-sucker, which may be styled a nocturnal swallow, as at the approach of evening it begins its flight. This bird is the largest of the kind, and may be known by the tail not being forked like the common swallow's. The martin's tail is likewise but little forked, and it is not of so large a size. The house-swallow is too well known to require being particularly described.

These birds may be all known by the size of their mouths, which they always extend when they are upon their flight; their feet are formed remarkably slender, and their wings are longer in proportion than those of any other birds of their size: their tail is likewise of an extraordinary length, and acts as a rudder in its circuit through the air.

About the latter end of September, the swallows leave us, and, a few days previous to their departure, assemble in large bodies upon the tops of houses, as if to deliberate on the fatiguing journey they are about to undertake: they direct their flight to Congo, Senegal, the Morocco shore, and the southern states.

THE HUMMING-BIRD AND ITS VARIETIES.

Of this charming little animal there are six or seven varieties, from the size of a small wren down to that of an humble-bee; yet it is furnished with bill, feathers, and intestines, exactly resembling those of the largest kind. A bird, not so big as the end of one's little finger, would probably be supposed but a creature of imagination, were it not seen in the fields of America, flying from flower to flower, like butterflies on a summer's day. The smallest of the species is about the size of a hazel-nut: the feathers on its wings and tail are black; but those on the body, and under the wings, are of a greenish brown, with a fine red cast, and a gloss which no silk nor velvet can imitate: on its head it has a small crest, green at the bottom, and as it were gilded at the top, which sparkles in the sun like a brilliant star; the bill is black, straight, and slender, and about the length of the smallest sized pin. The larger humming-bird is not quite half so big as our wren: it is not adorned with a gilded crest; but, from the throat, half way down the belly, its crimson-coloured feathers are more beautiful than can be conceived; and they vary their tints according to the light: the heads of these birds are peculiarly small, with circular eyes that are black as jet.

As soon as the sun has risen, these beautiful little flutterers begin to embellish the scene, and fly with rapidity from flower to flower, whilst a kind of humming sound issues from their wings, occasioned by the peculiar swift motion of their flight. The humming-bird is furnished with a forked tongue, calculated for extracting the honey from each flower, as that is the only diet on which it feeds.

The nests of these birds are not less curious than themselves, and are suspended in the air at the very point of a twig: they are composed of the fine fibres of vegetables, carefully combined with cotton and moss, and in shape and size resemble *half* the egg of a hen. The eggs are not larger than a small pea, of a clear white, with a few yellow specks. During the time of sitting, the female never quits her nest, except when the dew lies upon the flowers; and, during that period, the male takes her station, but quits it again upon her return. In twelve days the young ones make their appearance, and in size they resemble a blue bottle fly: at first they are entirely without any covering;

Nightingale



Black Bird



Starling



Redbreast

Canary bird



Hummingbird



Skylark



Swallow

Heron



Crane



Spoonbill



Stork



Flamingo



W. Hay sc.

but, in a little time, we can perceive a down, which is soon converted into that beautiful apparel which renders the humming-bird so generally admired.

The Indians formerly estimated the humming-bird for the ornamental part which it made in their dress; but it is now chiefly caught for the purpose of selling it to Europeans, which is done by placing bird-lime in the fields, upon rings



CHAP. VIII.

BIRDS OF THE CRANE KIND IN GENERAL.

THIS class of birds is to be distinguished from others, rather by their appetites than their conformation; yet even in this respect, they seem to be sufficiently discriminated by Nature; for, as they are to live amongst waters, yet are incapable of swimming, their legs are formed of a peculiar length, and bare of feathers half way up the thigh. The bill is likewise remarkable in most of this class, as it is generally much longer than that of other birds, and furnished with nerves that enable them to feel their food, which often lies at the bottom of marshy ground.

Willoughby and Pennant make the crane from five to six feet long, from the tip to the tail; yet Brisson's account seems more to be depended upon, when he asserts, that from the tip to the tail, it is three feet four inches, and not more than three feet in height; for it is not easy to suppose, that a bird, not bigger in the body than a turkey-hen, and not weighing more than *ten pounds*, should be equal to a full-grown ostrich in length.

The crane, then, is a tall, slender bird, with a neck proportioned to the length of its legs: the top of the head is covered with black bristles, and the back of it is bald and red, which completely distinguishes it from the stork: the plumage in general is of an ash colour; and there are two large tufts of feathers springing from the pinion of each wing, which the bird can erect or depress at pleasure, and which have the appearance of hair that is curled.

All ancient writers have been particular in their descriptions of this bird, and exaggeration has tended to immortalize its fame. From the policy of the cranes, they say

we may form an idea of a perfect republic; from their tenderness to their decrepit parents, which they cherish and support with the utmost zeal, we may learn a lesson of filial obedience; and from their battles with the pigmies of Ethiopia, receive maxims in the art of war.

In these accounts there doubtless is some foundation, though much may be ascribed to a poetic mind, as in early times the *poet* and *historian* were universally combined. The crane is, however, a very social bird, and remarkable for connubial fidelity and love; its favourite food appears to be vegetables; though upon a failure of these, they will eat snails, lizards, sea-fish, beetles, and earth-worms.

The cold arctic region seems to be this bird's favourite abode, for they come down to the more southern parts of Europe, rather as visitants than inhabitants of the climes. Gessner assures us, that they begin to quit Germany about the eleventh of September, and fly toward the south by thousands at a time; and, in these journeys, they often do the greatest damage to whole fields of standing corn; for, though they ascend above the human sight, they are able to distinguish all objects that lie beneath, and no sooner observe a field of corn than the whole body rapidly descend; but always quit their plunder at the dawn of day.

The female, which is easily distinguished from the male, by *not* being *bald* at the back of her head, never lays more than a couple of eggs, of a bluish colour, and like those of a goose; the young ones are very soon able to fly; when the parents forsake them, and they shift for themselves. They are said to live to a great age; and Aldrovandus assures us, that a friend of his kept one tame for upwards of forty years. Their voice is the loudest of all the feathered tribe; and they were formerly considered as excellent to eat. They are found in almost every country in Europe. The lower class of people regard the crane with veneration; and from its early or late appearance, foretell what their labours will produce.

THE STORK.

If we observe the stork externally only, it may very easily be confounded with the crane, though the latter is ash and black, and the former is white and brown; yet as the neck, legs, and body, have the same appearance, it is no wonder this mistake has frequently been made. The crane, however, has a piercing voice, whilst the stork never utters any

sound, though it produces a singular noise by striking the upper and lower jaw. The crane feeds upon corn and vegetables, whilst the stork preys entirely upon frogs, serpents, birds, and fish: the former lays but two eggs, but the latter generally four, and is fond of residing near populous places, whilst the crane endeavours to remain concealed.

Storks are birds of passage, like the former; but, as they travel by night, their flight is concealed: they all assemble on a particular day, and not one of the party is ever left behind. They generally return to Europe about the middle of March, and form their nests on the tops of chimneys and houses; are extremely attentive and careful of their young, and seldom trust them out of their sight.

The Egyptians had so high a veneration for this bird, that they paid it honours which ought only to have been divine. It is usually supposed that the ancient ibis is the same with that which goes at present by this name; it is a bird of the stork kind, about the size of a curlew, and entirely black; with a bill which terminates in a point that enables it to seize its destructive prey, which consists of locusts, caterpillars, and serpents, with which that country so particularly abounds.

THE BALEARIC AND OTHER FOREIGN CRANES.

The Balearic Crane is about the size of the ordinary one, with long neck and legs, like all other of their kind; but the bill is rather shorter, and the colour of the feathers of a dark greenish gray: on the head is erected a thick round crest made of bristles, spreading every way, in appearance resembling rays standing out in different directions; the longest of these rays (if such they may be called,) measure about three inches and a half in length, all of which are topped with a kind of black tassel, which makes them appear very beautiful to the sight; the sides of the head and cheeks are bare, of a whitish cast, but edged with red; and underneath the throat is a kind of bag or wattle, resembling that which grows upon the cock; the eyes are very large and staring, the pupil black, and the iris the colour of bright gold.

This bird comes from Africa and the Cape de Verd islands, and so much do they resemble the peacock in manners and disposition, that Ray has chosen to rank them with that tribe, under the denomination of the Sea-Peacock.

The jabira, and the jabira-guacu, are both natives of Brazil, though we know but little of the history of these birds, except that the jabira is rather larger than a swan, and that its bill is about eleven inches long. The jabira-guacu is about the size of a stork, with a bill that is thirteen inches in length; both are covered with white feathers, except upon the head and neck, each of which is completely bald.

The anhima is likewise a native of Brazil, bigger than the swan, and of the rapacious kind; the head, which is small for the size of the body, is distinguished by a horn which grows out of the forehead, bending forward like the unicorn's, which fabulous authors have so frequently described. This horn is about the thickness of a crow's quill, and in colour of an ivory white: at the second joint of the fore part of each wing, spring two straight triangular spurs, the one an inch, the other somewhat less, in length; the claws are likewise long and sharp; and they are continually making a loud unpleasant cry, as if repeating the word *Vyhoo*. The bill of the anhima is about two inches long, and, in appearance, resembles jet. The male and female are very much attached; and the survivor of either never leaves its companion if it dies, but remains by its side until regret and sorrow soon put an end to its miserable life.

The Numidian cranes must not be omitted in the history of birds of this race; the English sailors call it the *Buffoon bird*; but by the French it is termed *Demoiselle*, as they conceive that all its motions are lady-like, and full of grace. The attitudes of this bird are both ridiculous and extraordinary, and afford sailors much pleasure and delight; it first stoops, then rises; lifts up one wing, then the other; sails forward, then returns; and, in short, turns into a variety of positions, which may either arise from *pleasure* or *fear*.

The Numidian crane is a very scarce bird; the plumage of it is leaden gray; but, from the back of the head, there fall beautiful white feathers, about four inches in length; while the fore part of the neck is adorned with black ones, that gracefully flow below the breast.

THE HERON AND ITS VARIETIES.

Birds of the crane, the stork, and the heron kind, bear so strong an affinity to each other, that their difference is not easily discerned; and, of the latter, Brisson has enume

rated no less than forty-seven, which all vary in plumage and size, though they perfectly agree in the rapacity of their desires.

The common heron is remarkably light in proportion to its bulk, as it does not weigh more than three pounds and a half, though, when its wings are expanded, from tip to tip they measure full five feet; the bill is about five inches in length; its claws are sharp, and the middle one toothed like a saw; and though it seems to be armed for destruction, it is so cowardly as to be alarmed at the sight of a sparrow-hawk.

It was once the amusement of the affluent and unfeeling, to pursue this timorous creature with the falcon, as a sport; and so anxious were they for the preservation of the species, that it was twenty shillings sterling penalty for the destruction of their eggs. The heron, of all birds, commits the greatest depredations upon ponds which are abundantly stored with fish; for its appetite is so completely insatiable, that it has been known to devour fifty in a day; and, upon a calculation that was made by a simple experiment, it was found that a single bird would destroy, in a twelvemonth, no less than fifty thousand carp.

In general, the heron is seen standing by the side of ponds or lakes, with its long neck sunk between its shoulders, and its eyes anxiously bent upon the pool; and, whenever it observes its prey approaching, darts upon it with the most certain aim; sometimes it wades as far in the water as its long legs will allow it to go, and waits patiently till the smaller fish take possession of those shallows with which pools, in general, in some parts, abound. Though, in seasons that are fine, the heron finds a plentiful supply, in cold and stormy weather it is reduced to distress, as the fish always confine themselves to the deepest places they are able to find at the bottom of the stream, and they are then compelled to live upon frogs and lizards, though they cannot procure enough to supply them with food.

Though this bird lives chiefly among pools and marshes, yet it forms its nest upon cliffs, or the most elevated trees, and at the time of sitting, appears to enjoy society, though, at every other period, they are observed to range alone: their nests are of sticks, lined with wool; and the female lays four large eggs, the colour of which is a pale green; yet their indolence is so great, that they will never make a nest if they can get possession of one that has been formed by a rook or crow.

The French consider these birds, when young, as a delicacy, and actually assist them in forming their nests ; but we have ever thought their flesh unpalatable, and totally unfit to be used as food.

THE BITTERN, OR MIRE-DRUM.

Those who have walked in an evening, by the sedgy sides of unfrequented rivers, must remember the variety of notes which issue from the water-fowl ; the croaking of the mallard, the scream of the wild-goose, the whining of the lapwing, and the tremulous neighing of the jacksnipe ; but, of all the sounds, there are none so dismally hollow as that which comes from the bittern's croaking voice. The bird, however, which produces this tremendous noise, is not so large as a heron, with a much weaker bill, which does not exceed four inches in length : it differs from that bird chiefly in colour, which in general is a pale yellow, barred with black. From the loudness and solemnity of the voice of this bird, the ignorant imagine it thrusts its bill into some reed, that is the means of enabling it to swell its note ; though the truth is, it may be heard with an equal degree of shrillness, when far remote either from reed or rush.

This bird, though of the heron kind, is neither of so voracious nor destructive a race ; but is a retired and timorous animal, which conceals itself in the midst of reeds, and makes frogs, insects, and vegetables, the whole of its food. The nest of the bittern is composed of sedge or dry reeds, and is formed amongst bushes by the side of a stream : it generally lays seven or eight eggs ; and the young shift for themselves in the course of three days.

THE SPOONBILL.

The Spoonbill is one of those birds which differ a good deal from the crane, yet approaches nearer to the class than to any other of the kind ; the body, for its height, is much more bulky ; and the bill possesses a greater degree of length ; still it subsists among the waters, as comparatively a tall bird, and its toes are divided in the manner of the crane's.

The European spoonbill is about the *bulk* of a crane, though wanting, at least, one foot in height ; with us, they are of a dingy white ; but, in America, they are between a

crimson and a rose; yet the figure of the bird is so awkward as totally to destroy the effect of its plumes. The bill of the bittern is singularly formed, and is broad at the end, resembling a spoon; the eyes likewise possess the most vacant stare; and the whole of its beauty consists in the colour of its plumes: round the upper chap runs a kind of red ring; but its cheeks and throat are merely covered with black skin. A bird so strangely formed, might be supposed to possess peculiar appetites; but the spoonbill leads a life resembling the crane; and the bill, which possesses such a singular appearance, to short-sighted mortals seems of no particular use.

THE SHOVELER.

The Shoveler chiefly feeds upon frogs, toads, and serpents, for which the inhabitants of the Cape of Good Hope so highly esteem them, that they are suffered to run tame about every house; and the Egyptians did not hold the ibis in higher reputation, than they do this very useful bird.— Their flesh, it is true, is unfit to be eaten; but it destroys those animals which are obnoxious where they abound, and in that country is held in much higher estimation than in any other part of the world.

In Europe, the shoveler associates with the heron, and forms its nest in the branches of the highest trees: it generally lays from four to five eggs, of a whitish cast, with a few pale spots.

THE FLAMINGO.

Though the Flamingo is web-footed, like birds which class under the goose kind; yet, from its appetites, height, and figure, it seems to have an undisputed right to be ranked with the crane. Its neck and legs are *longer* than any of that species, and it seeks its food in the bosom of a stream, though instead of securing it by the aid of its claws, it depends solely upon the strength of its bill.

The flamingo is the most remarkable of all the crane kind; the tallest, bulkiest, and most beautiful. The body, which is of a brilliant scarlet, is no bigger than that of a swan; but its legs and neck are of such an extraordinary length, that, when it stands erect, it is upwards of six feet high. When its wings are extended, they measure five

feet six; the bill is formed like a bow, partly red, and partly black, and is about seven inches in length; the legs and thighs are disproportionately small; and the toes are united by membranes like those of a goose.

This singular bird, though formerly well known in Europe, is now only prevalent along the South American and African coasts; it is very shy and timid; resides either near salt water lakes, and marshes, or makes choice of some unfrequented place. At the approach of night, they frequently quit the marshes, and take up their abode on the mountain's side, but return to the margin of the lakes or rivers as soon as they behold the appearance of light, and form themselves in a rank along their sides, which often extends near half a mile. This rank, however, is broken when they are in search of food; and, during that period, one of the party stands as sentinel, to give instant notice if any danger should approach, which he does by a shrill loud noise, equal to the largest trumpet in sound.

The tongues of this bird were once thought a great delicacy; and the Roman emperors used to consider them as a most elegant dish, as we are told that one of them procured fifteen hundred to be served up at one of his luxurious feasts. The flesh of the young ones is by some thought tolerable eating; but the old birds are remarkably hard and tough. When the Europeans first came to America, or coasted along the African shores, they found the flamingos extremely gentle, and never alarmed at their approach, as the negroes and native Americans had no method of killing them but by the aid of their arrows and bows, the fatal effects of which the bird contrived to elude; but, when the fowler discharged his piece among them, they appeared too much alarmed to be capable of flight; and though their companions were dropping before them, the uninjured remained motionless and unmoved.

The nests of these birds are curiously constructed, and formed of mud scraped together about a foot and a half above the surface of the pool, which has the appearance of those pots that are placed upon tops of chimneys, for the purpose of conducting up the smoke. In this hole, the female deposits two eggs, without lining it with any thing to keep the young ones warm, who are a long time before they are capable of flying, though they soon are able to run with the utmost fleetness and strength.

THE AVOSETTA, OR SCROOPER; AND THE CORRIKA,
OR RUNNER.

The Avosetta is chiefly found in Italy, though in England it has *occasionally* been seen. The body is not larger than that of a pigeon; but the legs are remarkably long for its size; and, above the knee, it is bare of feathers, which proves it has the habit of wading in the stream; yet its history is imperfectly related, though time and observation may make it better known. The bill differs from all other of the feathered species, by turning up like a hook, just the reverse of a hawk's; it is black, flat, sharp, yet flexible, and measures about three inches and a half in length; it is web-footed, like a duck; but from the *slenderness* of its figure, we have ventured to rank it among the cranes.

SMALL BIRDS OF THE CRANE KIND, WITH THEIR
THIGHS NEARLY BARE.

In this group we find an extensive tribe of native birds, and a variety of others of different climates, of which we know little more than their colour and name. In this list is exhibited the curlew, a bird about the size of a duck, with a bill about four inches in length; the woodcock, not larger than the common pigeon, with a bill one inch shorter than the former bird; the godwit, resembling the size of the woodcock, with a bill the same length as the curlew; the greenshank, a bird with very long legs, but the bill not measuring more than two inches and a half; the redshank, differing in colour from the former; and the snipe, not more than half the size, though its bill measures three inches in length.

Amongst the birds with shorter bills, we discover the ruff, with a collar of feathers round its neck; and the ree, the female of the same bird; the knot; the sand-piper; the sanderling; the dunlin; the purre, and the stint. And amongst those with bills which yet decrease in length, we may observe the lapwing; the green plover; the gray plover; the dottril; the turnstone, and the sea-lark. These, with their affinities, are properly natives, or rather visitants, of this country, and are dispersed along our shores, rivers, and watery grounds; and, were we to take in birds of this kind which belong to other climates, we should swell the class to

an infinitely greater amount, as Brisson has computed them at a hundred at least.

All these birds are bare of feathers above the knee, and are capable of running remarkably swift; their bills are formed for scratching up insects, and the points are endowed with three pair of nerves, which pass from thence to the roof of the mouth, and enable them to feel the worms and insects which are concealed in marshy grounds. As this class resides in watery places, their constitution seems peculiarly calculated for the cold; for they evidently make choice of the most rigid climates, and migrate to this country when other birds remove from hence; and the few of their number, which reside among us, retire to the top of the bleakest mountains to breed, where they remain with their young families until winter gives evident notice of its approach. The curlew, the woodcock, the snipe, the godwit, the gray plover, the green and the long-legged plover, the knot, and the turnstone, merely visit us in the winter, and quit us at the beginning of spring, retiring to the mountains of Prussia, Sweden, Poland, and Lapland, where they form their nests and bring up their young. As birds of this species run swiftly, and feed upon the ground, so they are all found to nestle there; their nests are made without the slightest art, and the eggs laid in some little depression of the earth, or amongst the blades of long grass, that seem scarcely sufficient to preserve them from the damps below; they never lay more than four in number, and are generally hatched in fourteen days.

It is inherent to birds of this class to quarrel, particularly at certain periods of time; and those who take them in nets, for the purpose of fattening, are obliged to confine them in a complete dark room; or, could they obtain the sight of each other, death alone would terminate their disputes. Most of them are considered as real delicacies, and form a part in the entertainment of the epicure.

THE WATER-HEN AND THE COOT.

Before we enter upon what are *properly* called *water-fowls*, it may not be amiss to turn our attention to those which form a shade between: these partake rather of the form than of the habits of the crane, and, though furnished with long legs and necks, are known to swim instead of wade. The birds alluded to are the water-hen and coot, which, though they

cannot properly be called web-footed, have a membranous fringe on each side of their toes, by which they are enabled to float upon the stream.

Though these birds are formed with a striking similarity, and in their colour, which is black, they are perfectly the same, except that the bald part of the forehead in the coot is black, whilst in the water-hen it is pink, peculiarly bright. These birds, that in *form* bear so strict a resemblance, differ exceedingly in size, as the water-hen weighs but sixteen ounces, and the coot at least twenty-four: the wings and bills of both are proportionably short, and differ from the generality of those of the crane kind; they therefore are never known to migrate, as their wings are by no means calculated for flight.

The water-hen seems in some degree domestic, as she generally resides near the side of a pond: but the coot appears to prefer a rapid river, from possessing a much larger portion of strength, yet in these excursions, is often destroyed by the otter, or taken in those wires which are placed for the fishes. The nest is formed upon the margin of a river amongst the reeds that are continually wetted by the stream; and the young ones seem to be formed by the assistance of that element in which it is destined they should afterwards remain.

The water-hen forms her nest upon shrubs and low trees, and composes them of fibres and very small sticks; her eggs are sharp at one end, green and red spotted, and she generally has two or three broods in the year: her food consists of insects, or the slimy green weed that floats upon the surface of standing pools; and, as soon as the young ones are hatched, she points out their subsistence, and then leaves them to shift for themselves.

To these birds, with *long legs* and finny toes, we shall add one that has short legs, but with toes just the same: the grebe is much larger than the former two, with beautiful glossy feathers of black and white: the legs are short, and made for swimming; and from the knee upwards, they seem hid in the belly of the bird.

As neither legs nor wings are calculated for flying or walking, the grebe of course seldom leaves the stream; they chiefly frequent the mires of Shropshire and Cheshire, and breed among the flags and weeds. The female is allowed to be an excellent mother, and feeds her young with eels, and, when they are fatigued with swimming, has fre-

quently been seen to carry them upon her back ; the feathers upon their breast are remarkably beautiful, and the ladies formerly made use of them for tippets in dress ; but it is so great an adept in the art of diving, that, comparatively speaking, very few of them are killed.



CHAP. IX.

OF WATER-FOWL IN GENERAL.

THE first great distinction in this class appears in the toes, which are webbed together for the purpose of swimming ; and those who have remarked the toes and feet of a duck, will easily conceive how admirably they are formed for forcing a passage through the stream. When men swim, they never open their hands so as to let the fluid pass, but, closing them together, present one broad surface, which, by beating back the water, pushes their bodies along. What man performs by art, Nature has supplied to water-fowl, and has given them two broad oars, with which they paddle along ; and, as their toes are webbed in the most convenient manner, their legs are no less admirably formed ; for, by being short, they strike with facility, and materially assist them as they swim. Though this shortness of legs qualifies them for the water, it renders them unfit for remaining long upon land, and therefore they generally breed near the side of those rivers where they usually reside. The young of this class are covered with a soft down, that enables them to support the coldness of their situation ; and the old ones have likewise a much warmer plumage than any other of the feathered race.

It is to these useful birds that we owe the comfort of good feather beds, on which to repose our weary limbs, as they neither mat nor imbibe humidity, from an animal oil with which they are endowed, but which proves extremely offensive and disagreeable, unless the feathers are thoroughly dried before they are used.

As among land birds there are some fitted entirely for depredation, and others entirely for a harmless method of life, so, in the tribe we are now describing, some are inoffensive and live upon insects and vegetables, and others make fish and even small birds their prey. All water-fowl may be divided into three classes ; those of the gull kind,

Water Hen



Coot



Gull



Pelican



Albatross



Gannett



Penguin



Swan



Goose



Duck



King Fisher

Linnae sc.



with long legs and round bills, which fly along the surface of the water for the purpose of seizing their prey; those of the penguin kind, which have round bills, short wings, and their legs hid in the abdomen, which dive into the stream, and catch their unwary food; those of the goose kind, with flat broad bills, that subsist upon vegetables and the insect tribe.

In the first of these classes we shall find the albatross, the cormorant, the gannet, the shag, the frigate bird, the great brown gull, and all those of the lesser kind; these birds have sharp pointed bills, hooked at the end for holding their fishy prey.

In the second class we shall find the penguin, the ank, the skout, the sea turtle, the bottle-nose, and the loon. The bodies of these are large and heavy, and their wings so short that they cannot fly; but their legs and feet are peculiarly formed for diving, or they would find it difficult to obtain any food.

In the third class, which chiefly feeds upon insects and vegetables, we discover the swan, the goose, the duck, the teal, the widgeon, and all the varieties of their numerous tribe: but we must first give the description of a bird that seems allied to no species, and therefore the pelican must be separately described.

THE PELICAN.

The Pelican of Africa is much larger in the body than a swan, and somewhat of the same colour and shape; its four toes are all webbed together, and the form of its neck bears some resemblance to the swan's. The singularity which peculiarly distinguishes this bird, chiefly consists in the form of its bill, and the great pouch which hangs underneath it, which has given rise to a variety of fabulous tales. This enormous bill is fifteen inches, from the point to the opening of the mouth, which is a good way back, behind the eyes; at the base it is rather greenish, but varies towards the end to reddish blue; in the beginning it is very thick, but tapers off towards the point in the form of a hook. To the under chap hangs this extraordinary bag, which extends along the whole bill, and reaches to the neck, and is said to be capable of containing no less than *fifteen* quarts; this bag the bird has the power of wrinkling up into the hollow of the under jaw; it is not covered with feathers, but with a soft, very smooth down, and, when empty, is scarcely perceptible; but when

the pelican has been successful in fishing, it is astonishing to see to what a size it will extend ; and it has been asserted, that it would contain as many fish as would satisfy the appetites of six hungry men.

This bird was once known all over Europe, though it now seems to have deserted its coasts ; fabulous writers have asserted that it fed its young with its blood, and that the bag served as a reservoir, when it flew over the desert sands. These accounts are equally incredible, as the bag is not used for water but for fish, and the bird never attempts to satisfy its appetite until it is completely filled ; yet, as Father Labat studied its manners in America, from him is borrowed the following account.

“The pelican has strong wings, furnished with a thick plumage of ash colour ; and the feathers on the rest of the body are exactly the same ; the eyes are small, compared to the size of its head, and there is something in the countenance very melancholy and sad.

“They are torpid and inactive to the greatest degree ; so that nothing can exceed their indolence, but their gluttony ; and it is only by hunger they are excited to move, or they would continually remain in a stupid kind of sleep. When they have, with exertion, raised themselves about forty feet above the surface of the sea, they turn their head with one eye downwards, and in that position continue their flight. As soon as they perceive a fish sufficiently near the surface, with the swiftness of an arrow they dart down, surprise their victim before it can escape them, and carefully preserve it in their pouch ; again they rise, and continue hovering over the stream until their bag is completely filled, when they retire to land, and greedily devour the produce of their morning’s toil. As evening approaches, they feel another hungry call, and again towards the rivers pursue their flight, where they remain until their bag is filled, when they take up their abode on some high tree for the night, and would remain in a state of torpid stupidity during the greater part of the succeeding day, were they not roused by that voracious appetite, which seems with reluctance to compel them away.”

This habit of indolence attends them through all seasons ; for the female will not be at the pains of forming an abode for her young, but drops her eggs upon the ground ; and, when sitting, will even suffer them to be taken away. Her young seem to call forth the powers of affection ; for, Labat tells us, he tied two of them by the leg to a post,

and the old one came to feed them with great regularity with the contents of her well stored pouch, and did not seem inclined to leave them until each day was drawing to a close.

The native Americans kill them in vast numbers, yet they are even too coarse for a savage to digest; but their pouches, when dried, are converted into bags or purses, and frequently embroidered for the ladies' use. Some authors assert, that they may be made domestic, and rendered obedient to their commander's word; that they seem to be fond of music and conversation, and will show attention to both for several hours. They are allowed to be a long-lived bird, as the emperor Maximilian had one tame above eighty years.

THE ALBATROSS, THE FIRST OF THE GULL KIND.

Though this is one of the largest and most formidable of the American and African birds, yet its history has been very imperfectly described. Edwards informs us, that the body is rather longer than the pelican's, and that its wings extend ten feet, if measured from tip to tip: the bill, which is six inches long, is yellow, and terminates in a crooked point; the top of the head is a bright brown; the back much deeper, with spots of the same; and under the wings and belly it is perfectly white.

This bird is an inhabitant of the tropical climates; and, like all of the gull kind, takes its prey upon the wing, and chiefly pursues the flying-fish that the dolphins compel to quit the sea, though it will frequently take different water-fowl by surprise.

As the albatross, except when they breed, live entirely remote from land, so are they often seen to sleep, as it would seem, even in their flights through the air; though what truth there may be in this assertion, we will not take upon us to say. The attachment that subsists between the albatross and the penguin, seems as firm as that which can be formed by the sincerest friends; their nests are constructed with great uniformity, near to each other, on some uninhabited isle. those of the albatross placed in the centre, and those of the penguin curiously ranged around.

THE CORMORANT.

The Cormorant is about the size of a large Muscovy duck ; and, though the toes are united by a membrane, the middle one is notched like a saw, to assist it in holding its fishy prey. The head and neck of this bird are of a sooty blackness, and the body thick and heavy, not much unlike that of the goose ; the bill is straight till near the end, where the upper mandible bends into a hook.

As soon as winter approaches, these birds are seen dispersed all along the sea-shore, and ascending up towards the mouths of rivers, dealing destruction to all of the fishy tribe ; for their digestion is as sudden as their appetite is voracious, which may in some measure be accounted for, by their intestines being filled with a large quantity of small worms.

From the body of the cormorant there issues a most fetid smell, and from its voice proceeds both hoarse and croaking notes ; its appetites are gross, its habits unclean, and in the whole feathered race there is not a more displeasing bird. Yet, as the most disgusting animals may possess some valuable qualities, the cormorant has been held in esteem for the facility with which it catches fish ; and Willoughby assures us it was once valued in England, and rendered domestic for that peculiar use.

These birds, previous to being taken to the river, are hood-winked, to prevent them from receiving any fright ; and are not dislodged from the displeasing encumbrance, until a leather thong has been fastened round the lower part of their neck, to prevent them from *swallowing* the objects of their pursuit, or their possessors would derive little benefit from their skill.

As soon as they are unveiled, they dive under the water, and remain there a considerable time, until they have caught four or five fish, which are without difficulty dislodged from out their throat.

THE GANNET, OR SOLAND GOOSE.

The Gannet is about the size of a tame goose, but its wings are of a much greater length ; the bill is about six inches, and the sides are irregularly jagged ; as a substitute for nostrils, there is a deep furrow that reaches almost to the end of the bill ; and the plumage is nearly white ; from the corner of the mouth is a narrow slip of bare skin,

black in colour, extending to the back of the head ; beyond that skin is another, that, like the pouch of the pelican, will easily dilate, and contain, at least, five or six herrings, which, during the time of nurturing, the male uses as a conveyance of food to the female and her young.

The islands to the north of Scotland, the coasts of Kerry in Ireland, and those which lie in the North Seas, are where those birds most abound ; and they are seen in those places during the months of May and June, in such abundance, that they absolutely seem to cover the ground.—Martin assures us, that, upon the rocks of St. Kilda, the inhabitants consume near twenty-three thousand young birds, and eat of their eggs in the same proportion, without appearing to decrease the breed.

The gannet is a bird of passage, which in winter seeks the most southern coast of Cornwall, and gives the fisherman notice of the herrings' and pilchards' approach, as they regularly precede them from the Northern Seas, and return again to these frigid climates at the season when these fish disappear.

The gannet is remarkable for the keenness of its sight, and is possessed of a transparent membrane under the eyelid, with which it covers the whole eye at pleasure, without, in the slightest degree, obscuring the sight ; by this means it is enabled to dart headlong into the water, from the amazing height of a hundred feet. These birds breed but once a year, and lay only a single egg ; but if by chance that should be removed, a second, and even a third, will supply its place ; but then, the poor bird, tired with persecution, flies away to some more secure place. The egg is rather less than that of a goose ; and their nests are composed of those substances which they happen to find floating upon the surface of the sea.

THE SMALLER GULLS AND PETRELS.

The Gull, and all its varieties, are well known in every part of the world, and is seen, with a slow-sailing flight, hovering over rivers, to prey upon the smaller kind of fish. It likewise follows the ploughman in the fallow-fields, for the purpose of picking up the insects from off the ground ; and it will eat carrion in times of scarcity, and almost every other kind of food.

The large gulls reside at a remote distance from man, but the smaller ones dwell nearer his abode. Of this species

there are twenty different kinds ; but of the petrel only three, and of the sea-swallow, the same. The gulls may be distinguished by an angular knob on the lower chap ; the petrels, by their want of it ; and the sea-swallows by their bills, which are straight, slender, and sharp pointed.

Those who have been much upon the coasts of England, know there are two different kinds of shore ; that which slants down to the water with a gentle declivity, and that which rises with a precipitate boldness, that seems set as a bulwark to repel the force of the invading deep ; it is to such shores as these, that the whole tribe of the gull kind resort to breed, as the rocks offer them a retreat for their young, and the sea affords them an ample supply of food.

Those who have never observed these bold coasts, have no idea of their immense sublimity ; for the boasted works of art, the highest towers, and the noblest domes, are but as ant-hills in comparison ! the face of the shore offers to the view a wall of massive stones, ten times higher than our tallest steeples ; and the rocks of St. Kilda are known to measure upwards of three quarters of a mile in height ! What must be our awe at approaching the edge of that impending height, and looking on the unfathomable vacuity below : to ponder on the terrors of falling to the bottom, where the waves that swell like mountains, and the roar of an ocean a thousand leagues broad, appear to the ear softer than a brook ! and, in these majestic bold retreats, the cormorant, the gannet, the tarrock, and the fern, claim undisturbed possession.

To walk along the sea-shore when the tide is departed, or to sit in the hollow of a rock when it comes in, attentive to the various sounds that gather on every side, may raise the mind to its highest and noblest exertions ! The solemn roar of the waves swelling into, and subsiding from, the vast caverns beneath ; the piercing note of the gull ; the frequent chatter of the guillemot ; the loud note of the ank ; the scream of the heron ; and the hoarse, deep, periodical croaking of the cormorant, all unite to furnish out the grandeur of the scene, and turn the mind to *Him* who is the *essence* of *sublimity* !

These birds, like all others of the rapacious kind, lay but few eggs, in consequence of which their numbers are observed to diminish ; a circumstance which, at first view, may appear a benefit to mankind ; but, when we consider how many inhabitants of the British islands are sustained by their

flesh, either fresh or salted, we shall find no satisfaction in thinking that these poor creatures may lose in time their chief, though hardly-earned support!

The gull, in general, builds upon the edges of rocks, and lays from one to three eggs: the nests are formed with long grass and sea-weeds, and the young ones are infinitely preferable for food: yet most of these have a fishy taste, and their flesh is strong and stringy. Almost all delicacy is a relative thing; the luxuries of the poor are coarse to *us*, yet still luxurious to *those* who have not *tasted better*; and the difficulty with which this homely banquet is procured, may probably be the means of giving an additional relish to the taste.

There are two methods of taking these birds, which are practised by men trained to this dangerous work; the one is, to let themselves down these frightful precipices by a rope, with a stick fastened to the end, on which they sit across: and the other is, to ascend by the help of a long pole, with a hook at the end; yet both of these plans are attended with danger, and often prove fatal to those who follow that pursuit.

THE PENGUIN KIND.

The wings of the penguin kind are totally unfitted for flight, and their legs still more awkwardly adapted for walking; for above the knee is hid within the body, and nothing appears but two short legs or feet, which seem to spring from under the rump. This awkward position of the legs, which unqualifies for living upon land, admirably adapts them for their residence in the deep; for, by being placed backwards, they answer the purpose of fins, and have the power of pushing the body with velocity along the stream.

As they never visit land but when they come to breed, the feathers on their breast naturally become white, whilst those which are exposed to another element, according to the species, take a different hue.

The *Magellanic penguin* is the largest of this tribe, and in size approaches near to the goose; its wings are short, and covered with stiff, hard feathers, always expanded and hanging uselessly by its sides, and it is incapable of taking the slightest flight. On the upper part of the head, and back, the feathers are all perfectly black; but those on the breast are delicately white, with a line of black that runs across the crop; the bill is of the same colour, but marked across with

yellow stripes : they walk erect, with their heads high, with their wings drooping like two arms ; and at a distance they look like so many children with white aprons tied round their waists : in themselves may be said to unite the qualities of men, fishes, and fowls : upright, like the first ; their feet acting the part of fins, like the second ; and being feathered, like the third.

Though these birds feed upon fish, their flesh is thought very tolerable food by those whose appetites refinement has not depraved. A mutual good fellowship seems to prevail amongst them, as they always come on shore in a numerous tribe.

The penguin lays but one egg, and in uninhabited places ; it makes merely a depression in the earth, except when there is a chance of their being annoyed or incommoded ; it will then sometimes burrow two or three yards deep, when three or four females take possession of a hole, and one stands sentinel to guard the rest.

The great northern diver is beautifully variegated, and though in size it resembles the penguin, yet the figure is more elegantly formed. The gray speckled diver is about as large as a Muscovy duck, and resembles the former, except in size. The ank, which breeds on the island of St. Kilda, is smaller than the duck, and from the abdomen to the middle of the throat, the feathers are all delicately white. The guillemot is about the same size ; and the only difference to be observed is in the bill, which is longer, and more perfectly straight. The scarlet-throated diver may be distinguished by its name ; and the puffin is one of the most remarkable birds we know.

It is difficult to describe the form of the bill of the puffin, which varies very much from that of any other bird. Those who have seen the coulter of a plough, may form some idea of the beak of this odd-looking animal : the bill is flat, with a triangular figure, sharp at the point, but the edges turning upwards ; ash-coloured towards the base, and red near the point ; and the eyes are fenced with a protuberant skin, of a livid colour.

The puffin, like all the rest of this kind, has its legs thrown so far back that it can hardly move without tumbling, which makes it rise with great difficulty ; but, as it is not much bigger than a pigeon, when once it has risen it can continue its flight with great celerity, though it seldom chooses very elevated spots for the purpose of forming its nest.

During the winter, all the birds of this species are absent, but, about the latter end of March, or the beginning of April, a troop of spies or harbingers appear, which, after taking a survey of their former situations, again depart, but return in the course of a month or five weeks, attended by the whole body of their companions.

The puffin, when it prepares for breeding, which always happens a few days after its arrival, begins to scrape a hole in the ground, not far from the shore, and, when it has penetrated some way into the earth, it then throws itself upon its back, and, with bill and claws, burrows inward, until it has dug a hole, with several windings and turnings, from eight to ten feet deep: in this fortified retreat, it lays one egg, which, though the bird is not much bigger than a pigeon, is quite as large as that of a hen. When the young one is excluded, the courage and industry of the parent are incredible, and few birds or beasts will venture to attack them in their retreats. When the great sea-raven approaches, the puffin catches him under the throat with his beak, sticks his claws into his breast, and in vain the tortured animal attempts to get away, for the little bird sticks close to the invader, nor lets go his hold until they both come to the sea, where they drop down together, and the raven is generally drowned. Though this fate sometimes attends the depredator, it often happens that both the mother and the young one are devoured; for, if the puffin happens to be at the bottom of her hole, she is not able to make any defence.

Near the isle of Anglesea, in an islet called Priesholm, where their flocks may be compared to swarms of bees, they frequently take possession of the rabbit's burrows, to save themselves the trouble of digging their own holes. From these deep hiding-places the inhabitants contrive to take them, either by digging to the bottom, or dragging them out with a hooked stick; for, though they feed entirely upon fish and sea-weed, yet, when pickled with high spices, they are considered as a treat.

Before we describe the third division of water-fowls, it may not be improper to observe, that there is one species of the round-billed kind, which it is difficult to determine in what class to place, and this is the goosecander; a bird with the body and wings shaped like the penguin's, though the legs are very differently made. It may easily be distinguished by the bill, which is round, hooked at the point, and the under and upper chap toothed like a saw; its col-

ours are various, and very beautiful; and, like the heron, it builds its nest among trees. It is allowed to be an excellent diver, and seems to form a shade between the penguin and the goose.

BIRDS OF THE GOOSE KIND, PROPERLY SO CALLED.

The Swan, the Goose, and the Duck, are leaders of a numerous and useful tribe of birds, that have been reclaimed from a state of nature, and taught to live in dependence upon man. No bird makes a more indifferent figure upon land, or a more beautiful one in the *water*, than the *swan*: when it ascends from its favourite element, its motions are awkward, and its neck is stretched forward with a stupid air: but, when it is seen smoothly sailing along the stream, commanding a thousand graceful attitudes, moving at pleasure without the smallest effort; when it “proudly rows its state (as Milton has it) with arched neck between its wings mantling,” there is not a more beautiful figure in all Nature.

The wild swan is about one-fourth less than the tame; the one weighing about twenty, and the other seldom more than sixteen pounds. The feathers of the tame swan are delicately white; but, in the wild one, the back and the tip of the wings are a pale ash. The internal conformation of these birds differs infinitely more than the *external*, and to the singular construction of the wild swan’s wind-pipe, may be ascribed the loud and harsh tones of its voice, although the most celebrated authors of antiquity fabulously asserted there was harmony in the sound.

This beautiful bird is as delicate in its appetites, as it is elegant in its shape; it feeds upon corn, bread, and seeds, and such herbs and roots as grow near the edges of the stream: it prepares a nest in some retired part of the bank, and generally where there is an islet near, which is composed of water-plants, long grass, and sticks: the male assists the female in her employment, and assiduously attends her during the time she sits. The egg of the swan is perfectly white, and much larger than that of the goose: the time of sitting is about two months; and the cygnets are of an ash colour, when they first leave their shell. The swan is allowed to be a most attached parent, and will fiercely attack any one who ventures too near her brood; and so great is the force with which they can strike their *union*, that a leg or an arm might be broken with the blow.

The feathers of the young swan remain ash during the first twelve months, and then gradually become delicately white ; and it was formerly held in such esteem in England, that Edward IV. made it imprisonment to touch their eggs ; and no one was suffered to keep any of these birds, unless his annual income amounted to eight dollars. The swan is allowed to be remarkable for its longevity ; and Willoughby seems to think it will live one hundred years.

THE GOOSE, AND ITS VARIETIES.

The Goose, in a domestic state, exhibits a variety of colours, but the wild goose always retains the same marks ; the whole of the upper feathers are ash-coloured, whilst the breast and belly are of a dirty white : the bill is narrow at the base, and black at the tip ; the legs are yellow, and it is not quite so large as the tame.

The wild goose is supposed to breed in the northern parts of Europe, and in the beginning of winter to descend into more temperate climes ; they are often seen flying at very great heights, in flocks of from fifty to a hundred at a time, and seldom resting during the day. Their cry is frequently heard when they are at an imperceptible distance ; and, when they alight, they arrange themselves in a line, exactly in the same manner as cranes.

The bill of the tame goose is completely red, and the legs of a darkish brown ; and both wild and tame have a white ring round their tail, which shows that they originally were of the same breed.

The barnacle differs from both, not being equal in size, and having a much shorter bill. It is scarcely necessary to combat the idle error of this bird's being hatched from a shell that adheres to the bottom of ships.

The brent goose, in size, resembles the Muscovy duck, though the body is longer made ; the head, neck, and upper part of the breast, are black ; and about the middle of the neck are two small spots or rings of white.

These, and many other varieties, are found in this kind, which agree in one common character of feeding upon vegetables, being remarkably fruitful, and very firmly attached to their young. The gander seems to possess the same degree of affection for the brood as his mate, and guards them with the most watchful and anxious care ; and will even attack both men and mastiffs, if he fancies they are going to molest the young.

The flesh of the goose is excellent eating; and every author must acknowledge the value of its quills: the feathers are allowed to make the best beds of any, though the ancients were but little acquainted with their use. Lincolnshire is the county of England where these birds are in the most abundance, though in Somersetshire the feathers are held in the highest esteem; and once or twice a year, the poor animals suffer the torture of having them all torn from their sides. Hudson's Bay also furnishes very fine feathers, of the goose kind. The down of the swan is brought from Dantzic; and from Greenland, Iceland, and Norway, we procure the eider-down.

THE DUCK, AND ITS VARIETIES.

The tame Duck is the most easily reared of all our domestic animals, for the very instinct of the young ones directs them to their favourite element; and, when nurtured and protected by the tender care of the hen, they totally disregard her admonitions and cries. The duck is a heedless and inattentive mother, and frequently leaves her eggs until they spoil; and even seems to forget that she is intrusted with such a charge. She is equally regardless when the young are excluded; and if she leads them to a pond, and shows them the water, appears to think she has performed every duty that is required.

The hen is a nurse of very opposite character, and generally brings forth a young one from every egg; she does not, of course, lead the ducklings to the water, but when they are in it, never quits the brink; and should a rat, or weasel, attempt to molest them, she instantly proves both her courage and her care, and allures the young ones from the scene of danger to some place of safety near the house.

Of the wild duck, Brisson reckons twenty different sorts, though there are not more than ten of the tame; the latter are distinguished by their feet being *yellow*, whilst those of the wild are invariably *black*. Sea ducks, which feed in salt water, and dive much, may likewise be known by their broad bill, the hinder toe being much larger, and having a long *blunt* tail, whilst those that feed in ponds and rivers have a narrow bill and a sharp pointed tail.

It would be tedious to enter into a minute description of such a numerous class of birds, all agreeing in their habits and mode of living, and only varying in plumage and size

In this tribe we may rank, as natives of Europe, the eider duck, which is twice the size of the common kind, the bill of which is completely black; the velvet duck, not so large, and the bill of a yellow hue; the scoter, known by a knob at the end of the bill; the tufted duck, adorned with a thick crest; the scaup duck, with a bill of grayish blue; the golden eye, with a large white spot at each corner of the mouth; the sheldrake, with a bill of bright red, and swelling into a knob towards the end; the mallard, which is the stock from whence our tame ducks have been produced; the pintail, with the two middle feathers of the tail three inches longer than any of the rest; the pochard, with the head and neck of a bright bay; the widgeon, with a lead-coloured bill, and the plumage on the back marked with black and white lines; and, lastly, the teal, the smallest of this tribe, with a bill black, and the head and upper part of the neck bright bay.

These are the most common birds of the duck kind, which happen to be known amongst us; but, if we extend our view to foreign parts of the world, the list of course would be greatly increased. The most striking amongst these is the muscovy, or more properly speaking the *musk* duck, from a supposition that it possesses a musky smell; this bird is a native of the African clime: the Brazilian duck, which is the size of a goose, and entirely black, except the tips of the wings; the American wood duck, with a variety of beautiful colours, and a plume of feathers that fall from the back of the head.

All these live in the same manner as our domestic ducks, keeping together in flocks in the winter, always flying in pairs during summer, and bringing up their young ones by the water side; their nests are usually built among heath or rushes, and they lay from twelve to fourteen eggs. In the arctic regions, nothing can exceed the great care which birds of this species take to prevent their young from feeling inconvenience from the cold; but the eider duck is particularly remarkable for the method she adopts to supply her offspring with an artificial heat. The external materials of which the nest is composed, are such as are used by the rest of the kind; but the inside lining, on which the eggs are deposited, is warmer and softer than can be conceived: this is no other than the inside down which grows upon the breast of the affectionate bird, and which she plucks off to secure them from the severity of a climate that might prove fatal, by the extreme intenseness of the cold. The natives watch the

place where she begins to build; and, when she has done laying, take away both eggs and nest; and, after separating the down from the moss and dirt, barter it away for tobacco and spirits. The poor bird, however, is not discouraged by these depredations, but instantly prepares a second nest, which again becomes the property of these plunderers, when the persevering animal then makes a third; but should that become the prey of the invaders, she then entirely forsakes the place.

As they possess the faculties of flying and swimming, so they are generally birds of passage; and it is most probable perform their journeys across the ocean, as well *on the water*, as *in the air*. As soon as they arrive amongst us, they are generally seen flying in flocks, and appearing to take a survey of those lakes where they intend taking up their winter's abode, and in the choice of these they have two objects in view, to be remote from interruption, and yet near their food. Lakes, therefore, with a marsh on one side, and a wood upon the other, are always known to be their favourite retreat.

Though various methods are used for taking these birds, none of them answer so well as a *decoy*, which generally is found to be most productive, where there is a large pond surrounded by a wood, and beyond that marshy and uncultivated ground. When the place is chosen, the pool should be planted round with willows, unless the wood shades it on every side; and on the north and south there must be three or four channels, broad towards the pool, but ending in a point. These channels are to be covered with nets, supported by curved sticks fastened on each side, and terminated by a tunnel net, like those in which fish are caught in the weirs: the whole of this apparatus must be carefully concealed by a hedge of rushes and reeds along the margin of the pool, behind which the fowler manages his operations, which would be completely frustrated if he was seen. Previous to the time of beginning his employment, he is prepared with a certain number of wild ducks rendered tame, that are accustomed to obey the signal of his whistle, which calls them to be fed at the mouth of the pipe. The fowler, when he finds a fit opportunity, and sees the decoy covered with birds, throws handfuls of hemp-seed upon the surface of the water, or any other seed that he knows will float; and, whistling to the decoy ducks, easily allures them to their accustomed regale at the mouth of the pipe: the wild ducks instantly follow their leaders, and push

been disturbed. She begins to lay early in the season, and the young generally are hatched about the beginning of April; whilst the male, whose fidelity exceeds even that of the turtle, daily supplies her with a large portion of food. The young ones are hatched at the expiration of twenty days, but differ in beauty as much as size.

Having thus given a short History of Birds, we cannot take leave of this beautiful part of the creation, without feeling a degree of reluctance at having completed the task. These splendid inhabitants of the air, possess all those qualities that can cheer the fancy, and amuse the mind; the brightest colours, the roundest forms, the most active manners, and the sweetest sounds. In sending the imagination in pursuit of these, in following them to the chirping grove, the screaming precipice, or the glossy deep, the mind is naturally lost to a sense of its own situation; and, attentive to their little sports, almost forgets the task it undertakes. Innocently to amuse the imagination in this dream of life, is wisdom; and nothing is useless, that, by furnishing mental employment, keeps for a while in oblivion those stronger appetites that lead to evil. Every rank and state of life, may find something to imitate in those delightful inhabitants of the grove; and we may not only employ our time, but mend our lives by the contemplation. From their courage in defence of their young, and their assiduity in incubation, the coward may learn to be brave, and the rash to be patient. The inviolable attachment of some to their companions, may give lessons of fidelity; and the connubial tenderness of others, be a monitor to those who are deficient in love and esteem. Even those that are tyrants by nature, never spread capricious destruction; and, unlike man, never inflict pain but from necessity, and not from choice.

FISHES.

CHAP. I.

OF FISHES IN GENERAL.

THOUGH the ocean is allowed to be the grand receptacle of Fishes, still a great variety are to be found both in rivers and streams; and many authors give it as a decided opinion, that the whole species were naturally produced from the sea.

Though the wants of mankind, and the curiosity of individuals, have discovered great variety in this prolific race;* yet their pursuits, migrations, antipathies, and pleasures, are concealed by that element in which they reside.

Most fishes offer the same external appearance, enlarging in the middle, and tapering towards the ends; and this form we endeavour to imitate in the construction of those vessels which sail upon the sea. Yet the progress of a machine moved forward by *human* contrivance, is not equal to that which *Nature* produces in a fish; for they can easily outstrip the swiftest sailer that ever ploughed the turbulent main.

The fins are the chief instruments in a fish's motion, which in some are more numerous than in the rest: for one that is completely fitted for sailing is furnished with three single ones, and two complete pair, and thus equipped, it migrates with the utmost rapidity, and, in the course of a season, will traverse three thousand leagues. Yet it does not *always* happen that those fish have the most rapid motion, which are endowed with the greatest number of fins; for the shark is allowed to be one of the swiftest swimmers, but wants the ventral or belly fin. These fins not only serve the animal in progression, but in rising, sinking, turning, and even leaping out of the stream. The

* Linnæus asserts, that there are upwards of four hundred different kinds.

forward until they find the pipe decrease, when they appear to suspect the danger that surrounds them, but are prevented from retreating by a man placing himself at the mouth; they are therefore compelled to dart towards the end of the funnel, when, without any difficulty, they are all secured.

It sometimes, however, happens that the wild ducks are too drowsy to be allured by the enticement of the decoy ducks, in which case a little dog is trained for the purpose of driving them into the snare. In China, they have a still more curious method of obtaining an ample supply of these valuable birds; for, when they see a piece of water covered with them, they scoop out the inside of several gourds, which then naturally float, and though the birds at first are afraid of going near them, yet in a little time they become familiar to the sight, and rub their bills against them without the slightest dread. As soon as the fowler perceives that they are perfectly fearless, he scoops out a hole large enough to contain his head, and wading slowly into the water, lets only the gourd appear upon the surface of the stream: the unsuspecting fowls approach their destroyer, without experiencing the slightest degree of dread; he then catches them by the legs, jerks them under the water, and fastens them to a belt prepared round his waist: and, when he has secured as many as he can carry, quietly returns to the opposite shore.

THE KING-FISHER.

We shall now conclude the history of birds, with the account of one that seems to unite in itself something of each preceding class; it appears possessed of appetites for prey like those of the rapacious kind, and an attachment to the water like those birds which exist by its aid. It exhibits, in its form, the beautiful plumage of the peacock, the shading of the humming-bird, the bill of the crane, and the short legs of the swallow.

The king-fisher is not larger than the latter named bird, though much more clumsy in its shape; the legs are small, and the bill disproportionably long, being two inches from the tip to the base; the upper chap black, and the lower one yellow; but its colours atone for the inelegancy of its make. The crown of the head, and the coverts of the wings, are of a deep blackish gray, spotted with azure, most beautifully bright; the back and tail are of the same colour, and the under part of the body is orange, a red line

of which passes from the bill to the eyes, which terminates in a large spot of white: the tail is short, and consists of twelve feathers of a rich and very deep blue; the feet are of a reddish yellow, and the three joints of the outward toe adhere to the middle one, whilst the inner one is only attached to the first.

From the diminutive size, the slender short legs, and the beautiful colours of this bird, no person would be led to suppose that it is one of the most rapacious little animals that skims the deep; yet it is for ever on the wing, feeds on fish, of which it takes a surprising number, when we consider the smallness of its size. It chiefly frequents the banks of rivers, and takes its prey like the osprey, balancing itself at a certain distance above the water for a considerable time, then darting down into the deep, and seizing the fish with a most inevitable aim. On a bright day, whilst it remains suspended in the air, it exhibits an appearance quite dazzling to the sight; and it is probably owing to the extraordinary beauty of its plumage, that so many fictitious stories about it may have taken rise.

Of this bird it has been said, that she built her nest upon the water, and possessed a charm about her that allayed the fury of the waves, so that during the time she was sitting, the mariner might venture over the roughest seas. Cicero has written a long poem in praise of the halcyon, which the ancients supposed to be this very bird; but as in the Indian Ocean, many different nests float upon the surface of the waves, it is difficult to determine whether it is the same.

The king-fisher with which we are at present acquainted, is neither capable of allaying the storm, nor of erecting its nest upon the waves; but hollows, with its bill, a hole in the earth, generally about a yard deep; the bottom of this hole is considerably enlarged, and lined through with the down of the willow; and though the ancients supposed it was made of the bones of the sea-needle, it has since been found to be a mistake; for, though the king-fisher lives entirely upon fish, it is incapable of digesting the smallest bones, but throws them up again, and half fills its nest.

The female lays from five to nine eggs; and if her nest is robbed will return to it again, replenish it with the same number of eggs, and sit as contentedly as if she had not

flying-fish frequently rises out of the water, and pursues its course for a hundred yards, until, apparently exhausted by the exertion, it regains its vigour by sinking into the stream. The pectoral fins push the animal forward, and are placed behind the opening of the gills; the ventral fins grow under the belly; and the dorsal fin is situated along the back; this also assists the animal in motion, and enables it to keep an equilibrium in the stream: the anal fin grows near the tail, and serves to keep the fish upright, or in a vertical state. The tail is a more powerful assistant than the fins, as they are all in a certain degree dependent upon its aid; for, whenever it wishes to turn, a blow from the tail sends it round; and, when it strikes backwards and forwards, it gives addition to its speed.

As most animals that live upon land are furnished with a covering to defend them from the *injurious change* which *weather* might produce; so that numerous part of creation, which reside within the waters, are protected from their influence by a glutinous kind of matter that defends their bodies like a sheath; beneath this, many of the species have a strong covering of scales, under which is found an oily substance, which at once adds warmth and vigour to its life.

The fish, thus protected and fitted for motion, seems to be furnished with the means of happiness as well as quadrupeds or birds; but upon a more minute examination of their faculties, we shall find the advantages of the latter greatly to be increased. The sense of *touching*, which beasts and birds are known to possess, (though not in a very great degree,) to the fish, covered with a coat of mail, must be unknown; and of the sense of *smelling*, which in beasts is allowed to be exquisite, the fish enjoys but a moderate share. It is true, that all have one or more nostrils: but, as air is the medium through which odours necessarily pass, an animal, residing constantly in water, must receive every exhalation imperfect and faint.

Of *tasting* they can make but very little distinction, as the palate of most is bony and hard; and their *hearing* is allowed to be extremely doubtful; anatomists are of opinion that they cannot hear at all.

Seeing appears the sense which they possess in the greatest measure; yet those who have made observations on their eyes, assert, that they all are extremely near-sighted, and cannot discover objects that are distantly removed.

From the observations of the Naturalist, we easily discern

that fishes are inferior both to birds and beasts ; and even their brain, that mansion of sensation, is extremely small when compared to their size.

To preserve their own existence, and continue it to their posterity, fills up the whole circle of their pursuits ; a ceaseless desire of food seems to be the ruling impulse, and the only enjoyment they are capable of in life. Their digestive faculties are very extraordinary, for their stomachs will soften the shells of the most callous fish : and their whole lives are passed in a state of depredation ; the larger of the species existing upon the small.

Nor is the pursuit of fishes, like that of terrestrial animals, confined to a single region of the globe ; for shoals of one species follow the other, from the Equator to the Pole. The cod, from the banks of Newfoundland, pursue the whiting, which flies before it, to the most southern shores of Spain, and the cachalot is said to follow shoals of herrings, and to swallow thousands at a single gulp. This may be one cause of their annual migration, though others likewise may be produced ; they may change their residence for one more suited to their constitution, or more adapted for depositing their spawn.

It is remarkable, that no fish are fond of very cold waters, and in summer are seen in numbers, lying in shallows near the shore, where the sun has the power of warming the water to the bottom ; and, in the winter, at the lowest depths of the ocean, where the coldness of the atmosphere has not the power to reach.

The severity of the winter is fatal to many fresh water fishes, as may frequently be observed after the breaking up of a frost ; this is often occasioned by the air being excluded from them by the thick impenetrability of the sheets of ice. Though all fish reside in the water, air is necessary to the preservation of their lives ; yet nothing is more difficult to be accounted for, than the manner in which they obtain the supply. The use that is generally assigned to the air-bladder, is the enabling the fish to rise or sink at its will ; but the ancients were of opinion that it was to come in aid of the lungs, and to remain as a kind of store-house of air, to supply the animal if distressed ; and to this opinion we are inclined to assent.

Hitherto we have seen the inhabitants of the ocean every way inferior to those which dwell upon the land ; but, if they are capable of fewer enjoyments, they are generally endowed with a greater length of life ; for, residing in an ele-

ment subject to but little variation, they avoid many of the evils produced by the atmosphere's change, and their size continues to increase with their years.

There have been two methods devised for determining the age of fishes: the one is by the number of circles on the scales; and the other, by the transverse section of the back. When the scale of a fish is examined through a microscope, it will be found to consist of a number of circles one within another, resembling those which appear on the transverse section of a tree, and offering the same information to the mind; for as the circles on the tree correspond with the years of its growth, so those upon the scales of the fish are proportioned to its life; and by this method Mr. Buffon assures us he discovered a carp to be a hundred years of age.

The age of those fish which are destitute of scales, may be discovered by separating the joints of the back, and then observing the number of rings which are exhibited upon the surface where they were joined. Though the discovery of these marks may be more *ingenious* than *certain*, there is no reason to doubt that the generality of the species are very long-lived. Those that have ponds are enabled to form an opinion of their ages, by making observations upon their different size. All sorts, a few of the larger ones excepted, multiply their kinds by hundreds and thousands at a time some of their number bring forth their young alive; but the greater proportion are produced from eggs, which are either deposited at the bottom or the edges of the water, or float in millions on the surface of the stream. Of these eggs, scarcely one in a hundred produces an animal, as the aquatic birds devour those that are found on the edges of the water, and those at the bottom become a prey to the fish. Still there are sufficient to supply the deep with inhabitants, and to provide for the wants of a considerable part of mankind; for Lewenhoeck tells us, that in one season a *gadus morhua* will produce nine millions of eggs. The mackarel and flounder are likewise strikingly prolific; for the former spawns five hundred thousand, and the latter a million, in the year. Such an amazing increase, if permitted to come to maturity, would be much too abundant for the ocean to contain. yet two wise purposes are answered by this astonishing fecundity; for it is the means of preserving the species in the midst of numberless enemies, and serves the rest with that kind of sustenance that is most likely to contribute to the prolongation of their lives

Fishes in general, the whale kind excepted, are entirely divested of all tenderness for their young; and, instead of nurturing them with that fondness conspicuous in the brute creation, frequently devour them with the same indifference as every other kind of food. Such is the general picture of these heedless hungry creatures; yet there are some endowed with finer feelings than the rest, and which seem to possess all those parental sensations which are so easily to be discovered both in quadrupeds and birds. These nurse their offspring with the fondest solicitude, and seem to experience all a mother's care. Under this class comes the *cetaceous* tribe of fishes, or, as they may otherwise be termed, those of the *whale* kind. There are others, which, though not capable of nursing their young, yet bring them *alive* into the world, and protect them both from danger and harm; these are termed *cartilaginous*, from having *gristle* instead of *bones*: but those which leave their spawn unprotected, and seem dead to those sensations which other parents feel, are distinguished by the name of *spinous* fishes, from the sharpness of their bones bearing a resemblance to a thorn.

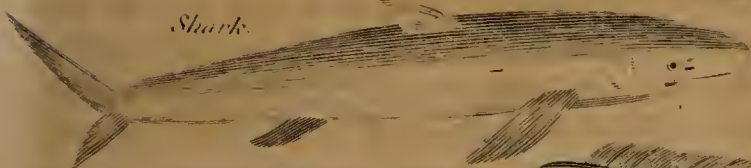
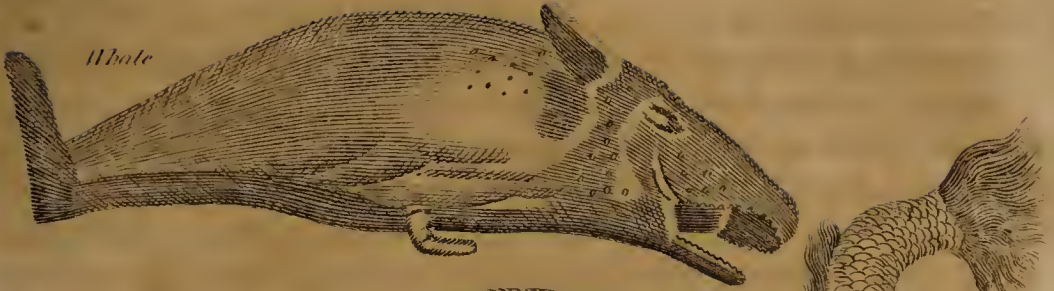
Thus it may be observed, that there are three grand divisions; the *cetaceous*, the *cartilaginous*, and the *spinous*; all differing from each other in their appearance and conformation, and in their manner of educating their young.



CHAP. II.

OF CETACEOUS FISHES IN GENERAL.

As on land there are some orders of animals that appear formed to command the rest, so in the ocean we find some kind of fishes endowed with instincts that exalt them above others of the race; and though residing in an element that distinguishes them from quadrupeds, yet resembling them, in many instances, in their internal form and make. This tribe is composed of the whale and its varieties, the cachalot, the dolphin, the grampus, and the porpoise, all of which seem to possess those appetites and affections, which more particularly belong to the animal race: they are formed with lungs, midriff, stomach, and intestines, exactly like those of



Kneass sc.



the quadruped kind ; and all cetaceous fish have their sight defended by eyelids, which resemble those of the human race.

Other fish deposit their spawn, totally regardless of the existence which it conceals ; but the cetaceous tribe of animals, though they produce but one or two at a time, seem to experience for their offspring both solicitude and care, supplying them with nutriment from their own bodies, and caressing them with fondness whilst they hang upon their breast. Mr. Waller, in his beautiful poem of the Summer Islands, relates a simple, though interesting fact, which at once proves that parental tenderness is capable of defying both danger and pain :—“ A whale and her young had got into an arm of the sea, and, by the ebbing of the tide, were unable to retreat, when the people from the shore, observing their situation, prepared themselves with weapons, and approached in boats. The poor creatures were quickly wounded in various situations, and the sea was absolutely discoloured with their gore ; yet their attempts to escape, for a time were unavailing ; but at length the old one forced a passage over the shallow, and secured its own safety by the depth of the sea. There she remained a short period ; but finding the young one had not strength to escape, she again returned to the scene of danger, resolving to become the partner of its fate. The returning tide fortunately relieved them, and enabled them to force a passage through that prison in which they had been confined.”

The other distinctive marks of this tribe are, that their fins never exceed *three*, namely, the two pectoral, and one on the back. Their tail also differs from any other of the species, being so formed as always to lie flat upon the stream. Some of these enormous animals are destitute of teeth, and others possess them only in the lower jaw.

THE WHALE.

If we compare land animals, in respect to *magnitude*, with those that take up their abode in the deep, we shall find they will appear contemptible by the comparison : though, from the bones of quadrupeds that have been dug out of the earth, we know that they formerly exceeded the present size ; and that there have been animals in existence twice as large as any elephant that ever was seen. Creatures of such an immense bulk required a proportionable

extent of ground for subsistence ; and becoming rivals with men for the possession of their territory, in the contest were most probably slain.

It is not only upon *land* that man has exerted his power of destroying ; for his influence has extended to the depths of the sea ; and we no longer hear of whales measuring two hundred and fifty feet ; though we know that they existed about two centuries ago. The Northern Seas were once the region to which the largest of these animals used to resort ; but so great has been their slaughter for the last two ages, that they begin to grow thinner every day ; and those that are now discovered in these places, are allowed to be very much decreased in size.

The whale generally resorts to those parts of the ocean where there is the least likelihood of their being disturbed ; and near the South Pole, it is still asserted that many are to be found a hundred and sixty feet long. Taking it, however, at the common size of eighty feet in length and twenty in height, it must still appear an enormous animal, calculated to excite astonishment and surprise ; yet, when compared with the accounts that have been given of the sea-serpent and kraken, they appear but diminutive in our eyes. To believe all that has been said of those animals, would be too credulous ; and to reject the possibility of their existence, would be a presumption unbecoming mankind.

The whale is doubtless the largest animal in creation, of whose history we can give any *certain account* ; and of this fish there are several different species, distinguished by their external figure and internal shape. The great Greenland whale has no back fin, and the back is covered with a sable hue. The Iceland whale is white upon the back, and, like the former, it wants the back fin. The New-England whale has a hump upon the back. The whale, with six humps on the same place. The fin-fish, with a fin on the back near the tail. The pike-headed whale, and the round-lipped whale. All these differ in figure, as the distinguishing marks in their names imply. They vary also in their manner of living ; yet none are allowed to be of a very voracious kind ; and, when compared with the cachalot, that tyrant of the deep, may be considered harmless, if not tame. Their history, therefore, may be comprised under that of the great common Greenland whale, which will be sufficient to give an idea of the rest.

The Greenland whale is a large heavy animal, the head

of which makes one third of its size, and usually measures from sixty to seventy feet; the fins on each side are from five to eight feet in length; and the tail, which always lies flat upon the water, is said to measure twenty-four feet in breadth: this is their only instrument of destruction; for the fishermen's boats are often upset with a single blow; and with this it forces its passage through the immeasurable ocean; and, only in *turning*, makes use of the fins. Though the fins are not the means of promoting the whale's progress, yet the female applies to their aid when pursued or in distress: for in those cases she puts her young between her shoulders, and prevents them from falling off by supporting them with her fins.

The cleft of the mouth is about twenty feet long, and the upper jaw is furnished with barbs like the pipes of an organ, of which the whalebone in ladies' dresses is entirely composed: and the other bones of this enormous animal are not converted to the slightest use. The tongue appears fixed in the lower jaw, and resembles a large lump of fat, sufficient to fill several hogsheads with oil; the eyes are not larger than those of an ox, but placed very far back in the head; and, though there is no external appearance of an ear, yet there is a black spot near the eye which covers the auditory nerve; and its sense of hearing is by anatomists thought to be very acute: the spout-hole, or nostril, through which they breathe, and return the water they may have taken into their mouths, has outwardly but *one opening*, though, upon an *inward* examination *two channels* may be seen: and the noise the animal makes, when spouting the water through them, may be plainly distinguished the distance of a league; the skin is smooth and generally black, marbled over with spots of yellow and white; the outward one appears about the consistency of parchment, but the inward one is more than twenty times as thick; under this covering lies the fat or blubber, which is always from eight to twelve inches deep.

Their fidelity to each other exceeds that of any other animal, and surpasses even the constancy which birds are allowed to feel. Anderson tells us, that he saw a female wounded, whilst her attached partner was reclining by her side; who, seeing the object of his tenderness falling a victim to the harpooners, stretched himself upon her body, and participated in her fate.

Nothing can exceed the affection of the female for her offspring, whom she never forsakes either in danger or dis-

tress; and, when pursued, either clasps it to her bosom, or supports it on her back by the help of her fins. The young ones continue at the breast for a twelvemonth, at which time the sailors distinguish them by the name of *short-heads*; and during that period they increase so much in fatness, that they are said to yield fifty barrels of oil, whilst the parent, who nourishes them from her own bosom, becomes exhausted and extremely lean.

The whale is known to be a gregarious animal, which implies that they unite together for their mutual defence; yet it seems wonderful how a shoal of such enormous creatures should be able to procure a sufficiency to eat. It is likewise known, that they cannot swallow any body that exceeds a herring in size, yet they are infinitely fatter than any other animal, though they exist upon an insect not larger than a bean. This little insect floats in clusters upon the ocean, and resembles raw muscles very much in taste; and this simple food is their principal sustenance, and the chief means of supporting the harmless creature's life.

There seems to be an analogy between the whale and the elephant; for both are known to lead inoffensive lives, yet both are the strongest and largest animals in their respective elements, which are never to be dreaded unless injured or provoked. The sword-fish is allowed to be its greatest enemy, and one which the whale seems instinctively to dread; for, the moment it perceives it skimming the surface of the ocean, this enormous body appears agitated with fright, and endeavours to avoid the weapons of the assailant, by turning in an opposite direction to that which it takes; but vain are all attempts to evade it; the poor animal has no instrument of defence but its tail; and the sword-fish is so extremely swift and active, that it always contrives to avoid the stroke, and bounding up into the air, darts upon its victim, whilst the surrounding element becomes tinged from the sanguinary stream which issues in torrents from its wounds. The *cetus pediculus* is likewise no insignificant tormentor, for it contrives to bury itself under the animal's skin, and every effort to dislodge it from its voluptuous habitation, never yet was known to succeed.

But of all the enemies which the whale has to encounter, man is the one it has most reason to dread; for he destroys more in one year than the combination of its foes could do in an age. The great resort of these enormous animals

used formerly to be upon the Spitzbergen shores, where it might have been thought the rigour of the climate would have deterred mankind from attempting to invade. European ships, however, soon after the improvement of navigation, ventured to encounter the dangers of those seas; and though the Biscayners were the first who traded to the coasts of Greenland, the Dutch and the English soon contrived to destroy their trade.

The art of taking whales, like that of most others, owes great improvement to experience and time: but, as the Biscayners' method is the least complicated, it is best suited to this design. The ships, proper for this kind of commerce, are allowed to be those of about two hundred and fifty tons, which are generally stored with six months' provisions, and manned with about fifty men and boys. When arrived at the spot where the whales are expected, a sailor is always stationed at the mast-head, and, as soon as he discovers one of these enormous animals, the rest of the crew hoist out their boats, and row to the place which he directs. The harpooner stands at the prow of the boat, with the harpoon ready for striking in his hand, to which is fastened a cord of several hundred fathoms, which runs over a swivel at the edge of the boat; as soon as he arrives within reach of the animal, he darts the harpoon into its side, which is pointed with steel, like the barb of an arrow, six feet long, and of a triangular shape. As the fat, which covers the body, is not *susceptible*, it is some moments before the creature becomes sensible of the wound; but, as the harpoon penetrates towards the muscles, it begins to feel the effect of the most agonizing pain, and it instantly dives with an impetuous motion, in the hope of evading the attack of its foes; want of air at length again brings it towards the surface, when several harpoons are successively thrown, until the surrounding waves are totally discoloured, and the exhausted animal expires in agony! The rope in the harpoon prevents it from sinking, and is fastened to the boat with an iron chain: the poor animal is then cut into different pieces, and proper means adopted for extracting the oil.

THE NARWHALE, OR SEA-UNICORN.

This fish is not so large as the whale, not measuring more than sixty feet in length; the body is infinitely more slender, and it does not yield such a proportionate quantity of oil

The animals just described are totally without teeth; but in this formidable creature, we find them attached to the upper jaw, from which they extend in a straight line with the body, bearing the appearance of immense horns.

The extreme length of these instruments has induced many to consider them rather as *horns*, than *teeth*, but they doubtless resemble the tusks of the boar and the elephant, and proceed from sockets in the upper jaw, which are allowed to exceed ivory both in *whiteness* and *strength*. In a skull, to be seen at Hamburgh, there are two teeth which measure upwards of seven feet, issuing from the head in a straight direction, and about the thickness of a man's leg.

Though Nature has given the narwhale these destructive weapons, it is one of the most peaceable inhabitants of the sea: and is often to be observed inoffensively sporting amidst other great monsters that reside in the deep. The Greenlanders call the sea-unicorn the whale's forerunner, as it is certain to appear soon after that has been seen; this may probably arise from their natural passion for society, or from both existing upon the same food. The manners and appetites of both are similar, and they are always to be seen in herds; and whenever they are attacked, they crowd so closely together, that they are often entangled in each other's tusks.

When the method of catching whales was entirely unknown, and none were ever seen unless stranded on the coast, the narwhale's tooth was sometimes found amongst other fossil substances, and thought to belong to an animal of the quadruped race. This probably gave rise to the history of the unicorn, which Pliny has described as resembling a horse with a horn fixed in front of its head.

THE CACHALOT, AND ITS VARIETIES.

The Cachalot bore the title of the spermaceti whale, until Mr. Pennant, very properly, distinguished it by borrowing a name from the French. It has no teeth in the upper jaw; and, like the whale, there are seven different kinds, which are separately known by the following names: the cachalot with two fins, and a *black* back; the cachalot with two fins, but the back *white*; the cachalot with a spout in the neck; the cachalot with a spout in the snout; the cachalot with three fins, and sharp *pointed* teeth; the cachalot

with three fins, and sharp *edged* teeth; and, lastly, the cachalot with three fins, and *flatted* teeth.

None of this tribe are so large as the whale, and of course do not yield such a quantity of oil; the head is so disproportioned to the body, that it is allowed to measure half the size; the tongue of the animal is rather small; but the throat is of so formidable an extent, that it is believed to be capable of swallowing an ox; and its appetite is at once so keen and voracious, that it will devour a shoal of fish at a time. Linnæus tells us, that porpoises and dolphins have frequently been driven upon the neighbouring shores, when pursued by this devouring monster, which may properly be termed the tyrant of the deep.

Though the cachalot is formidable to the inhabitants of that element where Nature destined it to reside, yet mankind consider it as a valuable animal, for the excellent drugs it is known to contain. Spermaceti, that useful commodity, is found in the head of the cachalot, and is no other than the brain of this curious fish; for, upon the outward skin of the head being removed, a covering of fat is presented, about three inches thick, under which, instead of a bony substance, there only appears a second skin, which serves as a covering and defence to the brain. In the first cavity or chamber, the finest spermaceti is allowed to be found; and there is generally enough to fill seven barrels, of the best and most valuable kind; below this cavity there is another, the contents of which sell for an inferior price; and by a simple process, which within a few years has been discovered, every part of the fat may be converted into this drug.

Ambergris, which is frequently found in this animal, was long considered as a substance that only floated upon the sea; it is contained in a bag about three feet in length, in round lumps, which weigh from one to twenty pounds.

THE DOLPHIN, THE GRAMPUS, AND THE PORPOISE, WITH THEIR VARIETIES.

All these fish have teeth in the upper and lower jaw; and all are much inferior in size to the whale. The grampus, which is the largest, never exceeds twenty feet, and may easily be distinguished by the flatness of its head, which, in appearance, resembles a boat turned upside-down. There is but little distinction between the porpoise and the grampus, and that is only to be found in the snout, which meas-

ures about eight feet in length. The dolphin bears a strong resemblance to the porpoise, though the snout is more pointed, and exceeds it in length. All of them are found with fins upon the back; and, like the whale, are formed with disproportionate heads.

The great agility which these animals are endowed with, prevents them from being easily secured, for they seldom remain a moment above the water; and, unless they pursue their prey into shallows, there is little probability of their ever being slain. All this tribe, but particularly the dolphin, are no less destructive than they are alert; and no fish would be able to escape from them, but for the awkward position of their mouth, which, in a manner, is placed under the head.

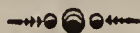
What could induce the ancients to a predilection in the dolphin's favour, is a circumstance for which we cannot easily account; yet historians and philosophers seem to have contended which should invent the most surprising tales. In the earliest ages, this fish was celebrated for its natural affection to the human race; and scarce an accident at sea could happen to individuals, but the dolphin was in readiness to convey them to the shore, and was either known by the name of *philanthropist*, or the *boy-loving* animal that resided in the deep.

The figure of the dolphin is far from prepossessing, and the rapacity of its appetites does not seem calculated to endear; it is difficult, therefore, to account for the prejudice in their favour, unless it proceeds from their plaintive moan, which, by first exciting the pity of the compassionate, may imperceptibly have been converted into love. It is not to one circumstance that the ancients have confined their fables, for even the figure of the animal is erroneously described; and, instead of being presented in a straight direction, the body of the fish is regularly curved. This error in the painter's judgment, proceeds from their taking that form when they bound or leap out of the sea; and mariners now generally consider these gambols as the forerunners of a storm.

Whether these motions are produced by pleasure, or whether they proceed from dreading the turbulent effects of the waves, is a circumstance that cannot easily be ascertained; but in times of fair weather, they are seen herding together, and impetuously pursuing shoals of various kinds of fish. Their method of hunting their game, if so it may be called, is to follow in a pack, and give each other mu-

tual aid ; and thus pursued, neither salmon, mackarel, nor herrings, have any chance of making their escape.

The porpoise not only seeks its prey near the surface of the element, but often descends to the bottom in search of sea-worms and sand-eels, which it roots out of the sand, in the same manner as a hog turns up the ground with its snout. These rapacious animals often pursue their victims until they arrive on a fresh water stream ; and many porpoises have been taken out of the Thames, both above and below London bridge : the method of doing this is to fire at them from boats, every time they raise their head above the stream. The body of the fish is no trifling capture, as it yields a considerable quantity of oil ; and the lean is said to resemble veal in colour, but is co arse and strong in flavour.



CHAP. III.

OF CARTILAGINOUS FISHES, AND THE VARIETIES OF THE SHARK.

WE have seen that fishes of the cetaceous kind bear an internal resemblance to quadrupeds, but those of the cartilaginous are one degree further removed ; the first distinction to be observed between them, is their having *gristles* instead of *bones*. The bones of the cetaceous tribe are exactly like those of the animal race, whilst those of the spinous are solid throughout, and have no marrow in the inside. Fishes of the cartilaginous kind have their bones always soft and yielding ; and age, which hardens the bones of other animals, tends to relax and soften theirs.

It has been observed, that the cetaceous fish had lungs like quadrupeds, and that there was a strong resemblance in every part of their inside. The spinous kind have no lungs to breathe through ; and their cold red blood is circulated by means of the impulse made upon their gills by the water. Cartilaginous fish unite both these systems in their conformation ; for, like the cetaceous tribes, they have organs of hearing and lungs ; like the spinous kind, they have gills, and a heart without a partition ; and this double capacity of breathing is one of the most remarkable features in the history of nature.

Such are the peculiar marks of the cartilaginous class of fishes, of which there are many kinds. To give a distinct description of each of these little animals, would swell the work to an immoderate size; but to omit naming those striking features which distinguish them, would be treating the subject with unpardonable neglect.

Cartilaginous fish may first be divided into those of the shark kind, with a body growing less towards the tail; a rough skin, with the mouth placed far beneath the end of the nose; five apertures on the sides of the neck, for breathing; and the upper part of the tail longer than the lower. In this class are included the great white shark, the balance-fish, the hound-fish, the monk-fish, the dog-fish, the basking-shark, the zygoena, the tope, the cat-fish, the blue shark, the sea-fox, the smooth hound-fish, and the porbeagle.

The next division is that of the flat-fish, which, from the form, may easily be distinguished: in this tribe we may place the torpedo, the skate, the sharp-nosed ray, the rough ray, the thorn-back, and the fire-flare.

The third division is that of the slender snake-shaped kind, such as the lamprey, the pride, and the pipe-fish. The fourth division is of the sturgeon and its variety, and the isinglass fish. And in the last division, may be comprised the sun-fish, the tetrodon, the lump-fish, the sea-snail, the chimara, and the fishing-frog; each of these has something peculiar in its form, which serves to distinguish it from the rest.

THE SHARK.

Of all the animals which inhabit the deep, the shark is the fiercest and the most voracious; the smallest of this kind is considered formidable by those fish which greatly exceed it in size; though the white shark may sometimes rank with the whale in magnitude, as many of them measure from twenty to thirty feet; and we are told that a human body has been found in their inside. The head is large, and somewhat flattened; the snout long; and the eyes fierce, extensive, and full of fire. The teeth are most terrible instruments of destruction, as the animal is known to be furnished with six rows, that amount to no less than a hundred and forty-four in number, which, when it is at rest, lie quite flat in the mouth; but, the moment it has the design of seizing upon its victim, these formidable weapons are erected in rows.

The shark is doubtless the fiercest depredator, and the greatest tyrant, that inhabits the deep; his formidable figure is calculated to intimidate, and his courage and activity are scarcely to be conceived. No other fish can swim with equal agility; for he is able to outstrip the fleetest ships, and frequently plays round them with sportive festivity, as if expecting to be regaled with some part of their contents. A sailor, that was bathing in the Mediterranean, near Antibes, in the year 1744, perceived one of these dreadful monsters approaching, and, anticipating his fate by the extension of its jaws, in an agony of terror called out to his companions instantaneously to throw him out a rope. The rope, of course, was immediately thrown to him, and in eager agony he secured his hold; but in the very moment his messmates were dragging him to a place of security, the insidious tyrant sprang upon his leg, and grasping it between its sharp-edged fangs, in a moment severed it from his bleeding frame. A Guinea captain was, by stress of weather, driven into the harbour of Belfast; and his unfortunate captives, when brought upon the deck for air, had many of them reposed their sorrows in the deep, from an idea that, by terminating their existence, they should be re-united to their family and friends. The savage monster under whose tyranny they were placed, enraged at the loss of so large a share of his prize, was resolved to make *death* appear in a more formidable shape than had hitherto been presented to the minds of those unfortunate victims of cruelty and oppression, and therefore gave orders that a young female, whom he heard had an intention of committing suicide, should gradually be let down with ropes from the side of the ship. The minions of authority obeyed his orders, and the unresisting victim patiently submitted to his caprice; but at the moment her head alone remained above the surface of the water, she was heard to utter a most agonizing scream. The surrounding element was dyed with crimson; and the sailors, alarmed and astonished at the sight, instantly drew the body out of the water, when it proved that a shark had divided it from the lower part of the sides. This is only *one* of the many instances that might be related, of the rapacious appetite of this destructive fish; but it is sufficient to create that antipathy and aversion which are universally conceived against this destructive race.

The usual method which sailors have contrived to take

them, is by baiting a large hook with a piece of beef or pork, which is thrown into the sea, attached to a stout rope, strengthened near the hook by an iron chain. The shark for some time surveys the magnet, as if fearful of the weapon, which is cautiously concealed, until the sailors, anxious to provoke it to destruction, pretend to draw the bait from the bottom of the stream, when, darting forward with furious impetuosity, he swallows the hook and part of the chain.

This is the manner in which Europeans destroy this tyrant: but the negroes along the African coast attack him merely with a knife; and, as the shark is obliged to turn before he can seize his opponent, during that action the negro plunges his knife into its sides. Upon the whole, the shark, when living, is a formidable animal; and, when it is dead, is of very little use, for its flesh can scarcely be digested by the stomach of a negro; but from the liver there may be extracted about three or four quarts of oil. Some imaginary virtues have been ascribed to the brain; and the skin is used by cabinet-makers, for polishing their work.

CARTILAGINOUS FLAT-FISH, OF THE RAY KIND.

The same rapacity which impels the shark along the surface of the water, actuates the flat-fish to dive to the bottom of the stream; less active and less formidable, they creep in security along the bottom, and make a seizure of every thing that comes in their way. The whole of this tribe bear so strong a resemblance to each other, that the distinction between them is difficult to be discerned; and a stranger to this dangerous class, imagining he is handling a skate, may be struck numb by the torpedo's petrifying touch; or he may fancy he has merely caught a thorn-back, till convinced of his mistake by the sting of the fire-flare.

All fish of the ray kind are broad and cartilaginous, swim flat upon the water, and have spines on the different parts of their body or tail: their eyes and mouth are placed under their body, with apertures for breathing through very near; and they all have teeth, or a rough bone which answers the same purpose and design. Their tail is differently shaped from that of other fishes, and more resembling those of the

quadruped kind, being narrow, and ending in a bunch at the point. It has been observed, that all fish of this description have some parts of their bodies furnished with spines. The middle of the skate's back is extremely rough; and it has only a single row of spines upon the tail. The sharp-nosed ray has ten large spines situated towards the middle of the back; but the rough ray has them indiscriminately spread entirely over every part. The spines of the thorn-back are disposed in three rows upon the back; whilst the fire-flare has but one, which is placed upon the tail. This dangerous and destructive weapon is of a flinty hardness, and generally grows about five inches in length; the sides are thin, and it is sharply pointed, and jagged the whole way. The last of this tribe is the *torpedo*; and though this animal appears to be devoid of any weapon, it is possessed of one of those extraordinary faculties which is beyond the art of the Naturalist to explain.

Of all the larger fish in the ocean, the species we are describing abounds the most; and this may be attributed to their external conformation, as the white shark and the cachalot alone can take them down their throats; and their spines make them such dangerous provision, that even the rapacious shark appears afraid to eat. Labat informs us, there was a ray found at Guadaloupe, which, in breadth, measured upwards of thirteen feet; but the flesh proved too strong for a European's stomach, though the negroes ate freely of some of its choicest parts. Large as this creature must have appeared upon inspection, it is probable that many of them exceed it in size; for, as they generally reside at the bottom of the ocean, it is difficult to ascertain their growth; but a Norway bishop, famous for the *marvellous*, asserted, that their figure would nearly cover a mile.

The method of catching this species of fish is both dangerous and fatiguing, and attended with infinite labour and toil; but the value of the capture generally repays the fisherman, both for his exertion and his pain. The skate and the thorn-back are excellent eating; but few fish vary so much in size: and it frequently happens when they are fishing for them, that the fire-flare, the rough ray, or the torpedo, are caught in the line. To all these animals the fisherman has a mortal antipathy, and, when they are discovered, absolutely shudders at their sight: but the fire-flare inspires him with the greatest degree of terror, from an idea that poison is attached to the spine. Though this weapon has the power of inflict-

ing the greatest anguish, yet there is no reason to suppose, that it is *poison* which produces pain.

The torpedo is an animal no less formidable than the fire-flare, though it is difficult to prove how its effects are produced; the body of this fish is almost circular, and thicker than the others of the ray kind; the skin is soft and of a yellowish colour, marked (as are all the class) with large annular spots; the tail is tapering to the point: and the weight of the fish is from a quarter to fifteen pounds. To all outward appearance, it is furnished with no extraordinary powers; it has no muscles formed for particular exertion or use; yet such is the indefinable effect of its touch, that the hand which comes in contact with its body instantly becomes listless and numb. This numbness extends far beyond the part affected; for the shoulder participates in the pain: in short, it appears like a sudden vapour, which, passing through the pores in a moment, absolutely penetrates to the very springs of life. Kempfer tells us, that the shock is diminished if the breath be suspended whilst the animal is touched; but I believe those who place their security in this information, will find they have been most cruelly deceived.

There are other fish which possess this benumbing quality, that are chiefly found along the African coast, which Moore and Atkins describe as resembling the mackarel, except that the head is disproportioned to the size.



CHAP. IV.

CARTILAGINOUS FISH.

THE LAMPREY, THE STURGEON, AND THEIR VARIETIES.

THE Lamprey is differently estimated, according to the season in which it has been caught, or the place where it has been fed; but those which leave the sea, to deposit their spawn in fresh waters, are allowed to be those which deserve to be the most highly prized, whilst those that wholly reside in rivers, without making any voyages to the briny deep, entirely lose their delicate flavour, and become both flabby and insipid food

The lamprey resembles an eel in its general appearance, but is of a lighter colour, and rather a clumsier make; it differs, however, in the mouth, which is placed obliquely below the end of the nose, and in form corresponds with that of a leech; like that animal, it possesses the power of *suction*; and it is difficult to separate it, when it adheres to stones. This adhesive quality may in some measure be increased by the slimy substance with which the body of the fish is overspread, which serves to defend it from the coldness of the element, and also gives a pliancy and softness to the skin. There are seven holes on each side of the head for respiration, and another at the upper part through which it spouts the water, as is the practice of all the cetaceous tribe.

In the beginning of spring, the lamprey generally quits the ocean to deposit her spawn in some fresh water stream, but returns again to the briny element after remaining a few months with her young. Some have not sufficient strength to return, in consequence of which they are compelled to remain; but their flesh then becomes flabby and tasteless, and after a very short period they pine away and die.

The life of this fish, Rendelitus assures us, is only continued to a very trifling date; and after having brought forth one family, the strength of the female seems to fail, and two years generally terminate their fate.

The lamprey was formerly thought one of the choicest delicacies that could be produced at a feast; and, at this period, the city of Gloucester, in England, retains the ancient custom of presenting a lamprey-pie, at *Christmas*, as a present to the king; that is a season when the fish are in great scarcity: they have frequently purchased them at a guinea a-piece.

A senator of Rome, whose name does not deserve to be transmitted, was famous for the delicacy of his lamprey treats; and the emperor Augustus, having heard of their superiority, *self-invited*, became his guest. The banquet equalled, if not surpassed representation; and the emperor inquired of the epicure, on what his fish were fed? when the wretch informed him, that the delicacy of their flavour was wholly to be ascribed to the bodies of his slaves, as he made a point of having those thrown into the river, who ventured to disobey his commands. We are told that the emperor was so shocked at the receipt, that he instantly gave orders the ponds should be filled up; but we should

still more have admired the justice of the sentence, if he had commanded the body of such a monster to assist in the design. x

THE STURGEON, AND ITS VARIETIES.

The Sturgeon, with a form as terrible, and a body nearly as large as the shark, is yet as harmless and innocent in its nature as the fish we have just described. The external appearance of this animal bears some resemblance to that of fresh water pike: the nose is long, the mouth is small; and it has neither jaw-bones nor teeth.

Though the sturgeon is a fish neither calculated for war nor depredation, yet its external appearance is rather formidable to the sight; it is long, pentagonal, and covered with five rows of large bony knobs, one row on the back, and two on each side, with a number of fins to promote its velocity and speed. Of this fish there are three distinct kinds; the common sturgeon, the caviar sturgeon, and the huso, or isinglass-fish. The first has eleven knobs or scales on the back; the second has fifteen; and the third has forty-three upon the tail, and thirteen upon the back. The first of these is the common sturgeon, the flesh of which is pickled, and sent into many parts of the world. From the second the roe is taken, which forms a delicate dish, known by the name of caviar; and the third not only supplies us with that ingredient, but with that useful commodity from which it derives its name. There is not a single country of Europe, but what this fish is known to visit, at different times of the year; but the inhabitants along the banks of the Po, the Danube, and the Wolga, are allowed to derive the greatest advantages from its fondness for change of scene, as they are always prepared with nets to intercept their passage, and then convert their bodies into the most profitable use.

The largest of the size that was ever caught in Great Britain, is allowed to have been taken in the river Eske; and, to those who have seen only fresh-water fishes, it must have appeared enormous, as it weighed four hundred and sixty pounds.

As the sturgeon is a harmless animal, and never voracious or rapaciously inclined, there is little chance of obtaining it by the assistance of a line: in fact, it exists upon sea-plants or insects, therefore the fisherman only attempts to secure it by nets. They have two methods of preparing the flesh of

the sturgeon: the one, by drying it, and hanging it up in the sun; and the other, by cutting it into pieces, and placing it in barrels, and covering it with a pickle of salt and sanmure. Isinglass is composed of the skin, entrails, and fins of the sturgeon, which are macerated in warm water, and then boiled over a slow fire until they have acquired the consistency of a paste, which is first spread out into sheets like those of parchment, and then formed into rolls. This valuable commodity is principally brought from Russia, where great quantities of it are prepared remarkably cheap; and though an Englishman discovered a substitute that answered the purpose, yet the arts that were practised to prevent him from perseverance, soon brought the article into discredit and disuse. Isinglass is not only serviceable in a medical capacity, but the wine merchant, the varnisher, and the clothier, are all materially benefited by its use. This fish is often seen in our rivers.

ANOMALOUS CARTILAGINOUS FISHES.

Of all the various classes in animated nature, none seems to abound with such a number of disproportioned shapes, as those which are attached to the cartilaginous tribe: there is the pipe-fish, that almost tapers to a thread; the sun-fish, that has the appearance of a bulky head, with the body cut off in the middle; the hippocampus, with a head somewhat like that of a horse, and the water-bat whose head can scarcely be distinguished from the body; the fishing-frog which, from its deformity, has been styled the *sea-devil* the chimera; the lump-fish; the sea-porcupine, and the sea-snail.

The sun-fish sometimes grows to an astonishing size, for one taken near Plymouth was five hundred weight; and in form it is thought to resemble a bream. The fishing-frog is like the animal from which it derives its appellation, allowing for the very great difference in size, as it grows to about five feet in length, and its mouth is generally a yard wide. The deformity of this animal cannot be exceeded, for its head is larger than the rest of its frame; the under jaw projects beyond the upper, and both are defended by rows of sharp teeth: the eyes are placed on the top of the head; and above the nose are two long beards or filaments, which are said to act as snares to the smaller kind of fish. Pliny informs us, that the fishing-frog hides itself in muddy waters,

and leaves no part exposed to view but the beard; the curiosity of the smaller fish soon becomes excited, and they approach the filaments to observe of what they are composed, when, the moment the sea-frog feels they are upon them, he instantly draws them towards his mouth, and by this method devours numbers at a time.

The lump-fish is small when compared with the sea-frog, as its length is but sixteen inches, and its weight about four pounds: the shape of the body is like that of a bream, the back is sharp and elevated, and it always swims upon the side: the lips, mouth, and tongue, are of a deep red; the whole skin is rough, with bony knobs, the largest row of which is along the ridge of the back; and it has an oval aperture in the abdomen, surrounded with a soft fleshy substance, that appears to be bearded all round. Like the leech, it possesses an adhesive quality; and when thrown into a pail of water, will stick so closely to its sides, that by taking hold of the body of the fish, the vessel may be raised from the ground, though it should contain several gallons of water. This fish is chiefly found along the Greenland coast; their roe is remarkably large, and the Greenlanders boil it into a kind of pulp, which they consider as a very delicious food.

The sea-snail takes its name from the soft and unctuous texture of its body, and from its resemblance to the snail that dwells upon land: the colour, when first taken out of the ocean, is a pale brown; and it is not above five inches in length.

The body of the pipe-fish, in the thickest part, is not larger than the swan's quill, yet it measures upwards of sixteen inches in length; its general colour is an olive brown, marked with a number of bluish lines, taking a direction from the belly to the back.

The hippocampus, which, from the form of its head, has been termed the sea-horse, never exceeds nine inches in length, and in thickness is about the size of a man's thumb: the snout is a sort of tube, with a hole at the bottom, the cover of which the animal can shut or open at its will; behind the eyes are two erect fins, that have the appearance of ears; and the whole body seems composed of cartilaginous rings, on the intermediate membranes of which several small prickles are placed. The hippocampus is found on the Mediterranean shores, and bears a greater resemblance to a caterpillar than to a fish.

From these harmless animals, covered with a slight coat of mail, we may proceed to others more thickly defended, whose exact station in the scale of being has not positively been ascertained. In the first of this tribe we may place the sea-orb, which in form is nearly circular; but the size so completely varies, that some are only seven inches, whilst others frequently measure two feet. This animal is sometimes termed the sea-porcupine, from its skin being covered with long prickles or thorns; and when it is enraged, these weapons are erected, and by inflating a bladder in the stomach, the fish appears almost double its usual size.

Of this extraordinary creature there are several varieties; some threatening only with spines, as the sea hedge-hog; others defended with a bony helmet, as the ostracion; others with a coat of mail from the head to the tail, where it terminates in a point, as the *centriscus*; and others armed offensively and defensively, with bones and spines, like the shield-orb. Each of these animals has its peculiar weapon of offence: the *centriscus* wounds with its spine; the ostracion poisons with its venom; the orb is perfectly impregnable, but the flesh is deadly poison to eat.

I shall conclude this account of cartilaginous fishes, with the history of an animal that scarcely comes under the name: but as Father Labat has ranked it under this description, his authority is sufficient to establish its fame. The galley-fish, to the eye of a careless spectator, might appear a transparent bubble, swimming on the surface of the deep; or like a bladder beautifully painted, where the most vivid colours were to be seen. Notwithstanding this appearance, it is an actual body, composed of cartilages, and a thin skin filled with air, which keeps the animal floating on the surface of the waves, in whatever direction the wind happens to drive. It has eight broad feet, with which it swims, or rather expands to catch the air, as with a sail; and the skin is covered with a slimy substance, of so pungent a quality as to corrode the part to which it is applied.

CHAP. V.

OF SPINOUS FISHES.

THE third general division of fishes, is that of the spinous or bony kind; and these are obviously distinguished from the rest, by having a complete bony covering to their gills, by their being destitute of lungs, by their bones being sharp and thorny, and by their tails being placed in a situation perpendicular to the body.

From the great variety which this class contains, it is difficult to give an accurate description of them all; for when six hundred different sorts of animals present themselves for consideration, the mind becomes bewildered in the extensive scene.

Of the real history of fishes but little is yet known, though several accurate descriptions have been given of many of their *forms*; it would therefore be unpardonable not to range their different characters under such heads as will give the most sufficient idea of their tribes. If we consider the substance of the fin of the fish, we shall find it composed, besides the skin, either of straight, hard, pointed, bony prickles, as in the pike; or of soft, crooked, or forked bones or cartilages, as in the herring. All the prickly finned fish make one grand division; and all the soft finned form another: they are distinguished by being *apodal*, *jugular*, *thoracic*, or *abdominal*, according to the situation in which the fins are placed.

SECTION I.

PRICKLY FINNED FISHES.

PRICKLY FINNED APODAL FISHES.

The trichurus: the body of this fish is in the form of a sword; the head oblong; the teeth sword-like, and bearded near the points; the fin that covers the gills, with seven spines; the tail without fins, and ending in a point. It is an inhabitant of the Oriental and American shores; and its skin is of a silvery white.

The body of the xiphias, or sword-fish, is round; the head long, and terminating in a pointed beak, resembling

the weapon from which it derives its name. This fish is to be met with in most parts of Europe, and is known to be a great enemy to the whale.

The opidium, or gilt-head, is allowed to be the most beautiful of all the finny tribe; the skin is covered with a mixture of gold, silver, and green; the body is sword-like, the mouth opens sideways, and the fins upon the back are united to those of the tail.

PRICKLY FINNED JUGULAR FISHES.

The trachinus, or weaver: the body is oblong; the head obtuse; the bones covering the gills jagged; and the fin covering the gills with six spines: it generally lies buried in the sand, with only its nose exposed to the sight: if trod upon, it strikes with its dorsal fin, which inflicts both a dangerous and venomous wound.

The uranoscopus is an inhabitant of the Mediterranean sea; the body, in form, resembles a wedge; and the head is rounded, and disproportioned to the rest of the size; the eyes are formed at the top of the head; and the fin which covers the gills has only five spines.

The form of the callyonymus resembles that of the uranoscopus: the mouth is even with the body; the opening to the gills at the back of the head; and the fin which covers them with six spines.

The blennius, or blenny, is of an oblong shape; the head obtuse, with a single range of teeth; and the fin which covers the gills has six spines.

PRICKLY FINNED THORACIC FISHES.

The gobius, or gudgeon; the body round and oblong; the head with two little holes between the eyes; and the fin covering the gills with six spines.

The cepola is an inhabitant of the Mediterranean sea: the body is sword-like; the head blunt, and the mouth flat.

The coryphæna, or razor-fish, has the body like a wedge, and the fin covering the gills with five spines.

The scomber, or mackarel: the body oblong; the line running down the side, zigzagged towards the tail; the head sharp and small; and the fin covering the gills with six spines; and several false fins towards the tail.

The labrus, or wrasse: the body is oval; the head mid-

dling ; the lips doubled inward, with both cutting and grinding teeth ; and the fin covering the gills with only five spines.

The sparus, or sea-bream : the body oblong ; the lips not inverted ; the teeth cutting and grinding ; and the fin covering the gills with five rays.

The chetodon, or cat-fish : the body oblong ; the head small ; the teeth slender and bending ; and the fin that covers the gills with five or six spines.

The sciaena : the body nearly elliptical ; the head bevil, and the fins covered with scales ; those upon the back are hidden in a furrow, and that which covers the gills has six rays.

The perch : the body oblong ; the head bevil ; the covers of the gills scaly and toothed ; and that which is attached to the gills with seven spines.

The sorpœna, or father-lasher, has a large head, a long body, and the fin covering the gills has seven spines.

The mullus, or surmulet, is considered as a delicacy ; the body is slender ; the head nearly square ; and the fin which covers the gills has only three spines.

The trigla or gurnard, has a slender body, with a head formed like the fish that has just been described, but covered with a substance callous as a bone ; and the fin attached to the gills has three spines.

The cottus, or bull-head : the body of this fish is formed like a wedge ; the head is flat, large, and furnished with prickles and knobs ; and the fin which covers the gills has six spines.

The zens, or doree : the body oblong ; the head bevil ; the fin that covers the gills with seven rays ; and from the upper jaw, there is a loose floating skin which drops into the mouth.

The thrachipterus, or sabre : the body sword-like ; the head bevil ; a loose skin in both jaws ; and the fin that covers the gills with six spines.

The gasterosteus, or strickle-back : the body broadest towards the tail ; the head oblong ; and the fin that covers the gills with three spines.

PRICKLY FINNED ABDOMINAL FISHES.

The *silurus*, or *sheet-fish* : the body oblong ; the head large ; and the fin covering the gills from four to fourteen spines.

The *mugil*, or *mullet* : the body oblong ; the head almost conical, with a furrow in the upper jaw where the under one

is received; and the fin which covers the gills with seven rays.

The *polynemus*: the body oblong, the head with a beak; and the fin which covers the gills with from five to seven spines.

The *thentys*: the body almost elliptical; the head abruptly shortened with a single row of strong and even teeth; and the fin covering the gills with five rays.

The *elops*, or *sea-serpent*: the body slender; the head large; the fin covering the gills doubles, with thirty spines; and armed externally with five cones resembling teeth.

SECTION II.

SOFT-FINNED FISHES.

SOFT-FINNED APODAL FISHES.

The *muræna*, or *eel*: the body round and slender; the head terminating in a beak; the fin covering the gills with ten rays; and the fins of the back uniting to those of the tail.

The *gimnotus*, or *carapo*, is a native of Brazil; the body is broadest on the back, like the blade of a knife; the head small; and the fin covering the gills with five rays.

The *anarchias*, or *wolf-fish*: the body roundish, yet slender; the head large and blunt; and the fin covering the gills with six rays.

The *stromateus*: the body oblong; the head small; and the fin covering the gills with five or six rays.

SOFT-FINNED JUGULAR FISHES.

The *lapadogaster*: the body wedge-like, the head oblong, and terminating in a beak resembling that of a duck; the pectoral fins double, the ventral ones joined together; and that which covers the gills with five rays.

The *gadus*, or *cod-fish*: the body oblong; the head wedge-like; and the fin covering the gills with seven rays.

SOFT-FINNED THORACIC FISHES.

The *plemonecles*, or *flumidi*: the body elliptical; the head small, and both eyes fixed on one side; and the fin covering the gills from four to seven rays.

The *echeneis*, or sucking-fish: the body almost wedge-like, rather round, and the head exceeding it in width; an oval breast-plate streaked like a ladder; and the fin covering the gills with ten rays.

The *lepidopus*, or *garter-fish*: the body sword-like; the head lengthened out; and the fins covering the gills with seven rays.

SOFT-FINNED ABDOMINAL FISHES.

The *loricaria*: the body crusted over; the head broad, with a beak; and the fin covering the gills with six rays.

The *atherina*: the body oblong; the head middling; a line, like a silver band, running on each side; and the fin covering the gills with six rays.

The *fistuloria*: the body angular, in the form of a spindle; the head-pipe fashioned with a beak; the under jaw extending over the upper one, and the fin covering the gills with seven rays.

The *esox*, or *pike*: the body round; the head with a beak; the under jaw pierced longitudinally, with small holes; and the fin covering the gills from seven to ten rays.

The *argentina*: the body a little round and slender; the head broader than the body, and terminating in a beak; and the fin which covers the gills with eight rays.

The *clupea*, or *herring*: the body a little oblong; the head with a small beak; and the fin covering the gills with eight rays.

The *exocetas*, or *flying-fish*: the body oblong; the head almost three-cornered; and the fin covering the gills with ten rays.

The *cyprinus*, or *carp*: the body elongated; the head with a small beak; and the fin covering the gills with three rays.

The *amia*, or *boneto*: the body round and slender; the head, body, and breast, without any skin; and the fin covering the gills with twelve rays.

The *mormyrus*: the body oblong; the head elongated, and the fin covering the gills with a single ray.

The utility of this system is easily to be discovered, by the assistance it gives the mind in immediately discovering to what class each fish belongs. Having given the method by which spinous fishes may be distinguished from each other, it may possibly be expected that I should give a

separate account of all; but as this would be both tedious and unentertaining, I shall merely say they breathe air and water through their gills; that they live by rapine, each devouring such animals as its mouth is able to contain; that they do not propagate their species *alive*, like the cetaceous tribe; nor by distinct eggs, as in the cartilaginous; but by spawn, or peas, as they are generally called, which they produce by hundreds and thousands at a time.

As the spinous fish partake less of the quadruped, in their formation, than any others, so they cannot bear to live out of their own element for so great a length of time; and in general, when taken out of the water, they testify their change by panting most violently, and appearing in exquisite pain; the thin air not furnishing their gills with proper play: and in a few moments they expire.

To some fishes, bred in the sea, fresh water is immediate destruction; and, on the other hand, many of those which have been bred in lakes and ponds, cannot bear the salt water to come in contact with their skin; whilst the salmon, the shad, the smelt, and the flounder, annually quit their native element, and come up our rivers to deposit their spawn. This seems the most important business of their lives: and there is no danger they will not encounter, to find a proper place for the deposition of their future offspring. The salmon, upon these occasions, is seen to ascend rivers five hundred miles from the sea, and not only to brave the danger of various enemies, but also to spring up cataracts as high as a house. It sometimes happens, however, that they want strength to make the leap; then in our fisheries they are taken in their descent, either in nets or baskets, placed so as to prevent their retreat.

Though these fish take very long voyages for the purpose of depositing their spawn in some fresh water stream, there are others that are known to quit their residence in rivers, for the purpose of bringing forth their young in the sea; and there are others that reside entirely in the ocean, which annually migrate many thousand miles. Of this kind are the gadus, the haddock, the whiting, the mackarel, the tunny, the herring, and the pilchard. The stated returns and regular progress of these fish of passage, is one of the most extraordinary circumstances in the history of Nature: what it is that impels them to such distant voyages, what directs their passage, and what supports them by the way, curiosity may ask, but philosophy can hardly resolve.

The gadus seems to be the foremost in this wandering tribe, and the banks of Newfoundland are its favourite retreat, where they are taken in such immense quantities, as to afford all Europe and America a sufficiency to eat. The English have stages erected all along the shore, for the purpose of salting and drying this valuable fish; for, though they regularly frequent our coasts, their number is not proportioned to the quantity consumed.

The *haddock*, the *whiting*, and the *mackarel*, are by many thought rather to migrate from *fear* than *choice*; and it is to the destructive appetites of the larger kinds of fish, which drive them towards our shores, that we are to ascribe the annual migrations which they regularly take.

But of all the animals that take these adventurous voyages, the herring and the pilchard are known to be of the greatest extent; and in Chesapeake Bay their annual migration is so astonishing, that they absolutely become a nuisance to the shores. That body which comes upon the coasts begins in April to appear off the Shetland Isles, and by the middle of June they collect in such immense shoals, as totally to alter the appearance of the sea, and extend in distinct columns for the distance of five or six miles. The pilchard, which differs but little from the herring, makes the coast of Cornwall its principal resort, and is found on those shores in such astonishing numbers, that from twelve to fifteen hundred barrels have been filled by a single draught. This fishery not only employs great numbers of men at sea, and is the means of training them to naval affairs, but affords occupation to the women and children, either in salting the fish or mending the nets. The poor are fed with the superfluity of the capture, the offals serve as a manure for the land, the fisherman obtains a comfortable subsistence, and the merchant is supported by the success of his trade; for the money paid annually for the exportation of pilchards from England, is known to amount to near fifty thousand pounds.

The *increasing* power of animals of this description, actually exceeds calculation or belief; for if a single herring were suffered to multiply twenty years unmolested, the progeny would be greater than ten globes could contain; therefore we are not to look upon the larger fish in the light of plunderers, but rather as friends and benefactors to mankind. Without their assistance, the sea would become overcharged with the burden of its own productions; and

that element, which distributes health and plenty to our shores, would otherwise load them with putrefaction.

Though all the species live upon each other, they are all subject to an enemy which preys upon themselves; for they all are infested with a peculiar kind of worm, which either buries itself in their jaws, their intestines, or their fins; and notwithstanding their reputed longevity, epidemic disorders affect the whole tribe. That numbers of them inflict poisonous wounds, is a truth that cannot be disputed or denied; and at New-Providence, one of the Bahama Islands, the greater part of the fish are capable of giving exquisite pain, and are frequently fatal to those who are imprudent enough to eat them. Dr. Granger tells us, that in the island of St. Christopher's there is a species of fish caught at one end of the island, which was always dangerous in its effects; whilst those of the same nature, which are caught at a remote distance, were beneficial to the health, and pleasing to the taste. It is difficult to account for the cause of these effects, which the obnoxious race of these animals is able to produce; but fortunate is it for those who are born in a climate where apprehension cannot be indulged, or danger feared. Happy country! where the sea furnishes a luxurious repast, and the fresh waters afford an innocent delight; where the angler, in cheerful solitude, strolls by the edge of the stream, and neither fears the lurking crocodile, nor the coiled snake; and, to borrow the pretty description of Walton, "where he can retire to some friendly cottage, where the landlady is good, and the daughter innocent as she is sweet; where the room is cleanly, with lavender in the sheets, and twenty ballads stuck about the wall: there he can enjoy the company of a talkative brother sportsman, have his trouts dressed for supper, sing a catch, or tell a tale; there he can talk of the wonders of Nature with learned admiration, or find some harmless sport to content him, without offence to his Maker, or injury to mankind."

CHAP. VI.
 OF CRUSTACEOUS AND TESTACEOUS
 FISHES.

THE DIVISION OF SHELL-FISH.

IN describing the inhabitants of the water, a class of animals occur, that mankind, from the place of their residence, have been content to call *fish*; but which Naturalists, from their formation, have justly agreed to be unworthy of the name. Crustaceous fish, such as the crab and the lobster, have a shell not quite of stony hardness, but rather resembling a firm crust, and, in some measure, capable of yielding; whilst those of the testaceous kind are furnished with a shell of stony hardness, that only yields to absolute force.

CRUSTACEOUS ANIMALS OF THE LOBSTER KIND.

However different in figure the lobster and crab may seem, their manners and conformation are nearly the same; yet, with all the voracious appetites of fishes, they are condemned to lead an insect kind of life at the bottom of the water. The lobster is an animal of so extraordinary a shape, that the head might easily be mistaken for the tail, which moves within itself, by joints, which resemble a coat of armour in make. The two great claws serve a double purpose, namely, as providers for its support, and as weapons of defence; and, besides these powerful instruments, which may be considered as arms, it has four legs on each side, which assist it in making its sidelong motion, which the joints of the tail likewise aid. Between the two claws appears the animal's little head, furnished with eyes that resemble black specks of horn; these it has the power of advancing out of the socket, or drawing them in whenever it likes; the mouth, like that of insects, opens the long way of the body, and is furnished with a couple of teeth: but, as these are not sufficient for the mastication of its food, it has three more in the stomach; and between the upper teeth is a lump of flesh in the shape of a tongue; on each side of the head are two long feelers, or horns, that seem to correct the dimness of its sight, and either ap-

prize the animal of danger, or point out to it the approach of prey.

The spawn of the lobster is lodged under the tail : and, when the young ones quit that receptacle, they immediately take refuge in the smallest clefts of rocks, where they remain, without appearing to take any nourishment, until they have acquired a defensive shell ; when they begin to issue from their fortresses, and creep along the bottom in pursuit of prey, and are busily employed in scratching up the sand, in hopes of finding worms, or some of the insect tribe. Whilst these little animals are enjoying a life of abundance, an unexpected evil soon occurs, for their bodies increase in consequence of their sustenance, whilst the shell remains in its original size ; and the poor creature, pent up in the walls of its prison, must doubtless endure an exquisite degree of pain.

It is generally believed, that all animals of this species change their shells every year, though some are of opinion that the young ones shoot them twice in the course of that period of time. The moulting season is about the beginning of summer, when their vigour is at the highest, and their food most easily obtained ; they then make a point of seeking the most retired situations, where they may avoid being attacked by any of their foes. For some days before the creature shoots its shell, it lies torpid and motionless, as if in anxious expectation of the approaching change ; and, just before it takes place, it throws itself upon its back, strikes its claws against each other, and every limb appears to shake. Its feelers are agitated ; its body increases, and, at the junctures of the abdomen, the shell begins to divide : the stomach likewise comes away with the shell, and it then shakes off each claw, as a man would his boots ; and thus the animal finds itself at liberty, though in an enfeebled and exhausted state ; and, indeed, the operation is so violent and painful, that many expire under the change.

Immediately after this wonderful transition, they seem even to dread the approach of the insect tribe ; and, during the time of this suffering imbecility, the ray, the cod, and the dog-fish, never fail in making them their prey. This defenceless and uncomfortable situation only continues for a short time ; a thick skin soon incloses the body, which becomes a hard shell in eight-and-forty hours ; and the first proof it gives of having regained its voracious appetite, is by devouring the stomach which had been disgorged in the former shell.

The creature, thus furnished not only with a new covering, but also with a greater proportion of courage and strength, ventures more boldly amongst the animals at the bottom ; and not a week passes, but some combats ensue, which generally terminate by the loss of a limb ; and, what appears almost inconceivable, in the course of three weeks it is completely renewed, though it never becomes quite of the former size.

After what has been said, let us pause a little, to reflect upon the singularities which this extraordinary creature presents : though it has no bones in the inside, yet it is furnished with a stomach capable of digesting the hardest shells ! without red blood circulating through the body, yet apparently endowed both with vigour and strength, and possessing the power of renewing not only its shell and stomach, but of supplying the place of a dissevered limb !

Of this singular, yet well-known animal, many varieties are to be seen ; some are found above three feet long, and some not more than an inch, if we include the prawn and shrimp. None of the class can exist long out of the water ; and, when in that element, the shell is perfectly black, though it becomes red by the effect of heat. The general way of taking lobsters is by putting a bait into a wicker-basket, and sinking it about ten fathoms deep : the bait attracts the animal's attention, and the basket is drawn up by the assistance of a line. The river craw-fish differs but little from the lobster ; the one exists in fresh water only, and the other never thrives but when in the sea.

THE CRAB.

The Crab is an animal found upon land as well as water, and will exist in rivers with as much vigour as in the sea ; and, though in shape it differs much from the lobster, yet its manners and conformation are exactly the same.

The tail of the crab is not so apparent as that of the lobster, but is merely a broad flap under the abdomen, which defends the spawn ; and the number of legs and claws are the same as in that fish. Like the lobster, it is a bold and voracious animal, and seems to bear a peculiar degree of enmity to the whole of its kind ; for those who are in the habit of carrying them to market, are obliged to tie their

claws together, to prevent them from destroying each other by the way.

The land crab is found in some of the warmer regions of Europe, and in great abundance in all the tropical climes. Some are allowed to be both delicious and nourishing whilst others are unpalatable, and poisonous in their effects. Some are at least a foot in breadth, whilst others do not measure more than an inch. Some are of a dirty brown, and others beautifully mottled: but the violet crab, so much noted in the Caribbee Islands, has obtained pre-eminence over the whole tribe.

The violet crab somewhat resembles two hands, cut through the middle, and joined together; for each side looks like four fingers, and the two claws have the appearance of thumbs: the rest of the body is covered with a shell as large as a man's hand, and bunched in the middle, on the fore part of which appear the two eyes, which resemble a grain of barley in shape, though it is impossible for crystal to be more transparently bright. A little below these the mouth is placed, in which are two broad and very sharp teeth, which are not situated like those of other animals, but unite like the blade of a pair of scissors.—With these they can easily cut leaves, fruits, and rotten wood, which is their accustomed food.

These animals not only live in a kind of orderly society in the *mountains*, but regularly, once a year, march down to the sea-side, in a body containing millions at a time, for the purpose of casting their spawn upon the shore. As they multiply in astonishing numbers, they choose the months of April or May for commencing their extraordinary expedition, when, as was observed, they set out by thousands, from the hollow stumps of trees or clefts of rocks, and pursue their course with as much order and regularity as the most highly disciplined army could observe. They are generally divided into three battalions, pursue their way in a straight forward line, and never suffer any obstacles to impede their progress. The night is the general time of their proceeding, as they are not able to endure both fatigue and heat; but, if it happens to rain during the day, they always avail themselves of its refreshing power; and, the moment they arrive at the wished-for haven, the whole body crawl into the sea, where they remain for some minutes, that the waves may pass over their shells. After this, they quit the margin of the ocean, in search of some retired situation upon land, where

they remain for the space of a few days, and again return to the edge of the sea, where they make a deposit of their spawn, two-thirds of which are devoured by different fish, whilst the eggs which escape are hatched under the sand.

The strength of the old ones seems by this time to be exhausted; but they make holes in the earth, for the purpose of hiding themselves whilst they cast their shell, which they exclude from their body without any apparent opening, and remain for five or six days in a torpid kind of state. During that period they grow very fat, and they are then in the highest perfection to eat. In some countries, the slaves are entirely fed upon them; and in Jamaica, they are thought a most delicious treat.

THE SOLDIER CRAB.

The Soldier Crab bears some resemblance to a lobster; though it is not more than four inches in length: the hinder part is covered with a rough skin, and the tail terminates in a point. Though Nature has denied this little animal a callous defence against its enemies, and the nippers alone are covered with a shell, yet it artfully contrives to supply the deficiency, by taking possession of some deserted shell; and remains in security, in this acquired habitation, until it grows too large for its size; when it changes its abode for one more commodious, which it frequently does three or four times.

The soldier crab is a native of the West India Islands, and, like the former, makes an annual excursion to the sea, for the purpose of depositing its spawn upon the shore; when it again returns to its abode upon the mountains, where it remains until the following year.

When this animal is taken, it sends forth a feeble cry, and endeavours to seize its enemy with its claws; and, as they are capable of inflicting a very painful wound, the danger attending the taking them is too great for the treat; therefore they are generally suffered to make their excursions unmolested, either to the sea, or their mountainous retreat.

CHAP. VII.

CRUSTACEOUS FISH OF THE TORTOISE
KIND.

All animals of this nature are divided into two classes, the one residing upon land, and the other dwelling in the sea; and, to distinguish them, the former are known by the name of the tortoise, and the latter by that of the *turle*. In their external appearance, they bear a strong resemblance to each other, though they differ very much in size: their outward covering is composed of two great shells, the one laid upon the other, and only touching at the edge, bearing some similitude to the tiles upon a house; there are two holes at each extremity of this singular body, one for a very small head, shoulders, and arms, to peep through, and the other for the feet and tail. From this shell the animal is never disengaged; and they defend it from the attacks of every creature *but man*.

Though the tortoise is not endowed with teeth, yet the jaw is furnished with two bony ridges, which completely supply their place; and so great is the strength of these grinders, that nothing can escape if they once obtain a hold: indeed, all parts of this singular animal appear to possess an uncommon degree of strength; and, torpid as the creature appears, it has been known to carry five men upon its back, without seeming incommoded by their weight. The legs, though short, are very strong, and as it proceeds forward, the claws sink into the ground.

Though there is a striking resemblance between the turtle and the tortoise, yet their habit and manner of living are totally unlike; the land tortoise resides in holes dug in the mountains, or else by the side of some marshy lake; the sea turtle dwells in the cavities of rocks, or in those extensive pastures at the bottom of the sea. The latter uses its feet merely in swimming; whilst the former walks with them, or burrows holes in the ground.

Seba has proved that all tortoises are amphibious, yet asserts that each species will exist either upon land or in the sea. The land tortoise is generally found from one to five feet in length, from the end of the snout to the termination of the tail; and from five inches to a foot and a half across

the back : the head small, and somewhat resembling a turtle ; and the eye is without an upper lid : it has a strong scaly tail like the lizard's ; and has the power of withdrawing its head under the shell : and remains invulnerable to every attack upon it, even from the most formidable and tremendous foe.

The tortoise is not only a long-lived animal, but is with the utmost difficulty destroyed ; and Naturalists have frequently made experiments, to see how far it was capable of enduring pain. Rhedi tells us, that he made an opening in the skull of a land tortoise, and took out every particle of the brain ; and that the poor animal gave no symptoms of suffering, except that of entirely closing its eyes, which were never after opened again.

Experiments of this nature, though they may inform the understanding, certainly tend to corrupt the heart : and that knowledge, which is attained at the expense of *anguish*, had better by far have remained concealed.

The Archbishop of Canterbury kept one of these animals in his garden, which was known to have been in that place a hundred and twenty years, and was neither supposed to have died from age nor infirmity, but to have lost its life through the severity of the frost.

From the smallness of the brain, and the slowness of its motion, the tortoise appears a torpid animal, whose life is lengthened by repose ; and it is known to burrow holes three or four feet deep, for the purpose of retiring during the intensity of the cold, where it frequently remains for six months together, till roused from insensibility by the genial warmth of spring.

The eggs of this species of animals, like those of birds, are all furnished with a yolk as well as a white, though they appear rather to be covered by a tough skin than a shell. It is difficult to ascertain the number of land-tortoise eggs, though it is supposed their number is not very great ; the female deposits them in a slight depression in the ground, and then leaves them to be nurtured into life by the heat.

The *sea-tortoise*, or *turtle*, as it is commonly called, is generally larger than the one which has just been described ; for the element in which it dwells is known to possess the power of increasing the natural bulk of those animals, which are allowed to be capable of existing both upon land and sea. The sea-pike is much larger than any of the species that exist in a fresh water stream ; the sea-bear exceeds that which dwells upon the mountains ; and the turtle is superior to the tortoise in size.

The great Mediterranean turtle is the largest of the species, and frequently weighs nine hundred pounds; the flesh is not only unpalatable, but has often been attended with poisonous effects; and the shell is not capable of being converted to any use.

The turtle which are caught in the South Seas, and Indian Ocean, may be divided into four different kinds, which are distinguished by the following names; the *trunk turtle*, the *loggerhead*, the *hawk's bill*, and the *green turtle*.

The *trunk turtle* is generally larger than the rest; the flesh is rank, and considered unwholesome; the *loggerhead*, which derives its name from the disproportion of that member, is never eaten but when other food cannot be obtained, and the *hawk's bill* is only valued for its *shell*, of which all our tortoise-shell combs and different trinkets are made; but the *green turtle* is considered as the most valuable, being at once a wholesome and delicious treat: the flesh of this fish is held in such high estimation, that it is now become a lucrative branch of trade; and ships are provided with conveniencies for transporting them from the West Indies, for the purpose of regaling the appetites of the rich and great.

When the female finds the time for laying her eggs approaching, she resorts to some low and sandy part of the shore, where she scratches a hole near two feet deep, and lays eighty or ninety eggs at a time; after which she covers it up with so much dexterity, that it is almost impossible to discover the place; but after fifteen days she again returns, and deposits as many eggs as before; and this plan is again repeated, though she never returns after the *third time*; yet in less than a month the heat produces young ones, without the assistance of maternal aid.



CHAP. VIII.

OF THE SHELL OF TESTACEOUS FISHES

BEFORE we enter into the history of shell-fish, it may not appear improper to observe, that Naturalists, who have written upon this part of history, have entirely attended to *outward forms*; and, instead of giving a description of the animal, have confined themselves wholly to the account of its shell.

The shell of a fish may properly be considered as a habitation which Nature has bounteously supplied, consisting of a hard substance, formed somewhat in the manner of a wall: part of this substance is derived from outward objects, whilst the fluids in the animal's body furnish the cement; and these united, make that firm covering which shell-fish generally reside in until they die.

The diversity is so great, both in the form and colour of shells, that the study of them has constituted the chief employment of some men's lives; and the amazing expense attending these collections, it is difficult to describe, and can scarcely be conceived. *Sea shells* are either found in the depths of the ocean, or, forsaken by their inhabitants, are cast empty upon the shore; others are discovered in *fresh* water rivers, whilst the possessors of some exist only upon land. Naturalists have varied in their method of distinguishing shells; but Aristotle has divided them into three tribes: the *turbinated*, or those of the snail kind; the *bivalved*, or those of the oyster kind; and the *multivalved*, or those of the acorn shell kind.

TURBINATED SHELL-FISH OF THE SNAIL KIND.

The history of the garden-snail, though so insignificant in appearance, has excited the attention of the curious, as much as the largest animal of the quadruped race; for it is as completely furnished with organs of existence, as if it was destined to pass the most useful kind of life. Upon minute examination, it is found to be endowed with tongue, brain saliva, ducts, glands, nerves, stomach, intestines, liver, heart, and vessels for the blood; besides which, it has a bag that furnishes different parts of the body with a red matter, and strong muscles that unite it to the shell.

When the snail is in motion, four horns may be observed, the two uppermost of which exceed the others in length; but what renders them peculiarly remarkable is, that at the extremity of each are placed the eyes: under the smaller horns the mouth is situated, which is furnished with eight sharp teeth, with which it devours leaves, and different kinds of vegetables, on which the animal promiscuously feeds.

When the young of this animal first leaves the egg, which the parent, after laying, always conceals in the earth, the shell may easily be discerned upon the back; but, at that time, it has only *one* convolution; yet, as it grows in size,

the circles increase, from that slimy kind of matter which exudes from the body, which at once nurtures the snail and composes the shell ; and if accident should injure or crush it to pieces, this glutinous composition restores it again.

The appetite of this singular creature is known to be voracious ; and gardeners, in general, have reason to dread their effects ; salt and soot are both recommended to destroy them ; though a land tortoise would more effectually accomplish this end. At the approach of winter, the snail retires to some hole in the earth, which, to prevent the air from penetrating into, it carefully closes up with slime, and there it remains, in a state of torpidity, until the rays of the sun recall it into life.

Such are the striking particulars in the history of this animal, which may give a general idea of the habits and manners of the kind : the sea-snail is a much larger creature ; and we are told there are no less than fifteen of the tribe. Of the fresh water snail there are eight species ; but of the land only five. The sea-snail has only two horns or feelers, and is thought to possess an imperfect kind of sight : the nautilus is allowed to be the most singular of this species ; the shell of one kind resembles mother-of-pearl, and the other is beautifully white.

The land and water snail not only differ from each other in size, but in the position in which the mouth is placed ; in the former, the mouth is situated like that of quadrupeds, and furnished with jaw-bones, lips, and teeth ; but in the latter, its direction takes a longitudinal shape, whilst those of the trochus kind have no mouth whatsoever, but are supplied with a trunk that answers the place, this trunk is muscular, hollow, and supple, and towards the extremity it is toothed like a saw. Amongst their own tribe of animals they seem to be dreaded, as they are both a destructive and a voracious race.

OF BIVALVED SHELL-FISH, OR THOSE OF THE OYSTER KIND.

THE MUSCLE.

It is well known that the muscle, whether belonging to fresh or salt water, consists of two equal shells, joined at the bar by a muscular ligament, that answers the exact purpose of a hinge ; and to one of these shells the fish is united, and can open or shut them at its will. Like other animals of

this species, it is furnished with vital organs, though they are most singularly placed. The mouth is formed by two fleshy lips, and the intestines pass through the brain; after which they make a number of circumvolutions through the liver, and from thence pass on to the heart.

The muscle possesses a kind of self-creating quality, which occasions the abundance in which they are found; for, as the crab, the cray-fish, and the trochus, all devour them, if they did not propagate in numbers, there would soon be an end of the race; but, notwithstanding the number of this creature's enemies, it has more reason to dread the element in which it resides; for, whenever that experiences any violent agitation, thousands of them are dashed against the rocks and destroyed. In order, in some degree, to guard them against such accidents, it is endowed with a beard, or a number of thin threads, which it can extend beyond the shell, and attach to any object on which it chooses either to fasten or feed.

The instrument the muscle uses to produce its motion is a muscular substance, in form resembling a tongue, which sometimes measures two inches, and at others not a third part of that length: this useful little membrane the animal is able to thrust out of the shell, and with it makes a kind of furrow in the sand, whilst the muscle travels edgewise in a convenient kind of groove.

The muscle cannot be entirely called a marine animal, as it is found in lakes and rivers, as well as in the sea; though, in the latter, they are to be met with in greater abundance, and likewise of a larger make.

THE OYSTER.

Though the internal conformation of the oyster bears some resemblance to the muscle, and the intestines, lungs, and heart, are nearly the same, yet only one side of the shell is concave, and in that the animal always dwells. The muscle, as we have observed, is capable of erecting itself upon its edge, and of proceeding forwards, although with a very slow pace; but the oyster remains in a stationary situation, and attaches itself either to rocks, stones, or sea-weeds, and may frequently be seen in the tropical climates, hanging in clusters to different branches of trees, whose boughs happen to bend over that element in which the fish naturally reside. This adhesive quality which the

creature possesses, is generally produced from a glutinous cement, though sometimes it is observed growing to the rocks, by threads which appear to have taken root upon the shell.

Oysters usually cast their spawn in May, which generally adhere to some hard substance, and have the appearance of drops of candle-grease, which in two or three days acquire a callous covering, though it is three years before they are large enough to eat. It is the custom in some parts of England, where the tide settles on marshy land, to pick up large quantities of these small oysters, and deposit them in some bed where the tide flows in; and, being thus defended from those agitations which disturb the ocean, they acquire a greater degree both of plumpness and size; but even these are inferior to what are termed *rock oysters*, which it is no unfrequent thing to see as large as a plate, whilst those which are found along the coast of Coromandel will satisfy eight or ten men for a meal, though their flavour is not so delicate as those of a smaller kind.

Other bivalved shell-fish, such as the cockle, the scallop, and the razor-shell, only differ from the muscle and oyster in a few minute points; though the scallop is remarkable for its method of moving forward upon land, as well as for swimming upon the surface of the tide.

All oysters, and most shell-fish, are occasionally known to contain pearls; but that which particularly obtains the name of the pearl-oyster, has a large, strong, whitish shell, rough and hard upon the outside, but within, polished and smooth; and from this all our mother-of-pearl trinkets are made. That elegant gem, which is found in oysters, was by many Naturalists thought the effect of disease; but it is now known to be merely a part of the same matter which originally formed the animal's shell. There are a great number of pearl-fisheries both in Asia and America; though, in the latter country, their produce is not very great; but those in the Persian Gulf, near the Isle of Bahren, are the most beautiful in colour, and of course bring a higher price.

The wretched people who are destined to attend these fisheries, are generally cut off in the prime of their days; and, if they escape the numerous dangers which attend the employment, they are almost certain of losing the greatest blessing of life; for the pressure of air upon their lungs, at the bottom of the water, is too powerful for the human

frame to sustain; and a spitting of blood is universally the effect.

The unfortunate objects selected for this employment, are always those young men who appear to be in the highest health; and it is said that the best divers will continue three quarters of an hour under water; but many find that one quarter completely exhausts their strength. Every diver descends perfectly naked, except a net fastened round his neck for the purpose of receiving the oysters, and is let down by a rope, with a stone fastened to it, which does not weigh less than fifty pounds.

MULTIVALVE SHELL-FISH.

To view the external habitation of these animals, it is scarcely possible to conceive they contain any thing with life; yet, what is more extraordinary, they are capable of moving forward with celerity, and, when pursued, frequently escape.

Of the multivalve shell-fish, there are two species; the one of which is stationary, and the other possessing powers which enable it to move; the latter are distinguished, in the cabinets of the curious, by the appellation of sea-eggs; but Naturalists have given them the name of sea-urchins, and the former that of the file-fish.

The sea-urchin bears some resemblance to the husk of a chesnut, or a turnip stuck completely full of pins; and upon these pointed angles it proceeds with a degree of dexterity which it is hardly possible to suppose such an uncouth form could attain. The mouth of the sea-urchin is placed downwards, and in it may be plainly discerned five teeth: the shell is a hollow vase, resembling an apple that has been scooped, which is filled with a soft muscular substance, through which the intestines wind round; but what is the most extraordinary part of the animal, is its horns or spines, that serve both for arms and feet; the latter of which are hard and prickly, but the former perfectly soft.

It is an observation that has frequently been made upon insects, that those which have the fewest legs move with the greatest speed: but the sea-urchin contradicts this assertion, as it has twelve hundred horns and two thousand spines, yet is able to run at the bottom of the sea with a degree of swiftness, if it cannot positively be termed speed. The flesh of

this fish is thought to resemble that of a lobster ; but the eggs (which are red) are allowed to be superior in taste.

The acorn shell-fish, the thumb-footed shell-fish, and the imaginary barnacle, upon a slight inspection, appear like funguses that grow in the deep ; but minute observation will soon convince us, that they are endowed with appetites as well as life, and may be seen opening a cover, and thrusting out twelve long arms, for the purpose of procuring something to eat : these are covered with hair, and capable of adhering to rocks, bottoms of ships, roots of trees, whales, lobsters, and even crabs, and there they remain clustered together in numbers, like bunches of grapes upon the stalk *These*

Of all the animals of the shelly tribe, none have excited the attention of the curious equal to that we are about to describe. The pholas, when divested of its external covering, bears some resemblance to a pudding in its form, and does not appear to be endowed with any instrument that could render it capable of boring into stones ; yet, by patience and perseverance, it can penetrate into the most callous substances, by the assistance of a fleshy member resembling a tongue. With this soft and yielding instrument, it perforates marble and the hardest stones ; and when, whilst small and naked, it has effected an entrance, it then enjoys an undisturbed life of ease, existing upon the sea water that enters into the aperture, and increasing in size until it attains about eight inches in length. Thus immured in its narrow mansion, which it regularly increases according to its size, it soon acquires a callous covering, which does not appear essential for its defence, as they are so small, when they begin to form their subterraneous habitation, that the passage to it resembles the stem of a tobacco-pipe, and their dwelling may not inaptly be compared to the bowl.

At Ancona, in Italy, this fish is found in the greatest abundance ; they are likewise to be met with in Normandy and Poitou, in France : some few have been discovered upon the coast of Scotland ; and their flesh is considered as a luxurious treat.

CHAP. IX.

OF FROGS, TOADS, AND LIZARDS.

FROGS AND TOADS IN GENERAL.

THE external figure of the frog is too well known to require being particularly described: its active powers are astonishingly great, when compared with its unwieldy shape; it is the best swimmer of all four-footed animals; and Nature has finely adapted it for those ends; the arms being light and pliant, the legs long, and endowed with great muscular strength.

The portion of brain which this animal possesses, is much less than might be supposed from its make: the swallow is wide, and the stomach narrow, though capable of being distended to an astonishing size: the heart of the frog, as in all other animals that are truly amphibious, has but one ventricle, so that the blood can circulate whilst it is under water, without any assistance from the lungs; these resemble a number of small bladders, joined together like the cells of a honeycomb, and can be distended or exhausted at the creature's will.

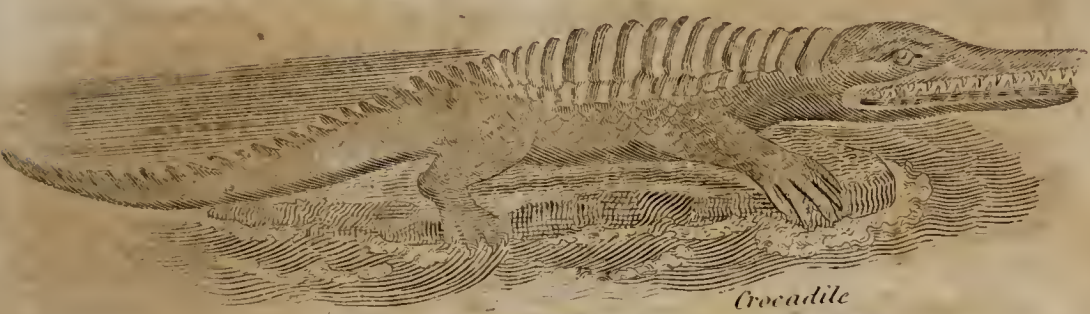
A single female produces from six to eleven hundred eggs at a time; but this only happens once a year. The male is of a grayish brown colour; but the skin of the female is of a yellow hue: these colours grow deeper every time they change them, which frequently happens every eighth day. The frog generally lives out of the water; but, when the cold nights set in, it returns to its native place, always making choice of those stagnant waters at the bottom of which it is most likely to remain concealed: there it remains torpid during the winter season: but it is roused into activity by the genial warmth of spring. The croaking of these animals has long been considered as the certain symptom of approaching rain; for no weather-glass can describe a change of season with more accuracy than this vociferous and noisy tribe; and we could hardly imagine, that a creature of that size could send forth sounds that would extend the distance of three miles. All very dry and hot seasons are allowed to be injurious to this animal's health; and, as they live chiefly upon snails and worms, at those periods they find it difficult to procure a



Turtle



Tortoise



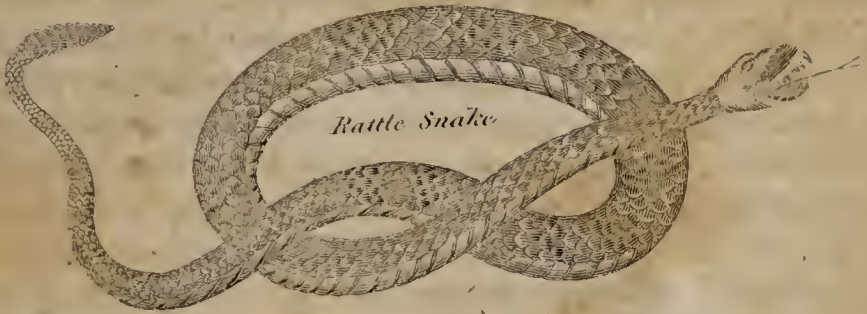
Crocodile



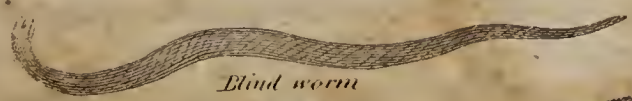
Lizard



Viper



Rattle Snake

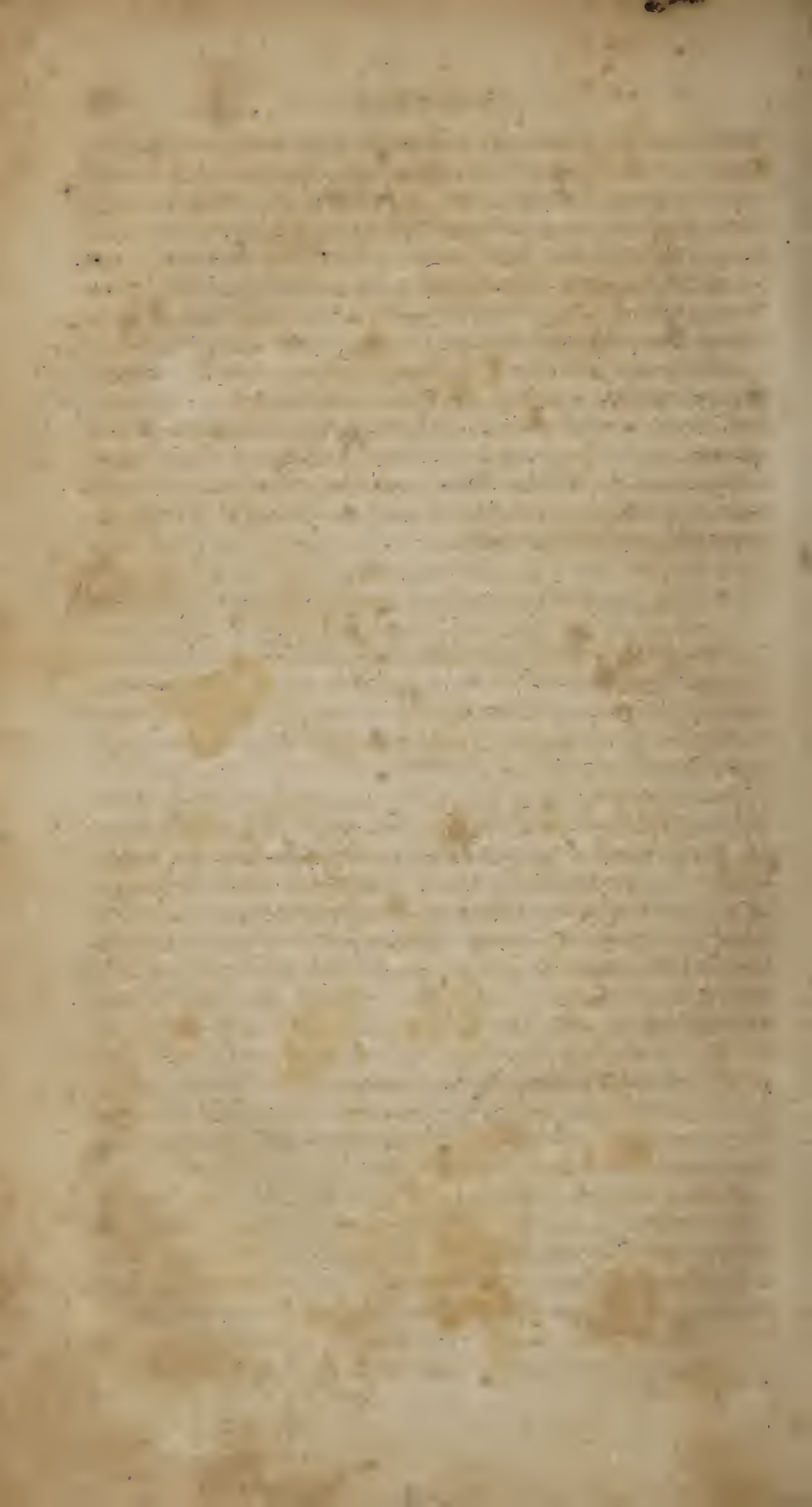


Blind worm



Double headed snake

Kucass sc.



sufficiency of food. The method they adopt to ensnare these unsuspecting creatures, affords entertainment to the curious mind; for when they observe their destined prey approaching, for some moments they remain immoveably fixed, and, when they are sufficiently near, spring suddenly upon them, at the same time darting their long tongue from their mouth, which is covered over with a glutinous substance, to which whatever it touches is certain to adhere.

The frog is not only capable of existing with a small portion of nourishment, but will live several hours after the head has been severed from the frame; and school-boys frequently, in the wantonness of cruelty, strip the unfortunate creatures of their skin, for the purpose of seeing how much vigour they are possessed of, though suffering the most excruciating torture and pain.

THE TOAD, AND ITS VARIETIES.

Though the toad, in form, bears a strong resemblance to the harmless animal we have just described, yet prejudice has taught us to consider them very differently; for the one is thought to belong to an obnoxious, and the other to a perfectly harmless race.

As the toad, in its figure, differs but little from the frog, its disposition and habits are also much alike: both are known to be amphibious; both exist chiefly upon the insect tribe; and though fable has bestowed a poisonous quality upon the former, no effects of that nature have ever been traced. Valisnieri informs us, that some German soldiers, having taken possession of an Italian fort, had frequently observed the lower class of people convert frogs into a very savoury dish; and, intending to imitate their cookery, by mistake composed it entirely of *toads*. The Italians with delight perceived their error, imagining their enemies would fall victims to the poisonous qualities of the dish; but the Germans did not find any bad consequences from their repast, nor suffer the slightest ill effect.

From this it will appear, that the animal has been treated with injustice; that it neither ejects a venom which will corrode or destroy, and that so far from rendering sage poisonous, merely by reposing near it, it is incapable of imparting any noxious effect, but is a torpid harmless animal, that, during the greatest part of the winter, passes its life in sleep.

The toad is known to be a long-lived creature, and is believed by many to exist in the centre of rocks, and the bodies of oaks, without leaving the smallest appearance of the path by which it entered, or there being the slightest probability that it ever could return. Some instances have been related of their being applied to cancers, and of their producing a most fortunate and striking effect; but I am inclined to think their fame must rather have been exaggerated, or they would, doubtless, in those cases, be brought into general use.

Of this animal there are several varieties, which probably differ only in the colour of their skin. Their size, with us, is generally from two to four inches; though they are infinitely larger in the tropical climes; some of these are most beautifully coloured; and the skins of others appear studded over as if with pearls. It would be a tedious task to enter into a minute discrimination of them; but the pipal, or toad of Surinam, cannot be passed over without being named, as an animal which nature has constructed with peculiar deformity, yet rendered a phenomenon by its *back* being the habitation for its brood.

OF THE LIZARD KIND.

THE CROCODILE, AND ITS AFFINITIES.

It is no easy matter to determine to what class in nature lizards are most nearly allied: they cannot justly be ranked with the quadruped creation, as they bring forth by eggs, and are not covered with hair; neither can they be placed among fishes, because the majority of them exist upon land; their size prevents them from being classed with insects; and they are excluded from the tribe of serpents by their feet.

As lizards thus differ from every other class of animals, they also vary very much amongst themselves; for where shall we find a greater difference than in the chameleon and the alligator? the one measuring an *inch*, and the other *twenty-seven feet*. All animals of this description have four short legs, and their fore feet bear some resemblance to a man's hand: their tails are generally nearly as thick as their body, but, at the end, taper to a point. They are all allowed to be amphibious, and capable of living either in water or upon land.

The crocodile is fortunately placed at that remote dis-

tance from Europeans, that, though it may raise curiosity, it cannot excite dread; yet those who sail up the rivers Amazon and Niger, describe them as being the most formidable animals of the deep. Of this tremendous species there are two kinds; the one termed the crocodile, and the other the cayman or alligator; and the chief distinctions between them are merely these: the body of the crocodile is more slender than that of the alligator; and the forehead, like a grayhound's, tapers off towards the snout; it likewise has a much wider swallow; and the colour is ash, whilst the alligator's is black. It is sometimes known to measure thirty feet from the tip of the nose to the end of the tail; though the one from which I shall give my description was not quite *nineteen*. The tail measured five feet and a half; and the head and neck upwards of two: it was four feet nine inches in circumference; and the fore legs had the appearance of the hands and arms of a man; but two of the five fingers were entirely without nails: the head was long, the skull uneven, and one part of it was proof against a musket-ball. The jaws seemed to shut one within the other; and, in the upper one, were placed twenty-seven cutting-teeth; but in the under one, only fifteen: the mouth was fifteen inches in length, and the body of a man could easily pass between; and it was covered with scales from the shoulders to the tail.

The strength of the crocodile surpasses credibility; for it can easily overturn a canoe with one stroke of its tail.

Except when pressed by hunger, it seldom leaves its favourite element, or with a view of depositing its eggs. Its usual method is to float upon the surface of the water, and to seize whatever animal comes within its reach. If disappointed of fishy prey, it conceals itself amongst the sedges, and waits the approach of those animals that may be attracted thither by the parching influence of the clime; and neither the dog, the bull, nor the tiger, have any chance of escaping from its destructive jaws. The human race likewise frequently fall victims to its rapacity; yet the negroes will attack them merely with a knife. Their usual method of doing this, is to enter the water with their left arm bound up tight with a cow's hide, which, the moment the crocodile extends his jaws to seize him, he thrusts with violence down its throat, and, with the other hand, repeatedly stabs him, until the exhausted animal expires.

Though, in some parts of the world, the crocodile is so formidable, there are others where its nature seems to have

undergone a total change; and, instead of spreading either terror or devastation around them, they are not only harmless, but sportively tame. It is only in those unpeopled countries, where mankind have few opportunities of exerting their power, that this animal becomes the terror of its few inhabitants; for there are many instances of their being made subservient to the human race.

The Siamese, in particular, take large numbers of them when young; and subjection has the power of producing such a change, that they will even submit to the direction of a bridle, and show no signs of a desire to dispute their rider's will.

All crocodiles breed near fresh waters; and, though they sometimes may be found in the sea, it is chance which conducts them into that element, and not nature or design. The female always pitches upon a sandy shore for the purpose of depositing her eggs, and after scratching a deep hole for their reception, lays from eighty to a hundred, as large as a tennis-ball; these she covers up with the greatest circumspection; but returns to the same spot on the two following days, on each of which she deposits the same number, and then leaves them to the nurturing influence of the sun. Instinct teaches her to return at the end of thirty days, for the purpose of scratching away the sand; some of the brood immediately ascend her back, and others run undirected towards the stream, at which place all natural connexion ceases, for the voracious mother begins to devour her brood. It is not only the crocodile that is an enemy to its own species, for the ichneumon and the vulture exist upon their eggs; and was it not for their beneficial influence, their numbers would completely overrun the land.

The flesh of this animal is extremely unpalatable, and impregnated by the bags of musk that are found under its arms and legs; but their eggs are considered as a great delicacy by savages, though an European appetite would not be likely to relish them as a treat

THE SALAMANDER.

Though the ancients have described a lizard bred by fire, and existing in flames, the moderns have discovered that it was a fabulous assertion, and that they have been merely the offspring of a heated brain.

The salamander, which was once supposed to live upon

that element which must inevitably prove the destruction of life, resembles a frog in the form of its body, though, like every species of the lizard, it has a long tail : like that animal, its snout is rounded, and its eyes placed in the back of the head ; the claws of its toes are short and feeble ; and it is covered with a rough skin.

Not only the salamander, but every one of the lizard species, are supposed to be of a venomous kind ; but it appears to be the effect of prejudice or misconception, for they are destitute of fangs like the viper, and have very small teeth ; as to the saliva which has been supposed poisonous, no effects of that nature have ever been produced.

The salamander, which is best known in Europe, is generally from eight to eleven inches in length ; when taken in the hands it imparts a chilling sensation, and appears to be incapable of supporting heat, as it always makes choice of a cool retreat. Like the frog, it seems to be a heavy torpid animal, and in that instance differs from the rest of the lizard kind, as the generality of them are continually in motion, if we except the winter months, which are chiefly devoted to sleep : during that period, the water-lizard changes its skin every fortnight ; but in the summer twice or thrice in that space.

THE CHAMELEON, THE IGUANA, AND LIZARDS OF DIFFERENT KINDS.

In the former divisions of this tribe of animals, we described those which, though innocent of those poisonous qualities which have been attributed to them, were neither beautiful in colour nor shape ; but those whose history is about to be recorded, are either interesting to the eye, or pleasing to the taste.

Directly descending from the crocodile, we find the cordyle, the tockay, and the tejuguaco, all gradually diminishing in size ; and next to these comes the African iguana, with a body about as thick as a man's thigh, and measuring nearly five feet ; the skin is covered with small scales like those of the serpent ; and a row of prickles stands erect upon the back ; the eyes appear but half opened, except when the creature happens to be in a rage ; and both jaws are full of sharp teeth, with which they bite extremely keen, though they do not inflict a venomous wound.

This animal, though apparently formed for combat, is com-

pletely harmless in all its pursuits ; but its flesh is allowed to be the greatest delicacy which either Africa or America is able to produce. The iguana either sports upon the edges of rivers, or resides upon different branches of trees, and chiefly feeds upon the flowers of the mahot, or upon the leaves of the manon. The method of taking this valuable animal, which is generally sought after for the delicacy of its food, is by fastening a noose to the end of a stick, and beating along the sides of rivers, or among the branches of different trees.

The chameleon is a different animal from the iguana ; and instead of feasting the body of the epicure, is a treat to the philosopher's mind ; for the various changes which it exhibits, and the different colours which at intervals it appears to disclose, have long made it an object of attention to the curious, though they have never exactly ascertained the cause by which they are produced.

The size of this animal frequently varies, though they never exceed more than eleven inches in length ; but by some singular power it frequently dilates its whole body, until it appears twice as large as before it began to swell . and this extension generally remains for two hours together, when by degrees it returns to its natural size.

The surface of the skin is extremely unequal, and has a grain upon it which bears some resemblance to shagreen ; but the variation of colours appears to depend upon the different effects of light and shade. Whenever the light comes upon the body, a kind of tawny brown seems to be displayed, whilst that part of the skin on which the sun has no influence, seems covered with spots of yellow, crimson, or red ; and when its rays are no longer perceptible, the whole skin becomes a lightish gray.

Like the crocodile, this animal is produced from an egg, and generally resides in the branches of trees, from which it descends with a very awkward motion, securing itself from falling by clinging round them with its tail. Many have supposed that it lived entirely upon *suction*, or rather by drawing in large quantities of air ; but, though it seems invigorated by inhaling that element, yet it may frequently be observed catching flies. The tongue, which it uses as the instrument of their destruction, is nearly equal to the whole body in length ; the eyes are small, though very shining, and placed very prominently in the head ; but what appears a phenomenon in them, they are capable of being directed different ways.

To the class of lizards we may add the flying one of Java,

which may frequently be seen perching upon different trees, from each of which they will fly with rapidity ; and upon flies, ants, and butterflies, it indiscriminately feeds. The flying lizard is about a foot in length : and the wings resemble those of the flying-fish ; they have four paws like the common lizard, and a variety of beautiful colours are displayed upon the skin : about the neck are a sort of wattles, not unlike those which are found upon the cock.

The last animal of the lizard kind to be mentioned is the chalcidian lizard of Aldrovanus, which modern historians have termed the sepo : this creature seems to form the shade which separates them from the serpent, for it has a long slender body, and very short legs ; these seem rather like useless encumbrances, than as instruments to promote the animal's speed, for the two fore ones are placed near the head, and the hind ones so backward that they are scarcely to be seen ; the head is large, the snout pointed, and the whole body is covered with scales.



CHAP. X.

OF SERPENTS IN GENERAL.

WE now come to a tribe, that not only their deformity, their malignity, and their venom, conspire to condemn, but even our very religious prejudices call forth a kind of detestation in the mind. Their numbers, however, have been thinned by human assiduity ; and it is probable that some of the species have been totally destroyed. In none of the countries of Europe do they prevail sufficiently to excite the alarming apprehensions of mankind ; for there are not more than three or four kinds in any degree dangerous, and a timely application will prevent their ill effect.

In the warm countries that lie within the tropic, as well as in the cold regions of the north, where the inhabitants are thinly scattered, these animals propagate in a very great degree ; yet along the swampy banks of the rivers Niger and Oronoko, a still greater abundance of them is to be found ; and there are many historical accounts of the devastation of these animals, which excite horror though they scarce obtain belief. Pliny assures us, that he saw the skin of one of these destructive creatures, that measured a hundred and twenty feet, and that whole armies had fallen victims to it.

rapacity ; that battering engines were forced to be employed against it, and that an ovation* was decreed to celebrate its defeat.

If we take a survey of serpents in general, there will be found marks to distinguish them from every other race : they have the length and suppleness of the eel, without its fins ; they have the scaly covering and pointed tail of the lizard, but want its legs ; they have the crawling motion of the worm, yet have lungs to breathe through, which that animal has not ; like all the reptile kind, they are resentful when offended ; and Nature has supplied them with arms to revenge.

With respect to their conformation, all serpents have a very wide mouth in proportion to the size of their heads ; and their jaws are capable of so great an extension, that they can swallow a body of incredible size ; the eyes of the animal are rather small ; and some have, whilst others have *not*, teeth ; the holes for hearing are perceptible in them all, but there are no conduits for smelling, apparently to be seen ; the tongue is very long and forky, and composed of two fleshy substances which terminate in a point ; the bodies of these animals are long and slender, and contain a hundred and forty-five joints, which enable them to bend in a circular direction, and twist themselves round the trunk or branches of trees ; the skin also contributes to its motion, being composed of a number of scales, united to each other by a transparent membrane, which grows harder as the animal increases in age ; though twice in the year it is generally changed, when the colours of the new skin appear infinitely more bright.

When we compare serpents with each other, the great distinction between them appears to be in their size : for what animals of the same species can be so remotely separated as the great liboa of Surinam, that grows to the length of thirty-six feet, and the little serpent of the Cape of Good Hope, that does not measure more than three inches in length ?

A gentleman, who had large concerns in the Berbices in America, informs us, that he sent a soldier and an Indian into the woods to kill game ; the latter of whom, finding himself fatigued, reposed himself, as he thought, upon the body of a felled tree ; but scarcely had the poor fellow

* An ovation was instituted by the Romans, in honour of any signal exploit that was not thought worthy of a triumph.

taken his seat, when the enormous mass began to move, and he fell upon the ground from excess of fright. The soldier, seeing his companion's situation, instantly levelled his well-aimed piece, and repeated his fire until the monster died; but what was his surprise, upon attempting to raise the Indian, when he found that terror and apprehension had actually killed him! The skin of this animal was stuffed and sent to the prince of Orange, and a few years since might have been seen in his cabinet at the Hague.

A German author of undoubted veracity tells us, that he saw a buffalo devoured by one of this destructive tribe; that it twisted itself round the body of the affrighted animal, and at every successive turn crushed some of its joints, which cracked with a report nearly as loud as a cannon, until the ill-fated creature expired in agony.

Other animals have a choice in their provisions, but the serpent indiscriminately preys upon all alike; the buffalo, the tiger, the gazell, and even the porcupine, alike fall victims to the rapacity of this tribe. Though the serpent is the most voracious of animals, and though they can swallow a larger body without chewing than even the whale, yet its digestive faculties are extremely imperfect, and one meal is sufficient for a length of time; part of their food only finds a passage to the stomach, the rest is retained in their gullet or mouth, where it remains until that which it has swallowed is digested, when it applies to that which has been kept in reserve. Vipers have been confined in boxes for six or eight months together, without being offered any food, yet never displayed any symptoms of languor, or showed a desire for what appears necessary for the preservation of life.

The voice of the serpent differs essentially; some have a peculiar cry, though a kind of *hiss* is the general sound; and this they are said to modulate very nicely; though the sensations produced by the two species must doubtless have a very different effect, the one filling the mind with pleasurable sensations, and the other exciting alarm and dread.

The motion of these animals likewise varies: the viper is slow; the ammodytes swift, and darts upon its prey with that unerring rapidity which scarcely gives them a chance to escape; the jaculus is allowed to be the swiftest in its motion of any of the serpent tribe, and the method it adopts to proceed with this rapidity is by coiling itself upon its tail, and darting from thence to its full extent, then twisting the

tail towards the head in an instant, and again darting forward in pursuit of food.

Though all serpents are known to be amphibious, yet they can only exist in marshes, or fresh water streams; and, if transported to the briny element, the most healthy of them would soon expire. Some of the species bring forth their young alive, whilst others are produced from eggs; but the last distinction to be made between them is, that some are harmless, and others fatal in their effects.

Destructive as this poison often proves to us, it has been given for the animal's support and defence; for, unarmed by nature with any powerful weapons, it would be exposed to the attacks of every other tribe; but, furnished as they are with this corrosive poison, every rank of animals approaches them with dread: and the malignity of a *few* serves as a protection for the rest.

From the noxious qualities which these creatures possess, it is natural to suppose that a general war should be carried on against them, and that man, beast, and bird, should unite in endeavouring to destroy such an obnoxious race. The Psylli, of old, were famous for destroying serpents, by attracting them all towards a fire; and the ichneumon of India, and the peccary of America, have the art of darting upon them, and seizing them by the head.

In India, there is nothing so common as dancing serpents, which are carried about in a broad flat vessel somewhat resembling a sieve, which erect themselves at their keeper's orders, and not only move their bodies, but keep time with their head.

Though the generality of mankind regard this formidable race with horror, yet there are some nations which pay them the greatest homage and respect; the Egyptians, in particular, hold them in such high veneration, that it was not only a crime to kill them, but to treat them with neglect; and, in the kingdom of Widdah, the serpent is considered as a tutelary deity at this present day.

From this slight history of the race in general, it will appear that they ought to be divided into two distinct tribes, the one including those that are venomous, and the other those that are capable of inflicting pain. To the first belongs the viper, the rattlesnake, the *cobro di capello*, with the affinities attached to each: to the other, the common black snake, the laboa, the boiguacu, the amphisbœna, which, though harmless in their nature, are considered as a formidable race

VENOMOUS SERPENTS, AND THOSE THAT ARE
NOT SO.

The poison of serpents has for ages been considered as an object worthy the attention of a reflecting mind, and to those who reside in countries where these destructive animals abound, few studies can prove of so important a kind. In all this venomous class of reptiles, there are two large fangs or teeth, that issue beyond the rest, from the upper jaw; and these instruments of destruction are only attached to those animals in which the corrosive liquid is to be found. The wounds, inflicted by the fangs, produce the most dangerous effects, as from being hollow they serve for a channel through which the poison passes into the lacerated part, and at the root of these is placed a bag of thick yellowish liquid, which, though it may be swallowed without danger, will prove fatal if once injected into the veins. This circumstance will no longer appear extraordinary, when we consider that milk, that palatable and nutritious beverage, will have the same destructive effect if put into the veins instead of being taken as food.

The malignant kind of this race of animals are very inferior to the harmless ones in size, and are seldom known to exceed nine feet: their food chiefly consists of the smaller kind of prey, such as birds, moles, toads, and lizards, so that they never attack those formidable animals that would not be likely to die unrevenged; they generally lurk in the clefts of rocks, twine round the different branches of trees, or repose beneath the shade of some high grass; and if by accident they should there be trod upon, the careless passenger instantly feels the effect.

In the East and West Indies, there are a variety of these noxious animals, but we are only acquainted with one in England, and that is seldom found but in dry and chalky countries, as it does not appear to thrive in a cold damp soil. The ground-colour of the viper is a dirty yellow; the back marked the whole length of it with rhomboid black spots, each of which touches the other at the points: the head is much thicker than the body; and the tail terminates in a point. It differs from most of the serpent species from only being able to move forward with a very slow pace, and from bringing forth its young alive: it is capable of supporting very long abstinence, and will never partake of any food whilst it is confined. When the young viper is alarmed or terrified, it instantly runs down its parent's throat, and remains in her

stomach until its fears have subsided, from whence it then makes a retreat.

The usual method of taking these animals, is to attack them with a pair of wooden tongs by the tail; notwithstanding which the viper catchers are often bit by them, but are cured by an application of olive oil rubbed into the part, over a chafing-dish of charcoal, until the pain and swelling entirely abate. The broth of this reptile was once held in high estimation, as a most powerful restorative; and one viper put to a quart of water, and boiled until it became a pint, has been said to produce the most surprising effects.

The rattlesnake is an inhabitant of our continent; the usual length is four or five feet, though they are sometimes known to measure six; and the bodies of those are about as thick as a man's thigh. Though larger than the viper, it bears a resemblance to it, having a large head and small neck; but the eye is furnished with a nictating membrane, and over each is suspended a large scale. The fangs of this animal are much more dreadful than the viper's; and the body of it is entirely covered with scales: those upon the back are between an orange and a tawny; and those on the abdomen, an ash inclining to lead.

The most extraordinary part of this animal's history consists in that rattling noise which it makes with its tail, occasioned by a collection of bones, which, when taken out, very much resemble the different links in a curb-bridle's chain. These rattles they shake with a prodigious degree of quickness, whenever they are disturbed, or are in pursuit of their prey; and the peccary and the vulture are the only creatures that hear the sound without the slightest appearance of dismay; these dart down, and seize the formidable animal, so as to prevent it from being able to bite, and devour its body without receiving the slightest injury, or experiencing any bad effect.

The very instant a wound is inflicted by this destructive animal, the pain is excruciating, and the part inflames and swells; the eyes become red, the head enlarges, the heart palpitates, and the whole frame is parched with heat. In this agony the wounded person remains five or six hours, and if his constitution happens to be robust, double that space of time; by the end of which, the whole mass of blood becomes corrupted, a mortification ensues, and the ill-fated being dies.

Several remedies have been tried to alleviate this calamity; and there have been some few instances of their

answering a good effect; a decoction of Virginia snake-root has obtained the preference, and an application, to the part affected, of the animal's head. The Indians are so convinced of the corrosive poison of the rattlesnake, that they dip the point of their arrows in the cavity of its fangs; for, not satisfied with merely destroying their enemies, they seem to derive gratification from their suffering an agonizing death.

A serpent, called the whip-snake, is still more venomous in its nature, as its bite is allowed to be certain death; it generally measures about five feet, but is not thicker than the thong of a coachman's whip. A Jesuit missionary, entering an Indian pagoda, observed one of these animals stretched upon the ground, and, imagining it to be a piece of whipcord, thoughtlessly took it up in his hand. Providentially he had seized it by the head, in consequence of which it was unable to bite; but his fears must have been excited to a pitch of agony, when he felt it entwine itself round his arm; however, he held it tight until some person came to his assistance, and dissevered the body from the head.

To this formidable class might be added the asp, the jaculus of Jamaica, the swiftest of the tribe; the seps; the her-morrhoid; the coral serpent; and the *cobro di capello*, which inflicts an incurable wound. This animal is from three to eight feet long, and has two large fangs hanging out of the upper jaw; the head and neck are covered with scales, and the eyes are fierce and full of fire.

Sallad oil has been prescribed as a general remedy, for extracting the poison of this destructive race; but in many, the quality is too corrosive to yield to the efforts of human aid. The Indians themselves make use of a composition, known by the name of the *serpent-stone*, which has the power of adhering to the part affected, and is said to diminish the inflammation and pain.

SERPENTS WITHOUT VENOM.

The class of serpents without poison may be distinguished from those that are venomous, by their being deficient in fangs, or projecting teeth; but still their size renders them formidable, and the largest buffalo frequently falls a victim to their power and strength; for it has been before observed, that it entwines round the creature's body, and draws itself so tight as to crush every limb.

The black snake is the largest of English serpents, and frequently exceeds four feet in length: the neck is slender, the middle of the body thick, and the back and sides covered with small scales. The whole species are perfectly inoffensive, and feed upon frogs, worms, mice, and insects; but show a particular fondness for hens' eggs. During the winter, they lie perfectly torpid, in the banks of hedges, or under old trees.

The blind worm is another harmless reptile, which does not measure more than eleven inches in length: the head is small; the eyes are fiery; and, instead of being pointed, it is blunt towards the tail. The back of the blind worm is of an ash colour, with small black specks; but the abdomen is white. Its motion is extremely slow and heavy; and it is torpid during winter, like the rest of the tribe.

The amphisbœna, or double-headed serpent, is remarkable for moving forward either with the head or tail; and from thence the error probably has arisen, that the creature is endowed with two heads. It is of an equal thickness at each end; and the skin in colour resembles the earth, though marked with spots of various kinds.

These animals are only formidable from their similitude to the viper; for, as they are all deficient in fangs, they cannot inflict a mortal bite: yet it is astonishing that any of the race should be estimated; for, though they may not injure, they cannot prove pleasing to the sight. In Italy, the Esculapian serpent is so great a favourite with the inhabitants, that it is not only suffered to crawl about their houses, but to get into their beds: this affection may possibly arise from its utility, as it is a great destroyer of the mice, with which that country so much abounds. The boyuna of Ceylon, and the Surinam serpent, are equally admired in those parts of the world; the colours of the latter are extremely beautiful, and their presence is thought to be the forerunner of some good. At Japan, the *prince of serpents* is a universal favourite; but the gevenda of the East Indies is held in still higher esteem; the natives of Calicut pay it divine honours; and the skin is spotted over with the liveliest colours that can be seen.

The larger tribe of serpents have no beauty to recommend them, as they are all of a dusky colour; and, though without fangs, they have teeth. The great jiboya of Java is allowed to be the largest; and Legant affirms, he has seen one that measured fifty feet.

The boiguacu is allowed to be the next in magnitude it is thickest in the middle of the body, but decreases toward the head and tail; and at the extremity of the latter, there are two claws, resembling those of a bird: a chain of small black spots runs the length of the back; and in each jaw it has a double row of teeth: they generally lie concealed in thickets, from whence they dart out with a hissing noise, and attack both men and beasts.

To this class of large serpents we may add the depona of Mexico, with a large head and enormous jaws, and eyes so large as to make it terrific; a forehead covered with immense scales; and though their figure is calculated to excite apprehension, they appear to have a natural dread of the human race.



CHAP. XI.

OF INSECTS WITHOUT WINGS.

THE SPIDER, THE FLEA, THE LOUSE, THE BUG, THE WOOD-LOUSE, THE WATER-FLEA, THE SCORPION, THE SCOLOPENDRA, AND THE LEECH.

HAVING passed through the upper ranks of Nature, we now descend to the insect tribe, a subject almost inexhaustible from their number, and the variety of appearances which they take. "After an attentive examination," says Swammerdam, "of the nature and anatomy of the smallest, as well as of the largest of each animated race, I cannot help allowing an equal degree of dignity to the former, and in many instances they are superior to the larger tribes. If we consider the unwearied diligence of the ant, its propensity to labour, and its fondness for its young, which it not only conducts to places where it will find the most abundance, but, if cut into pieces, will carry each part away in its arms; can we produce a greater example of tenderness? or can we meet with a greater proof of maternal regard?"

Though the bee, the silk-worm, the cochineal fly, and the cantharides, are all peculiarly serviceable to mankind, yet many of the insect tribe prove a great annoyance, and deprive them of many enjoyments in life. How comfortless must be the situation of the inhabitants of Lapland, and some

parts of America, where, the moment a candle is lighted, they will extinguish the flame, and where they are obliged to rub their bodies with different compositions, to prevent their enemies from attacking them, and inflicting the severest pain!

Definitions in general produce little knowledge; but where the shades of nature are intimately blended, some discrimination must be made; and, in the first of the order, we shall describe those insects which are without wings, and creep upon the ground: all these, the flea and wood-louse excepted, are known to be produced from an egg.

The second order consists of such as have wings, though not capable of moving them for some little time, as they are cased up in a kind of a covering, which the creature bursts in a few days; thus the grasshopper, the dragon-fly, and the ear-wig, have the wings confined by a skin not unlike a pair of stays.

The third order of insects is of the moth and butterfly kind: all of which have two pair of wings, covered with a kind of downy substance of various colours, and of a beautiful hue, which adheres to the fingers if only slightly touched, and, if examined through a microscope, appears as if richly embroidered with different coloured scales.—Insects of this species are first hatched from an egg, from whence proceeds a caterpillar, that eats and often casts its skin: it afterwards assumes a different form, and becomes a chrysalis, or the cone in the silk-worm, where it remains until it bursts its covering, and comes forth as a butterfly, adorned with various hues.

The fourth order of winged insects come from a worm instead of a caterpillar, and yet go through the same varieties as those we have just described, yet differing from them in their wings, which are not covered with a downy coat: amongst these may be placed the numerous tribes of gnats, beetles, bees, and flies.

To these may be added a fifth order, known to Naturalists by the name of zoophites, which seem a set of creatures placed as it were between the animal and vegetable tribe. Some of these, though cut into a hundred parts, still retain a principle of life, and each divided part becomes perfect in its make. To this class belongs the polypus, the earth-worm, and all the varieties of the sea-nettle kind.

All animals resembling the flea, the louse, the spider, the bug, the wood-louse, the water-louse, and the scorpion, never acquire the aid of wings, but pass their lives in the

same unchanged state in which they were produced from the egg. If we consider this class as distinct from the rest, we shall find them longer-lived than the generality of the insect race, as one season usually decides their fate. They likewise seem less subject to the influence of weather, and endure its rigour without being benumbed into torpidity, or destroyed by cold.

THE SPIDER, AND ITS VARIETIES.

In this country, where human assiduity is constantly exerted to the destruction of the insect tribe, we are fortunately insensible of the evils they are able to produce; and the house-spider, the garden-spider, the wandering-spider, and the field-spider, may all be considered as a very harmless race; but in those regions where insects acquire the greatest growth, where the wing of a butterfly is as large as that of the sparrow, and the ant builds a habitation as tall as a man, the spider is dreaded as a most formidable assailant; and its body being as large as a hen's egg, it is capable of inflicting a most dangerous bite.

Every spider has two divisions in its body; the fore part, containing the head and breast, is separated from the hinder part by a very slender thread; the fore part and legs are covered with a shell, and the hinder with a supple skin beset with hair; the eyes of this insect are both brilliant and acute; and the generality of them possess eight, which are placed in different parts of their head: from their forehead grow two pincers, which terminate in claws resembling those of a cat; and a little below their point is a small hole, through which the animal emits a venom, which proves fatal to all the insect tribe: they have eight jointed legs, like those of a lobster; and if by accident one of them should be torn away, another immediately grows in its place: at the end of each are three moveable claws, by the aid of which the little creature is enabled to adhere to its web; and when they walk upon looking-glass, marble, or any smooth surface, they squeeze a little sponge that grows at the end of their claws, and from thence exudes a glutinous kind of substance, which enables them to crawl along the polished plain: in addition to the eight legs just described, there are two others, which might not improperly be termed arms, as they do not assist the creature's motion, but are merely used in holding fast its prey.

The most striking circumstance in the history of the spider, is the facility with which it forms a web for the purpose of ensnaring other creatures of the insect tribe. Nature has supplied it with a large quantity of glutinous matter, that is concealed in a small bag within its body, which the little weaver draws out through five small teats, into a number of the smallest lines, which are combined with such ingenious art, that the little victims caught within the snare, have but a small chance of making their escape. The large blue-bottle fly, the ichneumon fly, and the common meat fly, are known to be this creature's favourite food; and when one of these is caught within its toils, the spider instantly deprives it of existence, by instilling a venomous juice from its own body into that of the unfortunate insect that is enslaved.

The female generally lays, in one season, from nine hundred to a thousand eggs, of a bluish colour, speckled with black, which in general are extremely small, though their size, in a great measure, depends upon the creature's age; and they never begin laying until they have terminated their second year. The moment the young ones have escaped confinement, the attached parent takes them on her back, and defends them from those dangers by which they are surrounded, until they are sufficiently strong to preserve their own lives; but they begin to spin when of a size scarcely to be seen, and prepare for acts of plunder before they have acquired force enough to overcome. Indeed Nature seems, in every respect, to have formed them for hostility; and they are not only at warfare with the insect race in general, but spread destruction among themselves. A gentleman, who was fond of making experiments upon insects, collected an amazing number for the purpose of converting their webs to some useful end; but, instead of eating the food he prepared for them, they lived upon each other, and destroyed their eggs. The thread of the spider is nearly five times finer than that of the silk-worm; therefore, upon a calculation, there must have been sixty thousand to make one pound of silk; but Mr. Reaumer, which was the name of the gentleman who endeavoured to convert their labours into benefit, had a pair of gloves made from their thread.

Of this animal there are several kinds, though none differing essentially from the rest. The water-spider is the most singular amongst them, from its body being rather shaped like a nine-pin than a ball, and from being as well able to form its web in the water as upon land.

The tarantula is a species of this animal, a native of Apulia in Italy, and the largest of the kind. The bite of the tarantula is extremely painful, and fable has attached to it a variety of tales. It has been said that its effects are only to be removed by music! and that the afflicted person labours under a temporary madness, which often terminates in death.

THE FLEA.

This insect is not only an enemy to mankind in general but a great tormenter both to dogs and cats, in whose fleecy covering it lodges with security, and, by concealment, is enabled to evade their attacks. The numbers of this insect are much greater in France and Italy than they are in our climes; but, though they are less prolific amongst us, they are allowed to inflict a sharper bite.

If the flea be examined through a microscope, it will be observed to have a small head, roundish body, and large eyes: it has six legs and two feelers, between which is placed a trunk or tube, which it buries beneath the skin, and through which it sucks the blood. The body appears to be curiously adorned with a set of polished armour, neatly jointed, from which a number of small points may be discerned, bearing some resemblance to a porcupine's quill.

THE LOUSE, AND ITS VARIETIES.

Of all the animals which create antipathy, none are capable of exciting it in a greater degree than the louse; for it may not only be considered in the light of a tormenter, but as an emblem of poverty, wretchedness, and disgrace. If examined through a microscope, its external deformity is in itself sufficient to produce disgust; the skin is hard, and, when stretched, transparent, and spread over with bristly hairs: the fore part of the head is rather oblong; in the centre of it is a kind of trunk, and on each side two horns, behind which the eyes are discernible, without any division between: the neck is very short, the breast is separated into three distinct parts, on each side of which grow three legs, covered like the body with bristly hairs, and terminating in two pointed claws.

There is scarcely any animal that multiplies so fast as this unwelcome intruder upon the comforts of mankind; and the ancients had a disease termed the phthiriasis, which fortunately amongst the moderns is very little known Herod,

Antiochus, Epiphanes, Perecydes, Cassander, Callisthenes, Sylla. and the poet Alemon, all died of this dreadful disorder, and their bodies were covered with this obnoxious insect, in the same manner as they may be observed upon trees. They cast their skins four times, like many other insects; and the males alone have four wings.

It would be endless to describe the varieties of this species, which all animated nature have reason to dread; for fish, fowl, and quadrupeds, are equally annoyed by them and they are peculiarly destructive to the vegetable race; the humblest plant is injured by their depredations, and the more elegant ones are frequently destroyed. Their trunk, or snout, lies beneath their breast, but they thrust it into the pores of the plant, and by that means suck out its juice: and their numbers would absolutely destroy vegetation, were they not devoured both by beetles and flies.

THE BUG, AND ITS VARIETIES.

The Bug is another of those nauseous insects that intrude both upon the comfort and refreshment of mankind; and, like the nightly plunderer of his property, commits its depredations when he is in bed.

The moment a room is darkened, the invaders sally forth from their secret retreat, and not only banish sleep from the eyelids of the weary, but absolutely overpower them with an offensive smell. This animal, if examined minutely, appears to consist of three principal parts; the head, the corselet, and abdomen; the eyes are small, though rather prominent; and it has two feelers, with the trunk between; in addition to which it has two pair of legs; its motion is slow and unwieldy; and Linnæus tells us there are forty different kinds.

Though the different parts of this country are infested with them, yet they are infinitely more abundant both in Italy and France; the inns, in particular, swarm so completely with them, that it is impossible for a traveller to obtain any sleep. Cleanliness is allowed to be the best antidote against them, and they may always be kept under by frequently taking down the beds; they are known to live upon each other, and are a general enemy to fleas.

THE WOOD-LOUSE, AND ITS VARIETIES.

The wood-louse, which exceeds every other in size, is a quarter of an inch broad, and above half a one in length;

if found about manure heaps, it is a livid black ; but if in drier places, the colour is brown. When touched, it rolls itself up like a ball ; it has two feelers, and fourteen feet. It is generally found amongst decayed timber ; and the young, like those of the other kind, are produced from eggs. These animals are allowed to be useful in medicine ; and, when impregnated with a saline quality, have produced astonishing effects.

THE MONOCULUS, OR WATER-FLEA.

This little animal, if observed without the microscope, appears to possess but one eye ; for the head is so small that they seem joined together, and placed at the extremity of the trunk ; the size never exceeds that of the common flea. Their colour resembles blood ; and they frequently float in such numbers upon the surface of the water, as to give it the appearance of a sanguinary stream.

The branching arms of this insect deserve attention, as by their assistance they wave upon the element from which it derives its name, as a bird moves in any direction with its wings. It is produced from an egg upon the surface of the water ; and, like most other insects, changes its skin.

THE SCORPION, AND ITS VARIETIES.

There is scarcely an insect without wings that is not obnoxious, but the scorpion is the most *terrible* of all the race ; happily for us, it is a stranger amongst us, for few recover from its malignant bite. On the continent of Europe, they seldom exceed four inches ; but in the tropical climates, they frequently grow near five times that length. It is not merely terrible for its magnitude, but for its malignant influence and unpleasing shape, which bears some resemblance to that of a lobster, though infinitely more unpleasing to the eye.

There are nine different kinds of this destructive insect, distinguished more by their colour than their shape ; some are yellow, brown, and ash colour ; others, green, black, white, and gray. There are four principal parts distinguishable in this animal ; the head, the breast, the abdomen, and the tail ; the former of which seems joined to the breast : instead of two, it has *four eyes* : the mouth is furnished with two jaws, the bones of which are notched, and fix into each other, so as to supply the place of teeth : on each side of the

head, two arms are extended, formed like the claws of a lobster, and each having four joints : below the breast, eight legs are placed ; the abdomen is divided into seven small rings, from the lowest of which issues a tail with six joints, in which is concealed that dreadful instrument with which the animal imparts its envenomed sting. With this weapon, it not only wounds, but injects a corrosive poison, that is contained near it in a small bag, which being compressed, the venom issues through two apertures into the wound, and generally produces the most fatal effects.

The mischiefs produced by this obnoxious insect, doubtless vary according to climate, strength, and age, though the sting of the most innocent is allowed to be excruciating ; but rubbing the part with iron, or stone, will remove the pain. If they be injurious to mankind, they are no less destructive to each other ; a circumstance which Providence has wisely ordained, or a numerous race of animals, so completely malignant, would occasion a constant alarm and apprehension of mind.

As their form bears some analogy to the lobster's, so it resembles that creature in casting its *shell*, though *skin* is a more applicable term for the scorpion's covering, as it is by no means callous, and is spread over with hairs. The scorpion's chief food is worms and insects ; and it is supposed to live about seven or eight years. The female brings forth her young alive, though there is a species in South America which is produced from eggs.

THE SCOLOPENDRA.

The Scolopendra, otherwise called the centipes, from the number of its feet, is very common in many parts of the world, but particularly so between the tropics, and in the East. The skin of these insects is of a ruddy colour ; their bodies are about as thick as a man's finger, consisting of a number of joints, and generally measure from five to six inches in length ; they are entirely covered with short hair, and do not appear to have any eyes ; a pair of feelers issue from the head, and they are capable of giving a very dangerous wound, from two small pointed teeth, which has been cured by roasted onions being frequently applied. Of this animal there are three different kinds ; some living, like worms, in holes of the earth, and others under stones, or wood that is decayed.

The galley-worm differs from the scolopendra, in having double the number of feet; the colour varies according to the place of its existence, and they are generally found between the bark of decayed trees. Though these creatures may be injurious in the tropical climates, in Europe they doubtless are a harmless race.

THE LEECH.

The history of the leech, from its beneficial influence, may doubtless be considered as interesting to mankind. There are four different animals of this species, though only *one* amongst them is of essential use.

The horse-leech, which is the largest of all, will not even adhere to the skin; and the snail-leech, which does not measure more than an inch, cannot extract blood enough to answer any good purpose; the broad-tailed leech will stick but on few occasions; but the large brown leech generally produces the desired effect.

The form of the leech bears some resemblance to that of a worm, and its skin is likewise composed of rings, in consequence of which it can both dilate and contract itself; and, when touched, does not appear more than an inch in length: it has a small head, with a blackish skin, spotted with yellow, and a line of the same running down its sides; its mouth is formed in a triangular direction, in which are placed three sharp teeth, which are concealed by a pair of lips: with these teeth, it pierces through the skin; both the tongue and lips assist in drawing the blood from the wound; and it adheres so firmly to the little orifice, that, until completely gorged, it cannot be removed.

In this part of the world, they seldom exceed four inches; but to the south, and in Hindostan, they are nearly double the size; and are likewise found in such amazing numbers, that it is dangerous to pass through the marshy grounds, or to bathe in pools where they are known to be.

The method to be adopted in applying leeches, is to have them taken out of the water an hour or two before they are intended to be used, and, if they do not appear desirous of their sanguinary sustenance, to rub the part they are wanted to adhere to with sugared milk or blood. The propagation of this species is different from the rest of the reptile creation, as they always bring forth their young alive, and produce from forty to fifty at a time

CHAP. XII.

INSECTS OF THE SECOND ORDER.

WE now come to a second order of insects, formed from eggs, like those we have just described, but superior to them, from possessing wings, though incapable of using them when first endowed with life. In this class may be ranked the dragon-fly, the lion-ant, the grasshopper, the locust, the cricket, the wood-cricket, the mole-cricket, the flea-locust, the flying-bug, the tipula, the water-scorpion, and the water-fly.

THE LIBELLA, OR DRAGON-FLY.

Of all the flies that adorn the face of nature, or by the diversity of their colours embellish the surrounding scene, the dragon-fly obtains pre-eminence, for the variety of its tints, which exhibit a happy mixture of crimson, scarlet, blue, and green.

Though there are three or four different kinds of this insect, they bear so great a resemblance to each other, that in giving the history of one, that of the rest may be seen. The dragon-fly's body generally measures from two to three inches in length, and is divided into eleven rings; their tail is forked, their eyes large and shining, and they have four beautiful transparent wings: within the mouth are two small teeth, with which they give a sharp, though not a venomous bite; and, as their appetite is very voracious, they may be considered as tyrants amongst the insect tribe.

The dragon-fly is produced from an egg, which the female deposits in clusters at the bottom of some pool or stream; and, when the young ones acquire strength enough to break through the walls of their prison, they bear a stronger resemblance to a worm than to a fly: their wings, during the time that they remain in the degrading state of a reptile, may be plainly discovered through a transparent skin, which, after great exertion on the part of the animal, it at length breaks through, and takes its flight, as if proud of a transformation so much in its favour, and which presents so beautiful a creature to the sight.

THE FORMIO-LEO, OR LION-ANT.

The lion-ant, when it becomes an inhabitant of the air, in every respect resembles that which has just been described: its glossy wings, its voracious appetite, and its transformation from a reptile to an insect, are all very much the same.

This creature, in its state of degradation, has very much the appearance of a wood-louse, though the body is somewhat broader, and of a dirty gray colour, spotted with black: the head is flat, and from it grow two feelers, at the extremity of which are placed a pair of small eyes, with which it can distinguish the most minute objects; and, independent of the feelers, it has six feet, notwithstanding which it can only move backwards, and is incapable of pursuing a direct line.

This defect in the conformation of the lion-ant, might be attended with very fatal effects, if cunning did not supply the imperfections of Nature, and, as it cannot pursue, teach it to *ensnare* its prey; for this purpose, it chooses a dry sandy situation, and begins working backward until it has formed a deep circular hole, at the bottom of which it conceals itself in ambush, in expectation that the ant or wood-louse will carelessly tumble down; and it seldom remains long in that situation, before the unsuspecting victims fall into the snare: it then darts its feelers into their body, and through their assistance, sucks out all the juice; after which it takes up the hollow carcass, and, by dint of exertion, throws it on the outside of the hole.

When the period has arrived in which the lion-ant is to undergo a change, which never happens in less than a year, it lays aside its industrious employment, and begins spinning a kind of web, in which it rolls itself up like a ball: and, as it has a kind of humid moisture upon it, the sand adheres to it, and defends it like a wall. In this state of confinement it always continues, for the space of two months or six weeks, when it begins to force its way through the tenement, by the assistance of two very sharp teeth, and soon takes its flight through the circumambient element, as one of the most beautiful insects that can possibly be seen

THE GRASSHOPPER, THE LOCUST, AND THE CRICKET.

Of this variegated tribe of insects, the little grasshopper, that breeds in such abundance in every meadow, and continues its chirping throughout spring and summer, is the one which, from being best known, we shall choose to describe. The colour of the grasshopper resembles that of a leaf, though the back is marked with brown streaks; the shape of the head is like that of a horse; and the mouth is covered by a kind of round buckler, and armed with sharp teeth: it has three pair of legs, the hinder of which are much longer than those in front; and two pair of wings, which likewise vary in size: the abdomen is large, and composed of eight rings, the internal construction of which resembles that of a cow; the feelers are very long and pointed; and it has two small prominent eyes: the tail is covered with down, like that of a rat, but forked, instead of terminating in a point; and the end of it, Nature has furnished with a two-edged instrument, which the creature can sheathe or unsheathe at will.

With this instrument the grasshopper is enabled to pierce a hole in the earth, where it carefully deposits near a hundred and fifty eggs, which generally happens about the end of autumn; and they remain in that situation until the beginning of May, when the animating force of the sun's influence calls the little insect into life. Upon the first appearance of motion amongst them, their forms do not appear larger than that of a flea; and their colour goes through a variety of changes, before it acquires the natural one of green. For some time their wings remain folded close to their sides, and they have only the power of using their legs; but at length they leave off their grassy sustenance, and place themselves under either a thistle or a thorn, and begin making those laborious exertions which every animal is obliged to use, for the purpose of getting rid of its skin, and at length leaves it fixed to the thorn or thistle, and in a short time afterwards takes its flight.

The chirping of the grasshopper, like the notes of different birds, generally issues from the voice of the male, and is considered as a call of tenderness, though the female is never known to make any reply.

The locusts, which were formerly so destructive to vegetation, and which the Scriptures describe as being sent as a scourge, are doubtless a species of the common grasshop

per, though they may probably exceed them in size. In 1748, some of them were seen in England, which filled the minds of the inhabitants with the utmost alarm; and in Poland, Lithuania, Barbary, and Russia, they have at different periods overspread the country in such numbers as to resemble black clouds, destroy every species of verdure and vegetation, and never leaving their stations until they had deposited their eggs, which the natives destroyed, either by fire or water, and by that means escaped their destructive effects.

From the locust we descend to the house-cricket, a creature perfectly inoffensive in its kind, yet whose chirping voice has given way to a variety of superstitions, to which the lower class of people are naturally inclined. This animal bears a strong resemblance to the grasshopper, not only in its appearance, but in the sound of its voice; yet, from the variety of its food, the colour differs, as its skin is of a rusty brown instead of green.

The house-cricket is allowed to be of a very cold constitution, as it always makes choice of the chinks in chimneys for its retreat; and it is probably owing to hearing a sound, without perceiving the animal, that a variety of superstitious stories have been raised.

The mole-cricket is by no means inoffensive; for it burrows in the earth like the animal after which it has been named. The fore feet are the instruments by which it is enabled to commit its devastations, and it burrows several inches under new turned-up ground; and with the utmost ingenuity it passes through the furrows, devouring every seed that is to be found. Their method of forming their nests is extremely curious; and the female shows great tenderness in the preservation of her young.

THE EAR-WIG, THE FROTH INSECT, AND OTHERS BELONGING TO THE SECOND CLASS.

The Ear-wig is a creature so generally known, that a minute description of it could not be amusing; but the smallness of its figure, and the deformity of its shape, have subjected it to an imputation which it does not deserve; and the fabulous accounts of its creeping into the ear, and producing the most excruciating pain, have been long known to be merely founded upon its name; as the formation of that organ would prevent the effect.

The ear-wig is provided with six feet, two feelers, four wings, and a forked tail ; it is extremely destructive to vegetables, fruits, and flowers ; and their eggs are generally deposited under the bark of plants, or the clefts of decayed trees. The wings of this little insect are concealed in a sheath, which adheres so close to its body that it is only by the minutest inspection they are seen ; and in a short time after they burst from their confinement, it begins depositing its eggs, grows sick, and dies.

To this order of insects we may refer the cuckow-spit, or froth-worm, a creature that is found hid in the frothy matter which is frequently seen upon the surface of plants and leaves. The body is obtuse, the head large ; it has four wings, and two small eyes. The frothy liquid, in which it is enveloped, is exuded from the body ; and, in its first state of existence, it does not acquire the use of wings.

The water-tipula likewise belongs to this class of insects, with a slender body, four feelers, and the same number of legs and wings ; it runs with wonderful agility upon the surface of the water, and its motions appear to be assisted by wings.

The common water-fly has nothing remarkable in it, except the swimming upon its back ; but, as it feeds upon the under parts of those plants which grow upon the surface of the water, we cannot help admiring the ingenuity of the design.

The water-scorpion is a rapacious animal, and measures near an inch in length ; the body is flat, and nearly oval ; the head small ; and the feelers appear like legs ; it is extremely destructive to the insect creation, and does not live long after it has obtained the use of its wings.

All ephemeras, of which there are various kinds, are known to be produced from eggs ; and, in form, bear some resemblance to a worm ; after this they change into a more perfect state, and are called aurelias ; they then experience a third mutation, and become a beautiful fly, about the size of a middling butterfly.

CHAP. XIII.

INSECTS OF THE THIRD ORDER.

CATERPILLARS, BUTTERFLIES, MOTHS, THE ENEMIES
OF CATERPILLARS, AND SILK-WORMS.

CATERPILLARS may easily be distinguished from worms or maggots, by the number of their feet, and by their producing butterflies or moths. In the second order of insects, we have seen the grasshopper and the ear-wig make but a trifling change in their form, upon assuming their wings; but the caterpillar goes through a perfect transformation, and, from a crawling reptile, becomes one of the most beautiful of the insect tribe.

Though the skin of the caterpillar is shed very frequently, and the operation occasions the animal an infinity of pain, yet, after every change, the body retains the same appearance, until the last transmutation is about to take place. During winter, the greater number of this species remain in the egg state which the butterfly excludes, though some few of them continue in a state of torpidity, until roused into animation by the sun's vivifying heat.

We are too well acquainted with the form of the caterpillar, to render a minute description of them of any use; but the number of their feet, in different kinds, completely varies, as some have only *eight*, and others *sixteen*. Their colour, and the texture of their skin, likewise differ, as some are hairy, and others are entirely smooth; but all are destructive to the vegetable creation, which they devour by the assistance of very sharp teeth.

Though the caterpillar, during its reptile state, very frequently exchanges the external coat in which it is confined; yet, when the time is arrived when it is to become a chrysalis, or aurelia, instinct teaches it to prepare for the extraordinary change. At this period its appetite seems suspended, and it generally adheres to the stems of plants instead of leaves; its colours likewise become pale and faded, and it begins spinning a web or cone, to conceal it from the sight when, after forcing the body into the form of a bow, and changing its skin for the last time, it appears almost in a lifeless state.

The caterpillar, thus stripped of its external covering, be

comes an aurelia, in which parts of the future butterfly may be distinctly seen; and in a little time it forms a complete cone or covering, composed of a slimy liquid, and combined with sand, or the pulverized bark of trees; and in this abode they remain secure and defended, until the animal principle is revived by the power of heat, when it forces a passage through the callous covering, and a gaudy butterfly is presented to the sight.

BUTTERFLIES AND MOTHS.

It has been already proved, that butterflies are produced from caterpillars, though it was beyond the limits of our design to give an explicit account of the change. Linnæus has described near eight hundred kinds of this beautiful insect; and even his catalogue is allowed to be incomplete.

The butterfly may be distinguished from every other species, merely by a slight observation upon its wings, which, in the fly kind, are transparent like gauze, or in the beetle kind, hard and crusted; whilst those in the race we are now describing, are soft, opaque, and covered over with a beautiful dust, that adheres to the fingers upon the slightest touch, and, if observed through a good microscope, appears to be spread over with a thousand beautiful scales.

The eyes of this insect are extremely beautiful: they have two feelers, six legs, and four wings; and, if one pair were to be dissevered from the body, they would still be equally capable of flight.

Such is the concise description of this beautiful insect, which cheers our walks, and announces the approach of summer and the decline of spring. They may be divided into two classes; namely, the butterfly, which sports abroad all day; and the moth, which prefers the gloom of night. All the tribe of female moths lay their eggs a short time after they leave their aurelian state; but there are many butterflies which flutter about the whole summer, and do not think of depositing theirs until the chillness of autumn reminds them of their approaching fate. Others there are, which secure themselves from the severity of the cold within the cavities of decayed trees, without providing for posterity until the return of spring

THE ENEMIES OF THE CATERPILLAR.

Nature, though she has rendered some animals surprisingly fruitful, yet takes care to prevent their too great increase,

and few creatures have to encounter such a variety of enemies as the one we recently described; for a single sparrow and its mate have been known to destroy a thousand caterpillars in the course of a week. They are likewise frequently known to live upon each other, and in that case the strong become destroyers of the weak: but the greatest devastation that is committed upon this reptile, proceeds from their bodies being made a receptacle for the eggs of various flies, which, as soon as they are hatched, force an internal passage, and secretly destroy the springs of life.

THE SILK-WORM.

The real history of this animal was unknown among the Romans until the time of Justinian; and it is supposed they were not brought into Europe until the beginning of the twelfth century, when Roger of Sicily brought workmen from the manufactory in Asia Minor, after his return from the Holy Land, and settled them in Sicily and Calabria.

The silk-worm is now known to be a large whitish caterpillar with twelve feet, and producing a butterfly of the moth kind. The cone on which it spins, is formed for covering it while it continues in the aurelia state; and several of these, properly wound off and combined together, form those strong and beautiful threads which are woven into silk.

There are two methods of breeding silk-worms; for they may be left to grow and remain at liberty on the trees when they are hatched, or they may be kept in a place built for that purpose, and fed every day upon fresh leaves. The first method is adopted in China, Tonquin, and other warm climates; and the latter is practised where there is a less degree of natural heat.

In countries where the care of the silk-worm becomes a matter of consequence, from promoting an essential branch of trade, a room is chosen with a southern aspect; and, in the middle, four pillars or posts are raised, which form a large square, on which different rows of hurdles, one above the other, are carefully placed. As soon as the worms are hatched, they are regularly provided with a fresh succession of young mulberry leaves, and the utmost caution must be used to keep them free from filth and insects; and when the sun is upon them, they must have a circulation of fresh air.

At the time of the shell, the worm is extremely small, and though black at first, it soon becomes gray; and as it in-

creases in size, it seems to lose its relish for eating, and for two days together will remain in an apparent sleep. Two or three times it changes its covering, which seems to occasion it both exertion and pain; it then assumes the form of an aurelia, and begins preparing its cone or ball. This cone is spun from two little long bags above the intestines, which are filled with a gummy fluid, the colour of marigold, which it spins out into a thread of so fine a texture, that eight of them must be combined to wind them from the balls, and, before the insect is completely secured in this covering, it spins no less than three hundred yards. The cone, when completed, resembles a pigeon's egg; and, in about three weeks, the aurelia is changed into a moth, and forces its way through its silken confinement, by repeatedly thrusting its head against the pointed end. Few of these animals are suffered to come to this state of maturity; as, by forcing their passage through the cone, they injure the silk: therefore the manufacturers generally place the aurelias in a very hot situation, which destroys them before they become moths.



CHAP. XIV.

INSECTS OF THE FOURTH ORDER.

IN this class of insects we may place a various tribe, that are first laid as eggs, then are excluded as maggots or grubs, afterwards change into aurelias, with their legs and wings appearing: and lastly, having the use of their wings; in which state they propagate their kind. Some of these have four transparent wings, as bees; some have two membranous cases to them, as beetles; and others have but two transparent wings, as ants. Here we shall place the bee, the wasp, the humble-bee, the ichneumon-fly, the gnat, the tipula, or long-legs, the beetle, the May-bug, the glow-worm, and the ant; for the transformations which all these creatures undergo, are similar, though their forms are very unlike.

THE BEE.

To give a complete history of this insect in a few pages, which some have taken whole volumes to describe, would

be as weak an attempt, as if, by explaining a few Chinese characters, we imagine the whole of the language might easily be understood; we shall therefore merely give a concise description of the three different bees which inhabit every hive.

The first of these are the labouring bees, of which the greater part of the community is composed; they are supposed to be of the neuter gender, and their chief employment consists in supplying the young ones with food. The second sort are termed drones; these are thought to be males, and there are about a hundred to seven thousand in every hive. The third are of a much larger form, and there are generally from *one* to four or five in a hive; these are distinguished by the name of *queens*, and from these alone proceed the eggs which are to replenish the community in the following year.

In examining the structure of the common working-bee, the first remarkable part is the trunk, which serves to extract the honey from the flower: it is not formed in the manner of a tube by which the fluid is sucked up, but like a besom to sweep, or a tongue to lick it away. It is likewise furnished with teeth for the purpose of making wax, which, like the honey, is gathered from different flowers, and is formed of the dust that contributes to the fecundation of plants, which the industrious little animal rolls into balls, and places them in two cavities in the femora of its hind legs, and flies home laden with its useful store.

The abdomen of the bee is divided into six rings, and besides the intestines, contains the honey-bag, the venom-bag, and the sting; the former is as transparent as crystal, and contains the honey which has been crushed from the flowers, part of which is always deposited in the cells, and the rest serves the little animal for food; and the sting, which is composed of two darts, defends it from the attacks of the more indolent tribes, who, were it not for the dread of this envenomed weapon, would support themselves at the expense of this industrious labourer's toil.

From examining the bee singly, we now come to consider it in society, as an animal not only subject to laws, but active, vigilant, laborious, and disinterested; all its provisions are laid up for the community, and all its art in building a cell designed for the benefit of posterity. When they begin to work in their hives, they divide themselves into four companies; one of which roves through the gardens and fields,

in search of materials for composing their cells; another is employed in laying out the partitions; a third is occupied in making the inside smooth from corners and angles; and a fourth company bring food for the rest, or relieve those which return from their laborious toil.

The cells of these industrious little animals are all formed upon a hexagon plan, and answer three designs: some are devoted to the reception of the wax, which in winter serves them chiefly for their food; others are destined to receive the honey; and some are converted into dwellings for their young. The wax, as was before observed, is composed of that downy powder found within various kinds of flowers, first digested in the creature's stomach, and then applied to this industrious use. The honey is extracted from that part of the flower called the nectarium; and, from the mouth, this delicious fluid passes into the gullet, then into the first stomach or honey-bag, which has the appearance of an oblong bladder; and the moment it is deposited in the cell, it is carefully covered with congealing wax.

One queen-bee is known to prove sufficient completely to stock a whole hive, and is allowed to produce upwards of twenty thousand young. When a greater number of these little sovereigns take possession of the same abode, each is surrounded by a separate train; and so great is the veneration that is paid them, that all labour is suspended when they die. Quarrels, however, are by no means uncommon amongst these potentates, which seldom subside till the stronger has destroyed the weak; when harmony supplies the place of discord, and the whole hive becomes subservient to the *conquering queen*.

There are two kinds of wax, as well as two kinds of honey: the inferior is of a yellow hue, but the better kind is white; and that which is made in the spring of the year, is allowed to be superior to that which is formed in summer, or when the flowers are upon the decline.

The humble-bee is the largest of this industrious species, though neither so active nor laborious as the race we have described; it forms its nest in different holes of the earth, and in making it uses wool, wax, and dry leaves. The wood-bee is somewhat larger than the common queen-bee, and forms its cells in the cavities of decayed trees. The mason-bee chooses its dwelling on a wall that has a southern aspect, and mortar is the substance which composes its cell. The ground-

bee forms a dwelling five or six inches deep in the earth; and the leaf-cutting bee composes its cell of dry leaves.

Though the general habit of these insects differs from those of the hive kind, yet they seem to agree in one essential, which is that of paying particular attention to their young. When the queen-bee has deposited her eggs in separate habitations, the working-bees consider them as objects of their care; and, the moment the little worm is excluded from them, supplies them with a glutinous kind of food, composed of honey and wax combined together, which, after five or six days, the young ones will refuse to eat. When these anxious nurses observe that they require no farther sustenance, they inclose them separately in their snug retreat, when the little animal begins its labours, and spins itself a kind of covering composed of silk; it is then transformed into an aurelia, though the legs and wings are plainly to be seen; and in about twenty-one days, it becomes so active that it pierces a passage through its cell; when its officious attendants flock round it, and either begin feeding it, or licking it dry, whilst the little animal testifies its industrious disposition, by showing a propensity to become an assistant in their toils.

THE WASP.

Though the Bee and the Wasp resemble each other very strongly, there is not only a great difference in their manners, but in the length of their lives; the one is a fierce and voracious animal, and subsists by the destruction of the smaller tribes; while the other, when unprovoked, is completely harmless, and contributes to the health and benefit of mankind.

The nest of the Wasp is a most ingenious contrivance, and has excited the attention of the curious in every age: they are sometimes constructed in a hole formed by some other animal, the field-mouse, rat, or mole. The form of these insects is perfectly calculated for their undertaking, as they are furnished with two saws on each side of the mouth, with which they cut away the earth from their intended habitation, and then carry it away with their feet. Whilst some are employed in this occupation, others are busy in collecting glue, and pieces of decayed wood, which they divide into a multitude of small pieces, and form into different apartments with their glue or paste.

Each cell, like that of the bee, is formed hexagonal,

though they differ very much in size; the larger ones are supposed to be the habitation of the females, and the smaller ones are devoted to the reception of the working tribe. This insect passes through a similar transformation to the one that has just been described; but fortunately its existence terminates in one season; or, from its rapid propagation, it would become a nuisance to mankind.

Bees, flies, meat, spiders, and fruit, indiscriminately become its prey; and the former are completely plundered of their possessions, to supply the younger wasps with food.

Though the European wasps are extremely mischievous, and their sting is attended with inflammation and pain, yet they are harmless when compared with those of the tropical climates, and inferior to them in size; some have allowed their sting to produce more torture than the scorpion's, and it is more difficult to make the swelling decrease.

THE ICHNEUMON-FLY.

Though there are many different kinds of this insect, yet the most formidable, and that which is best known, is called the common ichneumon, with four wings like the bee, a long slender black body, and a three-forked bristly tail. This instrument is, to all appearance, slender and feeble; yet it is found to be a weapon both of force and defence: it not only enables the insect to destroy those of greater magnitude, but is the means of forming a receptacle for its eggs.

About the middle of summer, the ichneumon appears occupied in discovering a convenient place for the purpose of depositing its eggs; this it does by thrusting its darts into the body of different reptiles or insects, and, at each dart, burying one of its eggs. The caterpillar appears to be the favourite of this animal, and thousands of them are destroyed every year; for the vivifying warmth derived from its body very soon animates the eggs with life, and the young ones begin devouring the form that sustained them, the moment they are able to move or eat.

THE ANT.

The common ants of Europe are of two or three different kinds; some red, some black, some with, and some without stings; and those which are unprovided with these weapons of defence, have the power of spirting from them

a pungent liquor, which creates a great degree of irritation upon the skin.

Like the bees, they are divided into three classes; the males, females, and the neutral, or working tribe, which are easily distinguished from each other, either by their wings, or size: the females are much larger than the males; and both are generally furnished with four wings. The working ants are much smaller than either; and, from being destitute of wings, are incapable of flight.

The industry practised by this numerous body has become proverbial, both in ancient and modern times; though the opinions which were entertained by the former are now known to have been misapplied. The granaries of corn, which they supposed to have been collected into the republic as a means of support during their winter's retreat, are now known to be brought as an internal defence to their habitation, or as a supply to the young ones, which are not strong enough to search for food; as, from the time the frigid season commences, they become completely torpid, and cease to eat.

Though the ant-hills in England are constructed with but little apparent regularity, yet in the southern provinces of Europe, Asia, and Africa, they are most curiously contrived, and are generally formed in the neighbourhood of both wood and water, as from both they require to be frequently supplied. The shape of an ant-hill resembles that of a sugar-loaf: it is about three feet high, and composed of earth, corn, wood, gum, and dried leaves, which are all curiously combined together, and placed in winding directions, forming little galleries, that terminate at the bottom of the retreat.

The working ants may be considered as the most useful part of this community; and it is impossible to describe the assiduity and attention which they display in the care of their young: in cold weather, they take them in their mouths, without offering them the slightest injury, and carry them to the very depths of their retreat; on a fine day they remove them with the same precaution towards the surface of their abode, that they may be enlivened and invigorated by the sun's reviving heat; they bring provisions to those who remain idly at home, carry out the dead bodies of their companions, and are constantly occupied in some useful employment, or in preparing food for the young ones to eat.

In Africa, there is a species of these insects extremely formidable to the human race; and they frequently collect

together in one large body, and completely cover the country a full quarter of a mile. The negroes feel the utmost terror at their appearance, as their bodies measure upwards of an inch in length, and they are capable of inflicting a most painful sting.

THE BEETLE, AND ITS VARIETIES.

Hitherto we have been treating of insects with four transparent wings. we now come to a tribe with only two, and these are inclosed in cases when the animal is at rest, though they are capable of being extended when it takes its flight. The principal of these is the beetle, the May-bug, and the cantliaris: all these, like the rest of their order, are first produced from eggs; they then become grubs, then a chrysalis, in which the parts of the future fly are distinctly seen; and, lastly, the animal leaves its prison in full maturity, and fit for flight.

Of the beetle there are various kinds; but all concur in the common formation of having coverings or cases to their wings, which are necessary to all the species, from their residence being formed beneath the surface of the earth, in holes which they burrow many inches in the ground: there is likewise a great difference in the form, colour, and size of these animals; some being scarcely larger than the head of a pin, whilst others are nearly as big as an apple. Some of the race are produced in the space of a month, and in a single season pass through all the stages of their existence; whilst others remain in the state of a worm upwards of three years, and during that period commit the utmost devastation upon the root of every plant that is to be found.

The May-bug, in particular, is so destructive to vegetation, that, unless they were devoured by birds and hogs, not any thing would thrive; and the farmers are often so injured by them, that they lose the produce of their harvest. The female always bores a hole in the earth as a depository for her eggs; and it is generally three months before they are endowed with animation, or the little grub discovers any symptoms of life. After remaining three years, with but little alteration, it becomes a large white maggot, nearly as big as a walnut in size, which, after some months, is transformed into a chrysalis, and then becomes one of the insect tribe.

If we examine the formation of all animals of the beetle kind, we shall find, as in shell-fish, that their bones are

placed externally, and that their muscles are within; that their necks appear to be covered with a plate, and that their fore legs are short, and perfectly adapted to burrowing in the ground. The elephant-beetle is allowed to be the largest of all this numerous race, and measures near four inches in length; it is an inhabitant of South America, is of a jet black colour, and is covered with a shell nearly as hard as that of a lobster or crab; the feelers likewise are of a horny substance; and the proboscis terminates in two crooked points.

To this class we may also add the *glow-worm*, a little animal which is known to emit a brilliant light: the male of this species is endowed with wings, and resembles the beetle in its perfect state: the female is incapable of making any aerial excursions, yet is considered of much more importance by the curious observer, from the irradiate stream that issues from its frame. The manner in which this light is produced, has never yet been satisfactorily explained: it is probable that the little animal is supplied with some electrical fluid, so that by rubbing the joints of its body against each other, it naturally produces a stream of light.

The cantharides may likewise be ranked amongst the beetle kind, generally known by the name of Spanish flies, though they are natives of Italy and Portugal, as well as of Spain. They differ from each other in size, colour, and shape; but all are endowed with a corrosive quality, which, upon being applied to the person, produces an exquisite degree of pain; yet they are allowed to be extremely efficacious, when any stimulus is wanted to be produced.

An insect of great, though perhaps not equal, use in medicine, is known by the name of the kermes, and is produced from an egg hatched in the excrescence of an oak, called the berry-bearing ilex. The female of these insects resembles a small worm; but the male has the appearance of a gnat or fly. They are only to be met with in warm countries; and are in the highest state of perfection in the months of May and June.

The cochineal is an insect which has given rise to various conjectures: some have thought it a vegetable excrescence; others have described it as a louse; some, as a beetle, and others, as a bug. The cochineal insect is a native of America, of an oval form, about the size of a small pea; it brings forth its young alive; and the natives, considering them as a valuable trading commodity, make small nests for their re-

ception, and place them upon the prickly pear-tree. When taken, they are placed in holes in the earth, a quantity of boiling water poured upon them, and then dried in the sun : they are used in various medicines ; but they are still more valuable to dyers, for producing a beautiful red.

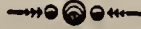
The gall insects, though not properly belonging to the tribe of beetles, cannot be mentioned in a more applicable place : they are not fruit, as some have imagined, but preternatural tumours, owing to the wounds given to the buds, leaves, or twigs of a tree, by an insect which lays its eggs within ; and, the heart of the bud being thus wounded, the circulation of the juice no longer takes its natural course, but, flowing round the egg, the air enters and assists in forming it into a kind of ball. In this confinement, the egg teems with motion, and at length the insect is endowed with life ; and, bursting the walls which restrained it, when spring returns it prepares for flight.

THE GNAT, AND THE TIPULA.

These are two insects which entirely resemble each other, yet widely differ in their habits and manner of life. Those who have seen the tipula, and the large kind of gnat, have generally thought them one and the same ; but the one is a harmless inoffensive insect, whilst the other is the means of depriving us of the comforts of sleep.

The gnat proceeds from a little worm which is found at the bottom of stagnant pools, but never in a stream ; it is produced from eggs which flow upon the surface of the water, but which are attached to a fine thread that is fastened beneath. After remaining some time in a reptile situation, they become transformed into a nymph-like state, and, then dislodging themselves from the skin that covers them, sally forth into the air to commit depredations upon mankind. The trunk of this little insect is placed under its throat, and is a long scaly sheath, which incloses four stings, that are darted into any body they may wish to penetrate, and serve as conductors for the blood or juice ; when examined through the nicest microscope, the points are so fine as scarcely to be discerned. The head of the gnat is adorned with a plume of feathers ; and the whole body appears to be invested with scales and hair, which prevent it from being injured either by dust or rain.

Though the gnats of Europe are capable of producing great irritation, they are harmless when compared to those of America and the East, where the natives are under the necessity of anointing their bodies with oil to prevent them from being tortured by their sting. With us, they are termed the musquit.



CHAP. XV

ZOOPHITES IN GENERAL, OR CREATURES WHICH COME UNDER THE FIFTH CLASS.

WE are now come to the last link of the chain in animated nature, or to a class of beings, so confined in their powers, and so defective in their formation, that some historians have been at a loss whether to consider them as a superior rank of vegetables, or as the humblest order of the animal tribe; in order to give them a denomination consistent with their existence, they have been called Zoophites, a name implying vegetable nature endowed with animal life.

Should it be asked, what it is that constitutes the difference between these, it might be difficult to make an accurate reply; the power of *motion* cannot form this distinction, since some vegetables possess it, and some animals do not know its use; for the sensitive plant has doubtless greater motion than the oyster; and the animal that fills the acorn-shell is immoveable, and can only close its lid to defend itself from harm; whilst the flower, known by the name of the fly-trap, closes upon the flies that attempt to rifle it of its sweets. However vegetables may, at first, appear to possess this important quality, yet it may be considered but as a mechanical impulse, resembling the raising one end of the lever when the other is depressed: the sensitive plant contracts and hangs its leaves when touched; but this motion neither contributes to its *safety* nor *defence*; the fly-trap flower acts upon the same principle; and though it closes its leaves upon the invader, does not prevent its escape; but it is different with insects even of the lowest order; the earth-worm contracts itself, and darts into its hole the moment it discovers that it is pursued; the polypus hides its horns; and the star-fish contracts its arms, even upon the most distant appearance of danger; and each is sagacious enough to supply itself with food.

WORMS.

The first class of zoophites are animals of the worm kind, which, being totally destitute of feet, trail their bodies along the earth, and form their dwellings in its uterus. Though worms, as well as serpents, are generally without feet, yet their motions are very differently made: the serpent, as has been observed, having a back-bone, which it is incapable of contracting, bends its body in the form of a bow, and then shoots forward from its tail; but the earth-worm is capable both of dilation and contraction; and the whole body is a continuation of rings and joints.

Under the skin there is a slimy liquid, which the reptile ejects when it is required, and which facilitates its passage through the earth; it has breathing-holes which run along the back; but it has neither bones, eyes, ears, nor brain; and the heart is placed close to the head.

Though these disgusting reptiles are produced from eggs, yet each is separately calculated to increase the tribe; many experiments have been made by severing their bodies; when it was found, from the divided parts many perfect animals were produced from one.

THE STAR-FISH.

The next order of the zoophites is that of the star-fish, a numerous, though a shapeless and deformed tribe. These animals take such a variety of figures, that it is impossible to describe them under one determinate shape; but, in general, their bodies resemble a truncated cone, the base of which is applied to the rock to which they are usually attached. Animals of this nature are formed of a semi-transparent gelatinous substance, covered over with a thin membrane, which appears like a lump of inanimate jelly floating upon the surface of the sea; but which, upon a more close inspection, may be seen shooting out their arms in every direction, in order to seize worms, spawn of fish, or muscles, for their prey; and in the dark they emit a kind of phosphoric light.

Many of them are possessed of long slender filaments, in which they entangle any small animals that may draw too near; as their appetite is known to be of the most voracious kind: and, if they be divided into a variety of parts, each in a short time will become a perfect whole.

Of this tribe the number is so various, that a description of each would neither instruct nor entertain; yet we cannot avoid naming the cuttle-fish, as being endowed with a degree of sagacity which none of the others possess. This creature is about two feet long, and is composed of a gelatinous substance, though it is inwardly strengthened by a large bone, which the goldsmiths make us of in various kinds of work: but the singular circumstance attached to the cuttle-fish is, that whenever it is pursued, it ejects a black liquid from a bag which is formed under it: this so completely discolours the sea, that it is absolutely impossible for it to be seen.

THE POLYPUS.

Those animals we have described in the last preceding pages, are of the same species, though differently named; yet all exist in the briny element, though the polypus lives in fresh water as well as in the sea, and is frequently found at the bottom of wet ditches, or attached to plants that have very broad leaves. In the size of these creatures, there is a great difference, as those in fresh water never measure more than an inch, whilst those in the sea grow from *two to four* feet.

Whoever has looked with attention into the bottom of a ditch, when the water is stagnant, and the sun has cast a powerful heat, must remember to have seen many little transparent lumps of jelly, about the size of a pea, without knowing that each possessed the principle of life. Yet these are the *polypi* gathered up into a quiescent state, and seemingly inanimate, because either undisturbed, or not excited into action by the calls of appetite. When they are seen exerting themselves, they put on a very different appearance to what they do when they are at rest, and bear a strong resemblance to a clue cut off at bottom, with several threads or horns planted round the edge. The polypus contracts itself more or less in proportion as it is touched, or the water is agitated in which it floats. Warmth animates, and cold benumbs them: but it requires it to be intense before they are reduced into an entire inactive state.

These animals have a progressive motion, which is performed by the power they possess of lengthening and contracting themselves at will; and those which are capable of extending their bodies to an inch, have arms or feelers

generally twice the length: these are stretched out in search of prey, which consists either of millipedes or worms. A singularity in the polypus is, that it is not only propagated by a division of the body into the most minute parts, but likewise grows from an excrescence which issues from the parent, and soon becomes equally perfect in form and shape.

THE LYTROPHYTES AND SPONGES.

Although every leaf and vegetable swarms with animals upon land, yet they are still more abundant in the sea; and, when the bottom of some shores are examined with attention, they bear a strong resemblance to a forest of trees. These aquatic groves are formed of different substances, and assume a variety both in appearance and shape. The coral plants sometimes spread out like the antlers of a stag, and at others like the leafless branches of trees.

These singular appearances in the watery element, were supposed to form a part of the vegetable tribe, but they are now known to be produced by the united exertions of a numerous class of the polypus race, like the honeycomb which is formed from the labours of the bee. Upon breaking off a branch of the coralline substance, and observing it with attention, it will appear studded with small jelly-drops, each of which contains an animal, endowed with every principle of life; and it is probable that the substance of coral is produced in the same manner as the shell is formed round the snail. These reptiles are each possessed of a slimy matter, which covers its body; and this hardening, as in the snail, becomes a habitation exactly fitted to the size of the body that it is destined to contain. Several of these habitations being joined together, form a considerable mass; and as most animals are productive in proportion to their minuteness, so these, multiplying in a surprising degree, at length form those extensive forests that cover the bottom of the deep. Sponges were likewise supposed to be a vegetable production; but they are now known to be formed by the animal race.

APPENDIX.

A SYNOPSIS

OF THE

LINNÆAN "SYSTEMA NATURÆ."

BY C. W. B.

1. NATURAL HISTORY is that part of knowledge which teaches us to distinguish and describe the objects of Nature ; to examine their appearances, structure, properties, and uses ; and to collect, preserve, and arrange them.

2. Two objects ought to occupy the attention of the Naturalist, *viz.* (1.) To classify natural substances. (2.) To examine their structure.

3. Few natural productions can be distinguished from others by a single property ; but by a combination of several of these properties, we are enabled to discriminate one object, from others which resemble it, in possessing some of those properties.

4. The principal object of Natural History teaches us the characteristics, or distinctive marks of each individual natural object. This is *classification*.

5. To distinguish a *species* from all others that exist in nature, it is necessary to express in its characters almost the whole of its properties.

6. A number of species, brought together, constitute a *genus*, or tribe.

7. The properties which are common to all the species of the genus, combine to form the character, or rather, the description of the genus, distinguishing it from all those which might be formed by bringing together other species.

8. Those *properties which are common to all the genera*, compose a character that distinguishes this assemblage or group, from all other groups. Such an assemblage is called an *order*.

9. By bringing together such orders as are more nearly allied, we form a more general assemblage, called a *class*; and by the union of several classes, we obtain a higher division, to which Naturalists have given the name of kingdom.

10. Kingdoms, in natural history, are divided into classes; classes into orders; orders into genera; genera into species; and each species often contains several varieties.

ILLUSTRATION.—Among the objects which surround us, a great number are possessed of life, sensation, and voluntary motion: these we call animals; and of them the *animal kingdom* is formed. In examining various groups of animals, we find many that have four extremities, and nourish their young with milk; these are called “quadrupeds,” on one account, and “mammalia,” on the other; and this is a *class* of animals: some of the mammalia have hoofed feet, blunt fore teeth, and feed almost entirely on vegetables: these constitute an *order* of that class named *bellua*;—a certain number of the animals of this order agree in having six fore teeth in both jaws, and form a *genus*, distinguished by this particular, from the other animals of the same order, and called the *equus*, or horse genus. In this genus, one species has solid hoofs, a tail bristly at the end, and a black mark on the shoulder of the male. This is the common *asinus*. The varieties are distinguished by certain differences in the mane, the ears, and forehead.

11. Natural objects are usually divided into three kingdoms, the *animal*, *vegetable*, and *mineral* kingdoms, though there is some difficulty in deciding to which division certain particular substances belong.

ILLUSTRATION.—There is one whole class of productions called *zoophita*, which seem to form the connecting links between the different kingdoms. Some are connected together in form of a stem and branches, as *corallines*, &c., and so situated as to be an exact resemblance to the seed-vessels of plants. They are very similar to sea-plants, and are generally confounded with them, under the title of sea-weeds; but, upon closer examination, they are found to be living animals. Other zoophita resemble productions of the mineral kingdom, as the madrepore and millepore, which appear like stones, or pieces of chalk or marble, but, being more

closely examined, there are evident marks of an organic structure.

12. Animals inhabit the exterior parts of the earth, respire, generate eggs, and are impelled to action by hunger, affection, and pain. By preying upon other animals and vegetables, they restrain within proper bounds and proportions the number of both: they enjoy life and sensation, and have locomotion in a greater or less degree.

ILLUSTRATION.—In examining the zoophita, just mentioned, it will be found that they have so much locomotion, as to be able to extend their tentacula, or feelers, in search of food; which, on the least alarm, they suddenly retract within their shell.

13. Vegetables clothe the surface of the earth with verdure, imbibe nourishment through their bibulous roots, respire by means of leaves, and continue their kind by the dispersion of seed. They are organized bodies, and have life, but not sensation.

14. Minerals occupy the interior parts of the earth, in rude and shapeless masses. They are concrete bodies, destitute of life and sensation.

15. Of these great divisions, the animal ranks the highest in comparative estimation; next, the vegetable; and last and lowest, is the mineral kingdom.

ZOOLOGY, OR THE ANIMAL KINGDOM.

16. The animal kingdom is divided into *six classes*, the characters of which are taken from the internal structure of the beings treated of; and each of the classes is divided into orders.

ILLUSTRATION.—A considerable portion of the bulk of animals is composed of tubular vessels, which originate in a heart. The heart propels either a colourless transparent fluid, or a red blood, into the extremities of the veins, through which it returns to the origin of motion. One of the distinguishing characteristics of the classes arises from the colour and temperature of the blood.

17. The six classes are denominated mammalia, aves, amphibia, pisces, insecta, vermes.

18. The mammalia, or first class, includes all animals that nourish their young by the lacteal vessels, viz. man, quadrupeds, whales, seals, porpoises, and the bat tribe.

19. The mammalia are characterized by having a heart

with four cavities, viz. two ventricles and two auricles: the blood is red and warm, and the animals belonging to it are *viviparous*, or bring forth their offspring alive and perfect.

ILLUSTRATION.—The senses of the mammalia consist of the organs of sight, hearing, tasting, smelling, and the power of feeling. In many of these animals, the organs are of greater acuteness than in man. The eyes in some quadrupeds, the hearing in others, and the sense of smell in others, are far more acute than those possessed by the human race. In some quadrupeds, the eyes are furnished with a membrane, semi-transparent, which may, at pleasure, be drawn over the ball of the eye, for its defence. The nose is more or less compressed or lengthened. In the elephant, it is extended in a most wonderful manner into a long trunk, at the tip of which are placed the nostrils. The tongue, in quadrupeds, is usually of a flattened and lengthened shape. In some, it is of a cylindric shape, and lengthened into the form of a worm, and is extendible at the pleasure of the animal.

20. The class *aves*, or birds, is distinguished from the mammalia, by being *oviparous*, or bringing forth their young by means of eggs.

21. Amphibia, or amphibious animals, have a heart with one ventricle and one auricle: their blood is cold and red. They breathe by means of voluntary lungs.

22. The amphibia, by the peculiar structure of their respiratory organs, have the power of living either in water or air. This class includes reptiles, serpents, and the shark, skate, and a few others, usually denominated fishes, but which possess this peculiarity.

23. The class *pisces*, or fishes, resembles the amphibia in the structure of the heart and the quality of the blood; but it is distinguished from them, by having *branchiæ*, or gills, instead of voluntary lungs.

24. *Insecta*, or insects, have a heart with one ventricle and no auricle: the blood is cold and white, and the animals are furnished with *antennæ*, or feelers.

25. The character of the class *vermes*, or worms, is the same as that of insects, only that the animals have no *antennæ*, but are furnished with *tentacula*.

SUMMARY (1.) The internal structure of the mammalia and *aves* is the same; and they differ in this, that the former are *viviparous*, the latter *oviparous*.

SUMMARY (2.) The internal structure of the amphibia and pisces is the same ; but the former are endowed with voluntary lungs, the latter have external gills.

SUMMARY (3.) The internal structure of the insecta and vermes is the same ; but the former have antennæ, the latter tentacula.

OBSERVATION.—The antennæ of insects are distinguished from the tentacula of the vermes, in being *crustaceous*; and from the palpi of insects, by their situation being nearer the mouth ; the antennæ of insects rarely exceed two. They have sometimes been confounded with tentacula, under the general name of feelers, but the true feelers of insects are the palpi. The *antennæ* are processes, or jointed bodies, situated on each side of the head ; the *palpi*, or feelers, are short jointed processes proceeding from the mouth.

CLASS I.—MAMMALIA.—ZOOLOGY.

1. The class mammalia is named from being provided with *mammæ*, for the purpose of nourishing their young. They resemble man in their structure ; most of them are quadrupeds, and, with man, inhabit the surface of the earth. The largest, though fewest in number, inhabit the ocean.

2. The mammalia are distributed into *seven* orders, the characters of which are taken from the number, situation, and structure of the teeth.

3. The names of the seven orders are, primates, bruta, feræ, glires, pecora, belluæ, and ceti.

4. The order primates contains man, monkeys, and bats :—they have four front cutting-teeth in both jaws, and two pectoral mammæ. The genera of this order are homo, lemur, and vespertilio.

5. The genus homo, or man, includes two species, denominated by Linnæus, homo sapiens, and homo monstruosus :—the first species contains several varieties, as the wild man, the American, European, Asiatic, and African ; the second includes the Patagonian, Hottentot, and some others.

6. The genus simia, or monkey tribe, contains sixty or seventy species, separated into four distinct divisions : viz. (1.) Apes, which have no tail. (2.) Baboons, whose tails are short. (3.) Monkeys, whose tails are long. (4.) Monkeys, whose tails are long and prehensile.

7. The simia genus resembles man in the uvula, eye lashes, hands, feet, fingers, toes ;—but it differs from him in the want of reason : the individuals have retentive memories, are imitative, and full of gesticulations,—chatter with their teeth, and grin : they are filthy, thieving, gregarious ; and the prey of leopards and serpents.

ILLUSTRATION.—No animal approaches so nearly the human form, or is so strongly impressed with the human likeness, as the ouran-outang, or wild man of the woods. The animals of this species reside in the warmer parts of India, Africa, and in some of the Indian islands, where they roam about, to the great terror of the negroes, who dare not pass through the woods alone, for fear of being attacked and overpowered by them. The ears, the hands, and the feet, bear a strong resemblance to the human ; and the body, which is lightly covered with hair, scarcely differs from that of a man, except that there are no calves to his legs. He walks erect, feeds upon fruits, and sleeps under trees. When the negroes leave a fire in the woods, this creature will sit close to it, as long as any embers are remaining. In its wild state, the ouran-outang is a most formidable creature ; but when domesticated, he becomes gentle and obedient, and capable of imitating a variety of actions.

8. The lemur, or macauco genus, consists of animals approaching to monkeys in the form of their feet, but differing from them in their manners. Some of the species are without tails, and some have long ones.

ILLUSTRATION.—The lemur tardigradus, or loris, walks and climbs with great slowness ; and it is supposed incapable of leaping. Its manners are gentle and interesting : it is extremely susceptible of cold. It sleeps from sun-rise to sun-set, without intermission, and is very attentive to cleanliness, licking its rich fur like a cat. Its food generally consists of fruits ; but there are species of insects which form a repast peculiarly gratifying to it, and the sight of them excites in its countenance the most glowing animation, and summons to exertion all the energies of its frame.

9. The vespertilio genus have palmated fore feet, with a membrane surrounding the body, giving the animal the power of flight.

10. The animals of this class fly abroad by night, by means of the membrane above described : they feed on gnats and nocturnal insects : they are torpid during winter, in cold

countries, gathering together in dark caverns, sticking to walls, or suspending themselves by the hind legs: they have the additional sense of being able to avoid objects in their way, when deprived of eyes.

ILLUSTRATION.—When bats are taken in the torpid state, and brought into a warm room, they gradually recover from their torpor. Bats are sometimes seen in such large flights as to darken the atmosphere; and some kinds, as the spectre bat, are so voracious as to attack men and other animals while they are asleep, perforate some large vein, and gorge themselves with the blood. The bats of this country live chiefly on insects, which induces them to frequent the sides of woods, or to glide along the surface of the water. By the ancients, the bat was consecrated to the goddess of the infernal regions; and its general aspect, nocturnal flights, and leathern wings, render it not an inappropriate inhabitant of those obscure and dismal territories. The fabulous harpies of the ancients, must have originated from a similar source. The larger bats of Africa and India answer extremely well to the general description of those monsters.

11. The animals of the order *bruta* have no fore teeth in either jaw; and it includes eight genera; *viz.* the sloth, rhinoceros, elephant, platypus, &c.

12. The sloth inhabits the warmer parts of America; feeds on fresh leaves, lives in trees, never drinks, is fearful of rain, climbs easily, walks painfully and slowly, scarcely travelling fifty yards in twenty-four hours; its cry is wretched, and its tears excite pity.

13. The rhinoceros inhabits marshy places between the tropics; lives on thorns and spinous plants; may be tamed; but when enraged, it will in its fury overturn trees: its sight is weak, but its sense of smell is very acute. There are two species, *viz.* the *one*-horned and *two*-horned rhinoceros.

14. The generic character of the elephant is, tusks in the upper jaw; proboscis very long and prehensile; body nearly in a state of nudity.

ILLUSTRATION.—The elephant inhabits the torrid zone, in swampy places, and by the sides of rivers; feeds on the leaves and branches of trees; devours grain voraciously; is gregarious, docile, long-lived, and sagacious. The proboscis is long, and capable of extension and contraction, furnished at the end with a hook, serving the purpose of a hand, with which it takes its food and drink: it serves also as the organ of respiration. It will carry vast loads on its back, moves

quickly, swims dexterously; is used in war by the Hindoos, and was formerly armed by the Romans with scythes. This is the largest of quadrupeds: its height is from nine to twelve feet, and it sometimes weighs four or five thousand pounds. His tusks extend very far beyond the mouth; they resemble horns marked with curled fibres: these are the ivory of the shops, and some weigh one hundred and fifty pounds each.

15. The platypus is a newly discovered animal, that has a mouth shaped like the bill of a duck, and palmated feet.

ILLUSTRATION.—This is the most extraordinary of all the *mammalia* class: it exhibits the perfect resemblance of the beak of a duck engrafted on the head of a quadruped. The peculiarity of its bill and webbed feet proves that it must be a resident in watery situations: that it has the habit of digging, or burrowing in the banks of rivers, or under ground, and that its food consists of aquatic plants and animals.

16. The animals of the order *feræ* have, for the most part, six conical fore teeth in each jaw: this order contains ten genera, among which are the seal, the dog, the cat, the bear, the hedge-hog, &c.

17. This order consists of predaceous animals, whose sharp, hooked claws, and sharp fore teeth, manifest their habits. They are all endowed with a keen sight, and have strength and agility combined, to dart upon their prey, and to retain it with a firm grasp.

18. The phoca, or seal genus, is filthy and quarrelsome: the individuals are easily tamed: their skin and feet are useful: they inhabit and swim under water, and crawl on land with difficulty; feed on fish and marine productions, and swallow stones, to prevent hunger by distending the stomach.

19. The phoca-ursina inhabits Kamtschatka, New-Zealand, and the adjacent islands: swims impetuously in large families: the old ones live by themselves and grow fat: each has a particular stone for its bed, which it never deserts: the males fight fiercely in defence of their females and stations: when grieved, they shed tears plentifully.

20. The canis, or dog genus, is characterized as voracious, tearing what it devours, swift in its course, but cannot climb trees, because its claws are not retractile.

ILLUSTRATION.—Of all animals, the most faithful is the dog; he fawns at the appearance of his master, and defends

him : he runs before him on his journey ; and, if the road divides, looks back ; he is docile, and seeks for what is lost ; watchful by night, he gives notice of the approach of strangers, and watches over what is committed to his care. He drives home cattle from the field, keeps them within bounds, and guards them from wild beasts. He points out game, and brings what is killed to his master. He is made to turn spits and to draw small carriages. He abhors beggars, bites strangers, licks wounds, howls at music, is liable to diseases and madness, and communicates the latter by biting. He has an exquisite smell.

(2.) The wolf, a species of the *canis* genus, hunts in packs, and destroys cattle ; is very suspicious, being hardly heard in the woods ; will not pass through a door, but leaps over the fence ; dreads the sound of a trumpet : is exquisite in the sense of smelling ; patient of extreme hunger and cold ; devours man, and even his own species.

(3.) The jackal species prowl by night in flocks of five hundred each ; they attack and feed on lesser animals : at the cry of one, all within hearing howl hideously, and urge other beasts to hunt the stag, &c. while the lion or tiger lying in wait, seizes the prey, and, as the king of the forest, satisfies his hunger, leaving to the crouching jackal the remainder ; hence originated the idea of the jackal being the lion's provider.

21. The felis, or cat genus, has retractile claws, and easily climbs trees ; it is temperate in its habits, very swift, and sees best by night. The lion and tiger are species of the felis genus.

ILLUSTRATION.—The lion inhabits Africa ; it is sometimes found in the deserts of Persia, India, and Japan. It preys on horses and other large quadrupeds ; and, when pressed by hunger, on man. It is afraid of flame, is restrained by dogs ; easily tamed when young ; it roars horribly ; sleeps in the sun ; eats every third day ; and its flesh is eaten by the aborigines. The tiger inhabits the warmer parts of Asia, China, Japan, and India ; lives in woods and thickets, near rivers. It is cunning, cruel, strong, of vast swiftness, infesting and desolating man. When tamed from his birth, will exercise his ferocity as soon as liberated ; the male destroys his own progeny ; will even attack a lion ; it bounds from ambush upon its prey, and is the most beautiful of wild beasts.

22. The animals of the order *glires*, have two cutting fore teeth in each jaw ; their feet are formed for running and

bounding, and they live on the bark of trees, roots, and vegetables, &c. which they gnaw. The beaver, guinea-pig, rats, mice, and hares, are of this order.

ILLUSTRATION.—(1.) The beaver inhabits the northern parts of Europe, Asia, and America; it feeds on the bark and leaves of trees: it walks slowly, swims dexterously, sleeps profoundly, is very cleanly, and conveys the food to its mouth with its fore paws; cuts down trees with its teeth, erects convenient houses, lives in families, from which they dismiss such as are indolent, who become hermits. In the structure of its house, it far exceeds the ingenuity of all other quadrupeds.

(2.) The lemming is a species of the mouse genus, and inhabits the mountains of Norway and Lapland: it feeds on grass, and burrows under the snow in winter; before the approach of a hard frost, it migrates in immense armies, and always in a straight line, chiefly by night, in spite of every obstacle, even rivers and houses. The lemmings destroy all vegetation in their progress, and lay waste the country through which they pass. They will even attack man; and, in turn, they themselves become the prey of birds, beasts, and many reptiles; so that few return in the spring to the mountains.

23. The animals of the *pecora* order have many cutting-teeth in the lower jaw; but none in the upper. They live on herbs, and chew the cud: they have four stomachs; *viz.* the “paunch,” to macerate and ruminate the food: the “bonnet,” to receive it; the “omasus,” of numerous folds, to digest it; and the “abomasus,” to give it acescency, and prevent putrefaction; the camel, the stag, the goat, the sheep, and the ox, are of this order.

ILLUSTRATION.—(1.) The Arabian camel, or dromedary, inhabits the temperate deserts of Asia, Africa, and Arabia: in many places it is domesticated, and is mild and gentle. It is very useful in conveying heavy burdens over the dry sandy deserts, and will carry 1200 pounds weight. It moves slowly, and cannot be forced beyond its accustomed pace, nor be made to carry more than its usual burden. It is patient of hunger and thirst, and will travel many days without water. It kneels down to be loaded or unloaded, at the command of its keeper. The hair of the camel is very valuable, and the flesh and milk are used by the Arabs as food. The Bactrian camel is chiefly used by the nobility of the Eastern

countries ; and there is a breed of these in China, of such swiftness, that they are called camels with “ feet of wind ”

(2.) The ox genus inhabits various parts of the world ; and the several species are used for draught and burden ; and are likewise valuable for their flesh, milk, hides, and many domestic purposes. They are subject to a variolous disease, which may be communicated to the human race, and thereby, it is hoped, prevent future infection from the small-pox. The animals of this genus are infested by gad-flies, and other insects : they are poisoned by yew, hemlock, aconite, and anemone.

24. The animals of the *belluæ* order have obtuse fore teeth and hooped feet ; their motion is heavy ; for food, they gather vegetables. They are of great value to mankind, and are used for draught, burden, and the saddle. They have the singular property of breathing only through the nostrils, and not through the mouth. The horse, the hog, and the hippopotamus, are of this order.

ILLUSTRATION.—(1.) The horse is naturally timid, swift, and vigilant. Horses, in a state of nature, move in flocks, having a leader before, with its ears thrown forwards, and a sentinel behind, with its ears bent backwards, to guard against surprise both ways. The ass is a species of the equus, or horse genus : from the skin growing on the back, shagreen is manufactured.

(2.) The hippopotamus inhabits the lakes of Abyssinia and Ethiopia : it feeds by night, on vegetables and roots of trees. It frequently lays waste whole plantations of sugarcane, rice, and other grain. It walks slowly, but swims dexterously, and walks under water, but cannot remain long without rising to the surface for breath.

25. The animals of the *cete* order have fins instead of feet : the tail is horizontal and flattened : they have no nostrils, but instead of these a fistulous opening in the upper part of the head ; they feed on fish, and inhabit the ocean. The monodon, balena, or whale ; physeter, and dolphin, are the genera included in this order.

ILLUSTRATION.—These are arranged with the mammalia, from their similarity of structure, though their habits and manners are like those of fish. Their heart has two auricles and two ventricles ; they have warm blood ; their lungs respire alternately ; their eye-lids are moveable, ears hollow, receiving sound through the medium of the air, and they suckle their young.

SYNOPSIS OF CLASS I.—MAMMALIA.

ORDER.	Genera.	Species.
I. Pri-ma-tes	4	88
II. Bru-ta	7	25
III. Fe-ræ	10	186
IV. Gli-res	10	129
V. Pe-co-ra	8	90
VI. Bel-lu-æ	4	25
VII. Ce-tæ	4	14
	47	557

CLASS II.—AVES.—ORNITHOLOGY.

1. The second class includes birds, and is denominated *aves*: it consists of animals having a body covered with feathers or down. Their jaws are protracted and naked; they have two feet, and two wings formed for flight.

2. The feathers of birds are convex above, and concave beneath; they vary in colour according to age, sex, season, or climate; their eggs are various in number, size, and colour, but always covered with a calcareous shell, deposited in an artificial nest, and hatched by the genial warmth of the parent.

3. Birds are mostly monogamous, or live in single pairs: upon defect of food, or warmth, they migrate into colder climates; and some are supposed to become torpid in the winter.

4. The generic characters are taken from the bill, tongue, nostrils, cere, caruncles, and other naked parts: they are divided by Linnæus into six orders.

5. The first order, denominated *accipitres*, includes birds of prey; as vultures, eagles, hawks, owls, &c. The birds of this order have an angular projection in their upper mandible.

ILLUSTRATION.—The condor of Peru, a species of the vulture genus, is of a vast size, measuring, with the wings extended, from twelve to sixteen feet; it builds under the projection of the highest rocks; lays two white eggs; preys on birds, kids, lambs, calves, and has been known to carry off children ten years of age. Two of them are said to be able to destroy and devour a cow; when passing near the ground in its flight, it makes a tremendous noise.

6. The second order, denominated *picæ* or *pies*, contains all the birds of the crow and jay kind, parrots, woodpeckers, king-fishers, &c. The bill of the birds of this order is compressed and convex. There are three divisions of the order, distinguished by their feet, as formed for perching, climbing, and walking.

7. The third order, called *anseræ*, or web-footed birds, includes the swan, goose, and duck tribe; gulls, penguins, and many others. They have a bill broad at the tip, and covered with skin: the two divisions are distinguished by the bill; in some it is toothed, in others it is without teeth.

8. The birds denominated *grallæ*, or waders, make the fourth order, and are distinguished by a roundish bill and fleshy tongue; there are two families, *viz.* those with three toes, and those with four toes. This order consists of all the heron tribe, the curlews, and plovers, and others, which have lengthened legs, and which frequent watery situations.

9. The fifth order is denominated *gallinæ*, or such birds as are more or less allied to the common domestic fowl. They have a convex bill, and the upper mandible is arched. This order includes the pheasant and partridge tribe, the peacock, turkey, and a variety of other birds.

ILLUSTRATION.—The pheasant tribe, in its wild and natural state, is found in India: it is domesticated every where, and subject to innumerable varieties in colour and size. It feeds on grains and worms. The *argus* pheasant, so remarkable for size and beauty, is a native of Sumatra, and is considered as constituting one of the chief ornaments of European museums. In China there is a species of pheasant, known to us only from the long tail feathers, which are sometimes brought over, and which are six feet long: this bird has been thought to have been noticed by Marco Polo, who speaks of pheasants with tails measuring ten spans in length.

10. The sixth order is named *passeræ*: the birds of this order have conic and sharp-pointed bills. It comprises pigeons, thrushes, larks, finches, and small birds in general, either with thick, or slender bills: and it is separated into four distinct divisions: *viz.* those having thick bills; those having an upper mandible, somewhat hooked at the point; those with a notched upper mandible; and those with a straight, simple, and tapering bill

SYNOPSIS OF CLASS II.—AVES, OR BIRDS.

ORDER.	Genera.	Species.
I. Ac-ci-pi-tres.....	4	271
II. Pi-cæ	26	663
III. An-se-res	13	314
IV. Gral-læ.....	20	326
V. Gal-li-næ	10	129
VI. Pas-se-res.....	17	983
	<hr/>	<hr/>
	90	2686
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CLASS III.—AMPHIBIA.

1. The third class of animals is denominated *amphibia*, from their appearing to live promiscuously on land or in water.

2 The class is divided into two orders, viz. reptiles and serpents; and it includes tortoises, frogs, lizards, and serpents, all of which possess a kind of voluntary power, by which they are able, at pleasure, to suspend their respiration, so as to continue for a long time without breathing.

3. Reptiles are characterized by breathing through their mouths; by having feet, and flat naked ears: of this order are frogs, lizards, and tortoises.

4. Serpents are distinguished as being without feet, but frequently armed with a deadly poison, contained in fangs resembling teeth. In cold and temperate climates, they conceal themselves in winter, in cavities beneath the surface of the ground, where they become torpid.

5. Some serpents are viviparous, as the rattlesnake, the viper, &c. but those which are innoxious or oviparous, depositing their eggs in a kind of chain in a warm situation, where they are afterwards hatched.

6. The broad laminæ, on the external part of the abdomen of serpents, are termed scutæ; and the smaller, or divided ones, beneath the tail, are called scales; and from these the genera are characterized.

SYNOPSIS OF CLASS III.—AMPHIBIA.

ORDER.	Genera.	Species
I. Rep-ti-lia	4	147
II. Ser-pen-tes	6	219
	<hr/>	<hr/>
	10	366
	<hr/>	<hr/>

CLASS IV.—PISCES.—ICHTHYOLOGY.

1. The fourth class of animals includes all kinds of “fishes” which are distinguished by the swiftness of their motion, and the voraciousness of their appetites.

2. Fishes breathe by means of their gills, and swim by fins: they are mostly covered with cartilaginous scales, and are furnished with an air-bladder, by the contraction or dilatation of which they can raise or sink themselves at pleasure.

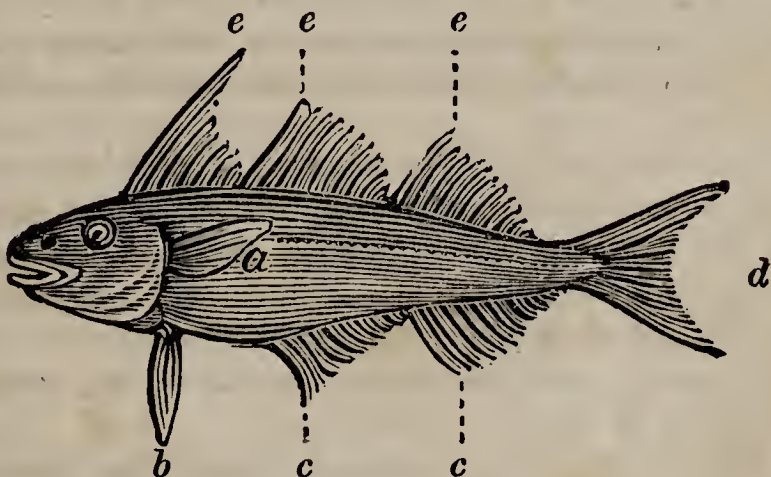
3. They live on mucus, insects, worms, dead bodies, lesser fish, or sea plants.

4. The under, or ventral fins, are to be considered as analogous to the feet in quadrupeds, and from the situation presence, or absence of these fins, the Linnæan division of fishes are instituted.

5. There are five orders of fishes, *viz.* the apodes, jugulares, thoracici, abdominales, and cartilaginous fishes.

6. Fishes entirely destitute of fins, such as the eel, gymnotus, &c. are denominated *apodes*, and are included in the first order.

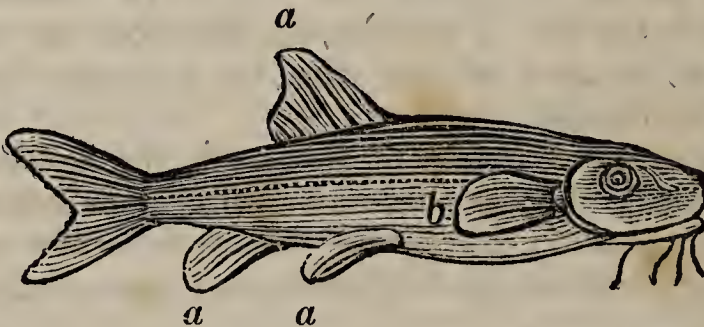
ILLUSTRATION.—The fins are thus named: *a* is called the pectoral fin; *b* the ventral fin; *c* the anval fin; *d* the caudal or tail fin; and *e* the dorsal or back fins.



7. The second order of fishes, denominated *jugulares*, have their ventral fin *b* placed more forward than the pectoral or breast fin *a*.



8. The third order, called *thoracici*, have their ventral fin *a*, immediately beneath their breast fin *b*.



9. The *abdominales*, or fourth order, have the ventral fins *a a*, situated behind the pectoral fin *b*.

10. The fifth order includes cartilaginous fish, which were separated into two orders by Linnæus, *viz.* the branchiostegous, or fishes that have gills without long rays; and the chondropterigious, or those that have cartilaginous gills; the sucker belongs to the former, and the squalus, or shark, to the latter.

ILLUSTRATION.—(1.) The cylopteri inhabit the sea, feed on worms, insects, and the fry of other fish, and are furnished, beneath the ventral fins, with an oval aperture of a muscular substance, and edged with small threaded appendages, by means of which they have the power of adhering so firmly to the rocks, as to be moved by scarcely a less force than would destroy them.

(2.) Sharks are inhabitants of the sea; they give a luminous appearance at night; some of them grow so large as to weigh two or three thousand pounds: from the liver is extracted much oil; the skin is used for polishing wood, ivory, &c. They are mostly solitary, devouring whatever comes in their way: they bring forth their young alive, each inclosed in a square, pellucid, horny case, terminated at the four corners by very long slender filaments, which are generally twisted round corallines, sea-weed, or other fixed substances.

SYNOPSIS OF CLASS IV.—PISCES.

ORDER.	Genera.	Species.
I. Ap-o-des.....	10	37
II. Ju-gu-la-res.....	6	52
III. Tho-ra-ci-ci	19	452
IV. Ab-do-mi-na-les.....	16	202
V. Bran-chi-os-te-gi.....	10	81
VI. Chon-drop-te-ri-gi-i.....	5	65
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CLASS V.—INSECTA.—ENTOMOLOGY.

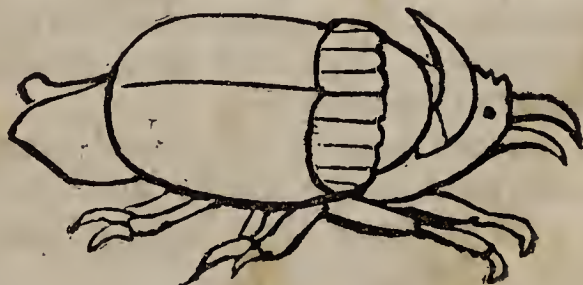
1. The fifth class, in the Linnæan system, consists of insects, which are small animals furnished with several feet, and which breathe by a kind of spiracles, or breathing-holes, distributed in a row on each side of the abdomen; the head is furnished with a pair of antennæ, or horns.

2. Insects have generally four, sometimes two or six feelers, affixed to the mouth: the mouth is usually placed beneath the head: they have two or four wings; the upper ones are often crustaceous shells, covering the lower: their legs consist of three divisions.

3. The sexes of insects are male, female, and neuter: the latter are devoted to labour for those of the more perfect sex.

4. Most insects undergo a triple metamorphosis, or transformation, effected by casting off the different coats or coverings in which the perfect insect is inclosed.

5. The first state in which insects appear, is that of an egg: from the egg is produced the larva, grub, or caterpillar; without wings, slow in its motions, sometimes with many feet, and sometimes with none: from this state it passes into that of the "pupa," chrysalis, or nymph; and, escaping from this, it becomes a "perfect insect;" as may be seen in the annexed figures:—



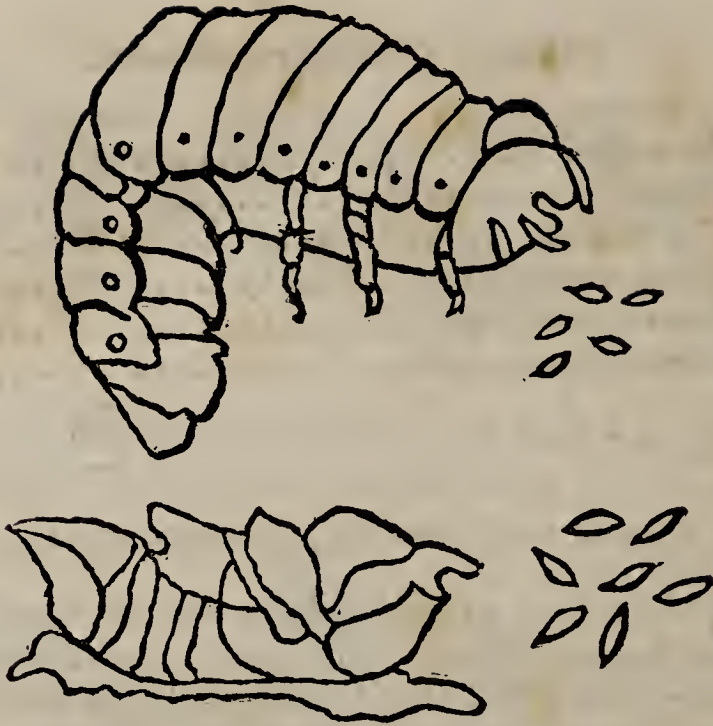


ILLUSTRATION.—We have, in preceding figures, a representation of the several states through which an insect of the scarabeus, or beetle tribe, passes, from the ova, or eggs, which are placed in detached heaps, to the perfect insect. The eggs are usually deposited beneath the surface of some clod; and the *larva*, which is shown by the middle figure, when first hatched, is not more than the eighth of an inch in length, gradually advancing in growth, and changing its skin till it arrives at the length of nearly two inches. It now prepares for the change into a chrysalis, or pupa, shown in the lowest figure, selecting for the purpose some clod of earth, in which it makes a house, and, after a certain time, throws off the last skin, and appears a pupa: in this it continues till the succeeding summer, when the beetle emerges from its retirement, commits its depredations, and deposits its eggs in a favourable situation; and, having done so, it soon dies. The larva of the beetle tribe is eagerly sought for by the hogs, poultry, &c.; but if it appear in very considerable quantities, in the autumn, it is said to prognosticate an epidemic disorder. The *scarabeus auratus*, or golden beetle, is a species of great beauty.

6. Insects are the least of the animal creation, and, excepting aquatic ones, as the lobster and a few others, they are annual; that is, finish their term of existence in the space of a year or less.

7. Insects are said to inhabit those plants on which they feed, and they often take their trivial names from their habitations.

ILLUSTRATION.—In the genus *curculio*, we have the nut weevil, a small, brown insect, with an extremely long and slender snout. This insect is the parent of the maggot in the hazel-nut; and in August the female insect perforates the rind of the nut, and deposits her egg; and when the kernel is almost ripe, the egg is hatched, and the maggot feasts on the food ready prepared for it. By the time it is full grown, the natural fall of the nut takes place, and the animal creeps out, and burrows under ground; where, after a certain time, it casts its skin, and commences pupa, or chrysalis. In this state it remains all winter, till the following August, when it emerges from its concealment, and appears in its complete form.

8. Insects are divided into seven orders: the first contains all the insects of the beetle tribe, or such as have strong horny sheaths or covers to their wings: this order is called *coleoptera*, or sheath-winged insects. All beetles are of this order.

ILLUSTRATION.—The coleopterous insects form a very extensive order, and each genus is distinguished by some leading particularity of appearance. In the individuals of the order, the real or proper wings are of a membranaceous nature, and when not in use, are curiously folded up under the exterior strong or horny sheaths.

9. The second division, or order of insects, is denominated *hemiptera*, or half-winged, because the upper part of the wing-sheaths, in this tribe, is of a leathery texture, and the lower part membranaceous. Locusts, grasshoppers, cicadæ, lantern-flies, &c. are of this order.

10. The third order is denominated *lepidoptera*, or scaly winged; it consists of the insects commonly termed butterflies and moths. The powder on the wings is found to consist of minute scales, of various shapes and sizes: these are disposed in the manner of slates on the roof of a building, lapping over each other.

11. The fourth order is denominated *neuroptera*, or nerve winged, on account of the reticulated appearance of the wings: this order includes dragon-flies, &c. The insects of this division have always four wings.

ILLUSTRATION.—The libellula, or dragon-fly, is an extremely ravenous insect, and is usually seen hovering over stagnant waters: the larvæ are six-footed, very active, and

inhabitants of the water; they prey with the most rapacious ferocity upon aquatic insects, and the larvæ of others: the pupa resembles the larva, but has the rudiments of wings.

12. The *hymenoptera*, or fifth order, consists of insects with four membranaceous wings, and a sting, or a process resembling one. Bees, wasps, &c., are of this order.

13. The sixth order is denominated *diptera*, and contains such insects as are furnished with two wings only: such are flies, properly so called, gnats, and a great variety of other insects.

14. The seventh order is called *aptera*, and consists of insects that are totally destitute of wings, as spiders, scorpions, centipedes, crabs, lobsters, fleas, mites, &c.

OBSERVATION. (1.) Some of the coleopterous insects are destitute of wings, and yet are not of the apterous order.

OBSERVATION. (2.) In some species of insects, one sex is winged, and the other apterous, as is the case of some of the moth tribe: in the *lampyris noctiluca*, or glow-worm, the female is apterous, or without wings, and emits a beautiful phosphoric light, for the purpose of attracting the male, which is winged, and of the order coleoptera. The aphides, in the order hemiptera, are some of them winged, and some wingless

SYNOPSIS OF CLASS V.—INSECTA.

ORDER.	Genera.	Species.
I. Co-le-op-te-ra.....	55	4048
II. He-mip-te-ra.....	14	1464
III. Le-pi-dop-te-ra.....	3	1600
IV. Neu-rop-te-ra.....	7	174
V. Hy-me-nop-te-ra.....	25	1239
VI. Dip-te-ra.....	12	692
VII. Ap-te-ra.....	15	679
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	131	9896
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CLASS VI.—VERMES.—VERMEOLOGY.

1. The sixth class, in the Linnæan system, is denominated *vermes*. It includes not only worms, but those animals which have the general character of being slow in motion, of a soft substance, extremely tenacious of life, capable of re-producing such parts of their bodies as may have been taken away or destroyed, and inhabiting moist places.

2. This class is divided into five orders, and they are principally distinguished by their tentacula or feelers. They are generally considered as the lowest scale of animated nature.

3. Most of the animals in this class are imperfect when compared to quadrupeds, possessing neither eyes, ears, head, nor feet. Many of them, as the corals and corallines, approach to the vegetable tribe, and some of them resemble, at least in their coverings, productions in the mineral kingdom.

4. The first order of the class vermes is denominated *intestina*, of which some of the individuals live within other animals, some in the waters, and a few in the earth.

ILLUSTRATION.—The *ascarides* inhabit the intestines of the human body; the *gordius* perforates clay to give a passage to springs, and the *lumbricus*, or earth-worm, perforates the common soil, which it renders fit to receive rain. It is the food of moles, hedge-hogs, and various birds.

5. The second order is denominated *mollusca*: the animals of this order are naked, furnished with tentacula, or arms, of which the *limax* or *slug* is a good illustration.

ILLUSTRATION.—(1.) The animals of the mollusca order are exceedingly numerous; many of them are inhabitants of the sea, and serve as food to thousands of the more useful and important species of fish. Some of them emit a phosphorescent light, like the glow-worm, and with other living insects, give a beautiful brilliancy to the sea. The star-fish are of this order.

ILLUSTRATION.—(2.) The cuttle-fish also of this order possess the power of expelling a black fluid in considerable quantities, so as to discolour the water, to favour their escape, when hard pressed by an enemy. This liquor was used as ink by the ancients; and is said to be the basis of modern Indian or Chinese ink. The bone in the back is converted into powder, and is used as pounce for paper, and as an excellent cleanser and preservative for the teeth.

6. The third order is named *testacea*; these are mollusca, covered with calcareous shells, which they carry about with them; of this order is the common garden-snail, or *helix hortensis*.

7. The study of this branch of natural history is called *conchology*. There are more than a thousand species of shells, some of which, on account of their beauty and rarity, bear a very high price.

8. Shells are separated into three divisions; the multi-

valve, bivalve, and univalve, according as the shells consist of *many* parts, *two* parts, or of a single piece.

9. The multivalve consist of many plates or shells, connected, in some species, like the different parts of a coat of mail. The barnacle, consisting of several small shells at the hinge of two large shells, is in this division.

10. Bivalves consist of two shells, connected by a hinge, as the cockle, muscle, oyster, scallop, &c.

ILLUSTRATION.—Oysters and muscles are found in beds, and may be improved by artificial management. They deposit their spawn, a jelly-like substance, which adheres to stones, and is soon covered with a shell.

OBSERVATION.—Pearls are sometimes found in oysters and in muscles. These are little calcareous concretions, formed of the same liquid, secreted by the animal, of which the inner surface of the shell is composed, and seem to be the effect of accidental injury. When the internal surface of the shell is abraded, the pearly excrescence is formed to repair the injury. Hence the Chinese have learned to increase the number of pearls, by catching the muscles, perforating the shells, and abrading the inner surface; they then replace the muscles in the water, and after a certain time fish up the same again, and upon opening them discover pearls attached to the point of the wire with which the shell was abraded.

11. The univalves comprehend those that have a regular spire; which is a most numerous division, including the snail, periwinkle, &c.; also the gowrie, a beautiful spotted shell, very common as an ornament on chimney-pieces; and those without a regular spire.

ILLUSTRATION.—The substance of the shells of this order of animals, when chemically examined, is found to be mild, calcareous earth, deposited in a mass of net-work composed of animal matter. Every part is secreted by the animal itself: the whole surface of the animal being concerned in the formation of the shell. The shining matter left in the tracks of snails, is that very substance, which, when deposited in strata one above another, hardens by exposure to the air, and forms a shell.

12. The fourth order is named *zoophyta*: the animals of this order are composite, holding a place between animals and vegetables. Most of them take root and grow up into stems, multiplying life in their branches, and deciduous buds, and in the transformation of their animated

blossoms or polypes, which are endowed with spontaneous motion.

ILLUSTRATION.—Sponge is an animal production, and of this order ; every minute pore on the surface of a perfect piece of sponge, was the orifice through which a polypus kind of animal extended his feelers in search of food. Sponge, when first fished up from the sea, is gelatinous, or a glue-like substance, and requires repeated washing in fresh water, before it is fit for the several purposes to which it is applied.

13. Plants resemble *zoophites*, but are destitute of animation and locomotion ; zoophites are plants, but furnished with sensation, and the organs of spontaneous motion.

14. Of the order *zoophyta*, some are soft and naked, and are called *zoophites*; others are covered with a hard shell, and are denominated *lithophytes*.

ILLUSTRATION.—Large beds or rocks, composed of the animal production of this division, are formed at the bottom of the sea. They derive their nutriment from insects, and from the saline and other matters in the sea. These, in their turn, are the origin of many of the chalk-beds, calcareous rocks, lime-stones, and other mineral articles.

15. The fifth order* of the class vermes is called *infusoria*, which are extremely minute animalcula, destitute of feelers, and generally invisible to the naked eye. They are chiefly found in infusions of various vegetable substances.

ILLUSTRATION.—The vorticella is found in most stagnant and impure water, and is known by its constant rotatory motion. Rain-water, collected in a cistern of almost any kind, and kept for some time, contains myriads of them.

ILLUSTRATION.—(2.) The hydra, or fresh-water polypus, another animalcule of this order, is found in almost every pool of water. It resembles a hollow tube, attached by its smallest extremity to some stone, stick, leaf, &c. in the water, and furnished with feelers at the other extremity, which it can extend in search of food. The young ones appear as excrescences, on the surface of the parent, and in time stretch out like branches, and each becomes a distinct animal. The polypus is propagated by division, for being cut in pieces, in every direction, each piece will, in a very short time, produce a perfect animal. This mode of

production, forms an example of the gradations made by nature. in stepping from the animal to the vegetable world.

SYNOPSIS OF CLASS VI.—VERMES.

ORDER.	Genera.	Species.
I. In-tes-ti-na.....	21	384
II. Mol-lus-ca	31	538
III. Tes-ta-ce-a.....	36	2525
IV. Zo-o-phy-ta.....	15	498
V. In-fu-so-ri-a	15	191
	118	4136

QUESTIONS FOR EXAMINATION.

QUESTION 1. What do you mean by Natural History? 2. What are the chief objects to engage the Naturalist's attention? 3. How are natural productions distinguished from one another? 4. What is meant by classification? 5. How is a species distinguished? 6. What constitutes a genus? 7. What forms the character or description of a genus? 8. What is meant by an order? 9. How is a class formed, and what is meant by a kingdom? 10. How are kingdoms, classes, &c. divided? 11. How are natural objects usually divided? 12. How are animals described? 13. Give the description of vegetables? 14. Where are minerals found, and how are they described? 15. In what order do the three natural kingdoms rank in comparative estimation? 16. How is the animal kingdom divided, and from what are the distinctive characters of the classes taken? 17. Give the illustration. 18. How are the six classes denominated? 19. What does the first class include? 20. How are they characterized? 21. How is the class aves distinguished from the mammalia? 22. What is the character of the amphibia? 23. What does the amphibia include, and why are they enabled to live either on land or in water? 24. In what does the class pisces differ from the amphibia? 25. What is the character of the class insecta? 26. In what do the vermes differ from insects? 27. Give me the summary respecting the

six classes? 28. Point out the distinction between the antennæ and palpi of insects, and the tentacula of vermes. 29. From what do the mammalia derive their name, and how are they described? 30. Into how many orders are they distributed, and from what is their character taken? 31. What are the names of the seven orders? 32. What does the order primates contain? what is their character, and of what genera does it consist? 33. What does the genus homo include? 34. What does the simia genus contain, and how is it divided? 35. In what does this genus resemble man, and in what does it differ from him? 36. Can you give any illustration of this genus? 37. Of what does the lemur genus consist, and in what respects does it agree and disagree with the monkey tribe? 38. Give some account of the lemur tar-di-gradus. 39. How is the vespertilio genus characterized? 40. Describe their habits. 41. Give some account of the bat, in writing. 42. What is the characteristic of the bruta order, and what animals does it include? 43. What are the characteristics of the sloth? 44. What is said of the rhinoceros? 45. What is the generic character of the elephant? 46. Give some account of the illustration. 47. What is the platypus? 48. Give the illustration. 49. What are the characteristics of the animals of the feræ order? 50. Of what does this order consist? 51. What is said of the seal? 52. What are the peculiarities of the phoca-ursina? 53. How is the dog genus characterized? 54. Give some account of the illustration. 55. How is the cat genus distinguished? 56. What is said of the lion and tiger? 57. How are the animals of the gliris order characterized? 58. Give an account of the beaver and lemming. 59. By what characteristics are the animals of the pecora order distinguished? 60. What is said of the dromedary, and ox? 61. How are the animals of the belluæ order distinguished? 62. What is said of the horse, mule, &c.? 63. What facts are given with respect to the hippopotamus? 64. How is the cete order characterized? 65. Why are they arranged with the mammalia? 66. Of what does the class aves consist? 67. What is said of the feathers and eggs of birds? 68. How do birds live? 69. From what are the generic characters of birds taken? 70. Give some account of the condor. 71. What is the first order of birds, and what does it include? 72. What is the second order, and how is it distinguished? 73. What is said of the third order? 74. How is the fourth order distinguished,

and into what families are they divided? 75. What is said of the gallinæ? 76. What is said of the pheasant? 77. How is the sixth order characterized, and what does it comprise? 78. What is the third class of animals called, and from what do they derive their name? 79. How is this class divided, and what does it include? 80. How are reptiles characterized? 81. How are serpents distinguished? 82. How are the venomous ones distinguished from those that are innocuous? 83. Which are the scuta and scales? 84. What does the fourth class include? 85. How are fishes described? 86. On what do they live? 87. How are the Linnæan division of fishes instituted? 88. What are the five orders of fishes? 89. How is the first order distinguished? 90. What is the characteristic of the second order? 91. How are the fins situated in the abdominales? 92. What does the fifth order include? 93. Give the illustration. 94. Of what does the fifth class in the Linnæan system consist? 95. How are insects described? 96. What is said of the sexes of insects? 97. What kind of metamorphosis do insects undergo? 98. Through what state or stages do insects pass? 99. Which are the least subjects in the animal creation? 100. What is said of the habitations of insects? 101. Give the illustration. 102. Into how many orders are insects divided, and what is the first order? 103. How is this subject illustrated? 104. What is the second order, and how is it described? 105. What is the third order, and of what does it consist? 106. How is the fourth order denominated, and what does it include? 107. Give the illustration. 108. Of what does this fifth order consist, and what is it called? 109. What is the sixth order, and why is it so named? 110. Of what does the seventh order consist, and what is its name? 111. What observations are made on this class of animals? 112. What is the sixth class in the Linnæan system, and what does it include? 113. How is this class divided? 114. What is said with regard to the imperfection of these animals? 115. What is the first order of these animals, and where do they inhabit? 116. Give the illustration. 117. How is the second order characterized? 118. Are the animals of the mollusca order very numerous, and what is said of them? 119. What is said of the cuttle-fish? 120. What is the third order? 121. To what study does the order testacea give rise? 122. How are shells separated? 123. Of what do the multivalves consist? 124. What are bivalves? 125.

What is said of oysters and muscles? 126. In what are pearls found, and how are they formed? 127. What do univalves comprehend? 128. What is said of the substance of shells? 129. What is the fourth order of the class vermes, and what is said of the animals comprehended in it? 130. What is said of sponge? 131. In what respects do plants and zoophytes resemble one another? 132. How are the zoophyta distinguished? 133. What is said in illustration? 134. What is the fifth order called, and how is it described? 135. Where is the vorticella found? 136. What is said of the hydra, or the fresh water polypus?

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THE END.

